This document shows a selected set of LilyPond snippets from the LilyPond Snippet Repository (https://lsr.di.unimi.it) (LSR). It is in the public domain.

We would like to address many thanks to Sebastiano Vigna for maintaining LSR web site and database, and the University of Milano for hosting LSR.

Please note that this document is not an exact subset of LSR: some snippets come from Documentation/snippets/new/ LilyPond sources directory, and snippets from LSR are converted through convert-ly, as LSR is based on a stable LilyPond version, and this document is for version 2.24.0.

Snippets are grouped by tags; tags listed in the table of contents match a section of LilyPond notation manual. Snippets may have several tags, and not all LSR tags may appear in this document.

In the HTML version of this document, you can click on the file name or figure for each example to see the corresponding input file.

For more information about how this manual fits with the other documentation, or to read this manual in other formats, see Section “Manuals” in General Information.

If you are missing any manuals, the complete documentation can be found at https://lilypond.org/.

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For LilyPond version 2.24.0
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Pitches

Section "Pitches" in Notation Reference

Adding ambitus per voice

Ambitus can be added per voice. In this case, the ambitus must be moved manually to prevent collisions.

\new Staff <<
  \new Voice \with {
    \consists "Ambitus_engraver"
  } \relative c'' {
    \override Ambitus.X-offset = #2.0
    \voiceOne
    c4 a d e
    f1
  }
  \new Voice \with {
    \consists "Ambitus_engraver"
  } \relative c' {
    \voiceTwo
    es4 f g as
    b1
  }
>>

Adding an ottava marking to a single voice

If you have more than one voice on the staff, setting octavation in one voice transposes the position of notes in all voices for the duration of the ottava bracket. If the octavation is only intended to apply to one voice, the Ottava_spanner_engraver should be moved to Voice context.

\layout {
  \context {
    \Staff {
      \remove Ottava_spanner_engraver
    }
  }
  \context {
    \Voice {
      \consists Ottava_spanner_engraver
    }
  }
}

{\clef bass
  << { <g d'>1~ q2 <c' e'> } \}}
Aiken head white notes get harder to read at smaller staff sizes, especially with ledger lines. Losing interior white space makes them appear as quarter notes.

\score { 
\aikenHeads  
c''2 a' c' a

% Switch to thin-variant noteheads
\set shapeNoteStyles = ##(doThin reThin miThin faThin sol laThin tiThin)
c'' a' c' a
}

Altering the length of beamed stems

Stem lengths on beamed notes can be varied by overriding the beamed-lengths property of the details of the Stem. If a single value is used as an argument, the length applies to all stems. When multiple arguments are used, the first applies to eighth notes, the second to sixteenth notes and so on. The final argument also applies to all notes shorter than the note length of the final argument. Non-integer arguments may also be used.

relative c'' { 
\override Stem.details.beamed-lengths = #'(2) a8[ a] a16[ a] a32[ a]
\override Stem.details.beamed-lengths = #'(8 10 12) a8[ a] a16[ a] a32[ a] r8
\override Stem.details.beamed-lengths = #'(8) a8[ a]
Ambitus

Ambitus indicate pitch ranges for voices.

Accidentals only show up if they are not part of the key signature. AmbitusNoteHead grobs also have ledger lines.

\layout {
  \context {
    \Voice
    \consists "Ambitus_engraver"
  }
}

<<
\new Staff {
  \relative c' {
    \time 2/4
    c4 f'
  }
}
\new Staff {
  \relative c' {
    \time 2/4
    \key d \major
    cis4 as'
  }
}
>>

Ambitus after key signature

By default, ambitus are positioned at the left of the clef. The ambitusAfter function allows for changing this placement. Syntax is \ambitusAfter grob-interface (see
Graphical Object Interfaces (http://lilypond.org/doc/v2.22/Documentation/internals/graphical-object-interfaces) for a list of possible values for grob-interface.

A common use case is printing the ambitus between key signature and time signature.

\new Staff \with {
  \consists Ambitus_engraver
} \relative {
  \ambitusAfter key-signature
  \key d \major
  es'8 g bes cis d2
}

\begin{music}
\new Staff \with {
  \consists Ambitus_engraver
}
<<
\new Voice \relative c' \{ 
  \voiceOne 
  c4 a d e 
  f1
}
\new Voice \relative c' \{ 
  \voiceTwo 
  es4 f g as 
  b1
}
>>
\end{music}

Ambitus with multiple voices

Adding the Ambitus_engraver to the Staff context creates a single ambitus per staff, even in the case of staves with multiple voices.

\new Staff \with {
  \consists "Ambitus_engraver"
}

\begin{music}
\begin{music}
\end{music}
\end{music}

Applying note head styles depending on the step of the scale

The shapeNoteStyles property can be used to define various note head styles for each step of the scale (as set by the key signature or the tonic property).

This property requires a set of symbols, which can be purely arbitrary (geometrical expressions such as triangle, cross, and xcircle are allowed) or based on old American engraving tradition (some latin note names are also allowed).

That said, to imitate old American song books, there are several predefined note head styles available through shortcut commands such as \aikenHeads or \sacredHarpHeads.

This example shows different ways to obtain shape note heads, and demonstrates the ability to transpose a melody without losing the correspondence between harmonic functions and note head styles.
fragment = {
    \key c \major
    c2 d
e2 f
g2 a
b2 c
}

\new Staff {
    \transpose c d
    \relative c' {
        \set shapeNoteStyles = ##(do re mi fa
                           #f la ti)
        \fragment
    }
    \break
    \relative c' {
        \set shapeNoteStyles = ##(cross triangle fa #f
                           mensural xcircle diamond)
        \fragment
    }
}

Automatically changing the stem direction of the middle note based on the melody

LilyPond can alter the stem direction of the middle note on a staff so that it follows the melody, by adding the Melody_engraver to the Voice context.

The context property suspendMelodyDecisions may be used to turn off this behavior locally.

\relative c'' {
    \time 3/4
    a8 b g f b g |
    \set suspendMelodyDecisions = ##t
    a b g f b g |
    \unset suspendMelodyDecisions
    c b d c b c |
}

\layout {
    \context {
        \Voice
\consists "Melody_engraver"
\autoBeamOff

Changing ottava text

Internally, \ottava sets the properties ottavation (for example, to 8va or 8vb) and middleCPosition. To override the text of the bracket, set ottavation after invoking \ottava.

Short text is especially useful when a brief ottava is used.

{  
c'2  
\ottava #1  
\set Staff.ottavation = #'8
  
c''2  
\ottava #0  
c'1  
\ottava #1  
\set Staff.ottavation = #'Text
  
c''1
}

Changing the ambitus gap

It is possible to change the default gap between the ambitus noteheads and the line joining them.

\layout {  
  \context {  
    \Voice  
      \consists "Ambitus_engraver"
  }
}

\new Staff {  
  \time 2/4  
  % Default setting  
  c'4 g''
}

\new Staff {  
  \time 2/4  
  \override AmbitusLine.gap = #0  
  c'4 g''
}
Changing the interval of lines on the stave

staffLineLayoutFunction is used to change the position of notes. This snippet shows setting its value to ly:pitch-semitones in order to produce a chromatic scale with the distance between each space and line of the stave equal to one semitone.

```latex
\scale = \relative c' { 
  a4 ais b c
cis4 d dis e
f4 fis g gis
a1}
```

```latex
\new Staff \with { 
  \remove "Accidental_engraver"
  \staffLineLayoutFunction = #ly:pitch-semitones
}
```

```latex
{ <<
  \context NoteNames { 
    \set printOctaveNames = ##f
  }
  \scale
}
Clefs can be transposed by arbitrary amounts

Clefs can be transposed by arbitrary amounts, not just by octaves.

```latex
\relative c' {
    \clef treble
    c4 c c c
    \clef "treble_8"
    c4 c c c
    \clef "treble_5"
    c4 c c c
    \clef "treble^3"
    c4 c c c
}
```

Coloring notes depending on their pitch

It is possible to color note heads depending on their pitch and/or their names: the function used in this example even makes it possible to distinguish enharmonics.

```latex
% Association list of pitches to colors.
#(define color-mapping
    (list (cons (ly:make-pitch 0 0 NATURAL) (x11-color 'red))
          (cons (ly:make-pitch 0 0 SHARP) (x11-color 'green))
          (cons (ly:make-pitch 0 1 FLAT) (x11-color 'green))
          (cons (ly:make-pitch 0 2 NATURAL) (x11-color 'red))
          (cons (ly:make-pitch 0 2 SHARP) (x11-color 'green))
          (cons (ly:make-pitch 0 3 FLAT) (x11-color 'red))
          (cons (ly:make-pitch 0 3 NATURAL) (x11-color 'green))
          (cons (ly:make-pitch 0 4 SHARP) (x11-color 'red))
          (cons (ly:make-pitch 0 5 NATURAL) (x11-color 'green))
          (cons (ly:make-pitch 0 5 FLAT) (x11-color 'red))
          (cons (ly:make-pitch 0 6 SHARP) (x11-color 'red))
          (cons (ly:make-pitch 0 1 NATURAL) (x11-color 'blue))
          (cons (ly:make-pitch 0 3 SHARP) (x11-color 'blue))
          (cons (ly:make-pitch 0 4 FLAT) (x11-color 'blue))
          (cons (ly:make-pitch 0 4 SHARP) (x11-color 'blue))
          (cons (ly:make-pitch 0 5 SHARP) (x11-color 'blue))
          (cons (ly:make-pitch 0 6 FLAT) (x11-color 'blue))))
```
Creating a sequence of notes on various pitches

In music that contains many occurrences of the same sequence of notes at different pitches, the following music function may prove useful. It takes a note, of which only the pitch is used.

This example creates the rhythm used throughout Mars, from Gustav Holst’s The Planets.

\(\text{rhythm} = \)

\#(define-music-function (p) (ly:pitch?)
  "Make the rhythm in Mars (the Planets) at the given pitch"
  #( \tuplet 3/2 { $p 8 8 8 } 4 4 8 8 4 #))

Creating custom key signatures

LilyPond supports custom key signatures. In this example, print for D minor with an extended range of printed flats.

\(\text{\new Staff \with} \)
\override StaffSymbol.line-count = #8
\override KeySignature.flat-positions = #'((-7 . 6))
\override KeySignature.flat-positions = #'((-7 . 6))
% presumably sharps are also printed in both octaves
\override KeySignature.sharp-positions = #'((-6 . 7))
\override KeyCancellation.sharp-positions = #'((-6 . 7))
\override Clef.stencil = #
(lambda (grob)(grob-interpret-markup grob
#{ \markup\combine
 \musicglyph "clefs.C"
 \translate #'(-3 . -2)
 \musicglyph "clefs.F"
#})
clefPosition = #3
middleCPosition = #3
middleCClefPosition = #3
}

{ key d
\f bes, \f bes,
}

\[\begin{array}{cccc}
\text{c} & \text{d} & \text{e} & \text{f} \\
\end{array}\]

**Direction of merged 'fa' shape note heads**

Using property `NoteCollision.fa-merge-direction`, the direction of ‘fa’ shape note heads (‘fa’, ‘faThin’, etc.) can be controlled independently of the stem direction if two voices with the same pitch and different stem directions are merged. If this property is not set, the ‘down’ glyph variant is used.

{ clef bass
   << { \aikenHeads
      \f2
      \override Staff.NoteCollision.fa-merge-direction = #UP
      \f2 }
   \\ { \aikenHeads
      \f2
      \f2 }
   >> }

\[\begin{array}{cccc}
\text{c} & \text{d} & \text{e} & \text{f} \\
\end{array}\]
Force a cancellation natural before accidentals

The following example shows how to force a natural sign before an accidental.

\relative c' { 
\key es \major 
bes c des 
\tweak Accidental.restore-first ##t 
eis 
}

Forcing a clef symbol to be displayed

When a clef sign has already been displayed and it has not been changed to a different clef, then repeating the \clef command will be ignored by LilyPond, since it is not a change of clef. It is possible to force the clef to be redisplayed using the command \set Staff.forceClef = ##t.

\relative c' { 
\clef treble 
c1 
\clef treble 
c1 
\set Staff.forceClef = ##t 
c1 
\clef treble 
c1 
}

Generating random notes

This Scheme-based snippet generates 24 random notes (or as many as required), based on the current time (or any randomish number specified instead, in order to obtain the same random notes each time): i.e., to get different random note patterns, just change this number.

\score { 
{ 
$(let ((random-state (seed->random-state (current-time))))) 
(make-sequential-music 
(map (lambda (x) 
(let ((idx (random 12 random-state))) 
(make-event-chord 
(list 
(make-music 'NoteEvent 
'duration (ly:make-duration 2 0 1/1) 
'pitch (ly:make-pitch 
(quotient idx 7) 
(remainder idx 7))))) 


Hiding accidentals on tied notes at the start of a new system

This shows how to hide accidentals on tied notes at the start of a new system.

\relative c' {
  \override Accidental.hide-tied-accidental-after-break = ##t
  cis1~ cis~
  \break
  cis
}

Keep change clefs full sized

When a clef is changed, the clef sign displayed is smaller than the initial clef. This can be overridden with full-size-change.

\relative c' {
  \clef "treble"
  c1
  \clef "bass"
  c1
  \clef "treble"
  c1
  \override Staff.Clef.full-size-change = ##t
  \clef "bass"
  c1
  \clef "treble"
  c1
  \revert Staff.Clef.full-size-change
  \clef "bass"
  c1
  \clef "treble"
  c1
}
Makam example

Makam is a type of melody from Turkey using 1/9th-tone microtonal alterations.

Consult the initialization file ‘ly/makam.ly’ for details of pitch names and alterations.

\% Initialize makam settings
\include "makam.ly"
\relative c' {
  \set Staff.keyAlterations = #"((6 . ,(- KOMA)) (3 . ,BAKIVE))
c4 cc db fk
gbm4 gfc gfb efk
fk4 db cc c
}

Modifying the Ottava spanner slope

It is possible to change the slope of the Ottava spanner.

\relative c'' {
  \override Staff.OttavaBracket.stencil = ly:line-spanner::print
  \override Staff.OttavaBracket.bound-details = #"((left . ((Y . 0)
          (attach-dir . ,LEFT)
          (padding . 0)
          (stencil-align-dir-y . ,CENTER)))
          (right . ((Y . 5.0) ; Change the number here
          (padding . 0)
          (attach-dir . ,RIGHT)
          (text . ,(make-draw-dashed-line-markup
          (cons 0 -1.2))))))
  \override Staff.OttavaBracket.left-bound-info =
          #ly:horizontal-line-spanner::calc-left-bound-info-and-text
  \override Staff.OttavaBracket.right-bound-info =
          #ly:horizontal-line-spanner::calc-right-bound-info
  \ottava #1
c1
c''''1
Non-traditional key signatures

The commonly used `key` command sets the `keyAlterations` property, in the Staff context. To create non-standard key signatures, set this property directly. The format of this command is a list:

```latex
\set Staff.keyAlterations = #`(((octave . step) . alter) ((octave . step) . alter) ...)
```

where, for each element in the list, `octave` specifies the octave (0 being the octave from middle C to the B above), `step` specifies the note within the octave (0 means C and 6 means B), and `alter` is `SHARP`, `FLAT`, `DOUBLE-SHARP` etc.

Alternatively, using the more concise format for each item in the list `(step . alter)` specifies the same alteration holds in all octaves.

For microtonal scales where a “sharp” is not 100 cents, `alter` refers to the alteration as a proportion of a 200-cent whole tone.

```latex
\include "arabic.ly"
\relative do' {
  \set Staff.keyAlterations = #`((0 ,SEMI-FLAT)
                              (1 ,SEMI-FLAT)
                              (2 ,FLAT)
                              (5 ,FLAT)
                              (6 ,SEMI-FLAT))

  \set Staff.extraNatural = ##f
  \re reb \dwn reb resd \
  \dod dob dosd \dwn dob |
  \dobsb dodsd do do |
}
```

Numbers as easy note heads

Easy notation note heads use the `note-names` property of the `NoteHead` object to determine what appears inside the note head. By overriding this property, it is possible to print numbers representing the scale-degree.

A simple engraver can be created to do this for every note head object it sees.

```latex
#(define Ez_numbers_engraver
  (make-engraver
    (acknowledgers
      ((note-head-interface engraver grob source-engraver))
      (let* ((context (ly:translator-context engraver))
             (tonic-pitch (ly:context-property context 'tonic))
             (tonic-name (ly:pitch-notename tonic-pitch))
             (grob-pitch
              (ly:event-property (event-cause grob) 'pitch))
             (grob-name (ly:pitch-notename grob-pitch))
             (delta (modulo (~ grob-name tonic-name) 7))
             (note-names
              (make-vector 7 (number->string (1+ delta)))))
```
Orchestra, choir and piano template

This template demonstrates the use of nested StaffGroup and GrandStaff contexts to subgroup instruments of the same type together, and a way to use \transpose so that variables hold music for transposing instruments at concert pitch.

#(set-global-staff-size 17)

\paper {
  indent = 3.0\cm \ % add space for instrumentName
  short-indent = 1.5\cm \ % add less space for shortInstrumentName
Pitches

fluteMusic = \relative c' { \key g \major g'1 b }

% Pitches as written on a manuscript for Clarinet in A
% are transposed to concert pitch.

clarinetMusic = \transpose c' a
    \relative c'' { \key bes \major bes1 d }

trumpetMusic = \relative c { \key g \major g''1 b }

% Key signature is often omitted for horns

hornMusic = \transpose c' f
    \relative c { d'1 fis }

percussionMusic = \relative c { \key g \major g1 b }

sopranoMusic = \relative c'' { \key g \major g'1 b }

sopranoLyrics = \lyricmode { Lyr -- ics }

altoIMusic = \relative c' { \key g \major g'1 b }

altoIIMusic = \relative c' { \key g \major g'1 b }

altoILyrics = \relative c' { \key g \major g'1 b }

altoIIlyrics = \lyricmode { Ah -- ah }

tenorMusic = \relative c' { \clef "treble_8" \key g \major g1 b }

tenorLyrics = \relative c' { \key g \major g1 b }

pianoRHMusic = \relative c { \key g \major g''1 b }

pianoLHMusic = \relative c { \clef bass \key g \major g1 b }

violinIMusic = \relative c' { \key g \major g'1 b }

violinIIIMusic = \relative c' { \key g \major g'1 b }

violaMusic = \relative c { \clef alto \key g \major g'1 b }

celloMusic = \relative c { \clef bass \key g \major g1 b }

bassMusic = \relative c { \clef "bass_8" \key g \major g,1 b }

\score {
    \new StaffGroup = "StaffGroup_woodwinds"
new Staff = "Staff_flute" with { instrumentName = "Flute" }
fluteMusic

new Staff = "Staff_clarinet" with {
instrumentName = \markup { \concat { "Clarinet in B" \flat } }
}

% Declare that written Middle C in the music
% to follow sounds a concert B flat, for
% output using sounded pitches such as MIDI.
\transposition bes

% Print music for a B-flat clarinet
\transpose bes c' \clarinetMusic

new StaffGroup = "StaffGroup_brass" <<
new Staff = "Staff_hornI" with { instrumentName = "Horn in F" }
\transposition f
\transpose f c' \hornMusic

new Staff = "Staff_trumpet" with { instrumentName = "Trumpet in C" }
\trumpetMusic

\new RhythmicStaff = "RhythmicStaff_percussion"
\with { instrumentName = "Percussion" }
<<
\percussionMusic

\new PianoStaff \with { instrumentName = "Piano" }
<<
new Staff { \pianoRHMusic }
new Staff { \pianoLHMusic }

\new ChoirStaff = "ChoirStaff_choir" <<
\new Staff = "Staff_soprano" \with { instrumentName = "Soprano" }
\new Voice = "soprano"
\sopranoMusic

\new Lyrics \lyricsto "soprano" { \sopranoLyrics }
\new GrandStaff = "GrandStaff_altos"
\with { \accepts Lyrics } <<
\new Staff = "Staff_altoI" \with { instrumentName = "Alto I" }
\new Voice = "altoI"
\altoIMusic

\new Lyrics \lyricsto "altoI" { \altoILyrics }
\new Staff = "Staff_altoII" \with { instrumentName = "Alto II" }
\new Voice = "altoII"
\altoIIMusic
\new Lyrics \lyricsto "altoII" { \altoII\lyrics }

\new Staff = "Staff_tenor" \with { instrumentName = "Tenor" }
\new Voice = "tenor"
\tenorMusic

\new Lyrics \lyricsto "tenor" { \tenor\lyrics }

\new Staff = "Staff_tenor" \with { instrumentName = "Tenor" }
\new StaffGroup = "StaffGroup_strings" <<
\new GrandStaff = "GrandStaff_violins" <<
\new Staff = "Staff_violinI" \with { instrumentName = "Violin I" }
\violinIMusic

\new Staff = "Staff_violinII" \with { instrumentName = "Violin II" }
\violinIIMusic

\new Staff = "Staff_viola" \with { instrumentName = "Viola" }
\violaMusic

\new Staff = "Staff_cello" \with { instrumentName = "Cello" }
\celloMusic

\new Staff = "Staff_bass" \with { instrumentName = "Double Bass" }
\bassMusic

\layout { }
}
 Preventing extra naturals from being automatically added

In accordance with traditional typesetting rules, a natural sign is printed before a sharp or flat if a previous double sharp or flat on the same note is canceled. To change this behavior to contemporary practice, set the extraNatural property to f in the Staff context.

\relative c'' {
    aeses4 aes ais a
    \set Staff.extraNatural = ##f
    aeses4 aes ais a
}
Preventing natural signs from being printed when the key signature changes

When the key signature changes, natural signs are automatically printed to cancel any accidentals from previous key signatures. This may be prevented by setting to 0 the printKeyCancellation property in the Staff context.

```
relative c' {
    key d \major
    a4 b cis d
    key g \minor
    a4 bes c d
    \set Staff.printKeyCancellation = ##f
    key d \major
    a4 b cis d
    key g \minor
    a4 bes c d
}
```

Quoting another voice with transposition

Quotations take into account the transposition of both source and target. In this example, all instruments play sounding middle C; the target is an instrument in F. The target part may be transposed using \transpose. In this case, all the pitches (including the quoted ones) are transposed.

```
\addQuote clarinet {
    \transposition bes
    \repeat unfold 8 { d'16 d' d'8 }
}

\addQuote sax {
    \transposition es'
    \repeat unfold 16 { a8 }
}

quoteTest = {
    % french horn
    \transposition f
    g'4
    \quoteDuring "clarinet" { \skip 4 } s4~"clar." >>
    \quoteDuring "sax" { \skip 4 } s4~"sax." >>
    g'4
}
```

```
\new Staff \with {
    instrumentName = \markup { \column { Horn "in F" } }
}
\quoteTest
\transpose c' d' << \quoteTest s4~"up a tone" >>
```
Separating key cancellations from key signature changes

By default, the accidentals used for key cancellations are placed adjacent to those for key signature changes. This behavior can be changed by overriding the 'break-align-orders property of the BreakAlignment grob.

The value of 'break-align-orders is a vector of length 3, with quoted lists of breakable items as elements. This example only modifies the second list, moving key-cancellation before staff-bar; by modifying the second list, break alignment behavior only changes in the middle of a system, not at the beginning or the end.

```scheme
\new Staff {
  \override Score.BreakAlignment.break-align-orders =
    #\((left-edge ambitus breathing-sign clef staff-bar
        key-cancellation key-signature time-signature custos)

    (left-edge ambitus breathing-sign clef key-cancellation
        staff-bar key-signature time-signature custos)

    (left-edge ambitus breathing-sign clef key-cancellation
        key-signature staff-bar time-signature custos))

  \key des \major
c'1
  \bar "||"
  \key bes \major
c'1
}
```

Transposing pitches with minimum accidentals ("Smart" transpose)

This example uses some Scheme code to enforce enharmonic modifications for notes in order to have the minimum number of accidentals. In this case, the following rules apply:

- Double accidentals should be removed
- B sharp -> C
- E sharp -> F
- C flat -> B
- F flat -> E

In this manner, the most natural enharmonic notes are chosen.

```scheme
#(define (naturalize-pitch p)
```
(let ((o (ly:pitch-octave p))
      (a (* 4 (ly:pitch-alteration p)))
      ;; alteration, a, in quarter tone steps,
      ;; for historical reasons
      (n (ly:pitch-notename p)))
  (cond
    ((and (> a 1) (or (eqv? n 6) (eqv? n 2)))
     (set! a (- a 2))
     (set! n (+ n 1)))
    ((and (< a -1) (or (eqv? n 0) (eqv? n 3)))
     (set! a (+ a 2))
     (set! n (- n 1))))
  (cond
    ((> a 2) (set! a (- a 4)) (set! n (+ n 1)))
    ((< a -2) (set! a (+ a 4)) (set! n (- n 1)))
    (if (< n 0) (begin (set! o (- o 1)) (set! n (+ n 7))))
    (if (> n 6) (begin (set! o (+ o 1)) (set! n (- n 7))))
    (ly:make-pitch o n (/ a 4))))

#(define (naturalize music)
  (let ((es (ly:music-property music 'elements))
         (e (ly:music-property music 'element))
         (p (ly:music-property music 'pitch)))
    (if (pair? es)
        (ly:music-set-property!
         music 'elements
         (map naturalize es))
        (if (ly:music? e)
            (ly:music-set-property!
             music 'element
             (naturalize e))
            (if (ly:pitch? p)
                (begin
                 (set! p (naturalize-pitch p))
                 (ly:music-set-property! music 'pitch p)))
               music))
  music)

naturalizeMusic =
#(define-music-function (m)
  (ly: MUSIC?)
  (naturalize m))

music = \relative c' { c4 d e g }
This template uses the start of a well-known Turkish Saz Semai that is familiar in the repertoire in order to illustrate some of the elements of Turkish music notation.

```ly
paper { tagline = ##f }
%
include "turkish-makam.ly"

header {
  title = "Hüseyni Saz Semaisi"
  composer = "Lavtacı Andon"
}

relative {
  \set Staff.extraNatural = ##f
  \set Staff.autoBeaming = ##f

  \key a \huseyni
  \time 10/8
  a'4 g'16 [fb] e8. [d16] d [c d e] c [d c8] bfc |
  a16 [bfc a8] bfc c16 [d c8] d16 [e d8] e4 fb8 |
  d4 a'8 a16 [g fb e] fb8 [g] a8. [b16] a16 [g] |
  g4 g16 [fb] fb8. [e16] e [g fb e] e4 r8 |
}

Hzuseyni Saz Semaisi

Lavtacı Andon

Tweaking clef properties
Changing the Clef glyph, its position, or the ottavation does not change the position of subsequent notes on the staff. To get key signatures on their correct staff lines middleCClefPosition must also be specified, with positive or negative values moving middle C up or down respectively, relative to the staff’s center line.
For example, \clef "treble_8" is equivalent to setting the clefGlyph, clefPosition (the vertical position of the clef itself on the staff), middleCPosition and clefTransposition. Note that when any of these properties (except middleCPosition) are changed a new clef symbol is printed.

The following examples show the possibilities when setting these properties manually. On the first line, the manual changes preserve the standard relative positioning of clefs and notes, whereas on the second line, they do not.

{%
% The default treble clef
\key f \major
c'1
%
% The standard bass clef
\set Staff.clefGlyph = #'clefs.F'
\set Staff.clefPosition = #2
\set Staff.middleCPosition = #6
\set Staff.middleCClefPosition = #6
\key g \major
c'1
%
% The baritone clef
\set Staff.clefGlyph = #'clefs.C'
\set Staff.clefPosition = #4
\set Staff.middleCPosition = #4
\set Staff.middleCClefPosition = #4
\key f \major
c'1
%
% The standard choral tenor clef
\set Staff.clefGlyph = #'clefs.G'
\set Staff.clefPosition = #2
\set Staff.clefTransposition = #2
\set Staff.middleCPosition = #1
\set Staff.middleCClefPosition = #1
\key f \major
c'1
%
% A non-standard clef
\set Staff.clefPosition = #0
\set Staff.clefTransposition = #0
\set Staff.middleCPosition = #0
\set Staff.middleCClefPosition = #0
\key g \major
c'1 \break
%
% The following clef changes do not preserve
% the normal relationship between notes, key signatures
% and clefs:
%
\set Staff.clefGlyph = #'clefs.F'
\set Staff.clefPosition = #2
c'1
\set Staff.clefGlyph = #'clefs.G'
c'1
\set Staff.clefGlyph = #'clefs.C'\%
Using autochange with more than one voice

Using autochange with more than one voice.

\score { \new PianoStaff { \new Staff = "up" { << \set Staff.clefTransposition = #7 \set Staff.clefTransposition = #0 \set Staff.clefPosition = #0 \new Voice { \voiceOne \autoChange \relative c' { g8 a b c d e f g g,,8 a b c d e f g } } \new Voice { \voiceTwo \autoChange \relative c' { g8 a b c d e f g g,,8 a b c d e f g } } >> } } }
\new Staff = "down" {
    \clef bass
}
Rhythms

Section “Rhythms” in Notation Reference

Adding beams, slurs, ties etc. when using tuplet and non-tuplet rhythms

LilyPond syntax can involve many unusual placements for parentheses, brackets etc., which might sometimes have to be interleaved.

For example, when entering a manual beam, the left square bracket has to be placed after the starting note and its duration, not before. Similarly, the right square bracket should directly follow the note which is to be at the end of the requested beaming, even if this note happens to be inside a tuplet section.

This snippet demonstrates how to combine manual beaming, manual slurs, ties and phrasing slurs with tuplet sections (enclosed within curly braces).

```
{ r16[ g16 \tuplet 3/2 { r16 e'8 } ]
g16( a \tuplet 3/2 { b d e' } )
g8( a \tuplet 3/2 { b d' e' } - )
\time 2/4
\tuplet 5/4 { e'32\( a b d' e' \) a'4.\})}
```

Adding drum parts

Using the powerful pre-configured tools such as the \drummode function and the DrumStaff context, inputting drum parts is quite easy: drums are placed at their own staff positions (with a special clef symbol) and have note heads according to the drum. Attaching an extra symbol to the drum or restricting the number of lines is possible.

```
drh = \drummode{
cymc4."crash" hhc16~"h.h." hh hhc8 hho hhc8 hh16 hh
hhc4 r4 r2
}
drl = \drummode{
bd4 sn8 bd bd4 << bd ss >>
b8 tommh tommh bd toml toml bd tomfh16 tomfh
}
timb = \drummode{
timh4 ssh timl8 ssh r timh r4
ssh8 timl r4 cb8 cb
}
```

```
\score {
<<
  \new DrumStaff \with {
    instrumentName = "timbales"
  }
```
Rhythms

\set StaffSymbol.line-count = #2
\set BarLine.bar-extent = #'(-1 . 1)

\new DrumStaff \with { instrumentName = "drums" }
\new DrumVoice { \stemUp \drh }
\new DrumVoice { \stemDown \drl }

\layout { }
\midi { \tempo 4 = 120 }

Adjusting grace note spacing

The space given to grace notes can be adjusted using the \$\texttt{spacing-increment}$ property of \Score.GraceSpacing.
\new \graceNotes = { \grace { c4 c8 c16 c32 } c8 }
\relative c'' { c8 \graceNotes \override \Score.GraceSpacing.spacing-increment = #2.0 \graceNotes \revert \Score.GraceSpacing.spacing-increment \graceNotes }

Aligning bar numbers

Bar numbers by default are right-aligned to their parent object. This is usually the left edge of a line or, if numbers are printed within a line, the left hand side of a bar line. The numbers may also be positioned directly over the bar line or left-aligned to the bar line.
\relative c' {
Alternative breve notes

Breve notes are also available with two vertical lines on each side of the notehead instead of one line and in baroque style.

\relative c' { 
  \time 4/2
  c'\breve |
  \override Staff.NoteHead.style = #'altdefault
  b\breve
  \override Staff.NoteHead.style = #'baroque
  b\breve
  \revert Staff.NoteHead.style
  a\breve
}

Appoggiatura or grace note before a bar line

By default, appoggiaturas and grace notes that occur on the first beat of a measure are printed after the bar line. They can however be printed before, simply by adding an invisible BarLine and then the visible one, as demonstrated here.

{ 
  R1
  \% default
  \appoggiatura d'8 c'4 r2.
  \% cheated
  \appoggiatura { \bar "" d'8 \bar "|" } c'4 r2.
}
Automatic beam subdivisions

Beams can be subdivided automatically. By setting the property `subdivideBeams`, beams are subdivided at beat positions (as specified in `baseMoment`).

```
\new Staff {
  \relative c'' {
    \begin{music}
      \new Voice {
        \set subdivideBeams = \##t
        b32 [ agfc'ba g ]
      }
      \new Voice {
        \set subdivideBeams = "default"
        b32 [ agfc'ba g ]
      }
      \set baseMoment = \ly:make-moment 1/8
      \set beatStructure = 2,2,2,2
      b32 "baseMoment 1 8" [ agfc'ba g ]
      \set baseMoment = \ly:make-moment 1/16
      \set beatStructure = 4,4,4,4
      b32 "baseMoment 1 16" [ agfc'ba g ]
    \end{music}
  }
}
```

Automatically change durations

`shiftDurations` can be used to change the note lengths of a piece of music.

It takes two arguments - the scaling factor as a power of two, and the number of dots to be added as a positive integer.

```
\paper { indent = 0 }

music = \relative c'' { a1 b2 c4 d8 r }

\score {
  \new Voice {
    \time 4/2
  }
```
Beam endings in Score context

Beam-ending rules specified in the Score context apply to all staves, but can be modified at both Staff and Voice levels:

```latex
\relative c' { 
  \time 5/4
  \set Score.baseMoment = #(ly:make-moment 1/8)
  \set Score.beatStructure = 3,4,3
  \new Staff { 
    c8 c c c c c c c c 
  } 
  \new Staff { 
    \set Staff.beatStructure = 6,4 
    c8 c c c c c c c c 
  } 
  \new Staff { 
    % Inherit beaming from Score context 
    << 
      \voiceOne 
  } 
}```
\begin{verbatim}
c8 c c c c c c c c c c
%
% Modify beaming for this voice only
\new Voice {
\voiceTwo
\set Voice.beatStructure = 6,4
a8 a a a a a a a a

}

Beams across line breaks

Line breaks are normally forbidden when beams cross bar lines. This behavior can be changed as shown:
\begin{verbatim}
relative c'' {
\override Beam.breakable = ##t
c8 c[ c] c[ c] c[ c] c[ \break
c8] c[ c] c[ c] c[ c] c
}
\end{verbatim}
\end{verbatim}

Changing beam knee gap

Kneed beams are inserted automatically when a large gap is detected between the note heads. This behavior can be tuned through the auto-knee-gap property. A kneed beam is drawn if the gap is larger than the value of auto-knee-gap plus the width of the beam object (which depends on the duration of the notes and the slope of the beam). By default auto-knee-gap is set to 5.5 staff spaces.
\begin{verbatim}
{ f8 f''8 f8 f''8
\override Beam.auto-knee-gap = #6
\end{verbatim}
Changing form of multi-measure rests

If there are ten or fewer measures of rests, a series of longa and breve rests (called in German “Kirchenpausen” - church rests) is printed within the staff; otherwise a simple line is shown. This default number of ten may be changed by overriding the expand-limit property.

```
relative c' {
    \compressMMRests {
        R1*2 | R1*5 | R1*9
        \override MultiMeasureRest.expand-limit = #3
        R1*2 | R1*5 | R1*9
    }
}
```

Changing the number of augmentation dots per note

The number of augmentation dots on a single note can be changed independently of the dots placed after the note.

```
relative c' {
    c4.. a16 r2 |
    \override Dots.dot-count = #4
    c4.. a16 r2 |
    \override Dots.dot-count = #0
    c4.. a16 r2 |
    \revert Dots.dot-count
    c4.. a16 r2 |
}
```

Changing the tempo without a metronome mark

To change the tempo in MIDI output without printing anything, make the metronome mark invisible.

```
\score {\new Staff \relative c' {\tempo 4 = 160 c4 e g b}}
```
Changing the tuplet number

By default, only the numerator of the tuplet number is printed over the tuplet bracket, i.e., the numerator of the argument to the \tuplet command.

Alternatively, \texttt{num:den} of the tuplet number may be printed, or the tuplet number may be suppressed altogether.

```latex
\relative c' {
  \tuplet 3/2 { c8 c c }
  \tuplet 3/2 { c8 c c }
  \override TupletNumber.text = #tuplet-number::calc-fraction-text
  \tuplet 3/2 { c8 c c }
  \omit TupletNumber
  \tuplet 3/2 { c8 c c }
}
```

Changing time signatures inside a polymetric section using \scaleDurations

The measureLength property, together with measurePosition, determines when a bar line is needed. However, when using \scaleDurations, the scaling of durations makes it difficult to change time signatures. In this case, measureLength should be set manually, using the \ly:make-moment callback. The second argument must be the same as the second argument of \scaleDurations.

```latex
\layout {
  \context {\
    \Score
    \remove "Timing_translator"
    }
  \context {
    \Staff
    \consists "Timing_translator"
    }
```
Chant or psalms notation

This form of notation is used for Psalm chant, where verses aren’t always the same length.

stemOff = \hide Staff.Stem
stemOn = \undo \stemOff

\score {
  \new Staff \with { \remove "Time_signature_engraver" }
  {
    \key g \minor
    \cadenzaOn
    \stemOff a'\breve b e s'4 g'4
    \stemOn a'2 \section
    \stemOff a'\breve g'4 a'4
    \stemOn f'2 \section
    \stemOff a'\breve\"mark up { \italic flexe }
    \stemOn g'2 \fine
  }
}
Compound time signatures

Odd 20th century time signatures (such as “5/8”) can often be played as compound time signatures (e.g. “3/8 + 2/8”), which combine two or more inequal metrics.

LilyPond can make such music quite easy to read and play, by explicitly printing the compound time signatures and adapting the automatic beaming behavior.

\relative c' {
  \compoundMeter #'((2 8) (3 8))
  c8 d e fis gis
  c8 fis, gis e d
  c8 d e4 gis8
}

Conducting signs, measure grouping signs

Beat grouping within a measure is controlled by the beatStructure context property. Values of beatStructure are established for many time signatures in file scm/time-signature-settings.scm. Values of beatStructure can be changed or set with \set. Alternatively, \time can be used to both set the time signature and establish the beat structure. For this, you specify the internal grouping of beats in a measure as a list of numbers (in Scheme syntax) before the time signature.

\time applies to the Timing context, so it will not reset values of beatStructure or baseMoment that are set in other lower-level contexts, such as Voice.

If the Measure_grouping_engraver is included in one of the display contexts, measure grouping signs will be created. Such signs ease reading rhythmically complex modern music. In the example, the 9/8 measure is grouped in two different patterns using the two different methods, while the 5/8 measure is grouped according to the default setting in scm/time-signature-settings.scm:

\score {
  \new Voice \relative c'' {
    \time 9/8
    g8 g d d g g a( bes g) |
    \set Timing.beatStructure = 2,2,2,3
    g8 g d d g g a( bes g) |
    \time 4,5 9/8
    g8 g d d g g a( bes g) |
    \time 5/8
    a4. g4 |
  }
  \layout {
    \context {
      \Staff
      \consists "Measure_grouping_engraver"
    }
  }
}
Consistently left aligned bar numbers

When left aligning bar numbers, overlapping problems may occur with Staves brackets.

The snippet solves this by keeping right aligned the first bar number following line breaks.

```latex
\begin{verbatim}
\texttt{\textbf{consistentlyLeftAlignedBarNumbers} = \{\
\texttt{\textbackslash override \texttt{Score.BarNumber.break-visibility} = \#end-of-line-invisible} \\
\texttt{\textbackslash override \texttt{Score.BarNumber.self-alignment-X} =} \\
\texttt{\hspace{1cm}(\lambda (\texttt{grob})} \\
\texttt{\hspace{2cm}(\texttt{let} ((\texttt{break-dir (ly:item-break-dir grob)}))} \\
\texttt{\hspace{3cm}(\texttt{if} (= \texttt{break-dir \texttt{RIGHT}) \texttt{RIGHT LEFT}))}) \\
\}\}
\new \texttt{\textbf{ChoirStaff} \ll} \\
\new \texttt{\textbf{Staff} \{} \\
\hspace{1cm}\texttt{\relative c' \{} \\
\hspace{2cm}\texttt{\set \texttt{Score.barNumberVisibility} = \#(\texttt{every-nth-bar-number-visible 3})} \\
\hspace{2cm}\texttt{\bar "} \\
\hspace{2cm}\texttt{\textbf{consistentlyLeftAlignedBarNumbers}} \\
\hspace{2cm}\texttt{\set \texttt{Score.currentBarNumber} = \#112} \\
\hspace{2cm}\texttt{\repeat unfold 8 \{ \texttt{R1} \}} \\
\hspace{2cm}\texttt{\break} \\
\hspace{2cm}\texttt{\repeat unfold 9 \{ \texttt{R1} \}} \\
\hspace{2cm}\texttt{\break} \\
\hspace{2cm}\texttt{\repeat unfold 7 \{ \texttt{R1} \}} \\
\hspace{1cm}\} \\
\new \texttt{\textbf{Staff} \{} \\
\hspace{1cm}\relative c' \{} \\
\hspace{2cm}\texttt{\repeat unfold 24 \{ \texttt{R1} \}} \\
\hspace{1cm}\} \\
\} \\
\texttt{\ll}} \\
\texttt{\layout \{} \\
\hspace{1cm}\texttt{\indent = \#0} \\
\hspace{1cm}\texttt{\texttt{ragged-right} = \#\#t} \\
\hspace{1cm}\texttt{\texttt{ragged-last} = \#\#t} \\
\} 
\end{verbatim}
\end{verbatim}
```
Controlling tuplet bracket visibility

The default behavior of tuplet bracket visibility is to print a bracket unless there is a beam of the same length as the tuplet.

To control the visibility of tuplet brackets, set the property 'bracket-visibility to either #t (always print a bracket), 'if-no-beam (only print a bracket if there is no beam), or #f (never print a bracket). The latter is in fact equivalent to omitting the TupletBracket object altogether from the printed output.

```plaintext
music = \relative c'' { 
  \tuplet 3/2 { c16[ d e } f8] 
  \tuplet 3/2 { c8 d e } 
  \tuplet 3/2 { c4 d e } 
}
\new Voice { 
  \relative c' { 
    \override Score.TextMark.non-musical = ##f 
    \textMark "default" \music 
    \override TupletBracket.bracket-visibility = #'if-no-beam 
    \textMark markup \typewriter '"if-no-beam" \music 
    \override TupletBracket.bracket-visibility = ##t 
    \textMark markup \typewriter "#t" \music 
    \override TupletBracket.bracket-visibility = ##f 
    \textMark markup \typewriter "#f" \music 
    \omit TupletBracket 
    \textMark markup \typewriter "omit" \music 
  }
}
```
Cow and ride bell example

Two different bells, entered with 'cb' (cowbell) and 'rb' (ridebell).
\paper{\tagline = \q###f}

#(define mydrums '((ridebell default #f 3)
  (cowbell default #f -2)))

\new DrumStaff\with{\instrumentName = #"Different Bells"}
\drummode{
  \set DrumStaff.drumStyleTable = #(alist->hash-table mydrums)
  \set DrumStaff.clefPosition = 0.5
  \override DrumStaff.StaffSymbol.line-positions = #'(~2 3)
  \override Staff.BarLine.bar-extent = #'(~1.0 . 1.5)
  \time 2/4
  rb8 8 cb8 16 rb16-> ~ |
  16 8 16 cb8 8 |
}

Different Bells

Creating metronome marks in markup mode

New metronome marks can be created in markup mode, but they will not change the tempo in MIDI output.
\relative c'{
  \tempo \markup{
    \concat{
      \smaller \general-align #Y #DOWN \note {16.} \q#1
      " = "
      \smaller \general-align #Y #DOWN \note {8} \q#1
    }
    c1
    c4 c' c,2
  }
}
Engraving ties manually

Ties may be engraved manually by changing the `tie-configuration` property of the `TieColumn` object. The first number indicates the distance from the center of the staff in half-staff-spaces, and the second number indicates the direction (1 = up, -1 = down).

Note that LilyPond makes a distinction between exact and inexact values for the first number. If using an exact value (i.e., either an integer or a fraction like \( \frac{4}{5} \)), the value serves as a rough vertical position that gets further tuned by LilyPond to make the tie avoid staff lines. If using an inexact value like a floating point number, it is taken as the vertical position without further adjustments.

\[
\text{\texttt{relative c' \{} \quad \texttt{\textbackslash{}override TieColumn.tie-configuration =} }
\]
\[
\texttt{\texttt{\#'(0.0 . 1) (-2.0 . 1) (-4.0 . 1)) \quad \texttt{\langle c e g\rangle2\texttt{}\textbackslash{}\texttt{\textbackslash{}override TieColumn.tie-configuration =} }
\]
\[
\texttt{\texttt{\#'(0 . 1) (-2 . 1) (-4 . 1)) \quad \langle c e g\rangle2\texttt{}} \}
\]

Engraving tremolos with floating beams

If a tremolo’s total duration is less than a quarter-note, or exactly a half-note, or between a half-note and a whole-note, it is normally typeset with all beams touching the stems. Certain engraving styles typeset some of these beams as centered floating beams that do not touch the stems. The number of floating beams in this type of tremolo is controlled with the `gap-count` property of the `Beam` object, and the size of the gaps between beams and stems is set with the `gap` property.

\[
\text{\texttt{relative c'' \{} \quad \texttt{\textbackslash{}repeat tremolo 8 \{ a32 f \}} }
\]
\[
\texttt{\texttt{\textbackslash{}override Beam.gap-count = #1}} 
\]
\[
\texttt{\texttt{\textbackslash{}repeat tremolo 8 \{ a32 f \}} }
\]
\[
\texttt{\texttt{\textbackslash{}override Beam.gap-count = #2}} 
\]
\[
\texttt{\texttt{\textbackslash{}repeat tremolo 8 \{ a32 f \}} }
\]
\[
\texttt{\texttt{\textbackslash{}override Beam.gap-count = #3}} 
\]
\[
\texttt{\texttt{\textbackslash{}repeat tremolo 8 \{ a32 f \}} }
\]
\[
\texttt{\texttt{\textbackslash{}override Beam.gap-count = #3}} 
\]
\[
\texttt{\texttt{\textbackslash{}override Beam.gap = #1.33}} 
\]
\[
\texttt{\texttt{\textbackslash{}repeat tremolo 8 \{ a32 f \}} }
\]
\[
\texttt{\texttt{\textbackslash{}override Beam.gap = #1}} 
\]
\[
\texttt{\texttt{\textbackslash{}repeat tremolo 8 \{ a32 f \}} }
\override Beam.gap = \##0.67
\repeat tremolo 8 { a32 f }
\override Beam.gap = \##0.33
\repeat tremolo 8 { a32 f }
}

\begin{music}
\relative c' {
  \time 2/4
  \tupletSpan 4
  \tuplet 3/2 \{ c8^"\tupletSpan 4" c c c c \}
  \tupletSpan \default
  \tuplet 3/2 \{ c8^"\tupletSpan \default" c c c c \}
  \tuplet 3/2 4 \{ c8^"\tuplet 3/2 4 {...}" c c c c \}
}
\end{music}

\begin{music}
\tuplet 3/2 4 {...}
\tupletSpan 4 \tupletSpan \default
\end{music}

**Entering several tuplets using only one \tuplet command**

The property `tupletSpannerDuration` sets how long each of the tuplets contained within the brackets after `\tuplet` should last. Many consecutive tuplets can then be placed within a single `\tuplet` expression, thus saving typing.

There are several ways to set `tupletSpannerDuration`. The command `\tupletSpan` sets it to a given duration, and clears it when instead of a duration `\default` is specified. Another way is to use an optional argument with `\tuplet`.

\begin{music}
% Example 1
<<
\relative c' {
  \time 2/4
  \tupletSpan 4
  \tuplet 3/2 { c8^"\tupletSpan 4" c c c c }
  \tupletSpan \default
  \tuplet 3/2 { c8^"\tupletSpan \default" c c c c }
  \tuplet 3/2 4 { c8^"\tuplet 3/2 4 {...}" c c c c }
}
\end{music}

**Flat flags and beam nibs**

Flat flags on lone notes and beam nibs at the ends of beamed figures are both possible with a combination of `stemLeftBeamCount`, `stemRightBeamCount` and paired `[]` beam indicators.

For right-pointing flat flags on lone notes, use paired `[]` beam indicators and set `stemLeftBeamCount` to zero (see Example 1).

For left-pointing flat flags, set `stemRightBeamCount` instead (Example 2).

For right-pointing nibs at the end of a run of beamed notes, set `stemRightBeamCount` to a positive value. And for left-pointing nibs at the start of a run of beamed notes, set `stemLeftBeamCount` instead (Example 3).

Sometimes it may make sense for a lone note surrounded by rests to carry both a left- and right-pointing flat flag. Do this with paired `[]` beam indicators alone (Example 4).

(Note that `\set stemLeftBeamCount` is always equivalent to `\once \set`. In other words, the beam count settings are not “sticky”, so the pair of flat flags attached to the lone c’16[] in the last example have nothing to do with the `\set` two notes prior.)

\begin{music}
% Example 1
<<}
\end{music}
Forcing rehearsal marks to start from a given letter or number

This snippet demonstrates how to obtain automatic ordered rehearsal marks, but from the letter or number desired.

\relative c''>{
  c1 \mark \default
Generating custom flags

The stencil property of the Flag grob can be set to a custom scheme function to generate the glyph for the flag.

```scheme
#(define-public (weight-flag grob)
  (let* ((stem-grob (ly:grob-parent grob X))
         (log (~ (ly:grob-property stem-grob 'duration-log) 2))
         (is-up? (eqv? (ly:grob-property stem-grob 'direction) UP))
         (yext (if is-up? (cons (* log -0.8) 0) (cons 0 (* log 0.8))))
         (flag-stencil (make-filled-box-stencil '(-0.4 . 0.4) yext))
         (stroke-style (ly:grob-property grob 'stroke-style))
         (stroke-stencil (if (equal? stroke-style "grace")
                           (make-line-stencil 0.2 -0.9 -0.4 0.9 -0.4)
                           empty-stencil)))
  (ly:stencil-add flag-stencil stroke-stencil)))

% Create a flag stencil by looking up the glyph from the font
#(define (inverted-flag grob)
  (let* ((stem-grob (ly:grob-parent grob X))
         (dir (if (eqv? (ly:grob-property stem-grob 'direction) UP) "d" "u"))
         (flag (retrieve-glyph-flag "" dir "" grob))
         (line-thickness (ly:staff-symbol-line-thickness grob))
         (stem-thickness (ly:grob-property stem-grob 'thickness))
         (stem-width (* line-thickness stem-thickness))
         (stroke-style (ly:grob-property grob 'stroke-style))
         (stencil (if (null? stroke-style)
                     flag
                     (add-stroke-glyph flag stem-grob dir stroke-style ""))))
  (rotated-flag (ly:stencil-rotate-absolute stencil 180 0 0)))
  (ly:stencil-translate rotated-flag (cons (~ (/ stem-width 2) 0))))
```

```latex
\begin{center}
\begin{tabular}{cccccc}
A & B & C & O & P & Q & R \\
\end{tabular}
\end{center}
```
For guitar music, it is possible to show strum rhythms, along with melody notes, chord names and fret diagrams.

\include "predefined-guitar-fretboards.ly"
<<
\new ChordNames {
  \chordmode {
    c1 | f | g | c
  }
}
\new FretBoards {
  \chordmode {
    c1 | f | g | c
  }
}
\new Voice \with {
  \consists "Pitch_squash_ engraver"
} {
  \relative c'' {
    \improvisationOn
    c4 c8 c c4 c8 c
    f4 f8 f4 f8 f
    g4 g8 g4 g8 g
    c4 c8 c c4 c8 c
  }
}
\new Voice = "melody" {
  \relative c'' {

c2 e4 e4
f2 r4
g2 a4
e4 c2.

\new Lyrics {\lyricstool "melody" {
  This is my song.
  I like to sing.
}}

\timesig C44/\clef G \noteheads.s1\noteheads.s2\noteheads.s2\noteheads.s2\noteheads.s2\noteheads.s2\noteheads.s2\noteheads.s2\noteheads.s2\noteheads.s2\noteheads.s2\noteheads.s2\noteheads.s2\noteheads.s2\noteheads.s2\noteheads.s2
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C

\begin{music}
This is my song.
I like to sing.
\end{music}

Heavily customized polymetric time signatures

Though the polymetric time signature shown was not the most essential item here, it has been included to show the beat of this piece (which is the template of a real Balkan song!).

\begin{verbatim}
melody = \relative c' {\key g \major
  \compoundMeter '#((3 8) (2 8) (2 8) (3 8) (2 8) (2 8)
    (2 8) (2 8) (3 8) (2 8) (2 8))
  c8 c c d4 c8 c b c b a4 g fis8 e d c b' c d e4=f fis8 g \break
  c,4. d4 c4 d4. c4 d c2 d4. e4=f d4
  c4. d4 c4 d4. c4 d c2 d4. e4=f d4 \break
  c4. d4 c4 d4. c4 d c2 d4. e4=f d4 \break
}
\end{verbatim}

\begin{verbatim}
drum = \new DrumStaff \drummode {
  \repeat volta 2 {
    bd4.\markup {Drums} sn4 bd \bar ";" 
    sn4. bd4 sn \bar ";"
    bd sn bd4. sn4 bd
  }
}
\end{verbatim}

\begin{verbatim}
\new Staff \with {
  \instrumentName = \markup {\concat { "B" \flat " Sop."}}
}
\end{verbatim}
High and Low woodblock example

Two Woodblocks, entered with ‘wbh’ (high woodblock) and ‘wbl’ (low woodblock). The length of the barline has been altered with an \override command otherwise it would be too short. The positions of the two stafflines also have to be explicitly defined.

\paper { tagline = ##f }

% These lines define the position of the woodblocks in the stave;
% if you like, you can change it or you can use special note heads
% for the woodblocks.
#(define mydrums '((hiwoodblock default #f 3)
                (lowwoodblock default #f -2)))

woodstaff = {
% This defines a staff with only two lines.
% It also defines the positions of the two lines.
override Staff.StaffSymbol.line-positions = '#(-2 3)

% This is necessary; if not entered,
% the barline would be too short!
override Staff.BarLine.bar-extent = '#(-1.0 . 1.5)
% small correction for the clef:
set DrumStaff.clefPosition = 0.5
}

\new DrumStaff {
% with this you load your new drum style table
\set DrumStaff.drumStyleTable = #(alist->hash-table mydrums)

\woodstaff
\drummode {
  \time 2/4
  wb18 16 16 8-> 8 |
  wb18 16 16-> ~ 16 16 r8 |
}

\relative {
  \time 2/4
  <<
    {
      \once \hide Stem
      \once \override Stem.length = #8
      b'8 ~ 8\noBeam
      \once \hide Stem
      \once \override Stem.length = #8
      g8 ~ 8\noBeam
    }
    \|
    { b8 g g e }
    >>
}

Making an object invisible with the 'transparent property

Setting the transparent property will cause an object to be printed in “invisible ink”: the object is not printed, but all its other behavior is retained. The object still takes up space, it takes part in collisions, and slurs, ties and beams can be attached to it.

This snippet demonstrates how to connect different voices using ties. Normally, ties only connect two notes in the same voice. By introducing a tie in a different voice, and blanking the first up-stem in that voice, the tie appears to cross voices.

\making
\relative {
  \time 2/4
  \once \hide Stem
  \once \override Stem.length = #8
  b'8 ~ 8\noBeam
  \once \hide Stem
  \once \override Stem.length = #8
  g8 ~ 8\noBeam
}

Making slurs with complex dash structure

Slurs can be made with complex dash patterns by defining the dash-definition property. dash-definition is a list of dash-elements. A dash-element is a list of parameters defining the dash behavior for a segment of the slur.
The slur is defined in terms of the bezier parameter \( t \) which ranges from 0 at the left end of the slur to 1 at the right end of the slur. \texttt{dash-element} is a list (\texttt{start-t} \texttt{stop-t} \texttt{dash-fraction} \texttt{dash-period}). The region of the slur from \texttt{start-t} to \texttt{stop-t} will have a fraction \texttt{dash-fraction} of each \texttt{dash-period} black. \texttt{dash-period} is defined in terms of staff spaces. \texttt{dash-fraction} is set to 1 for a solid slur.

\begin{verbatim}
\relative c' {
  \once \override Slur.dash-definition = #'((0 0.3 0.1 0.75)
                       (0.3 0.6 1 1)
                       (0.65 1.0 0.4 0.75))

  c4( d e f)
}
\end{verbatim}

\begin{verbatim}
\relative c' {
  \once \override Slur.dash-definition = #'((0 0.25 1.0 1)
                       (0.3 0.7 0.4 0.75)
                       (0.75 1.0 1 1))

  c4( d e f)
}
\end{verbatim}

\begin{verbatim}
\override Beam.positions = #'(2 . 0)

  c8 c
\end{verbatim}

\begin{verbatim}
\override Beam.positions = #'(0 . 1)

  c8 c
\end{verbatim}

Manually controlling beam positions

Beam positions may be controlled manually, by overriding the positions setting of the Beam grob.

Merging multi-measure rests in a polyphonic part

When using multi-measure rests in a polyphonic staff, the rests will be placed differently depending on the voice they belong to. However they can be printed on the same staff line, using the following setting.

\set global { normalPos = \revert MultiMeasureRest.direction ~ \{ << c''1 ~ \} }
Modifying tuplet bracket length

Tuplet brackets can be made to run to prefatory matter or the next note. Default tuplet brackets end at the right edge of the final note of the tuplet; full-length tuplet brackets extend farther to the right, either to cover all the non-rhythmic notation up to the following note, or to cover only the whitespace before the next item of notation, be that a clef, time signature, key signature, or another note. The example shows how to switch tuplets to full length mode and how to modify what material they cover.

\new RhythmicStaff {
% Set tuplets to be extendable...
\set tupletFullLength = ##t
% ...to cover all items up to the next note
\set tupletFullLengthNote = ##t
\time 2/4
\tuplet 3/2 { c4 4 4 }
% ...or to cover just whitespace
\set tupletFullLengthNote = ##f
\time 4/4
\tuplet 5/4 { 4 1 }
\time 3/4
2.
}

Moving dotted notes in polyphony

When a dotted note in the upper voice is moved to avoid a collision with a note in another voice, the default is to move the upper note to the right. This behaviour can be over-ridden by using the prefer-dotted-right property of NoteCollision.

\new Staff \relative c' <<
Multi-measure rest length control

Multi-measure rests have length according to their total duration which is under the control of MultiMeasureRest.space-increment. Note that the default value is 2.0.

\relative c' {
  \compressEmptyMeasures
  R1*2 R1*4 R1*64 R1*16
  \override Staff.MultiMeasureRest.space-increment = 2.5
  R1*2 R1*4 R1*64 R1*16
}

Multi-measure rest markup

Markups attached to a multi-measure rest will be centered above or below it. Long markups attached to multi-measure rests do not cause the measure to expand. To expand a multi-measure rest to fit the markup, use an empty chord with an attached markup before the multi-measure rest. Text attached to a spacer rest in this way is left-aligned to the position where the note would be placed in the measure, but if the measure length is determined by the length of the text, the text will appear to be centered.

\relative c' {
  \compressMMRests {
    \textLengthOn
    <>\markup { [MAJOR GENERAL] }
    R1*19
    <>\markup { italic { Cue: ... it is yours } }
    R1*30
    \markup { [MABEL] }
    \textLengthOff
  }
}
Non-default tuplet numbers

LilyPond also provides formatting functions to print tuplet numbers different than the actual fraction, as well as to append a note value to the tuplet number or tuplet fraction.

```plaintext
\relative c'\'' {  
  \once \override TupletNumber.text =  
    #(tuplet-number::non-default-tuplet-denominator-text 7)  
  \tuplet 3/2 { c4. c4. c4. c4. }  
  \once \override TupletNumber.text =  
    #(tuplet-number::non-default-tuplet-fraction-text 12 7)  
  \tuplet 3/2 { c4. c4. c4. c4. }  
  \once \override TupletNumber.text =  
    #(tuplet-number::append-note-wrapper  
    (tuplet-number::non-default-tuplet-fraction-text 12 7)  
    (ly:make-duration 3 0))  
  \tuplet 3/2 { c4. c4. c4. c4. }  
  \once \override TupletNumber.text =  
    #(tuplet-number::append-note-wrapper  
    tuplet-number::calc-denominator-text  
    (ly:make-duration 2 0))  
  \tuplet 3/2 { c8 c8 c8 c8 c8 c8 }  
  \once \override TupletNumber.text =  
    #(tuplet-number::append-note-wrapper  
    tuplet-number::calc-fraction-text  
    (ly:make-duration 2 0))  
  \tuplet 3/2 { c8 c8 c8 c8 c8 c8 }  
  \once \override TupletNumber.text =  
    #(tuplet-number::fraction-with-notes  
    (ly:make-duration 2 1) (ly:make-duration 3 0))  
  \tuplet 3/2 { c4. c4. c4. c4. }  
  \once \override TupletNumber.text =  
    #(tuplet-number::non-default-fraction-with-notes 12  
    (ly:make-duration 3 0) 4 (ly:make-duration 2 0))  
  \tuplet 3/2 { c4. c4. c4. c4. }  
}
```
Numbering single measure rests

Multi measure rests show their length by a number except for single measures. This can be changed by setting \texttt{restNumberThreshold}.

\begin{verbatim}
\compressEmptyMeasures
R1 R1*10 R1*11 \bar "||"
\set restNumberThreshold = 0
R1 R1*10 R1*11 \bar "||"
\set restNumberThreshold = 10
R1 R1*10 R1*11
\end{verbatim}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{example.png}
\caption{Example of numbering single measure rests.}
\end{figure}

Partcombine and \texttt{autoBeamOff}

The function of \texttt{\autoBeamOff} when used with \texttt{\partCombine} can be difficult to understand. It may be preferable to use

\begin{verbatim}
\set Staff.autoBeaming = ##f
\end{verbatim}

instead, to ensure that autobeaming will be turned off for the entire staff. \texttt{\partCombine} apparently works with 3 voices – stem up single, stem down single, stem up combined.

An \texttt{\autoBeamOff} call in the first argument to \texttt{\partCombine} will apply to the voice that is active at the time the call is processed, either stem up single or stem up combined. An \texttt{\autoBeamOff} call in the second argument will apply to the voice that is stem down single.

In order to use \texttt{\autoBeamOff} to stop all autobeaming when used with \texttt{\partCombine}, it will be necessary to use \texttt{three} calls to \texttt{\autoBeamOff}.

\begin{verbatim}
{\set Staff.autoBeaming = ##f \% turns off all autobeaming
\partCombine
{
\autoBeamOff \% applies to split up stems
\repeat unfold 4 a'16
\autoBeamOff \% applies to combined up stems
\repeat unfold 4 a'8
\repeat unfold 4 a'16
}

{\autoBeamOff \% applies to down stems
\repeat unfold 4 f'8
\repeat unfold 8 f'16 |
}
}
\end{verbatim}
Percussion example

A short example taken from Stravinsky’s *L’Histoire du soldat*.

```s2
(define mydrums '((bassdrum default #f 4)
               (snare default #f -4)
               (tambourine default #f 0)))

global = {
  \time 3/8 s4.
  \time 2/4 s2*2
  \time 3/8 s4.
  \time 2/4 s2
}
drumsA = {
  \context DrumVoice <<
  { \global }
  { \drummode {
      \autoBeamOff
      \stemDown sn8 \stemUp tamb s8 | sn4 \stemDown sn4 |
      \stemUp tamb8 \stemDown sn8 \stemUp sn16 \stemDown sn \stemUp sn8 |
      \stemDown sn8 \stemUp tamb s8 |
      \stemUp sn4 s8 \stemUp tamb
    }
  }
}>
drumsB = {
  \drummode {
    s4 bd8 s2*2 s4 bd8 s4 bd8 s8
  }
}

/layout {
  indent = 40
  \context {
    \DrumStaff
    drumStyleTable = #(alist->hash-table mydrums)
  }
}

/score {
  \new StaffGroup <<
  \new DrumStaff \with {
    instrumentName = \markup \center-column {
```
"Tambourine"
"et"
"caisse claire s. timbre"
}

\drumsA
\new DrumStaff \with { 
  \instrumentName = "Grosse Caisse"
}
\drumsB
>>
}

Tambourine
et
caisse claire s. timbre
Grosse Caisse

**Permitting line breaks within beamed tuplets**

This artificial example shows how both manual and automatic line breaks may be permitted to within a beamed tuplet. Note that such off-beat tuplets have to be beamed manually.

```
\layout {
\context { 
  \Voice
  \% Permit line breaks within tuplets
  \remove "Forbid_line_break_engraver"
  \% Allow beams to be broken at line breaks
  \override Beam.breakable = ##t
}
}
\relative c' { 
  a8
  \repeat unfold 5 { \tuplet 3/2 { c[ b a] } }
  \% Insert a manual line break within a tuplet
  \tuplet 3/2 { c[ b \bar "" \break a] }
  \% Allow beams to be broken at line breaks
  \repeat unfold 5 { \tuplet 3/2 { c[ b a] } }
  c8
}
Positioning grace note beams at the height of normal note beams

When notes are placed on ledger lines, their beams are usually centred on the stave. Grace notes beams are shorter and grace notes on ledger lines may well have beams outside the stave. You can override this beaming for grace notes.

\relative c {  
  f8[ e] 
  \grace {  
    f8[ e] 
    \override Stem.no-stem-extend = ##f 
    f8[ e] 
    \revert Stem.no-stem-extend 
  }  
  f8[ e] 
}

\relative c' {  
  \override Score.SpacingSpanner.strict-grace-spacing = ##t  
  \new Staff \new Voice {  
    \afterGrace c4 { c16[ c8 c16] }  
    c8[ \grace { b16 d } c8]  
    c4 r  
  }  
  \new Staff {  
    c16 c c c c c c c c4 r  
  }  
}

Positioning grace notes with floating space

Setting the property 'strict-grace-spacing makes the musical columns for grace notes 'floating', i.e., decoupled from the non-grace notes: first the normal notes are spaced, then the (musical columns of the) graces are put left of the musical columns for the main notes.

Positioning multi-measure rests

Unlike ordinary rests, there is no predefined command to change the staff position of a multi-measure rest symbol of either form by attaching it to a note. However, in polyphonic music multi-measure rests in odd-numbered and even-numbered voices are vertically separated.
The positioning of multi-measure rests can be controlled as follows:

\relative c'' {
\% Multi-measure rests by default are set under the fourth line
R1
\% They can be moved using an override
\override MultiMeasureRest.staff-position = #-2
R1
\override MultiMeasureRest.staff-position = #0
R1
\override MultiMeasureRest.staff-position = #2
R1
\override MultiMeasureRest.staff-position = #3
R1
\override MultiMeasureRest.staff-position = #6
R1
\revert MultiMeasureRest.staff-position
\break
\%
\%

% In two Voices, odd-numbered voices are under the top line
\%
\%

% Even-numbered voices are under the bottom line
\%
\%

% Multi-measure rests in both voices remain separate
\%
\%

% Separating multi-measure rests in more than two voices
% requires an override
\%
\%

% Using compressed bars in multiple voices requires another override
% in all voices to avoid multiple instances being printed
\%
\%

\compressMMRests
<<
\revert MultiMeasureRest.direction
{ R1*3 }
\revert MultiMeasureRest.direction
{ R1*3 }
>>
}
Positioning opposing fermatas on a bar line

This snippet demonstrates a command that prints fermatas both above and below a bar line. If there would not otherwise be a bar line, it adds a double bar line. Semantically, the command codes a longer-than-normal caesura, which might be considered misuse depending on the situation.

```plaintext
twoWayFermata = {
    once \set Staff.caesuraType = #'((underlying-bar-line . "||"))
    once \set Staff.caesuraTypeTransform = ##f
    \caesura \fermata \fermata
}

music = {
    f'1 \twoWayFermata R1
    f'2 \twoWayFermata f'2 R1
    b'1 \twoWayFermata fine
}

\new GrandStaff <<
    \new Staff \music
    \new Staff \music
>>
```

Preventing final mark from removing final tuplet

The addition of a final mark can result in the loss of a final tuplet marking. This can be overcome by setting `TupletBracket.full-length-to-extent` to false.

```plaintext
\new Staff {
    \set tupletFullLength = ##t
    \time 1/8
    \tuplet 3/2 8 { c'16 c' c' c' c' c' c' c' }
    \tweak direction #DOWN \textEndMark "1234"
}
```

```plaintext
\new Staff {
    \set tupletFullLength = ##t
    \override TupletBracket.full-length-to-extent = ##f
    \time 1/8
```
Printing bar numbers at regular intervals

By setting the `barNumberVisibility` property, bar numbers can be printed at regular intervals. Here the bar numbers are printed every two measures except at the end of the line.

```latex
\relative c' {
  \override Score.BarNumber.break-visibility = #end-of-line-invisible
  \set Score.currentBarNumber = #11
  % Print a bar number every second measure
  \set Score.barNumberVisibility = #(every-nth-bar-number-visible 2)
  c | c | c | c | c
  \break
  c | c | c | c | c
}
```

Printing bar numbers for broken measures

By default a BarNumber of a broken measure is not repeated at the beginning of the new line. Use `first-bar-number-invisible-save-broken-bars` for `barNumberVisibility` to get a parenthesized BarNumber there.

```latex
\layout {
  \context {
    \Score
      barNumberVisibility = #first-bar-number-invisible-save-broken-bars
      \override BarNumber.break-visibility = ##(#f #t #t)
  }
}
\relative c' {
  c | d | e | f2 \bar "" \break
  fis | g1 | e2 \bar "" \break
```
"reenabled default"
% back to default -
% \unset Score.barNumberVisibility would do so as well
\set Score.barNumberVisibility =
  #first-bar-number-invisible-and-no-parenthesized-bar-numbers
es | d1 | c
}

Printing bar numbers inside boxes or circles

Bar numbers can also be printed inside boxes or circles.

\relative c' {
% Prevent bar numbers at the end of a line and permit them elsewhere
\override Score.BarNumber.break-visibility = #end-of-line-invisible
\set Score.barNumberVisibility = #(every-nth-bar-number-visible 4)
% Increase the size of the bar number by 2
\override Score.BarNumber.font-size = #2
% Draw a box round the following bar number(s)
\override Score.BarNumber.stencil
  = #(make-stencil-boxer 0.1 0.25 ly:text-interface::print)
\repeat unfold 5 { c1 }
% Draw a circle round the following bar number(s)
\override Score.BarNumber.stencil
  = #(make-stencil-circler 0.1 0.25 ly:text-interface::print)
\repeat unfold 4 { c1 } \bar "."
}

Printing bar numbers using modulo-bar-number-visible

If the remainder of the division of the current BarNumber by the first argument of modulo-bar-number-visible equals its second argument print the BarNumber.
Useful to print the BarNumber at certain distances, p.e:
• (modulo-bar-number-visible 3 2) -> prints 2,5,8
• (modulo-bar-number-visible 4 2) -> prints 2,6,10
• (modulo-bar-number-visible 3 1) -> prints 3,5,7
• (modulo-bar-number-visible 5 2) -> prints 2,7,12

\layout {
\context {
\Score
\override BarNumber.break-visibility = #(#f #t #t)
barNumberVisibility = #(modulo-bar-number-visible 3 2)
}
}

\relative c' {
   c1 | d | e | f \break
   g1 | e | d | c
}

Printing bar numbers with changing regular intervals
Using the set-bar-number-visibility context function, bar number intervals can be changed.
\relative c' {
   \override Score.BarNumber.break-visibility = #end-of-line-invisible
   \context Score \applyContext #(set-bar-number-visibility 4)
   \repeat unfold 10 c'1
   \context Score \applyContext #(set-bar-number-visibility 2)
   \repeat unfold 10 c
}

Printing metronome and rehearsal marks below the staff
By default, metronome and rehearsal marks are printed above the staff. To place them below the staff simply set the direction property of MetronomeMark or RehearsalMark appropriately.
\layout {

Printing music with different time signatures

In the following snippet, two parts have a completely different time signature, yet remain synchronized.

The bar lines can no longer be printed at the Score level; to allow independent bar lines in each part, the Timing_translator is moved from the Score context to the Staff context.

If bar numbers are required, the Bar_number_engraver should also be moved, since it relies on properties set by the Timing_translator; a \with block can be used to add bar numbers to the relevant staff.

\paper {
  indent = #0
  ragged-right = ##t
}

\layout {
  \context {
    \Score
    \remove "Timing_translator"
    \remove "Bar_number_engraver"
    \override SpacingSpanner.uniform-stretching = ##t
    \override SpacingSpanner.strict-note-spacing = ##t
    proportionalNotationDuration = #(ly:make-moment 1/64)
  }
  \context {
    \Staff
    \consists "Timing_translator"
  }
  \context {
\Voice
\remove "Forbid_line_break_engraver"
\tupletFullLength = #\t
}
}

Bassklarinette = \new Staff \with {\consists "Bar_number_engraver"
\barNumberVisibility = #(\every-nth-bar-number-visible 2)
\override BarNumber.break-visibility = \end-of-line-invisible
} <<
\global {
 \bar "|
 \clef treble
 \time 3/8
d''4.

 \bar "|
 \time 3/4
r8 des''2( c''8)

 \bar "|
 \time 7/8
r4. ees''2 ~

 \bar "|
 \time 2/4
\tupletUp
\tuplet 3/2 { ees''4 r4 d''4 ~ }

 \bar "|
 \time 3/8
\tupletUp
\tuplet 4/3 { d''4 r4 }

 \bar "|
 \time 2/4
e''2

 \bar "|
 \time 3/8
es''4.

 \bar "|
 \time 3/4
r8 d''2 r8
 \bar "|
}
>>

Perkussion = \new StaffGroup <<
\new Staff <<
\global {
  \bar "|
  \clef percussion
  \time 3/4
  r4 c'2 ~

  \bar "|
  c'2.

  \bar "|
  R2.

  \bar "|
  r2 g'4 ~

  \bar "|
  g'2. ~

  \bar "|
  g'2.
}

>>

new Staff <<
\global {
  \bar "|
  \clef percussion
  \time 3/4
  R2.

  \bar "|
  g'2. ~

  \bar "|
  g'2.

  \bar "|
  r4 g'2 ~

  \bar "|
  g'2 r4

  \bar "|
  g'2.
}

>>

>>

\score {
  \Bassklarinette
  \Perkussion
}


Printing the bar number for the first measure

By default, the first bar number in a score is suppressed if it is less than or equal to 1. By setting `barNumberVisibility` to `all-bar-numbers-visible`, any bar number can be printed for the first measure and all subsequent measures.

```
\layout {
    indent = 0
    ragged-right = ##t
}

\relative c' {
    \set Score.barNumberVisibility = #all-bar-numbers-visible
    cl | d | e | f \break
g1 | e | d | c
```
Printing tuplet brackets on the note head side

Whichever option you choose for controlling the tuplet bracket visibility, it will show or hide the tuplet bracket irrespectively of tuplet bracket placement (stem side or note head side). However, when placing the tuplet bracket on the note head side some authors recommend always printing the tuplet bracket. The option `visible-over-note-heads` can be used to achieve this.

```
music = \relative c'' { 
  \tupletNeutral \tuplet 3/2 { c16[ d e } f8] 
  \tupletUp \tuplet 3/2 { c8 d e } 
}
```

```
\new Voice { 
  \relative c' { 
    \time 2/4 
    \override TupletBracket.visible-over-note-heads = ##t 
    \override Score.TextMark.non-musical = ##f 
    { \textMark \markup "default" \music } 
    \override TupletBracket.bracket-visibility = #'if-no-beam 
    { \textMark \markup \typewriter "'if-no-beam" \music } 
  } 
}
```

Redefining grace note global defaults

The global defaults for grace notes are stored in the following identifiers.

- `startGraceMusic`
- `stopGraceMusic`
- `startAcciaccaturaMusic`
- `stopAcciaccaturaMusic`
- `startAppoggiaturaMusic`
- `stopAppoggiaturaMusic`

They are defined in file `ly/grace-init.ly`. By redefining them other effects may be obtained.

```
startAcciaccaturaMusic = { 
  <>{ 
    \override Flag.stroke-style = #"grace" 
    \slurDashed 
  } 
}
```
stopAcciaccaturaMusic = {
\revert Flag.stroke-style
\slurSolid
<>}
\relative c'\ '{
\acciaccatura d8 c1
}

Removing bar numbers from a score
Bar numbers can be removed entirely by removing the Bar_number_engraver from the Score context.
\layout {
  \context {
    \Score
    \omit BarNumber
    \% or:
    \%\remove "Bar_number_engraver"
  }
}
\relative c'' { c\ 4 c c c \break
c4 c c c}

Removing connecting bar lines on StaffGroup, PianoStaff, or GrandStaff
By default, bar lines in StaffGroup, PianoStaff, or GrandStaff groups are connected between the staves, i.e. a SpanBar is printed. This behaviour can be overridden on a staff-by-staff basis.
\relative c' { \new StaffGroup <<
  \new Staff {
    \once \override Staff.BarLine.allow-span-bar = ##f
    e1 | e
e1 | e | e}
Rest styles

Rests may be used in various styles.

```latex
\new Staff \relative c { 
  \omit \Score.TimeSignature 
  \cadenzaOn 
  \override \Staff.Rest.style = \mensural
  r\maxima\markup \typewriter { mensural } 
  r\longa r\breve r1 r2 r4 r8 r16 s32 s64 s128 s128 
  \bar "" 
  \break 

  \override \Staff.Rest.style = \neomensural 
  r\maxima\markup \typewriter { neomensural } 
  r\longa r\breve r1 r2 r4 r8 r16 s32 s64 s128 s128 
  \bar "" 
  \break 

  \override \Staff.Rest.style = \classical 
  r\maxima\markup \typewriter { classical } 
  r\longa r\breve r1 r2 r4 r8 r16 r32 r64 r128 s128 
  \bar "" 
  \break 

  \override \Staff.Rest.style = \z-style 
  r\maxima\markup \typewriter { z-style } 
  r\longa r\breve r1 r2 r4 r8 r16 r32 r64 r128 s128 
  \bar "" 
```
\break
\override Staff.Rest.style = #'default
r\maxima\markup \typewriter { default } r\longa r\breve r1 r2 r4 r8 r16 r32 r64 r128 s128

\mensural
\neomensural
\classical
\zstyle
\default

Reverting default beam endings
To typeset beams grouped 3-4-3-2 in 12/8 it is necessary first to override the default beam endings in 12/8, and then to set up the new beaming endings:
\relative c'\ { 
\time 12/8

% Default beaming
a8 a a a a a a a a a

% Set new values for beam endings
\set Score.beatStructure = 3,4,3,2
a8 a a a a a a a a a a a
}
Rhythmic slashes

In “simple” lead-sheets, sometimes no actual notes are written, instead only “rhythmic patterns” and chords above the measures are notated giving the structure of a song. Such a feature is for example useful while creating/transcribing the structure of a song and also when sharing lead sheets with guitarists or jazz musicians.

The standard support for this using \repeat percent is unsuitable here since the first beat has to be an ordinary note or rest.

This example shows two solutions to this problem, by redefining ordinary rests to be printed as slashes. (If the duration of each beat is not a quarter note, replace the r4 in the definitions with a rest of the appropriate duration).

% Macro to print single slash
rs = {
  \once \override Rest.stencil = #ly:percent-repeat-interface::beat-slash
  \once \override Rest.thickness = #0.48
  \once \override Rest.slope = #1.7
  r4
}

% Function to print a specified number of slashes
comp = #(define-music-function (count) (integer?))#
  \override Rest.stencil = #ly:percent-repeat-interface::beat-slash
  \override Rest.thickness = #0.48
  \override Rest.slope = #1.7
  \repeat unfold $count { r4 }
  \revert Rest.stencil
#}

\score {
  \relative c' { 
    c4 d e f |
    \rs \rs \rs \rs |
    \comp #4 |
  }
}

Skips in lyric mode

The s syntax for skips is only available in note mode and chord mode. In other situations, for example, when entering lyrics, using the \skip command is recommended.

<<
  \relative c'' { a1 | a }
  \new Lyrics \lyricmode { \skip 1 bla1 }
>>
Skips in lyric mode (2)

Although skips cannot be used in \lyricmode (it is taken to be a literal “s”, not a space), double quotes (""") or underscores (_) are available.

So for example:

```
<<
\relative c' \{ a4 b c d \}
\new Lyrics \lyricmode \{ a4 "" _ gap \}
>>
```

Stemlets

In some notational conventions beams are allowed to extend over rests. Depending on preference, these beams may drop 'stemlets' to help the eye appreciate the rhythm better, and in some modern music the rest itself is omitted and only the stemlet remains.

This snippet shows a progression from traditional notation, to beams over the rest, to stemlets over the rest, to stemlets alone. Stemlets are generated by overriding the 'stemlet-length property of Stem, while rests are hidden by setting 'transparent = ##t.

Some \markup elements are included in the source to highlight the different notations.
Rhythms

Strict beat beaming

Beamlets can be set to point in the direction of the beat to which they belong. The first beam
avoids sticking out flags (the default); the second beam strictly follows the beat.

\relative c' \{ 
\time 6/8 
a8. a16 a a 
\set strictBeatBeaming = ##t 
a8. a16 a a 
\}

Subdividing beams

The beams of consecutive 16th (or shorter) notes are, by default, not subdivided. That is, the
three (or more) beams stretch unbroken over entire groups of notes. This behavior can be modi-
ﬁed to subdivide the beams into sub-groups by setting the property subdivideBeams. When
set, multiple beams will be subdivided at intervals deﬁned by the current value of baseMoment
by reducing the multiple beams to the number of beams that indicates the metric value of the
subdivision. If the group following the division is shorter than the current metric value (usually
because the beam is incomplete) the number of beams reﬂects the longest possible subdivision
group. However, if there is only one note left after the division this restriction isn’t applied.
Note that baseMoment defaults to one over the denominator of the current time signature if
not set explicitly. It must be set to a fraction giving the duration of the beam sub-group using
the ly:make-moment function, as shown in this snippet. Also, when baseMoment is changed,
beatStructure should also be changed to match the new baseMoment:

\relative c' \{ 
c32[ c c c c c c c ] 
\set subdivideBeams = ##t 
c32[ c c c c c c c ] 

% Set beam sub-group length to an eighth note
\set baseMoment = #(ly:make-moment 1/8) 
\set beatStructure = 2,2,2,2 
c32[ c c c c c c c ] 

% Set beam sub-group length to a sixteenth note
\set baseMoment = #(ly:make-moment 1/16) 
\set beatStructure = 4,4,4,4 
c32[ c c c c c c c ] 

% Shorten beam by 1/32
\set baseMoment = #(ly:make-moment 1/8) 
\set beatStructure = 2,2,2,2 
c32[ c c c c c c ] r32 

% Shorten beam by 3/32
\set baseMoment = #(ly:make-moment 1/8) 
\set beatStructure = 2,2,2,2
c32\[c c c c\] r16.
\r2
\}

Tam-tam example

A tam-tam example, entered with 'tt'

\(\textbf{#(define mydrums '((tamtam default #f 0)))}\)

\(\textbf{\textbackslash new DrumStaff \with \{ instrumentName = #$"Tamtam" \}}\)

\(\textbf{\textbackslash drummode \{}\)

\(\textbf{\textbackslash set DrumStaff.drumStyleTable = #(alist->hash-table mydrums)}\)

\(\textbf{\textbackslash override Staff.StaffSymbol.line-positions = #$'( 0 )} \)

\(\textbf{\textbackslash override Staff.BarLine.bar-extent = #$'(-1.5 . 1.5)} \)

\(\textbf{tt 1 \pp \textbar laissezVibrer \}}\)

Tam-tam \(\textbf{\H\Hpp}\)

Tambourine example

A tambourine example, entered 'tamb'

\(\textbf{\textbackslash paper \{}\textbackslash tagline = ###f \}}\)

\(\textbf{#(define mydrums '((tambourine default #f 0)))}\)

\(\textbf{\textbackslash new DrumStaff \with \{ instrumentName = #$"Tambourine" \}}\)

\(\textbf{\textbackslash drummode \{}\)

\(\textbf{\textbackslash set DrumStaff.drumStyleTable = #(alist->hash-table mydrums)}\)

\(\textbf{\textbackslash override Staff.StaffSymbol.line-positions = #$'( 0 )} \)

\(\textbf{\textbackslash override Staff.BarLine.bar-extent = #$'(-1.5 . 1.5)} \)

\(\textbf{\textbackslash time 6/8}\)
\(\textbf{tamb8. 16 8 8 8 |}\)
\(\textbf{tamb4. 8 8 8 |}\)
\(\%\textbackslash the\ trick\ with\ the\ scaled\ duration\ and\ the\ shorter\ rest}\)
\(\%\textbackslash is\ necessary\ for\ the\ correct\ ending\ of\ the\ trill-span!}\)
\(\textbf{tamb2.*5/6 \textbar startTrillSpan s8 \textbar stopTrillSpan |}\)
\(\}

Tambourine \(\textbf{\H\H\G \G}\)
Three-sided box

This example shows how to add a markup command to get a three sided box around some text (or other markup).

% New command to add a three sided box, with sides north, west and south
% Based on the box-stencil command defined in scm/stencil.scm
% Note that ";;" is used to comment a line in Scheme
(define-public (NWS-box-stencil stencil thickness padding)
  "Add a box around STENCIL, producing a new stencil."
  (let* ((x-ext (interval-widen (ly:stencil-extent stencil X) padding))
         (y-ext (interval-widen (ly:stencil-extent stencil Y) padding))
         (y-rule (make-filled-box-stencil (cons 0 thickness) y-ext))
         (x-rule (make-filled-box-stencil
                   (interval-widen x-ext thickness) (cons 0 thickness))))
    ;; (set! stencil (ly:stencil-combine-at-edge stencil X 1 y-rule padding))
    (set! stencil (ly:stencil-combine-at-edge stencil X LEFT y-rule padding))
    (set! stencil (ly:stencil-combine-at-edge stencil Y UP x-rule 0.0))
    (set! stencil (ly:stencil-combine-at-edge stencil Y DOWN x-rule 0.0))
    stencil))

% The corresponding markup command, based on the box command defined in scm/define-markup-commands.scm
(define-markup-command (NWS-box layout props arg) (markup?)
  #:properties ((thickness 0.1) (font-size 0) (box-padding 0.2))
  "Draw a box round \var{arg}. Looks at \code{thickness}, \code{box-padding} and \code{font-size} properties to determine line thickness and padding around the markup."
  (let* ((pad (* (magstep font-size) box-padding))
         (m (interpret-markup layout props arg)))
    (NWS-box-stencil m thickness pad))

% Test it:

\relative c' { 
  c1-\markup { \NWS-box ABCD } 
  c1-\markup { \NWS-box \note {4} #1.0 } 
}

Time signature in parentheses

The time signature can be enclosed within parentheses.

\relative c'' {
  \override Staff.TimeSignature.stencil = #(lambda (grob)
    (bracketify-stencil (ly:time-signature::print grob) Y 0.1 0.2 0.1))
  \time 2/4
  a4 b8 c}

Relative c'
Time signature in parentheses - method 3

Another way to put the time signature in parenthesis

\relative c' {
   \override Staff.TimeSignature.stencil = #(lambda (grob)
      (parenthesize-stencil (ly:time-signature::print grob) 0.1 0.4 0.4 0.1 ))
   \time 2/4
   a4 b8 c
}

Time signature printing only the numerator as a number
(instead of the fraction)

Sometimes, a time signature should not print the whole fraction (for example, 7/4), but only the numerator (digit 7 in this case). This can be easily done by using \override Staff.TimeSignature.style = #'single-digit to change the style permanently. By using \revert Staff.TimeSignature.style, this setting can be reversed. To apply the single-digit style to only one time signature, use the \override command and prefix it with a \once.

\relative c' {
   \time 3/4
   c4 c c
   % Change the style permanently
   \override Staff.TimeSignature.style = #'single-digit
   \time 2/4
   c4 c
   \time 3/4
   c4 c c
   % Revert to default style:
   \revert Staff.TimeSignature.style
   \time 2/4
   c4 c
   % single-digit style only for the next time signature
   \once \override Staff.TimeSignature.style = #'single-digit
   \time 5/4
   c4 c c c c
   \time 2/4
   c4 c
}
Tweaking grace layout within music

The layout of grace expressions can be changed throughout the music using the functions \texttt{add-grace-property} and \texttt{remove-grace-property}.

The following example undefines the Stem direction for this grace, so that stems do not always point up, and changes the default note heads to crosses.

\begin{verbatim}
\relative c' { 
  \new Staff { 
    $\texttt{(remove-grace-property 'Voice 'Stem 'direction)}$
    $\texttt{(add-grace-property 'Voice 'NoteHead 'style 'cross)}$
    \new Voice { 
      \acciaccatura { f16 } g4 
      \grace { d16 e } f4 
      \appoggiatura { f,32 g a } e2 
    } 
  } 
}
\end{verbatim}

\begin{music}
\relative c' { 
  \new Staff { 
    \acciaccatura { f16 } g4 
    \grace { d16 e } f4 
    \appoggiatura { f,32 g a } e2 
  } 
}
\end{music}

User defined time signatures

New time signature styles can be defined. The time signature in the second measure should be upside down in both staves.

\begin{verbatim}
#(\texttt{add-simple-time-signature-style 'topsy-turvy (lambda (fraction) 
  \texttt{(make-rotate-markup 180 (make-compound-meter-markup fraction))}))}
\end{verbatim}

<< \new Staff { 
  \time 3/4 f'2. 
  \override \Score.TimeSignature.style = '#'topsy-turvy 
  \time 3/4 R2. \bar "|." 
} \new Staff { 
  R2. e'' 
} >>

\begin{music}
\relative c' { 
  \new Staff { 
    \acciaccatura { f16 } g4 
    \grace { d16 e } f4 
  } 
}
\end{music}

\begin{music}
\relative c' { 
  \new Staff { 
    \acciaccatura { f16 } g4 
    \grace { d16 e } f4 
    \appoggiatura { f,32 g a } e2 
  } 
}
\end{music}
Using alternative flag styles

Alternative styles of flag on eighth and shorter notes can be displayed by overriding the stencil property of Flag. Valid values are modern-straight-flag, old-straight-flag and flat-flag.

```latex
\begin{verbatim}
\testnotes = {
  \autoBeamOff
  c8 d16 c32 d64 \acciaccatura { c8 } d64 r4
}
\score {
  \relative c' {
    \time 2/4
    \testnotes
      \override Flag.stencil = #modern-straight-flag
      \testnotes
      \override Flag.stencil = #old-straight-flag
      \testnotes
      \override Flag.stencil = #flat-flag
      \testnotes
    \revert Flag.stencil
    \testnotes
  }
  \layout {
    \indent = 0
    \context {
      \Score
        \override NonMusicalPaperColumn.line-break-permission = ##f
    }
  }
}

\begin{music}
\end{music}
\end{verbatim}
```

Using grace note slashes with normal heads

The slash through the stem found in acciaccaturas can be applied in other situations.

```latex
\begin{verbatim}
\relative c'' {
  \override Flag.stroke-style = "grace"
  c8( d2) e8( f4)
}
\end{verbatim}
```
Using ties with arpeggios

Ties are sometimes used to write out arpeggios. In this case, two tied notes need not be consecutive. This can be achieved by setting the tieWaitForNote property to #t. The same feature is also useful, for example, to tie a tremolo to a chord, but in principle, it can also be used for ordinary consecutive notes.

\relative c' {
\set tieWaitForNote = ##t
\grace c'16{ e ~ g } <c, e g>2
\repeat tremolo 8 { c'32 ~ c' } <c, c'>1
\tieUp c8 ~ a
\tieDown
g8 ~ c g2
}
Expressive marks

Section “Expressive marks” in Notation Reference

Adding beams, slurs, ties etc. when using tuplet and non-tuplet rhythms

LilyPond syntax can involve many unusual placements for parentheses, brackets etc., which might sometimes have to be interleaved.

For example, when entering a manual beam, the left square bracket has to be placed after the starting note and its duration, not before. Similarly, the right square bracket should directly follow the note which is to be at the end of the requested beaming, even if this note happens to be inside a tuplet section.

This snippet demonstrates how to combine manual beaming, manual slurs, ties and phrasing slurs with tuplet sections (enclosed within curly braces).

```
{r16[ g16 \tuplet 3/2 { r16 e'8 }] 
g16( a \tuplet 3/2 { b d e' }) 
g8[{ a \tuplet 3/2 { b d'} e' } - ] 
\time 2/4 
\tuplet 5/4 { e'32\{ a b d' e' } a'4.\}
}
```

Adding parentheses around an expressive mark or chordal note

The \parenthesize function is a special tweak that encloses objects in parentheses. The associated grob is Parentheses.

```
\relative c' { 
    c2-\parenthesize ->
    \override Parentheses.padding = #0.1
    \override Parentheses.font-size = #-4
    <d \parenthesize f a>2
}
```

Adding timing marks to long glissandi

Skipped beats in very long glissandi are sometimes indicated by timing marks, often consisting of stems without noteheads. Such stems can also be used to carry intermediate expression markings.

If the stems do not align well with the glissando, they may need to be repositioned slightly.

```
glissandoSkipOn = {
```
Adjusting the shape of falls and doits

The shortest-duration-space property may be tweaked to adjust the shape of falls and doits.
Aligning the ends of hairpins to NoteColumn directions

The ends of hairpins may be aligned to the LEFT, CENTER or RIGHT of NoteColumn grobs by overriding the property endpoint-alignments, which is a pair of numbers representing the left and right ends of the hairpin. endpoint-alignments are expected to be directions (either -1, 0 or 1). Other values will be transformed with a warning. The right end of a hairpin terminating at a rest is not affected, always ending at the left edge of the rest.

```latex
\override Hairpin.endpoint-alignments = #'(1 . -1)
\override Hairpin.endpoint-alignments = #"(LEFT . CENTER)
```

Alternative breve notes

Breve notes are also available with two vertical lines on each side of the notehead instead of one line and in baroque style.

```latex
\relative c' \{ 
\time 4/2 
c\breve
\override Staff.NoteHead.style = #'altdefault 
b\breve
\override Staff.NoteHead.style = #'baroque 
b\breve
\revert Staff.NoteHead.style 
a\breve
\}
```

Asymmetric slurs

Slurs can be made asymmetric to match an asymmetric pattern of notes better.

```latex
\relative c' \{ 
\slurNotes = \{ d,8( a' d f a f' d, a) \}
\\stemDown 
\\slurUp 
\\slurNotes 
\\once \override Slur.eccentricity = #3.0 
\\slurNotes
\}
```
Breathing signs

Breathing signs are available in different tastes: commas (default), ticks, vees and “railroad tracks” (caesura).

\new Staff \relative c' { 
\key es \major 
\time 3/4 
% this bar contains no \breathe 
<< { g4 as g } \ { es4 bes es } >> |
% Modern notation:
% by default, \breathe uses the rcomma, just as if saying:
% \override BreathingSign.text =
% % #(make-musicglyph-markup "scripts.rcomma")
<< { g4 as g } \ { es4 \breathe bes es } >> |
%
% rvarcomma and lvarcomma are variations of the default rcomma
% and lcomma
% N.B.: must use Staff context here, since we start a Voice below
\override Staff.BreathingSign.text =
  \markup { \musicglyph "scripts.rvarcomma" } 
<< { g4 as g } \ { es4 \breathe bes es } >> |
%
% raltcomma and laltcomma are alternative variations of the
% default rcomma and lcomma
\override Staff.BreathingSign.text =
  \markup { \musicglyph "scripts.raltcomma" } 
<< { g4 as g } \ { es4 \breathe bes es } >> |
%
% vee
\override BreathingSign.text =
  \markup { \musicglyph "scripts.upbow" } 
es8[ d es f g] \breathe f |
%
% caesura
\override BreathingSign.text =
  \markup { \musicglyph "scripts.caesura.curved" } 
es8[ d] \breathe es[ f g f] |
es2 r4 \bar "||"  
}
Broken Crescendo Hairpin

In order to make parts of a crescendo hairpin invisible, the following method is used: A white rectangle is drawn on top of the respective part of the crescendo hairpin, making it invisible. The rectangle is defined as postscript code within a text markup.

The markup command `with-dimensions` tells LilyPond to consider only the bottom edge of the rectangle when spacing it against the hairpin. The property `staff-padding` prevents the rectangle from fitting between the hairpin and staff.

Make sure the hairpin is in a lower layer than the text markup to draw the rectangle over the hairpin.

\relative c' { << { \dynamicUp r2 r16 c'8.\pp r4 } \relative c' { \override DynamicLineSpanner.layer = #0 des,2\mf< - \override TextScript.layer = #2 \once\override TextScript.staff-padding = #6 \once\override TextScript.vertical-skylines = #'() des16_\markup \with-dimensions #'(2 . 7) #'(0 . 0) \with-color #white \filled-box #'(2 . 7) #'(0 . 2) #0 r8. des4 - des16=>\sff r8. } >> }

\relative c'' { \override TextScript.layer = #2 \once\override TextScript.staff-padding = #6 \once\override TextScript.vertical-skylines = #'() des16_\markup \with-dimensions #'(2 . 7) #'(0 . 0) \with-color #white \filled-box #'(2 . 7) #'(0 . 2) #0 r8. des4 - des16=>\sff r8. }

Caesura ("railtracks") with fermata

A caesura is sometimes denoted by a double “railtracks” breath mark with a fermata sign positioned above. This snippet shows an optically pleasing combination of railtracks and fermata.

\relative c' { c2. \% construct the symbol \override BreathingSign.text = \markup { \override #'(direction . 1) \override #'(baseline-skip . 1.8) \dir-column { \translate #'(0.155 . 0) \center-align \musicglyph "scripts.caesura.curved" \center-align \musicglyph "scripts.ufermata" } } }
Center text below hairpin dynamics

This example provides a function to typeset a hairpin (de)crescendo with some additional text below it, such as “molto” or “poco”. The added text will change the direction according to the direction of the hairpin. The Hairpin is aligned to DynamicText.

The example also illustrates how to modify the way an object is normally printed, using some Scheme code.

```
\paper { tagline = ##f } 

hairpinWithCenteredText = 
#(define-music-function (text) (markup?)
#
\once \override Voice.Hairpin.after-line-breaking =
#(lambda (grob)
  (let* ((stencil (ly:hairpin::print grob))
    (par-y (ly:grob-parent grob Y))
    (dir (ly:grob-property par-y 'direction))
    (staff-line-thickness
      (ly:output-def-lookup (ly:grob-layout grob) 'line-thickness))
    (new-stencil (ly:stencil-aligned-to
      (ly:stencil-combine-at-edge
        (ly:stencil-aligned-to stencil X CENTER) Y dir
        (ly:stencil-aligned-to
          (grob::has-interface par-x 'dynamic-text-interface)
          (grob::hasinterface par-x 'dynamic-text-interface))
          (if dyn-text
            (ly:output-def-lookup
              (ly:grob-layout grob) 'staff-space)
            (ly:output-def-lookup
              (ly:grob-layout grob) 'staff-space)))
            (par-x (ly:grob-parent grob X))
            (dyn-text (grob::has-interface par-x 'dynamic-text-interface))
            (dyn-text-stencil-x-length
              (if dyn-text
                (make-fontsize-markup
                  (magnification->font-size
                    (+ (ly:staff-symbol-staff-space grob)
                      (/ staff-line-thickness 2)))
                    text)) X CENTER)))
    (staff-space (ly:output-def-lookup
      (ly:grob-layout grob) 'staff-space))
    (par-x (ly:grob-parent grob X))
    (interpolate-markup stencil X CENTER)
    X LEFT))}
```
Changing text and spanner styles for text dynamics

The text used for crescendos and decrescendos can be changed by modifying the context properties crescendoText and decrescendoText.
The style of the spanner line can be changed by modifying the 'style property of DynamicTextSpanner. The default value is 'dashed-line, and other possible values include 'line, 'dotted-line and 'none.

```plaintext
relative c'' {
    set crescendoText = \markup { \italic { cresc. poco } }
    set crescendoSpanner = #'text
    override DynamicTextSpanner.style = #'dotted-line
    a2< a
    a2 a
    a2 a-mf
}
```

![Example of a spanner line with different styles]

Changing the appearance of a slur from solid to dotted or dashed

The appearance of slurs may be changed from solid to dotted or dashed.

```plaintext
relative c' {
    c4( d e c)
    \slurDotted
    c4( d e c)
    \slurSolid
    c4( d e c)
    \slurDashed
    c4( d e c)
    \slurSolid
    c4( d e c)
}
```

![Example of slurs with different appearances]

Changing the breath mark symbol

The glyph of the breath mark can be tuned by overriding the text property of the BreathingSign layout object with any markup text.

```plaintext
relative c''' {
    c2
    override BreathingSign.text = \markup { \musicglyph "scripts.rvarcomma" }
    \breathe
    d2
}
```
Changing the number of augmentation dots per note

The number of augmentation dots on a single note can be changed independently of the dots placed after the note.

\relative c' {  
c4.. a16 r2 |  
\override Dots.dot-count = #4  
c4.. a16 r2 |  
\override Dots.dot-count = #0  
c4.. a16 r2 |  
\revert Dots.dot-count  
c4.. a16 r2 |  
}

Combining dynamics with markup texts

Some dynamics may involve text indications (such as “più forte” or “piano subito”). These can be produced using a \markup block.

\markup {  
\italic pi`u \dynamic f  
\layout { \ragged-right = ##f }  
}

\relative c'' {  
c2\f c-\piuF  
}

Contemporary glissando

A contemporary glissando without a final note can be typeset using a hidden note and cadenza timing.

\relative c'' {  
\time 3/4  
\override Glissando.style = #'zigzag  
c4 c  
\cadenzaOn  
c4\glissando  
\hideNotes  
c,,4  
}
Controlling spanner visibility after a line break

The visibility of spanners which end on the first note following a line break is controlled by the after-line-breaking callback `ly:spanner::kill-zero-spanned-time`.

For objects such as glissandos and hairpins, the default behaviour is to hide the spanner after a break; disabling the callback will allow the left-broken span to be shown.

Conversely, spanners which are usually visible, such as text spans, can be hidden by enabling the callback.

\paper { ragged-right = ##t }

\relative c' {
  \override Hairpin.to-barline = ##f
  \override Glissando.breakable = ##t
  % show hairpin
  \override Hairpin.after-line-breaking = ##t
  % hide text span
  \override TextSpanner.after-line-breaking = 
    ly:spanner::kill-zero-spanned-time
  \startTextSpan e2\glissando
  % show glissando
  \override Glissando.after-line-breaking = ##t
  \break f,1!\stopTextSpan
}

Controlling the vertical ordering of scripts

The vertical ordering of scripts is controlled with the 'script-priority property. The lower this number, the closer it will be put to the note. In this example, the TextScript (the sharp symbol) first has the lowest priority, so it is put lowest in the first example. In the second, the prall trill (the Script) has the lowest, so it is on the inside. When two objects have the same priority, the order in which they are entered determines which one comes first.

\relative c''' {
Creating a delayed turn

Creating a delayed turn, where the lower note of the turn uses the accidental, requires several overrides. The `outside-staff-priority` property must be set to `#f`, as otherwise this would take precedence over the `avoid-slur` property. Changing the fraction `2/3` adjusts the horizontal position.

```latex
relative \textcopyright \ {
\after 2*2/3 \textcopyright c( d4) r |
\after 4 \textcopyright c4.( d8)
\after 4
{
\once \set suggestAccidentals = ##t
\once \override AccidentalSuggestion.outside-staff-priority = ##f
\once \override AccidentalSuggestion.avoid-slur = #'inside
\once \override AccidentalSuggestion.font-size = -3
\once \override AccidentalSuggestion.script-priority = -1
\once \hideNotes
\textcopyright cis8\textcopyright turn \textcopyright noBeam
}
d4.( e8)
}
```

Creating arpeggios across notes in different voices

An `arpeggio` can be drawn across notes in different voices on the same staff if the `Span_arpeggio_engraver` is added to the `Staff` context:

```latex
\new Staff \with {
\consists "Span_arpeggio_engraver"
}
\relative \textcopyright \ {
\set Staff.connectArpeggios = ##t
<\ {
\langle <e' g>4\textcopyright \textcopyright arpeggio <d f> <d f>2 
\endgraf}
```
Creating cross-staff arpeggios in a piano staff

In a PianoStaff, it is possible to let an arpeggio cross between the staves by setting the property PianoStaff.connectArpeggios.

\new PianoStaff \relative c'' <<
\set PianoStaff.connectArpeggios = ##t
\new Staff {
  <c e g c>4\arpeggio
  <g c e g>4\arpeggio
  <e g c e>4\arpeggio
  <c e g c>4\arpeggio
}
\new Staff {
  \clef bass
  \repeat unfold 4 {
    <c,,, e g c>4\arpeggio
  }
}
>>

Creating cross-staff arpeggios in other contexts

Cross-staff arpeggios can be created in contexts other than GrandStaff, PianoStaff and StaffGroup if the Span_arpeggio_engraver is included in the Score context.

\score {
  \new ChoirStaff {
    \set Score.connectArpeggios = ##t
    <<
      \new Voice \relative c' {
        <c e>2\arpeggio
        <d f>2\arpeggio
        <c e>1\arpeggio
      }
      \new Voice \relative c {
        \clef bass
      }
  }
}
Creating double-digit fingerings

Creating fingerings larger than 5 is possible.

\relative c' { 
  c1-10 
  c1-50 
  c1-36 
  c1-29 
}

Creating "real" parenthesized dynamics

Although the easiest way to add parentheses to a dynamic mark is to use a \markup block, this method has a downside: the created objects will behave like text markups, and not like dynamics.

However, it is possible to create a similar object using the equivalent Scheme code (as described in the Notation Reference), combined with the make-dynamic-script function. This way, the markup will be regarded as a dynamic, and therefore will remain compatible with commands such as \dynamicUp or \dynamicDown.

paren = 
  #(define-event-function (dyn) (ly:event?)) 
  (make-dynamic-script 
    #{ \markup \concat 
            \normal-text \italic \fontsize #2 ( 
              \pad-x #0.2 #(ly:music-property dyn 'text) 
              \normal-text \italic \fontsize #2 )}
  ;
Creating slurs across voices

In some situations, it may be necessary to create slurs between notes from different voices. The solution is to add invisible notes to one of the voices, using \hideNotes.

This example is measure 235 of the Ciaconna from Bach’s 2nd Partita for solo violin, BWV 1004.

Creating text spanners

The \startTextSpan and \stopTextSpan commands allow the creation of text spanners as easily as pedal indications or octavations. Override some properties of the TextSpanner object to modify its output.

\paper { ragged-right = ##f }
Dynamics custom text spanner postfix

Postfix functions for custom crescendo text spanners. The spanners should start on the first note of the measure. One has to use \mycresc, otherwise the spanner start will rather be assigned to the next note.

% Two functions for (de)crescendo spanners where you can explicitly give the spanner text.

\mycresc =
\(\text{(define-music-function (mymarkup) (markup?) (make-music 'CrescendoEvent 'span-direction START 'span-type 'text 'span-text mymarkup))}\)
### Expressive marks

```lisp
mydecresc =
#{define-music-function (mymarkup) (markup?)
  (make-music 'DecrescendoEvent
    'span-direction START
    'span-type 'text
    'span-text mymarkup))

\relative c' {
  c4-\mycresc "custom cresc" c4 c4 c4 |
  c4 c4 c4 c4 |
  c4-\mydecresc "custom decresc" c4 c4 c4 |
  c4 c4\! c4 c4
}
```

![Custom Crescendo and Decrescendo Examples](image)

**Dynamics text spanner postfix**

Custom text spanners can be defined and used with hairpin and text crescendos. `<` and `>` produce hairpins by default, `\cresc` etc. produce text spanners by default.

```lisp
% Some sample text dynamic spanners, to be used as postfix operators

crpoco =
#{make-music 'CrescendoEvent
  'span-direction START
  'span-type 'text
  'span-text "cresc. poco a poco")

\relative c' {
  c4\cresc d4 e4 f4 |
  g4 a4\! b4\crpoco c4 |
  c4 d4 e4 f4 |
  g4 a4\! b4< c4 |
  g4\dim a4 b4\decresc c4!|
}
```

![Text Dynamics Example](image)

**Glissandi can skip grobs**

NoteColumn grobs can be skipped over by glissandi.

```lisp
\relative c' {
  a2 \glissando 
  \once \override NoteColumn.glissando-skip = ##t
  f'\"'4 d,
}
```

![Glissando Example](image)
Hairpins with different line styles

Hairpins can take any style from line-interface - dashed-line, dotted-line, line, trill or zigzag.

\relative c' {
  c2< c! \override Hairpin.style = #'dashed-line
  c2< c! \override Hairpin.style = #'dotted-line
  c2< c! \override Hairpin.style = #'line
  c2< c! \override Hairpin.style = #'trill
  c2< c! \override Hairpin.style = #'zigzag
  \revert Hairpin.style
  c2< c!
}

Hiding the extender line for text dynamics

Text style dynamic changes (such as cresc. and dim.) are printed with a dashed line showing their extent. This line can be suppressed in the following way:

\relative c'' {
  \override DynamicTextSpanner.style = #'none
  \crescTextCresc
  c1< d | b | c!
}

Horizontally aligning custom dynamics (e.g. "sempre pp", "piu f", "subito p")

Some dynamic expressions involve additional text, like “sempre pp”. Since dynamics are usually centered under the note, the \pp would be displayed way after the note it applies to.

To correctly align the “sempre pp” horizontally so that it is aligned as if it were only the \pp, there are several approaches:
Expressive marks

- Simply use `\once\override DynamicText.X-offset = #\-9.2` before the note with the dynamics to manually shift it to the correct position. Drawback: This has to be done manually each time you use that dynamic markup...
- Add some padding (`#:hspace 7.1`) into the definition of your custom dynamic mark so that after LilyPond center-aligns it, it is already correctly aligned. Drawback: The padding really takes up that space and does not allow any other markup or dynamics to be shown in that position.
- Shift the dynamic script `\once\override ... X-offset = ...`. Drawback: `\once\override` is needed for every invocation!
- Set the dimensions of the additional text to 0 (using `#:with-dimensions '(0 . 0) '(0 . 0)`). Drawback: For LilyPond, “sempre” has no extent now. This means it might put other stuff there, causing collisions (which are not detected by LilyPond’s collision detection algorithm!). There also seems to be some spacing, so it is not exactly the same alignment as without the additional text.
- Add an explicit shift directly inside the scheme function for the dynamic script.
- Set an explicit alignment inside the dynamic script. By default, this won’t have any effect, only if one sets `X-offset`! Drawback: One needs to set `DynamicText.X-offset`, which will apply to all dynamic texts! Also, it is aligned at the right edge of the additional text, not at the center of `\pp`.

\paper {
  \ragged-right = ##f
  \indent = 2.5\cm
}

% Solution 1: Using a simple markup with a particular halign value
% Drawback: It’s a markup, not a dynamic command, so `\dynamicDown` etc. will have no effect
semppMarkup = \markup { \halign #1.4 \italic "sempre" \dynamic "pp" }

% Solution 2: Using a dynamic script & shifting with
% \once \override ...X-offset = ..
% Drawback: \once \override needed for every invocation
semppK =
#(make-dynamic-script
  (markup #:line
    (#:normal-text
      #:italic "sempre"
      #:dynamic "pp")))

% Solution 3: Padding the dynamic script so the center-alignment
% puts it at the correct position
% Drawback: the padding really reserves the space, nothing else can be there
semppT =
#(make-dynamic-script
  (markup #:line
    (#:normal-text
      #:italic "sempre"
      #:dynamic "pp"
      #:hspace 7.1)))

% Solution 4: Dynamic, setting the dimensions of the additional text to 0
% Drawback: To lilypond "sempre" has no extent, so it might put
% other stuff there => collisions
% Drawback: Also, there seems to be some spacing, so it's not exactly the
% same alignment as without the additional text

semppM = 
#(make-dynamic-script
  (markup #:line
    (#:with-dimensions '(0 . 0) '(0 . 0)
      #:right-align
      #:normal-text
      #:italic "sempre"
      #:dynamic "pp"))
)

% Solution 5: Dynamic with explicit shifting inside the scheme function
semppG = 
#(make-dynamic-script
  (markup #:hspace 0
    #:translate '(-18.85 . 0)
    #:line (#:normal-text
      #:italic "sempre"
      #:dynamic "pp"))
)

% Solution 6: Dynamic with explicit alignment. This has only effect
% if one sets X-offset!
% Drawback: One needs to set DynamicText.X-offset!
% Drawback: Aligned at the right edge of the additional text,
% not at the center of pp
semppMII = 
#(make-dynamic-script
  (markup #:line (#:right-align
    #:normal-text
    #:italic "sempre"
    #:dynamic "pp"))
)

\new StaffGroup <<
\new Staff = "s" \with { instrumentName = \markup \column { Normal } }
  <<
  \relative c'' {
    \key es \major
    c4\pp c\p c c | c\ff c c\pp c
  }
  >>
\new Staff = "sMarkup" \with {
  instrumentName = \markup \column { Normal markup }
}
  <<
  \relative c'' {
    \key es \major
    c4-\semppMarkup c\p c c | c\ff c c-\semppMarkup c
  }
  >>
\new Staff = "sK" \with {
instrumentName = \markup \column { Explicit shifting }
}
<<
 relative c'' { 
 \key es \major
 \once \override DynamicText.X-offset = #-9.2
 c4\semppK c\p c c
 c4\ff c
 \once \override DynamicText.X-offset = #-9.2
 c4\semppK c
 }
>>
new Staff = "sT" \with {
 instrumentName = \markup \column { Right padding }
}
<<
 relative c'' { 
 \key es \major
 c4\semppT c\p c c | c\ff c c\semppT c
 }
>>
new Staff = "sM" \with {
 instrumentName = \markup \column { Set dimension "to zero" }
}
<<
 relative c'' { 
 \key es \major
 c4\semppM c\p c c | c\ff c c\semppM c
 }
>>
new Staff = "sG" \with {
 instrumentName = \markup \column { Shift inside dynamics}
}
<<
 relative c'' { 
 \key es \major
 c4\semppG c\p c c | c\ff c c\semppG c
 }
>>
new Staff = "sMII" \with {
 instrumentName = \markup \column { Alignment inside dynamics }
}
<<
 relative c'' { 
 \key es \major
 % Setting to ##f (false) gives the same result
 \override DynamicText.X-offset = #0
 c4\semppMII c\p c c | c\ff c c\semppMII c
 }
>>
>>
Inserting a caesura

Caesura marks can be created by overriding the 'text property of the BreathingSign object. A curved caesura mark is also available.

\relative c' {  
  \override BreathingSign.text = \markup {  
    \musicglyph "scripts.caesura.straight"
  }  
  \breath g8. e16 c4

  \override BreathingSign.text = \markup {  
    \musicglyph "scripts.caesura.curved"
  }  
  \breath g8 e'4. g8 e16 c4
}

Laissez vibrer ties

Laissez vibrer ties have a fixed size. Their formatting can be tuned using 'tie-configuration.

\relative c' {  

Line arrows

Arrows can be applied to text-spanners and line-spanners (such as the Glissando).

\relative c' { 
  \override TextSpanner.bound-padding = #1.0 
  \override TextSpanner.style = #'line 
  \override TextSpanner.bound-details.right.arrow = ##t 
  \override TextSpanner.bound-details.left.text = #'fof 
  \override TextSpanner.bound-details.right.text = #'gag 
  \override TextSpanner.bound-details.right.padding = #0.6 
  \override Glissando.bound-details.right.arrow = ##t 
  \override Glissando.arrow-length = #0.5 
  \override Glissando.arrow-width = #0.25 
  a8\startTextSpan gis a4 b\glissando b, 
g'4 c\stopTextSpan c2 
}
Expressive marks

fraction dash-fraction of each dash-period black. dash-period is defined in terms of staff spaces. dash-fraction is set to 1 for a solid slur.

\relative c' {
    \once \override Slur.dash-definition = #'((0 0.3 0.1 0.75)
        (0.3 0.6 1 1)
        (0.65 1.0 0.4 0.75))
    c4( d e f)
    \once \override Slur.dash-definition = #'((0 0.25 1 1)
        (0.3 0.7 0.4 0.75)
        (0.75 1.0 1 1))
    c4( d e f)
}

Modifying default values for articulation shorthand notation

The shorthands are defined in ‘ly/script-init.ly’, where the variables dashHat, dashPlus, dashDash, dashBang, dashLarger, dashDot, and dashUnderscore are assigned default values. The default values for the shorthands can be modified. For example, to associate the –+ (dashPlus) shorthand with the trill symbol instead of the default + symbol, assign the value \trill to the variable dashPlus:

\relative c'' { c1+- }

dashPlus = \trill

\relative c'' { c1+- }

Moving slur positions vertically

The vertical position of a slur can be adjusted using the positions property of Slur. The property has 2 parameters, the first referring to the left end of the slur and the second to the right. The values of the parameters are not used by LilyPond to make an exact movement of the slur - instead it selects what placement of the slur looks best, taking into account the parameter values. Positive values move the slur up, and are appropriate for notes with stems down. Negative values move downward slurs further down.

\relative c' {
    \stemDown
    e4( a)
Moving the ends of hairpins

The ends of hairpins may be offset by setting the `shorten-pair` property of the `Hairpin` object. Positive values move endpoints to the right, negative to the left. Unlike the `minimum-length` property, this property only affects the appearance of the hairpin; it does not adjust horizontal spacing (including the position of bounding dynamics). This method is thus suitable for fine-tuning a hairpin within its allotted space.

```
{ c'1- \<
   c'2- c'!\}
\once \override Hairpin.shorten-pair = #'(2 . 2)
   c'1- \<
   c'2- c'!\}
\once \override Hairpin.shorten-pair = #'(-2 . -2)
   c'1- \<
   c'2- c'!\}
   c'1-\p \tweak shorten-pair #'(2 . 0)\<
   c'2- c'\fff
```
Positioning arpeggios

If you need to extend or shorten an arpeggio, you can modify the upper and lower start positions independently.

\relative c' {
    <c e g b>1\arpeggio
    \once \override Arpeggio.positions = #'(-5 . 0)
    <c e g b>1\arpeggio
    \once \override Arpeggio.positions = #'(0 . 5)
    <c e g b>1\arpeggio
    \once \override Arpeggio.positions = #'(5 . 5)

    <c e g b>1\arpeggio
}

Positioning text markups inside slurs

Text markups need to have the outside-staff-priority property set to false in order to be printed inside slurs.

\relative c'' {
    \override TextScript.avoid-slur = #'inside
    \override TextScript.outside-staff-priority = ##f
    c2(\markup { \halign #-10 \natural } d4.) c8
}

Printing hairpins in various styles

Hairpin dynamics may be created in a variety of styles.

\relative c'' {
    \override Hairpin.stencil = #flared-hairpin
    a4\< a a a\f
    a4\p< a a a\ff
    a4\sfz< a a a\!
    \override Hairpin.stencil = #constante-hairpin
    a4\< a a a\f
    a4\p< a a a\ff
    a4\sfz< a a a\!
    \override Hairpin.stencil = #flared-hairpin
    a4\> a a a\f
    a4\p> a a a\ff
    a4\sfz> a a a!
    \override Hairpin.stencil = #constante-hairpin
    a4\> a a a\f
Hairpin dynamics may be printed with a circled tip ("al niente" notation) by setting the circled-tip property of the Hairpin object to \( \#t \).

```latex
\relative c' { 
    \override Hairpin.circled-tip = \#t 
    c2 < c! 
    c4 > c! < c2! 
}
```

Printing metronome and rehearsal marks below the staff

By default, metronome and rehearsal marks are printed above the staff. To place them below the staff simply set the direction property of \( \text{MetronomeMark} \) or \( \text{RehearsalMark} \) appropriately.

```latex
\layout { 
    indent = 0 
    ragged-right = \#f 
}
```

```latex
% Metronome marks below the staff 
\override Score.MetronomeMark.direction = \#DOWN 
\tempo 8. = 120 
c''1 

% Rehearsal marks below the staff 
\override Score.RehearsalMark.direction = \#DOWN 
\mark \default 
c''1
```
Setting hairpin behavior at bar lines

If the note which ends a hairpin falls on a downbeat, the hairpin stops at the bar line immediately preceding. This behavior can be controlled by overriding the 'to-barline property.

```latex
\relative c'' { 
  e4\< e2.
  e1\!
  \override Hairpin.to-barline = ##f
  e4\< e2.
  e1\!
}
```

Setting the minimum length of hairpins

If hairpins are too short, they can be lengthened by modifying the minimum-length property of the Hairpin object.

```latex
<< 
{ 
  \after 4 \< \after 2 \> \after 2. \! f'1
  \override Hairpin.minimum-length = #8
  \after 4 \< \after 2 \> \after 2. \! f'1
} 
{ 
  \repeat unfold 8 c'4 
} 
>>
```

Showing the same articulation above and below a note or chord

By default, LilyPond does not allow the same articulation (e.g., an accent, a fermata, a flageolet, etc.) to be displayed above and below a note. For example, \c4\fermata\fermata only shows a fermata below. The fermata above gets simply ignored.

However, one can stick scripts (just like fingerings) inside a chord, which means it is possible to have as many articulations as desired. This approach has the advantage that it ignores the stem and positions the articulation relative to the note head. This can be seen in the case of the flageolets in the snippet. To mimic the behaviour of scripts outside a chord, 'add-stem-support would be required.

The solution is thus to write the note as a chord and add the articulations inside of <...>, using the direction modifiers ^ and _ as appropriate.

```latex
\relative c' { 
```
Snap-pizzicato or Bartok pizzicato

A snap-pizzicato (also known as “Bartok pizzicato”) is a “strong pizzicato where the string is plucked vertically by snapping and rebounds off the fingerboard of the instrument” (Wikipedia). It is denoted by a circle with a vertical line going from the center upwards outside the circle.

Using a tick as the breath mark symbol

Vocal and wind music frequently uses a tick mark as a breathing sign. This indicates a breath that subtracts a little time from the previous note rather than causing a short pause, which is indicated by the comma breath mark. The mark can be moved up a little to take it away from the stave.
Using arpeggioBracket to make divisi more visible

The arpeggioBracket can be used to indicate the division of voices where there are no stems to provide the information. This is often seen in choral music.

\include "english.ly"

\score {
  \relative c' {
    \key a \major
    \time 2/2
    \new Voice = "upper"
    \{ \voiceOne \arpeggioBracket
      a2( b2
      <b d>1\arpeggio)
      <cs e>\arpeggio ~
      <cs e>4
    \}
    \addlyrics { \lyricmode { A -- men. } }
    \new Voice = "lower"
    \{ \voiceTwo
      a1 ~
      a ~
      a4 \bar "|."
    \}
    \layout { ragged-right = ##t }
  }
}

Using double slurs for legato chords

Some composers write two slurs when they want legato chords. This can be achieved by setting doubleSlurs.

\relative c' {
  \set doubleSlurs = ##t
  <c e>4( <d f> <c e> <d f>)
Using the whiteout property

Any graphical object can be printed over a white background to mask parts of objects that lie beneath. This can be useful to improve the appearance of collisions in complex situations when repositioning objects is impractical. It is necessary to explicitly set the layer property to control which objects are masked by the white background. In this example the collision of the tie with the time signature is improved by masking out the part of the tie that crosses the time signature by setting the whiteout property of TimeSignature. To do this TimeSignature is moved to a layer above Tie, which is left in the default layer of 1, and StaffSymbol is moved to a layer above TimeSignature so it is not masked.

```
\override Score.StaffSymbol.layer = #4
\override Staff.TimeSignature.layer = #3
b'2 b'~
\once \override Staff.TimeSignature.whiteout = #t
\time 3/4
b' r4
```

Vertical line as a baroque articulation mark

This short vertical line placed above the note is commonly used in baroque music. Its meaning can vary, but generally indicates notes that should be played with more “weight”. The following example demonstrates how to achieve such a notation.

```
upline =
\tweak stencil
#(lambda (grob)
    (grob-interpret-markup grob #{ \markup \draw-line #'(0 . 1) #}))
\stopped
\relative c' {
    a'4^-\upline a( c d')_\upline
}
```
Vertically aligning dynamics across multiple notes

Dynamics that occur at, begin on, or end on the same note will be vertically aligned. To ensure that dynamics are aligned when they do not occur on the same note, increase the staff-padding property of the DynamicLineSpanner object.

```
\relative c' {
  \override DynamicLineSpanner.staff-padding = #4
  c2\p f\mf
  g2< b4\> c\!
}
```

![Musical notation example]
Repeats

Section “Repeats” in Notation Reference

Adding volta brackets to additional staves

The Volta_engraver by default resides in the Score context, and brackets for the repeat are thus normally only printed over the topmost staff. This can be adjusted by adding the Volta_engraver to the Staff context where the brackets should appear; see also the “Volta multi staff” snippet.

```lilypond
\new Staff { \repeat volta 2 { c'1 } \alternative { c' } }
\new Staff { \repeat volta 2 { c'1 } \alternative { c' } }
\new Staff \with \{ \consists "Volta_engraver" \} { c'2 g' e' a' }
\new Staff { \repeat volta 2 { c'1 } \alternative { c' } }
```

Centered measure numbers

Scores of large ensemble works often have bar numbers placed beneath the system, centered horizontally on the measure’s extent. This snippet shows how the Measure_counter_engraver may be used to simulate this notational practice. Here, the engraver has been added to a Dynamics context.

This snippet presents a legacy method: starting from LilyPond 2.23.3, \set Score.centerBarNumbers = ##t is enough.

```lilypond
\layout { 
\context { 
\Dynamics
\consists #Measure_counter_engraver
\override MeasureCounter.direction = #DOWN
\override MeasureCounter.font-encoding = #'latin1
\override MeasureCounter.font-shape = #'italic
% to control the distance of the Dynamics context from the staff:
\override VerticalAxisGroup.nonstaff-relatedstaff-spacing.padding = #2 }
\context { }
\Score
```
Changing the default bar lines

Default bar lines can be changed when re-defined in a score context.

\remove "Bar_number_engraver"

\new StaffGroup <<
\new Staff {
  \pattern
}
\new Staff {
  \pattern
}
\new Dynamics {
  \startMeasureCount s1*7
  \stopMeasureCount
}
>>

\layout {
  \context {
    \Score
    \measureBarType = "!"
    startRepeatBarType = "[|:" 
    endRepeatBarType = "|:"]"
    doubleRepeatBarType = "|][][|:" 
  }
}

%% example:
{
  c'1
  \repeat volta 2 { \repeat unfold 2 c' 
}
Cross-staff tremolos

Since `\repeat tremolo` expects exactly two musical arguments for chord tremolos, the note or chord which changes staff within a cross-staff tremolo should be placed inside curly braces together with its `\change Staff` command.

```latex
\new PianoStaff <<
  \new Staff = "up" \relative c'' {
    \key a \major
    \time 3/8
    s4.
  }
  \new Staff = "down" \relative c'' {
    \key a \major
    \time 3/8
    \voiceOne
    \repeat tremolo 6 {
      <a e'>32
      {
        \change Staff = "up"
        \voiceTwo
        <cis a' dis>32
      }
    }
  }
>>
```
Engraving tremolos with floating beams

If a tremolo’s total duration is less than a quarter-note, or exactly a half-note, or between a half-note and a whole-note, it is normally typeset with all beams touching the stems. Certain engraving styles typeset some of these beams as centered floating beams that do not touch the stems. The number of floating beams in this type of tremolo is controlled with the 'gap-count property of the Beam object, and the size of the gaps between beams and stems is set with the 'gap property.

\relative c' {  
  \repeat tremolo 8 { a32 f }  
  \override Beam.gap-count = #1  
  \repeat tremolo 8 { a32 f }  
  \override Beam.gap-count = #2  
  \repeat tremolo 8 { a32 f }  
  \override Beam.gap-count = #3  
  \repeat tremolo 8 { a32 f }  

  \override Beam.gap-count = #3  
  \override Beam.gap = #1.33  
  \repeat tremolo 8 { a32 f }  
  \override Beam.gap = #1  
  \repeat tremolo 8 { a32 f }  
  \override Beam.gap = #0.67  
  \repeat tremolo 8 { a32 f }  
  \override Beam.gap = #0.33  
  \repeat tremolo 8 { a32 f }  
}

Isolated percent repeats

Isolated percents can also be printed.

\makePercent =  
#(define-music-function (note) (ly:music?)  
  "Make a percent repeat the same length as NOTE."  
  (make-music 'PercentEvent  
    'length (ly:music-length note)))

\relative c' {  
  \makePercent s1  
}

Measure counter

This snippet provides a workaround for emitting measure counters using transparent percent repeats.
Numbering groups of measures

This snippet demonstrates the use of the Measure_counter_engraver to number groups of successive measures. Any stretch of measures may be numbered, whether consisting of repetitions or not.

The engraver must be added to the appropriate context. Here, a Staff context is used; another possibility is a Dynamics context.

The counter is begun with \startMeasureCount and ended with \stopMeasureCount. Numbering will start by default with 1, but this behavior may be modified by overriding the count-from property.

When a measure extends across a line break, the number will appear twice, the second time in parentheses.

\layout {
  \context {
    \Staff 
    \consists #Measure_counter_engraver
  }
}

\new Staff {
  \startMeasureCount 
  \repeat unfold 7 { 
    c'4 d' e' f' 
  } 
  \stopMeasureCount 
  \bar "||" 
  g'4 f' e' d' 
  \override Staff.MeasureCounter.count-from = #2 
  \startMeasureCount 
  \repeat unfold 5 { 
    g'4 f' e' d' 
  } 
}
Percent repeat count visibility

Percent repeat counters can be shown at regular intervals by setting the context property `repeatCountVisibility`.

```latex
\relative c'' { 
\set countPercentRepeats = ##t
\set repeatCountVisibility = #(every-nth-repeat-count-visible 5)
\repeat percent 10 { c1 } \break
\set repeatCountVisibility = #(every-nth-repeat-count-visible 2)
\repeat percent 6 { c1 d1 }
}
```

Percent repeat counter

Measure repeats of more than two repeats can get a counter when the convenient property is switched, as shown in this example:

```latex
\relative c'' { 
\set countPercentRepeats = ##t
\repeat percent 4 { c1 }
}
Positioning segno and coda (with line break)

If you want to place an exiting segno sign and add text like “D.S. al Coda” next to it where usually the staff lines are you can use this snippet. The coda will resume in a new line. There is a variation documented in this snippet, where the coda will remain on the same line.

```plaintext
{  
  \relative c'' {  
    c4 c c c c c c c c c 
  \repeat segno 2 {  
    c4 c c c c c c c 
  \alternative {  
    \ volta 1 {  
      c4 c c c c c c c c c c 
      % If you don't use \break at Coda, use \noBreak here 
      % and after \bar "" below. 
      \noBreak  
      \section % double bar line  
      \cadenzaOn % pause bar count  
      \stopStaff % remove staff lines  
      % Increasing the unfold counter will expand the staff-free space  
      \repeat unfold 6 {  
        s1  
        \bar ""
    }  
    % Place JumpScript where the staff would normally be.  
    \once \override Score.JumpScript.outside-staff-priority = ##f  
    \once \override Score.JumpScript.Y-offset = 0  
    \startStaff % resume bar count  
    \cadenzaOff % show staff lines again  
  }  
}  
\sectionLabel "Coda"  
% Show Coda on a new line  
\break  
\repeat unfold 8 { c4 c c c }  
\fine  
}
```

% Place JumpScript where the staff would normally be.
\once \override Score.JumpScript.outside-staff-priority = ##f
\once \override Score.JumpScript.Y-offset = 0
\startStaff % resume bar count
\cadenzaOff % show staff lines again

D.S. % al % e poi la Coda
Setting the double repeat default for volte

There are three different styles of double repeats for volte, that can be set using \doubleRepeatBarType.

\relative c'\{  
\repeat volta 2 { c1 }  
\set Score.doubleRepeatBarType = #":"..:"  
\repeat volta 2 { c1 }  
\set Score.doubleRepeatBarType = #":"|.|:"  
\repeat volta 2 { c1 }  
\set Score.doubleRepeatBarType = #":"|.:"  
\repeat volta 2 { c1 }  
\}

Shortening volta brackets

By default, the volta brackets will be drawn over all of the alternative music, but it is possible to shorten them by setting \voltaSpannerDuration. In the next example, the bracket only lasts one measure, which is a duration of 3/4.

\relative c'\{  
\time 3/4  
c4 c c  
\set Score.voltaSpannerDuration = #(ly:make-moment 3/4)  
\repeat volta 5 { d4 d d }  
\alternative {  
{  
e4 e e  
f4 f f  
}  
{  
g4 g g  
}  
}\}

Volta below chords

By adding the \Volta_engraver to the relevant staff, volte can be put under chords.

\score {  
<<
Volta multi staff

By adding the \texttt{Volta\_engraver} to the relevant staff, volte can be put over staves other than the topmost one in a score.

\begin{verbatim}
voltaMusic = \relative c' { 
  \repeat volta 2 { c'1 }
  \alternative { c' }
}

<< \new StaffGroup << 
  \new Staff \ voltaMusic
  \new Staff \ voltaMusic

>> 
\new StaffGroup << 
  \new Staff \with { \consists "Volta\_engraver" } 
    \ voltaMusic 
  \new Staff \ voltaMusic 

>>
\end{verbatim}
Volta text markup using repeatCommands

Though volte are best specified using \repeat volta, the context property repeatCommands must be used in cases where the volta text needs more advanced formatting with \markup.

Since repeatCommands takes a list, the simplest method of including markup is to use an identifier for the text and embed it in the command list using the Scheme syntax #(list (list ‘volta textIdentifier)). Start- and end-repeat commands can be added as separate list elements:

\set Score.repeatCommands = #'((volta #f) (volta "4.")) end-repeat

\relative c' {
  c1
  \markup { 1. 2. 3... \text \italic { ad lib. } }
  \relative c' {
    \set Score.repeatCommands = #((volta #f))
    f1
  }
}

1. 2. 3... ad lib. 4.
Simultaneous notes

Section “Simultaneous notes” in Notation Reference

Additional voices to avoid collisions

In some instances of complex polyphonic music, additional voices are necessary to prevent collisions between notes. If more than four parallel voices are needed, additional voices can be added by defining a variable using the Scheme function `context-spec-music`.

```scheme
voiceFive = #(context-spec-music (make-voice-props-set 4) 'Voice)
```

```latex
\relative c'' {
\time 3/4
\key d \minor
\partial 2
<<
\new Voice {
\voiceOne
a4. a8
e'4 e4. e8
f4 d4. c8
}
\new Voice {
\voiceTwo
d,2
d4 cis2
d4 bes2
}
\new Voice {
\voiceThree
f'2
bes4 a2
a4 s2
}
\new Voice {
\voiceFive
s2
g4 g2
f4 f2
}
>>
}
```

![Musical notation]

Changing a single note’s size in a chord

Individual note heads in a chord can be modified with the `\tweak` command inside a chord, by altering the `font-size` property.
Inside the chord (within the brackets < >), before the note to be altered, place the \tweak command, followed by font-size and define the proper size like #\-2 (a tiny note head).

\relative c' {  
  \tweak font-size #+2 c e g c  
  \tweak font-size #\-2 e>1  
  \markup { A tiny e } \_ \markup { A big c }  
}

\begin{verbatim}
A tiny e
\end{verbatim}

A big c

Changing partcombine texts

When using the automatic part combining feature, the printed text for the solo and unison sections may be changed:

\new Staff <<  
\set Staff.soloText = "girl"  
\set Staff.soloIIText = "boy"  
\set Staff.aDueText = "together"  
\partCombine  
\relative c'' {  
  g\text{"4} g r r  
  a2 g  
}  
\relative c'' {  
  r4 r a( b)  
  a2 g  
}  
>>

\begin{verbatim}
girl boy together
\end{verbatim}

Clusters

Clusters are a device to denote that a complete range of notes is to be played.

\begin{verbatim}
fragment = \relative c' {  
  c4 f <e d'>4  
  <g a>8 <e a> a4 c2 <d b>4  
  e2 c  
}
\end{verbatim}

\new Staff \fragment  
\new Staff \makeClusters \fragment  
>>
Combining two parts on the same staff

The part combiner tool ( `\partCombine` command ) allows the combination of several different parts on the same staff. Text directions such as “solo” or “a2” are added by default; to remove them, simply set the property `printPartCombineTexts` to `f`.

For vocal scores (hymns), there is no need to add “solo/a2” texts, so they should be switched off. However, it might be better not to use it if there are any solos, as they won’t be indicated. In such cases, standard polyphonic notation may be preferable.

This snippet presents the three ways two parts can be printed on a same staff: standard polyphony, `\partCombine` without texts, and `\partCombine` with texts.

%% Combining pedal notes with clef changes

```latex
\musicUp = \relative c'' { \\
  \time 4/4 \\
  a4 c4.( g8) a4 | \\
  g4 e' g,( a8 b) | \\
  c b a2. }
\musicDown = \relative c'' { \\
  g4 e4.( d8) c4 | \\
  r2 g'4( f8 e) | \\
  d2 \stemDown a }
```

\score {
<<
  \new Staff \with { instrumentName = "Standard polyphony" } \\
  << \musicUp \new Staff \with { instrumentName = "PartCombine without text" \\ instrumentName = "PartCombine with text" } \\
  \partCombine \musicUp \musicDown \\
  \partCombine \musicUp \musicDown \\
  \partCombine \musicUp \musicDown \\
  \partCombine \musicUp \musicDown >>

  \layout {
    indent = 6.0 \cm
  }
Simultaneous notes

\Score
\override SystemStartBar.collapse-height = #30

}\}

 Standard polyphony

PartCombine without text

PartCombine with text

Displaying complex chords

Here is a way to display a chord where the same note is played twice with different accidentals.

fixA = {
    \once \override Stem.length = #11
}

fixB = {
    \once \override NoteHead.X-offset = #1.7
    \once \override Stem.length = #7
    \once \override Stem.rotation = #'(45 0 0)
    \once \override Stem.extra-offset = #'(-0.1 , -0.2)
    \once \override Flag.style = #'no-flag
    \once \override Accidental.extra-offset = #'(4 , -.1)
}

relative c' {
    << { \fixA <b d!>8 } \ \ { \voiceThree \fixB dis } >> s
}

Forcing horizontal shift of notes

When the typesetting engine cannot cope, the following syntax can be used to override typesetting decisions. The units of measure used here are staff spaces.

relative c' <<
{
    <d g>2 <d g>
}
Making an object invisible with the ’transparent property

Setting the transparent property will cause an object to be printed in “invisible ink”: the object is not printed, but all its other behavior is retained. The object still takes up space, it takes part in collisions, and slurs, ties and beams can be attached to it.

This snippet demonstrates how to connect different voices using ties. Normally, ties only connect two notes in the same voice. By introducing a tie in a different voice, and blanking the first up-stem in that voice, the tie appears to cross voices.

\relative {  
\time 2/4  
<<  
  {  
    \once \hide Stem  
    \once \override Stem.length = #8  
    b'8 ~ 8\noBeam  
    \once \hide Stem  
    \once \override Stem.length = #8  
    g8 ~ 8\noBeam  
  }  
  \relative {  
    \once \override NoteColumn.force-hshift = #1.7  
    b'f>2  
  }  
}  

Moving dotted notes in polyphony

When a dotted note in the upper voice is moved to avoid a collision with a note in another voice, the default is to move the upper note to the right. This behaviour can be over-ridden by using the prefer-dotted-right property of NoteCollision.

\new Staff \relative c' <<  
{  
  f2. f4  
}
Simultaneous notes

\override Staff.NoteCollision.prefer-dotted-right = ##f
f2. f4
\override Staff.NoteCollision.prefer-dotted-right = ##t
f2. f4
}
\%
{ e4 e e e e e e e e e e e }
>>

Suppressing warnings for clashing note columns

If notes from two voices with stems in the same direction are placed at the same position, and both voices have no shift or the same shift specified, the error message ‘warning: ignoring too many clashing note columns’ will appear when compiling the LilyPond file. This message can be suppressed by setting the ‘ignore-collision property of the NoteColumn object to #t. Please note that this does not just suppress warnings but stops LilyPond trying to resolve collisions at all and so may have unintended results unless used with care.

ignore = \override NoteColumn.ignore-collision = ##t

\relative c' {
\new Staff <<
\new Voice { \ignore \stemDown f2 g }
\new Voice { c2 \stemDown c, }
>>
}

\%

Two \partCombine pairs on one staff

The \partCombine function takes two music expressions each containing a part, and distributes them among four Voices named “two”, “one”, “solo”, and “chords” depending on when and how the parts are merged into a common voice. The voices output from \partCombine can have their layout properties adjusted in the usual way. Here we define extensions of \partCombine to make it easier to put four voices on a staff.

soprano = { d'4 | cis' b e' d'8 cis' | cis'2 b }
alto = { fis4 | e8 fis gis ais b4 b | b ais fis2 }
tenor = { a8 b | cis' dis' e'4 b8 cis' d'4 | gis cis' dis'2 }
bass = { fis8 gis | a4 gis g fis | eis fis b2 }

\new Staff <<
\key b\minor
\clef alto
\partial 4
\transpose b b

\partCombineUp \soprano \alto
\partCombineDown \tenor \bass

\layout {
  \context {
    \Staff
    \accepts "VoiceBox"
  }
  \context {
    \name "VoiceBox"
    \type "Engraver_group"
    \defaultchild "Voice"
    \accepts "Voice"
    \accepts "NullVoice"
  }
}

customPartCombineUp =
#:\define-music-function (partOne partTwo)
  (ly:music? ly:music?)
  "Take the music in \var{partOne} and \var{partTwo} and return
  a @code{VoiceBox} named @q{Up} containing @code{Voice}s
  that contain \var{partOne} and \var{partTwo} merged into one
  voice where feasible. This variant sets the default voicing
  in the output to use upward stems."
  #{
  \new VoiceBox = "Up" <<
    \context Voice = "one" { \voiceOne }
    \context Voice = "two" { \voiceThree }
    \context Voice = "shared" { \voiceOne }
    \context Voice = "solo" { \voiceOne }
    \context NullVoice = "null" {}  
    \partCombine #partOne #partTwo
  }}

customPartCombineDown =
#:\define-music-function (partOne partTwo)
  (ly:music? ly:music?)
  "Take the music in \var{partOne} and \var{partTwo} and return
  a @code{VoiceBox} named @q{Down} containing @code{Voice}s
  that contain \var{partOne} and \var{partTwo} merged into one
  voice where feasible. This variant sets the default voicing
  in the output to use downward stems."
  #{
  \new VoiceBox = "Down" <<
    \set VoiceBox.soloText = "Solo III"
    \set VoiceBox.soloIIText = "Solo IV"
    \context Voice = "one" { \voiceFour }
    \context Voice = "two" { \voiceTwo }
    \context Voice = "shared" { \voiceFour }
  }}
Simultaneous notes

\context Voice ="solo" { \voiceFour }
\context NullVoice = "null" {}
\partCombine #partOne #partTwo
>>
#

```plaintext
soprano = { d'4 | cis' b e' d'8 cis' | cis'2 b }
alto = { fis4 | e8 fis gis ais b4 b | b ais fis2 }
tenor = { a8 b | cis' dis' e'4 b8 cis' d'4 | gis cis' dis'2 }
bass = { fis8 gis | a4 gis g fis | eis fis b,2 }
```

```plaintext
\new Staff <<
 \key b\minor
 \clef alto
 \partial 4
 \transpose b b'
 \customPartCombineUp \soprano \alto
 \customPartCombineDown \tenor \bass
>>
```

![Musical notation image]
Staff notation

Section “Staff notation” in Notation Reference

Adding ambitus per voice

Ambitus can be added per voice. In this case, the ambitus must be moved manually to prevent collisions.

```
\new Staff <<
  \new Voice \with {
    \consists "Ambitus_engraver"
  } \relative c'' {
    \override Ambitus.X-offset = #2.0
    \voiceOne
    c4 a d e
    f1
  }
  \new Voice \with {
    \consists "Ambitus_engraver"
  } \relative c' {
    \voiceTwo
    es4 f g as
    b1
  }

>>
```

Adding an extra staff

An extra staff can be added (possibly temporarily) after the start of a piece.

```
\score {
  \new Staff \relative c'' {
    c1 | c | c | c | c
  }
  \new StaffGroup \relative c'' {
    \new Staff {
      c1 | c
      <<
      { c1 | d }
    }
    \new Staff {
      \once \omit Staff.TimeSignature
      c1 | b
    }
  }
  >>
  c1
```
Adding an extra staff at a line break

When adding a new staff at a line break, some extra space is unfortunately added at the end of the line before the break (to fit in a key signature change, which will never be printed anyway). The workaround is to add a setting of Staff.explicitKeySignatureVisibility as is shown in the example.

\score { 
  \new StaffGroup \relative c'' { 
    \new Staff 
    \key f \major 
    c1 c"Unwanted extra space" \break 
    \( \text{<< } { c1 | c } \text{ \break} \) 
    \new Staff { 
      \key f \major 
      \once \omit Staff.TimeSignature 
      c1 | c 
    } 
  } 
  \( \text{\break} \text{\break} \text{\break} \text{\break} \) 
  c1 \( \text{\break} \text{\break} \text{\break} \text{\break} \) 
  c1 | c"Fixed here" \break 
  \( \text{\break} \text{\break} \text{\break} \text{\break} \) 
  \new Staff { 
    \once \set Staff.explicitKeySignatureVisibility = \#end-of-line-invisible 
    \key f \major 
    \once \omit Staff.TimeSignature 
    c1 | c 
  } 
  \( \text{\break} \text{\break} \text{\break} \text{\break} \) 
  \new Staff { 
    \once \omit Staff.TimeSignature 
    c1 | c 
  } 
} 

Unwanted extra space
Adding indicators to staves which get split after a break

This snippet defines the \splitStaffBarLine, convUpStaffBarLine and convDownStaffBarLine commands. These add arrows at a bar line, to denote that several voices sharing a staff will each continue on a staff of their own in the next system, or that voices split in this way recombine.

\begin{verbatim}
#(define-markup-command (arrow-at-angle layout props angle-deg length fill) 
  (number? number? boolean?)
  (let* 
    ((PI-OVER-180 (/ (atan 1 1) 34))
     (degrees->radians (lambda (degrees) (* degrees PI-OVER-180)))
     (angle-rad (degrees->radians angle-deg))
     (target-x (* length (cos angle-rad)))
     (target-y (* length (sin angle-rad))))
  (interpret-markup layout props
    markup#:translate (cons (/ target-x 2) (/ target-y 2))
    #:rotate angle-deg
    #:translate (cons (/ length -2) 0)
    #:concat (#:draw-line (cons length 0)
              #:arrow-head X RIGHT fill))))

splitStaffBarLineMarkup = \markup \with-dimensions #'(0 . 0) #'(0 . 0) {
 \combine
 \arrow-at-angle #45 #(sqrt 8) ##t
 \arrow-at-angle #-45 #(sqrt 8) ##t
}

splitStaffBarLine = {
 \once \override Staff.BarLine.stencil =
  #(lambda (grob)
    (ly:stencil-combine-at-edge
      (ly:bar-line::print grob)
      X RIGHT
    (grob-interpret-markup grob splitStaffBarLineMarkup))
\end{verbatim}
\begin{verbatim}
convDownStaffBarLine = {
  \once \override Staff.BarLine.stencil =
  #(lambda (grob)
    (ly:stencil-combine-at-edge
      (ly:bar-line::print grob)
      X RIGHT
      (grob-interpret-markup grob #{
        \markup\with-dimensions #'(0 . 0) #'(0 . 0) {
          \translate #'(0 . -.13)\arrow-at-angle #-45 #(sqrt 8) ##t
        }#}
      0))
  )
}

convUpStaffBarLine = {
  \once \override Staff.BarLine.stencil =
  #(lambda (grob)
    (ly:stencil-combine-at-edge
      (ly:bar-line::print grob)
      X RIGHT
      (grob-interpret-markup grob #{
        \markup\with-dimensions #'(0 . 0) #'(0 . 0) {
          \translate #'(0 . 14)\arrow-at-angle #45 #(sqrt 8) ##t
        }#}
      0))
  )
}

\paper {
  ragged-right = ##t
  short-indent = 10\mm
}

separateSopranos = {
  \set Staff.instrumentName = "AI AII"
  \set Staff.shortInstrumentName = "AI AII"
  \splitStaffBarLine
  \change Staff = "up"
}

convSopranos = {
  \convDownStaffBarLine
  \change Staff = "shared"
  \set Staff.instrumentName = "S A"
  \set Staff.shortInstrumentName = "S A"
}

sI = {
\end{verbatim}
\voiceOne
\repeat unfold 4 f'2
\separateSopranos
\repeat unfold 4 g'2
\convSopranos
\repeat unfold 4 c'2
}
sII = {
s1*2
\voiceTwo
\change Staff = "up"
\repeat unfold 4 d'2
}
aI = {
\voiceTwo
\repeat unfold 4 a'2
\voiceOne
\repeat unfold 4 b'2
\convUpStaffBarLine
\voiceTwo
\repeat unfold 4 g'2
}
aII = {
s1*2
\voiceTwo
\repeat unfold 4 g'2
}
ten = {
\voiceOne
\repeat unfold 4 c'2
\repeat unfold 4 d'2
\repeat unfold 4 c'2
}
bas = {
\voiceTwo
\repeat unfold 4 f2
\repeat unfold 4 g2
\repeat unfold 4 c2
}

\score {
<<
\new ChoirStaff <<
\new Staff = up \with {
  instrumentName = "SI SII"
  shortInstrumentName = "SI SII"
} { s1*4
}

\new Staff = shared \with {
  instrumentName = "S A"
}
shortInstrumentName = "S A"
}
\new Voice = sopI \sI
\new Voice = sopII \sII
\new Voice = altI \aI
\new Voice = altII \aII
>>
\new Lyrics \with {
  alignBelowContext = up
}
\lyricsto sopII { e f g h }
\new Lyrics \lyricsto altI { a b c d e f g h i j k l }
\new Staff = men \with {
  instrumentName = "T B"
  shortInstrumentName = "T B"
}
<<
\clef F
\new Voice = ten \ten
\new Voice = bas \bas
>>
\new Lyrics \lyricsto bas { a b c d e f g h i j k l }
>>
>>
\layout {
  \context {
    \Staff \RemoveEmptyStaves
    \override VerticalAxisGroup.remove-first = ##t
  }
}
}
Adding orchestral cues to a vocal score

This shows one approach to simplify adding many orchestral cues to the piano reduction in a vocal score. The music function \cwhile takes four arguments: the music from which the cue is to be taken, as defined by \addquote, the name to be inserted before the cue notes, then either \up or \down to specify either \voiceone with the name above the staff or \voicetwo with the name below the staff, and finally the piano music in parallel with which the cue notes are to appear. The name of the cued instrument is positioned to the left of the cued notes. Many passages can be cued, but they cannot overlap each other in time.

\cwhile =
\(\text{(define-music-function)}\)
\((\text{instrument name dir music})\)
\((\text{string? string? ly:dir? ly:music?})\)
\#{
\cDuring $instrument \#dir {
\once \override \text{Script.self-alignment-X} = \#RIGHT
\once \override \text{Script.direction} = \#dir
<->-\markup { \tiny \#name }
$music
}
}#}

\flute = \relative c' \{{
\transposition c'
\s4 s4 e g
}\}
\addquote "flute" { \flute }
clarinet = \relative c' { 
    \transposition bes
    fis4 d d c
}
\addQuote "clarinet" { \clarinet }

singer = \relative c'' { c4. g8 g4 bes4 }
words = \lyricmode { here's the lyrics }

pianoRH = \relative c' { 
    \transposition c'
    \cueWhile "clarinet" "Clar." #DOWN { c4. g8 }
    \cueWhile "flute" "Flute" #UP { g4 bes4 }
}
pianoLH = \relative c { c4 <c' e> e, <g c> }

\score { <<
    \new Staff { 
        \new Voice = "singer" { 
            \singer
        }
    }
    \new Lyrics { 
        \lyricsto "singer"
        \words
    } \new PianoStaff <<
    \new Staff { 
        \new Voice { 
            \pianoRH
        }
    }
    \new Staff { 
        \clef "bass"
        \pianoLH
    } >> >> 
}
Adding timing marks to long glissandi

Skipped beats in very long glissandi are sometimes indicated by timing marks, often consisting of stems without noteheads. Such stems can also be used to carry intermediate expression markings.

If the stems do not align well with the glissando, they may need to be repositioned slightly.

```
\relative c' { 
  r8 f8\glissando \glissandoSkipOn 
  f4 g a a8\noBeam \glissandoSkipOff a8 

  r8 f8\glissando \glissandoSkipOn 
  g4 a8 \glissandoSkipOff a8 |

  r4 f\glissando < \glissandoSkipOn 
  a4 f \> \glissandoSkipOff b8\! r |
}
```
Alternative bar numbering

Two alternative methods for bar numbering can be set, especially for when using repeated music.

\relative c'\{
  \set Score.alternativeNumberingStyle = #'numbers
  \repeat volta 3 { c4 d e f | }
  \alternative {
    { c4 d e f | c2 d \break }
    { f4 g a b | f4 g a b | f2 a | \break }
    { c4 d e f | c2 d }
  }
  c1 \break
  \set Score.alternativeNumberingStyle = #'numbers-with-letters
  \repeat volta 3 { c,4 d e f | }
  \alternative {
    { c4 d e f | c2 d \break }
    { f4 g a b | f4 g a b | f2 a | \break }
    { c4 d e f | c2 d }
  }
  c1\}
}
Ambitus after key signature

By default, ambitus are positioned at the left of the clef. The \ambitusAfter function allows for changing this placement. Syntax is \ambitusAfter grob-interface (see Graphical Object Interfaces (http://lilypond.org/doc/v2.22/Documentation/internals/graphical-object-interfaces) for a list of possible values for grob-interface.)

A common use case is printing the ambitus between key signature and time signature.

\new Staff \with { 
  \consists Ambitus_engraver 
} \relative { 
  \ambitusAfter key-signature 
  \key d \major 
  es'8 g bes cis d2 
}

Centered measure numbers

Scores of large ensemble works often have bar numbers placed beneath the system, centered horizontally on the measure's extent. This snippet shows how the Measure_counter_engraver may be used to simulate this notational practice. Here, the engraver has been added to a Dynamics context.

This snippet presents a legacy method: starting from LilyPond 2.23.3, \set Score.centerBarNumbers = ##t is enough.

\layout { 
  \context { 
    \Dynamics 
    \consists #Measure_counter_engraver 
    \override MeasureCounter.direction = #DOWN 
    \override MeasureCounter.font-encoding = #'latin1 
    \override MeasureCounter.font-shape = #'italic 
    \% to control the distance of the Dynamics context from the staff: 
    \override VerticalAxisGroup.nonstaff-relatedstaff-spacing.padding = #2 
  } 
  \context { 
    \Score 
    \remove "Bar_number_engraver" 
  } 
}

pattern = \repeat unfold 7 { c'4 d' e' f' }

\new StaffGroup \< 
  \new Staff { 
    \pattern 
  } 
  \new Staff { 
    \pattern 
  }
\new Dynamics {
 \startMeasureCount
 s1*7
 \stopMeasureCount
}

Changing the default bar lines

Default bar lines can be changed when re-defined in a score context.

%% http://lsr.di.unimi.it/LSR/Item?id=964

\layout {
 \context {
  % Changing the defaults from engraver-init.ly
  measureBarType = #"!"
  startRepeatBarType = #"[::]
  endRepeatBarType = #"[::]
  doubleRepeatBarType = #"[::][::]
  }

  %% example:
  {
  c'1
  \repeat volta 2 { \repeat unfold 2 c' }
  \repeat volta 2 { \repeat unfold 2 c' }
  \alternative {
   { c' }
   {
    % v2.18 workaround
    \once\override Score.VoltaBracket.shorten-pair = #'(1 . -1)
    c'
   }
  }
  \bar "|:"
  }
}
Changing the number of lines in a staff

The number of lines in a staff may changed by overriding the StaffSymbol property line-count.

```latex
upper = \relative c'' { c4 d e f }
lower = \relative c { \clef bass c4 b a g }
\score { \context PianoStaff << \new Staff { \relative c' { \dynamicDown c8|ff c c c c c c c } } \new Staff { \override \StaffSymbol.staff-line-count = #4 \relative c { \clef bass c4 d e f } } \new Staff \with { \fontSize = #-3 \override \StaffSymbol.staff-space = #(\magstep -3) } } }
```

Changing the staff size

Though the simplest way to resize staves is to use \#(set-global-staff-size xx), an individual staff’s size can be changed by scaling the properties \staff-space and \fontSize.

```latex
<< \new Staff { \relative c'' { \dynamicDown c8|ff c c c c c c c } } \new Staff \with { \fontSize = #-3 \override \StaffSymbol.staff-space = #(\magstep -3) } }
```
Creating blank staves

To create blank staves, generate empty measures then remove the Bar_number_engraver from the Score context, and the Time_signature_engraver, Clef_engraver and Bar_engraver from the Staff context.

```latex
\#(set-global-staff-size 20)
\score {
  \repeat unfold 12 { s1 \break }
} \layout {
  indent = 0\in
  \context { \Staff \remove "Time_signature_engraver"
          \remove "Clef_engraver"
          \remove "Bar_engraver"
    }
  \context { \Score \remove "Bar_number_engraver"
        }
}

% uncomment these lines for "letter" size
%
\paper {
  #(set-paper-size "letter")
  ragged-last-bottom = ##f
  line-width = 7.5\in
  left-margin = 0.5\in
  bottom-margin = 0.25\in
  top-margin = 0.25\in
}
%

% uncomment these lines for "A4" size
```
%{
\paper {
  #(set-paper-size "a4")
  ragged-last-bottom = ##f
  line-width = 180
  left-margin = 15
  bottom-margin = 10
  top-margin = 10
}
%}
Creating custom key signatures

LilyPond supports custom key signatures. In this example, print for D minor with an extended range of printed flats.

\new Staff \with {
\override StaffSymbol.line-count = #8
\override KeySignature.flat-positions = #'((-7 . 6))
\override KeyCancellation.flat-positions = #'((-7 . 6))
% presumably sharps are also printed in both octaves
\override KeySignature.sharp-positions = #'((-6 . 7))
\override KeyCancellation.sharp-positions = #'((-6 . 7))

\override Clef.stencil = #
(lambda (grob)(\grob-interpret-markup grob
#(\musicglyph "clefs.C"
\translate #'(-3 . -2)
\musicglyph "clefs.F"
#)))
clefPosition = #3
middleCPosition = #3
middleCClefPosition = #3
}

{\key d\minor
f bes, f bes,
}

Creating double-digit fingerings

Creating fingerings larger than 5 is possible.

\relative c' {
\relative c' {
c1-10
c1-50
c1-36
c1-29
}

Cross staff stems

This snippet shows the use of the \Span_stem_engraver and \crossStaff to connect stems across staves automatically.

The stem length need not be specified, as the variable distance between noteheads and staves is calculated automatically.
\layout {
    \context {
        \PianoStaff
        \consists "Span_stem_engraver"
    }
}

{\new PianoStaff <<
    \new Staff {
        <b d'>4 r d'16> e'8. g8 r!\e'8 f' g'4 e'2
    }
    \new Staff {
        \clef bass
        \voiceOne
        \autoBeamOff
        \crossStaff { <e g>4 e, g16 a8. c8} d
        \autoBeamOn
        g8 f g4 c2
    }
}

Display bracket with only one staff in a system

If there is only one staff in one of the staff types ChoirStaff or StaffGroup, by default the bracket and the starting bar line will not be displayed. This can be changed by overriding collapse-height to set its value to be less than the number of staff lines in the staff.

Note that in contexts such as PianoStaff and GrandStaff where the systems begin with a brace instead of a bracket, another property has to be set, as shown on the second system in the example.

\score {
    \new StaffGroup <<
    % Must be lower than the actual number of staff lines
    \override StaffGroup.SystemStartBracket.collapse-height = #4
    \override Score.SystemStartBar.collapse-height = #4
    \new Staff {
        c'1
    }
}

\score {
    \new PianoStaff <<
Extending a TrillSpanner

For TrillSpanner, the minimum-length property becomes effective only if the set-spacing-rods procedure is called explicitly.

To do this, the springs-and-rods property should be set to ly:spanner::set-spacing-rods.

\relative c' {  
\key c\minor  
\time 2/4  
c16( as') c,\-. des-.  
\once\override TrillSpanner.minimum-length = #15  
\once\override TrillSpanner.springs-and-rods = #ly:spanner::set-spacing-rods  
\afterGrace es4  
\startTrillSpan { d16[( \stopTrillSpan es)] }  
c( c' g es c g' es d  
\hideNotes  
c8)  
}

Extending glissandi across repeats

A glissando which extends into several \alternative blocks can be simulated by adding a hidden grace note with a glissando at the start of each \alternative block. The grace note should be at the same pitch as the note which starts the initial glissando. This is implemented here with a music function which takes the pitch of the grace note as its argument.

Note that in polyphonic music the grace note must be matched with corresponding grace notes in all other voices.

repeatGliss = #(define-music-function (grace)  
(ly:pitch?)  
#{
\once \override Glissando.springs-and-rods
  = #ly:spanner::set-spacing-rods
\once \override Glissando.minimum-length = #3.5
\once \hideNotes
\grace $\grace \glissando$
\}

\score {\relative c'' {\repeat volta 3 {c4 d e f}\glissando}
  \alternative {
    {g2 d}
    {\repeatGliss f g2 e}
    {\repeatGliss f e2 d}
  }
}

\music = \relative c' {\voiceOne
  \repeat volta 2 {
    g a b c\glissando
  }
  \alternative {
    {d1}
    {\repeatGliss c \once \omit StringNumber e1\2}
  }
}

\score {
  \new StaffGroup <<
  \new Staff <<
   \new Voice { \clef "G_8" \music}
  >>
  \new TabStaff <<
   \new TabVoice { \clef "moderntab" \music}
  >>
  >>
}
Flat Ties

The function takes the default Tie.stencil as an argument, calculating the result relying on the extents of this default.

Further tweaking is possible by overriding Tie.details.height-limit or with \shape. It’s also possible to change the custom-definition on the fly.

#((flared-tie coords) grob)

(define (pair-to-list pair)
 (list (car pair) (cdr pair)))

(define (normalize-coords goods x y dir)
 (map
  (lambda (coord)
    ;(coord-scale coord (cons x (* y dir)))
    (cons (* x (car coord)) (* y dir (cdr coord))))
  goods))

(define (my-c-p-s points thick)
 (make-connected-path-stencil
  points
  thick
  1.0
  1.0
  #f
  #f))

(let ((sten (ly:tie::print grob)))
 (if (grob::is-live? grob)
   (let* ((layout (ly:grob-layout grob))
           (line-thickness (ly:output-def-lookup layout 'line-thickness))
           (thickness (ly:grob-property grob 'thickness 0.1))
           (used-thick (* line-thickness thickness))
           (dir (ly:grob-property grob 'direction))
           (xex (ly:stencil-extent sten X))
           (yex (ly:stencil-extent sten Y))
           (lenx (interval-length xex))
           (leny (interval-length yex))
           (xtrans (car xex))
           (ytrans (if (> dir 0) (car yex) (cdr yex))))
(uplist
 (map pair-to-list
  (normalize-coords coords lenx (* leny 2) dir)))))

(ly:stencil-translate
 (my-c-p-s uplist used-thick)
 (cons xtrans ytrans))'
)

#(define flare-tie
 (flared-tie '((0 . 0)(0.1 . 0.2) (0.9 . 0.2) (1.0 . 0.0)))))

\layout {
 context {
  \Voice
  \override Tie.stencil = #flare-tie
 }
 }

\paper { ragged-right = ##f }

\relative c' {
  a4-a
  \override Tie.height-limit = 4
  a'4-a
  a'4-a
  <a,, c e a c e a c e>- q

  \break
  a'4-a
  \once \override Tie.details.height-limit = 14
  a4-a

  \break
  a4-a
  \once \override Tie.details.height-limit = 0.5
  a4-a

  \break
  a4-a
  \shape #'(0 . 0) (0 . 0.4) (0 . 0.4) (0 . 0)) Tie
  a4-a

  \break
  a4-a
  \once \override Tie.stencil =
    #(flared-tie '((0 . 0)(0.1 . 0.4) (0.9 . 0.4) (1.0 . 0.0)))
  a4-a

a4-a
\once \override Tie.stencil =
   #(flared-tie '((0 . 0)(0.06 . 0.1) (0.94 . 0.1) (1.0 . 0.0)))
a4-a

Forcing measure width to adapt to MetronomeMark’s width

By default, metronome marks do not influence horizontal spacing.

This can be solved through a simple override, as shown in the second half of the example.

example = {
    \tempo "Allegro"
    R1*6
    \tempo "Rall."
    R1*2
    \tempo "A tempo"
    R1*8
}

{
    \compressMMRests {
        \example
        R1
        R1
        \override Score.MetronomeMark.extra-spacing-width = #'(-3 . 0)
        \example
    }
}
Glissandi can skip grobs

NoteColumn grobs can be skipped over by glissandi.
\relative c' {
    a2 \glissando
    \once \override NoteColumn.glissando-skip = ##t
    f''4 d,
}

Incipit

When transcribing mensural music, an incipit at the beginning of the piece is useful to indicate the original key and tempo. While today musicians are used to bar lines in order to faster recognize rhythmic patterns, bar lines were not yet invented during the period of mensural music; in fact, the meter often changed after every few notes. As a compromise, bar lines are often printed between the staves rather than on the staves.

% With 2.23. this throws:
% programming error: Loose column does not have right side to attach to.
% Likely "Hidden BarLine during note yields programming error"
% https://gitlab.com/lilypond/lilypond/-/issues/4084
% --Harm

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% A short excerpt from the Jubilate Deo by Orlande de Lassus
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

global = {
    \set Score.skipBars = ##t
    \key g \major
    \time 4/4

    % the actual music
    \skip 1\times

    % let finis bar go through all staves
    \override Staff.BarLine.transparent = ##f
\% finis bar
\bar "|.

\begin{verbatim}
\begin{verbatim}
discantusIncipit = {
  \clef "neomensural-c1"
  \key f \major
  \time 2/2
  c''1.
}

discantusNotes = {
  \transpose c' c'' {
    \clef "treble"
    d'2. d'4 |
    b e' d'2 |
    c'4 e'4.( d'8 c' b |
    a4) b a2 |
    b4.( c'8 d'4) c'4 |
    \once \hide NoteHead
    c'1 |
    b\breve |
  }
}

discantusLyrics = \lyricmode {
  Ju -- bi -- la -- te De -- o,
  om -- nis ter -- ra, -- om-
  "...
  -us.
}

altusIncipit = {
  \clef "neomensural-c3"
  \key f \major
  \time 2/2
  r1 f'1.
}

altusNotes = {
  \transpose c' c'' {
    \clef "treble"
    r2 g2. e4 fis g |
    a2 g4 e |
    fis g4.( fis16 e fis4) |
    g1 |
    \once \hide NoteHead
    g1 |
    g\breve |
  }
}
\end{verbatim}
\end{verbatim}
altusLyrics = \lyricmode {
   Ju -- bi -- la -- te
   De -- o, om -- nis ter -- ra,
   "..."
   -us.
}

tenorIncipit = {
   \clef "neomensural-c4"
   \key f \major
   \time 2/2
   r\longa
   r\breve
   r1 c'1.
}

tenorNotes = {
   \transpose c' c' {
      \clef "treble_8"
      R1 |
      R1 |
      R1 |
      % two measures
      r2 d'2. d'4 b e' |
      \once \hide NoteHead
      e'1 |
      d'\breve |
   }
}

tenorLyrics = \lyricmode {
   Ju -- bi -- la -- te
   "..."
   -us.
}

bassusIncipit = {
   \clef "mensural-f"
   \key f \major
   \time 2/2
   r\maxima
   f1.
}

bassusNotes = {
   \transpose c' c' {
      \clef "bass"
      R1 |
      R1 |
      R1 |
      R1 |
      g2. e4 |
once hide NoteHead
  e1 |
  g\breve |
}

bassusLyrics = \lyricmode {
  Ju -- bi-
  
  "...
  -us.
}

\score {
  <<
    \new StaffGroup = choirStaff <<<
    \new Voice = "discantusNotes" <<<
      \set Staff.instrumentName = "Discantus"
      \incipit discantusIncipit
      \global
      \discantusNotes
    >>
    \new Lyrics \lyricsto discantusNotes { \discantusLyrics }
    \new Voice = "altusNotes" <<<
      \set Staff.instrumentName = "Altus"
      \global
      \incipit altusIncipit
      \altusNotes
    >>
    \new Lyrics \lyricsto altusNotes { \altusLyrics }
    \new Voice = "tenorNotes" <<<
      \set Staff.instrumentName = "Tenor"
      \global
      \incipit tenorIncipit
      \tenorNotes
    >>
    \new Lyrics \lyricsto tenorNotes { \tenorLyrics }
    \new Voice = "bassusNotes" <<<
      \set Staff.instrumentName = "Bassus"
      \global
      \incipit bassusIncipit
      \bassusNotes
    >>
    \new Lyrics \lyricsto bassusNotes { \bassusLyrics }
    >>
  >>
\layout {
  \context {
    \Score
      \no bar lines in staves or lyrics
      \hide BarLine
  }
  \the next two instructions keep the lyrics between the bar lines
\context { 
  \Lyrics 
  \consists "Bar_engraver"
  \consists "Separating_line_group_engraver"
} 
\context { 
  \Voice 
  \% no slurs
  \hide Slur
  \% Comment in the below \"remove\" command to allow line breaking also at those bar lines where a note overlaps into the next measure. The command is commented out in this short example score, but especially for large scores, you will typically yield better line breaking and thus improve overall spacing if you comment in the following command. \%\remove "Forbid_line_break_engraver"
} 
\indent = 6\,\text{cm} 
\incipit-width = 4\,\text{cm} 
} 

Discantus  
\new Staff 
\职员 \\text{Jubilatemus.} 

Altus  
\new Staff 
\职员 \\text{Jubilatemus.} 

Tenor  
\new Staff 
\职员 \\text{Jubilatemus.} 

Bassus  
\new Staff 
\职员 \\text{Jubilatemus.} 

\\text{o, omnimis terrar, _ omn _ - us.} 
\\text{De o, omnimis terrar, _ omn _ - us.} 
\\text{Jubilatemus.} 
\\text{Jubilatemus.}
Inserting score fragments above a staff, as markups

The \markup command is quite versatile. In this snippet, it contains a \score block instead of texts or marks.

\begin{verbatim}
\tuning = \markup {
\score {
  \new Staff \with { \remove "Time_signature_engraver" }
  \clef bass
  \<c, g, d g>1
  \layout { \ragged-right = \##t \indent = \##c 0cm }
}
}\header {
  \title = "Solo Cello Suites"
  \subtitle = "Suite IV"
  \subsubtitle = \markup { Originalstimmung: \raise \##c 0.5 \tuning }
}\layout { \ragged-right = \##f }
\relative c' { \time 4/8 \tuplet 3/2 { c8 d e } \tuplet 3/2 { c d e }
  \tuplet 3/2 { c8 d e } \tuplet 3/2 { c d e }
  g8 a g a
  g8 a g a }
\end{verbatim}

Solo Cello Suites
Suite IV
Originalstimmung: \begin{figure}[h!]
\centering
\includegraphics[width=\textwidth]{example.png}
\end{figure}

Let TabStaff print the topmost string at bottom

In tablatures usually the first string is printed topmost. If you want to have it at the bottom change the stringOneTopmost-context-property. For a context-wide setting this could be done in layout as well.

\begin{verbatim}
\layout {
  \context { \Score
    \stringOneTopmost = \##f
  }
}
\end{verbatim}
Letter tablature formatting

Tablature can be formatted using letters instead of numbers.

```
music = \relative c { 
  c4 d e f 
  g4 a b c 
  d4 e f g 
}
```

```
\new Staff { 
  \clef "G_8"

  \music
}
\new TabStaff \with { 
  \tablatureFormat = #fret-letter-tablature-format
}
```

Staff notation
Tablature can be formatted using letters instead of numbers.
Making glissandi breakable

Setting the `breakable` property to `#t` in combination with `after-line-breaking` allows a glissando to break if it occurs at a line break:

```plaintext
\relative c'' {
    \override Glissando.breakable = ##t
    \override Glissando.after-line-breaking = ##t
    f1\glissando |
    \break
    a4 r2. |
    f1\glissando
    \once \glissandoSkipOn
    \break
    a2 a4 r4 |
}
```

Making some staff lines thicker than the others

For educational purposes, a staff line can be thickened (e.g., the middle line, or to emphasize the line of the G clef). This can be achieved by adding extra lines very close to the line that should be emphasized, using the `line-positions` property of the `StaffSymbol` object.

```plaintext
\override Staff.StaffSymbol.line-positions =
```
Staff notation

Measure counter

This snippet provides a workaround for emitting measure counters using transparent percent repeats.

```
<<
\context Voice = "foo" {
  \clef bass
c4 r g r
c4 r g r
c4 r g r
c4 r g r
}
\context Voice = "foo" {
  \set countPercentRepeats = ##t
  \hide PercentRepeat
  \override PercentRepeatCounter.staff-padding = #1
  \repeat percent 4 { s1 }
}
>>&>

Mensurstriche layout (bar lines between the staves)

*Mensurstriche*, bar lines between but not through staves, can be printed by setting `measureBarType` to "-span|" and using a grouping context that allows span bars, such as `StaffGroup`.

```
\layout {
  \context {
    \Staff {
      measureBarType = "-span|"
    }
  }
}

music = \fixed c'' {
c1
d2 \section e2
f1 \fine
}
```

\new StaffGroup <<
\new Staff \music
Modifying the Ottava spanner slope

It is possible to change the slope of the Ottava spanner.

\begin{verbatim}
\relative c'' {
  \override Staff.OttavaBracket.stencil = #"line-spanner::print
  \override Staff.OttavaBracket.bound-details = #"((left . ((Y . 0)
    (attach-dir . LEFT)
    (padding . 0)
    (stencil-align-dir-y . CENTER)))
    (right . ((Y . 5.0) ; Change the number here
        (padding . 0)
        (attach-dir . RIGHT)
        (text . , (make-draw-dashed-line-markup
            (cons 0 -1.2))))))

  \override Staff.OttavaBracket.left-bound-info = #"horizontal-line-spanner::calc-left-bound-info-and-text
  \override Staff.OttavaBracket.right-bound-info = #"horizontal-line-spanner::calc-right-bound-info

  ottava #1
  c1
  c''''1
}
\end{verbatim}

Nesting staves

The property systemStartDelimiterHierarchy can be used to make more complex nested staff groups. The command \set StaffGroup.systemStartDelimiterHierarchy takes an alphabetical list of the number of staves produced. Before each staff a system start delimiter can be given. It has to be enclosed in brackets and takes as much staves as the brackets enclose. Elements in the list can be omitted, but the first bracket takes always the complete number of staves. The possibilities are SystemStartBar, SystemStartBracket, SystemStartBrace, and SystemStartSquare.

\begin{verbatim}
\new StaffGroup
\relative c'' <<
\end{verbatim}
Non-traditional key signatures

The commonly used \key command sets the keyAlterations property, in the Staff context.

To create non-standard key signatures, set this property directly. The format of this command is a list:
\set Staff.keyAlterations =
   #`(((octave . step) . alter) ((octave . step) . alter) ...)

where, for each element in the list, octave specifies the octave (0 being the octave from middle C to the B above), step specifies the note within the octave (0 means C and 6 means B), and alter is ,SHARP ,FLAT ,DOUBLE-SHARP etc.

Alternatively, using the more concise format for each item in the list (step . alter) specifies the same alteration holds in all octaves.

For microtonal scales where a “sharp” is not 100 cents, alter refers to the alteration as a proportion of a 200-cent whole tone.
\include "arabic.ly"
\relative do' {
  \set Staff.keyAlterations = #`((0 . ,SEMI-FLAT)
                             (1 . ,SEMI-FLAT)
                             (2 . ,FLAT)
                             (5 . ,FLAT)
                             (6 . ,SEMI-FLAT))
}
\set Staff.extraNatural = ##f
Numbering groups of measures

This snippet demonstrates the use of the Measure_counter_engraver to number groups of successive measures. Any stretch of measures may be numbered, whether consisting of repetitions or not.

The engraver must be added to the appropriate context. Here, a Staff context is used; another possibility is a Dynamics context.

The counter is begun with \startMeasureCount and ended with \stopMeasureCount. Numbering will start by default with 1, but this behavior may be modified by overriding the count-from property.

When a measure extends across a line break, the number will appear twice, the second time in parentheses.

\layout {
  \context {
    \Staff
    \consists #Measure_counter_engraver
  }
}

\new Staff {
  \startMeasureCount
  \repeat unfold 7 {
    c'4 d' e' f'
  }
  \stopMeasureCount
  \bar "||"
  g'4 f' e' d'
  \override Staff.MeasureCounter.count-from = #2
  \startMeasureCount
  \repeat unfold 5 {
    g'4 f' e' d'
  }
  g'4 f'
  \bar ""
  \break
  e'4 d'
  \repeat unfold 7 {
    g'4 f' e' d'
  }
  \stopMeasureCount
}
Orchestra, choir and piano template

This template demonstrates the use of nested StaffGroup and GrandStaff contexts to sub-group instruments of the same type together, and a way to use \transpose so that variables hold music for transposing instruments at concert pitch.

#(set-global-staff-size 17)
\paper {
   indent = 3.0\cm % add space for instrumentName
   short-indent = 1.5\cm % add less space for shortInstrumentName
}
fluteMusic = \relative c' { \key g \major g'1 b }
% Pitches as written on a manuscript for Clarinet in A % are transposed to concert pitch.
clarinetMusic = \transpose c' a
   \relative c'' { \key bes \major bes1 d }
trumpetMusic = \relative c { \key g \major g''1 b }
% Key signature is often omitted for horns
hornMusic = \transpose c' f
   \relative c { d' fis }
percussionMusic = \relative c { \key g \major g1 b }
sopranoMusic = \relative c'' { \key g \major g'1 b }
sopranoLyrics = \lyricmode { Lyr -- ics }
altoIMusic = \relative c' { \key g \major g'1 b }
altoIIMusic = \relative c' { \key g \major g'1 b }
altoILyrics = \sopranoLyrics
altoIIlyrics = \lyricmode { Ah -- ah }
\begin{verbatim}

\score {
  \new StaffGroup = "StaffGroup_woodwinds" <<
  \new Staff = "Staff_flute" \with { instrumentName = "Flute" } \fluteMusic

  \new Staff = "Staff_clarinet" \with {
    instrumentName = \markup { \concat { "Clarinet in B" \flat } } 
  }

  % Declare that written Middle C in the music
  % to follow sounds a concert B flat, for
  % output using sounded pitches such as MIDI.
  %\transposition bes

  % Print music for a B-flat clarinet
  \transpose bes c' \clarinetMusic
}

\new StaffGroup = "StaffGroup_brass" <<
  \new Staff = "Staff_hornI" \with { instrumentName = "Horn in F" } \hornMusic

  \new Staff = "Staff_trumpet" \with { instrumentName = "Trumpet in C" } \trumpetMusic

  >>

\new RhythmicStaff = "RhythmicStaff_percussion" \with { instrumentName = "Percussion" } <<
  \percussionMusic
}
\end{verbatim}
\new PianoStaff \with { instrumentName = "Piano" }
<<
\new Staff \{ \pianoRHMusic \}
\new Staff \{ \pianoLHMusic \}
>>
\new ChoirStaff = "ChoirStaff_choir" <<
\new Staff = "Staff_soprano" \with { instrumentName = "Soprano" }
\new Voice = "soprano"
sopranoMusic

\new Lyrics \lyricsto "soprano" \{ \sopranoLyrics \}
\new GrandStaff = "GrandStaff_altos"
\with \{ \accepts Lyrics \} <<
\new Staff = "Staff_altoI" \with { instrumentName = "Alto I" }
\new Voice = "altoI"
altoIMusic

\new Lyrics \lyricsto "altoI" \{ \altoILyrics \}
\new Staff = "Staff_altoII" \with { instrumentName = "Alto II" }
\new Voice = "altoII"
altoIIMusic

\new Lyrics \lyricsto "altoII" \{ \altoIILyrics \}
>>
\new Staff = "Staff_tenor" \with { instrumentName = "Tenor" }
\new Voice = "tenor"
tenorMusic

\new Lyrics \lyricsto "tenor" \{ \tenorLyrics \}
>>
\new StaffGroup = "StaffGroup_strings" <<
\new GrandStaff = "GrandStaff_violins" <<
\new Staff = "Staff_violinI" \with { instrumentName = "Violin I" }
\violinIMusic

\new Staff = "Staff_violinII" \with { instrumentName = "Violin II" }
\violinIIMusic
>>
\new Staff = "Staff_viola" \with { instrumentName = "Viola" }
\violaMusic

\new Staff = "Staff_cello" \with { instrumentName = "Cello" }
\celloMusic

\new Staff = "Staff_bass" \with { instrumentName = "Double Bass" }
bassMusic
>>
>>
layout \{ \}
Print ChordNames with same root and different bass as slash and bass-note

To print subsequent ChordNames only differing in its bass note as slash and bass note use the here defined engraver. The behaviour may be controlled in detail by the chordChanges context property.

```
(define Bass_changes_equal_root_engraver
  (lambda (ctx)
    "For sequential @code{ChordNames} with same root, but different bass, the root markup is dropped: D D/C D/B -> D /C /B
The behaviour may be controlled by setting the @code{chordChanges} context-property."
    (let ((chord-pitches '())
          (last-chord-pitches '())
          (bass-pitch #f))
      (make- engraver
        ((initialize this-engraver)
         (initialize bass-engraver)
         (initialize lyric-engraver)
         (initialize bass-lyric-engraver)
         (initialize staff-notations)
         (initialize noteheads)
         (initialize accidentals)
         (initialize timesignatures)
         (initialize clefs)
         (initialize brace-handles)
         (initialize bracket-tips)
         (initialize print-chord-names)
         (initialize bass-changes)
         (initialize chord-changes)
         (initialize chordChanges)
         (initialize bassChanges)
         (initialize staff-notation)
         (initialize accidentals-sharp)
         (initialize noteheads-s0)
         (initialize lypics)
         (initialize lyric-ics)
         (initialize ahahics)
         (initialize ah-ahics)
         (initialize lyrics)
         (initialize bass-lyrics)
         (initialize staff-notations)
         (initialize noteheads)
         (initialize accidentals)
         (initialize timesignatures)
         (initialize clefs)
         (initialize brace-handles)
         (initialize bracket-tips)
         (initialize print-chord-names)
         (initialize bass-changes)
         (initialize chord-changes)
         (initialize chordChanges)
         (initialize bassChanges)
         (initialize staff-notation)
         (initialize accidentals-sharp)
         (initialize noteheads-s0)
         (initialize lypics)
         (initialize lyric-ics)
         (initialize ahahics)
         (initialize ah-ahics)
         (initialize lyrics)
         (initialize bass-lyrics)
         (initialize staff-notations)
         (initialize noteheads)
         (initialize accidentals)
         (initialize timesignatures)
         (initialize clefs)
         (initialize brace-handles)
         (initialize bracket-tips)
         (initialize print-chord-names)
         (initialize bass-changes)
         (initialize chord-changes)
         (initialize chordChanges)
         (initialize bassChanges)
         (initialize staff-notation)
         (initialize accidentals-sharp)
         (initialize noteheads-s0)
         (initialize lypics)
         (initialize lyric-ics)
         (initialize ahahics)
         (initialize ah-ahics)
         (initialize lyrics)
         (initialize bass-lyrics)
         (initialize staff-notations)
         (initialize noteheads)
         (initialize accidentals)
         (initialize timesignatures)
         (initialize clefs)
         (initialize brace-handles)
         (initialize bracket-tips)
         (initialize print-chord-names)
         (initialize bass-changes)
         (initialize chord-changes)
         (initialize chordChanges)
         (initialize bassChanges)
         (initialize staff-notation)
         (initialize accidentals-sharp)
         (initialize noteheads-s0)
         (initialize lypics)
         (initialize lyric-ics)
         (initialize ahahics)
         (initialize ah-ahics)
         (initialize lyrics)
         (initialize bass-lyrics)
         (initialize staff-notations)
         (initialize noteheads)
         (initialize accidentals)
         (initialize timesignatures)
         (initialize clefs)
         (initialize brace-handles)
         (initialize bracket-tips)
         (initialize print-chord-names)
         (initialize bass-changes)
         (initialize chord-changes)
         (initialize chordChanges)
         (initialize bassChanges)
         (initialize staff-notation)
         (initialize accidentals-sharp)
         (initialize noteheads-s0)
         (initialize lypics)
         (initialize lyric-ics)
         (initialize ahahics)
         (initialize ah-ahics)
         (initialize lyrics)
         (initialize bass-lyrics)
         (initialize staff-notations)
         (initialize noteheads)
(let ((chord-note-namer (ly:context-property ctx 'chordNoteNamer)))
  ;; Set 'chordNoteNamer, respect user setting if already done
  (ly:context-set-property! ctx 'chordNoteNamer
   (if (procedure? chord-note-namer)
       chord-note-namer
       note-name->markup)))

(listeners
  ((note-event this-engraver event)
   (let* ((pitch (ly:event-property event 'pitch))
       (pitch-name (ly:pitch-notename pitch))
       (pitch-alt (ly:pitch-alteration pitch))
       (bass (ly:event-property event 'bass #f))
       (inversion (ly:event-property event 'inversion #f)))
    ;; Collect notes of the chord
    ;; - to compare inverted chords we need to collect the bass note
    ;;   as usual member of the chord, whereas an added bass must be
    ;;   treated separate from the usual chord-notes
    ;; - notes are stored as pairs containing their
    ;;   pitch-name (an integer), i.e. disregarding their octave and
    ;;   their alteration
    (cond (bass (set! bass-pitch pitch))
      (inversion
       (set! bass-pitch pitch)
       (set! chord-pitches (cons (cons pitch-name pitch-alt) chord-pitches)))
      (else
       (set! chord-pitches (cons (cons pitch-name pitch-alt) chord-pitches))))))

(acknowledgers
  ((chord-name-interface this-engraver grob source-engraver)
   (let ((chord-changes (ly:context-property ctx 'chordChanges #f)))
    ;; If subsequent chords are equal apart from their bass,
    ;; reset the 'text-property.
    ;; Equality is done by comparing the sorted lists of this chord's
    ;; elements and the previous chord. Sorting is needed because
    ;; inverted chords may have a different order of pitches.
    ;; 'chord-changes' needs to be true
    (if (and bass-pitch
       (equal? (sort chord-pitches car) (sort last-chord-pitches car))
       (ly:grob-set-property! grob 'text
        (make-line-markup
         (list (ly:context-property ctx 'slashChordSeparator)
               (ly:context-property ctx 'chordNoteNamer)
               bass-pitch
               (ly:context-property ctx 'chordNameLowercaseMinor))))))
     (set! last-chord-pitches chord-pitches)
     (set! chord-pitches '())
     (set! bass-pitch #f))))
Putting lyrics inside the staff

Lyrics can be moved vertically to place them inside the staff. The lyrics are moved with \override LyricText.extra-offset = #'(0 . dy) and there are similar commands to move the extenders and hyphens. The offset needed is established with trial and error.
\new Lyrics \with {
  \override LyricText.extra-offset = #'(0 . 8.6)
  \override LyricExtender.extra-offset = #'(0 . 8.6)
  \override LyricHyphen.extra-offset = #'(0 . 8.6)
} \lyricsto "voc" \{ La la -- la __ _ la \}

\Quoting another voice

The quotedEventTypes property determines the music event types which should be quoted. The default value is (note-event rest-event tie-event beam-event tuplet-span-event), which means that only the notes, rests, ties, beams and tuplets of the quoted voice will appear in the \quoteDuring expression.

In the following example, a 16th rest is not quoted since rest-event is not in quotedEventTypes.

For a list of event types, consult the “Music classes” section of the Internals Reference.

quoteMe = \relative c' \{ 
  fis4 r16 a8. -> b4\ff c 
} \addQuote quoteMe \quoteMe

original = \relative c'' \{ 
  c8 d s2 
  \once \override NoteColumn.ignore-collision = ##t 
  es8 gis8 
} <<<

\new Staff \with \{ instrumentName = "quoteMe" \} \quoteMe

\new Staff \with \{ instrumentName = "orig" \} \original

\new Staff \with \{ 
  instrumentName = "orig+quote"
  quotedEventTypes = #'(note-event articulation-event)
} \relative c'' <<<
\original \new Voice \{ 
  s4 
  \set fontSize = #-4 
  \override Stem.length-fraction = #(magstep -4)
Quoting another voice with transposition

Quotations take into account the transposition of both source and target. In this example, all instruments play sounding middle C; the target is an instrument in F. The target part may be transposed using \transpose. In this case, all the pitches (including the quoted ones) are transposed.

\addQuote clarinet {
  \transposition bes
  \repeat unfold 8 { d'16 d' d'8 }
}

\addQuote sax {
  \transposition es'
  \repeat unfold 16 { a8 }
}

quoteTest = {
  \% french horn
  \transposition f
  g'4
  << \quoteDuring "clarinet" { \skip 4 } s4^"clar." >>
  << \quoteDuring "sax" { \skip 4 } s4^"sax." >>
  g'4
}

{ \new Staff \with {
    instrumentName = \markup { \column { Horn "in F" } }
  }
  \quoteTest
  \transpose c' d' << \quoteTest s4_"up a tone" >>
}

Horn in F clar. sax. up a tone
Removing brace on first line of piano score

This snippet removes the first brace from a PianoStaff or a GrandStaff. It may be useful when cutting and pasting the engraved image into existing music. It uses \alterBroken.

```latex
someMusic = {
    \once \override Staff.Clef.stencil = ##f
    \once \override Staff.TimeSignature.stencil = ##f
    \repeat unfold 3 c1 \break
    \repeat unfold 5 c1 \break
    \repeat unfold 5 c1
}

\score {
    \new PianoStaff
    <<
        \new Staff = "right" \relative c' { \someMusic \\
        \new Staff = "left" \relative c' { \clef F \someMusic }
    >>
    \layout {
        indent=75
        \context {
            \PianoStaff
            \alterBroken transparent #'(#t) SystemStartBrace
        }
    }
}
```

Removing the first empty line

The first empty staff can also be removed from the score by setting the VerticalAxisGroup property remove-first. This can be done globally inside the \layout block, or locally inside
the specific staff that should be removed. In the latter case, you have to specify the context (Staff applies only to the current staff) in front of the property.

The lower staff of the second staff group is not removed, because the setting applies only to the specific staff inside of which it is written.

\layout {
  \context {
    \Staff \RemoveEmptyStaves
    \override VerticalAxisGroup.remove-first = ##t
  }
}
\new StaffGroup <<
\new Staff {\relative c' {e4 f g a \break c1}}
\new Staff {\override Staff.VerticalAxisGroup.remove-first = ##t \break R1 R}>
>>
\new StaffGroup <<
\new Staff {\relative c' {e4 f g a \break c1}}
\new Staff {R1 \break R}>
>>

\begin{music}
\new Text {\text \textbf{Noteheads}}
\new Text {\text \textbf{Rests}}
\end{music}
Setting system separators

System separators can be inserted between systems. Any markup can be used, but \slashSeparator has been provided as a sensible default.

\paper {
  system-separator-markup = \slashSeparator
  line-width = 120
}

notes = \relative c’ {
  c1 | c \break
  c1 | c \break
  c1 | c
}

\book {
  \score {
    \new GrandStaff <<
      \new Staff \notes
      \new Staff \notes
    >>
  }
}
Tick bar lines

'Tick' bar lines are often used in music where the bar line is used only for coordination and is not meant to imply any rhythmic stress.

```latex
\relative c' {
  \set Score.measureBarType = #"\"
  c4 d e f
  g4 f e d
  c4 d e f
  g4 f e d
  \bar "|."}
```

Time signature in parentheses

The time signature can be enclosed within parentheses.

```latex
\relative c'' {
  \override Staff.TimeSignature.stencil = #(lambda (grob)
    (bracketify-stencil (ly:time-signature::print grob) Y 0.1 0.2 0.1))
  \time 2/4
  a4 b8 c}
```

Time signature in parentheses - method 3

Another way to put the time signature in parenthesis

```latex
\relative c'' {
  \override Staff.TimeSignature.stencil = #(lambda (grob)
    (parenthesize-stencil (ly:time-signature::print grob) 0.1 0.4 0.4 0.1 ))
  \time 2/4
  a4 b8 c}
```

Tweaking clef properties

Changing the Clef glyph, its position, or the ottavation does not change the position of subsequent notes on the staff. To get key signatures on their correct staff lines middleCClefPosition must also be specified, with positive or negative values moving middle C up or down respectively, relative to the staff's center line.

For example, \clef "treble_8" is equivalent to setting the clefGlyph, clefPosition (the vertical position of the clef itself on the staff), middleCPosition and clefTransposition. Note
that when any of these properties (except \texttt{middleCPosition}) are changed a new clef symbol is printed.

The following examples show the possibilities when setting these properties manually. On the first line, the manual changes preserve the standard relative positioning of clefs and notes, whereas on the second line, they do not.

\{
\%
% The default treble clef
\key f \major
\c'1
\%
% The standard bass clef
\set Staff.clefGlyph = \texttt{"clefs.F"}
\set Staff.clefPosition = #2
\set Staff.middleCPosition = #6
\set Staff.middleCClefPosition = #6
\key g \major
\c'1
\%
% The baritone clef
\set Staff.clefGlyph = \texttt{"clefs.C"}
\set Staff.clefPosition = #4
\set Staff.middleCPosition = #4
\set Staff.middleCClefPosition = #4
\key f \major
\c'1
\%
% The standard choral tenor clef
\set Staff.clefGlyph = \texttt{"clefs.G"}
\set Staff.clefPosition = #-2
\set Staff.clefTransposition = #-7
\set Staff.middleCPosition = #1
\set Staff.middleCClefPosition = #1
\key f \major
\c'1
\%
% A non-standard clef
\set Staff.clefPosition = #0
\set Staff.clefTransposition = #0
\set Staff.middleCPosition = #-4
\set Staff.middleCClefPosition = #-4
\key g \major
\c'1 \break
\%
% The following clef changes do not preserve
% the normal relationship between notes, key signatures
% and clefs:
\set Staff.clefGlyph = \texttt{"clefs.F"}
\set Staff.clefPosition = #2
\c'1
\set Staff.clefGlyph = \texttt{"clefs.G"}
\c'1
\set Staff.clefGlyph = \texttt{"clefs.C"}
\c'1
\set Staff.clefTransposition = #7
\}
Two \partCombine pairs on one staff

The \partCombine function takes two music expressions each containing a part, and distributes them among four Voices named “two”, “one”, “solo”, and “chords” depending on when and how the parts are merged into a common voice. The voices output from \partCombine can have their layout properties adjusted in the usual way. Here we define extensions of \partCombine to make it easier to put four voices on a staff.

soprano = \{ d'4 | cis' b e' d'8 cis' | cis'2 b \}
alto = \{ fis4 | e8 fis gis ais b4 b | b ais fis2 \}
tenor = \{ a8 b | cis' dis' e'4 b8 cis' d'4 | gis cis' dis'2 \}
bass = \{ fis8 gis | a4 gis g fis | eis fis b,2 \}

\new Staff <<
\key b\minor
\clef alto
\partial 4
\transpose b b'
\partCombineUp \soprano \alto
\partCombineDown \tenor \bass
>>

\layout {
  \context {
    \Staff
    \accepts "VoiceBox"
  }
  \context {
    \name "VoiceBox"
    \type "Engraver_group"
    \defaultchild "Voice"
    \accepts "Voice"
    \accepts "NullVoice"
  }
}
customPartCombineUp =
{define-music-function (partOne partTwo)
 (ly:music? ly:music?)
 "Take the music in @var{partOne} and @var{partTwo} and return
 a @code{VoiceBox} named @q{Up} containing @code{Voice}s
 that contain @var{partOne} and @var{partTwo} merged into one
 voice where feasible. This variant sets the default voicing
 in the output to use upward stems."
 #{
   \new VoiceBox = "Up" <<
   \context Voice = "one" { \voiceOne }
   \context Voice = "two" { \voiceThree }
   \context Voice = "shared" { \voiceOne }
   \context Voice = "solo" { \voiceOne }
   \context NullVoice = "null" {}
   \partCombine #partOne #partTwo
 >>
 }#}

customPartCombineDown = #
{define-music-function (partOne partTwo)
 (ly:music? ly:music?)
 "Take the music in @var{partOne} and @var{partTwo} and return
 a @code{VoiceBox} named @q{Down} containing @code{Voice}s
 that contain @var{partOne} and @var{partTwo} merged into one
 voice where feasible. This variant sets the default voicing
 in the output to use downward stems."
 #{
   \new VoiceBox = "Down" <<
   \set VoiceBox.soloText = "Solo III"
   \set VoiceBox.soloIIIText = "Solo IV"
   \context Voice = "one" { \voiceFour }
   \context Voice = "two" { \voiceTwo }
   \context Voice = "shared" { \voiceFour }
   \context Voice = "solo" { \voiceFour }
   \context NullVoice = "null" {}
   \partCombine #partOne #partTwo
 >>
 }#}

soprano = { d'4 | cis' b e' d'8 cis' | cis'2 b }
alto = { fis4 | e8 fis gis ais b4  b ais fis2 }
tenor = { a8 b | cis' dis' e'4 b8 cis' d'4 | gis cis' dis'2 }
bass = { fis8 gis | a4 gis g fis | eis fis b,2 }

\new Staff <<
\key b\minor
\clef alto
\partial 4
\transpose b b'
Use square bracket at the start of a staff group

The system start delimiter SystemStartSquare can be used by setting it explicitly in a StaffGroup or ChoirStaff context.

\score { 
\new StaffGroup { << 
\set StaffGroup.systemStartDelimiter = #'SystemStartSquare 
\new Staff { c'4 d' e' f' } 
\new Staff { c'4 d' e' f' } 
>> } }

Using autochange with more than one voice

Using autochange with more than one voice.

\score 
{ 
\new PianoStaff 
<< 
\new Staff = "up" { 
<< 
\set Timing.beamExceptions = #'() 
\set Timing.beatStructure = #'(4) 
\new Voice { 
\voiceOne 
\autoChange 
\relative c' { 
  g8 a b c d e f g 
  g,8 a b c d e f g 
} 
} 
\new Voice { 
\voiceTwo 
} 
}
Using marklines in a Frenched score

Using MarkLine contexts (such as in LSR1010 (https://lsr.di.unimi.it/LSR/Item?id=1010)) in a Frenched score can be problematic if all the staves between two MarkLines are removed in one system. The Keep_alive_together_engraver can be used within each StaffGroup to keep the MarkLine alive only as long as the other staves in the group stay alive.

bars = {
    \tempo "Allegro" 4=120
    s1*2
    \repeat unfold 5 { \mark \default s1*2 }
    \bar "||"
    \tempo "Adagio" 4=40
    s1*2
    \repeat unfold 8 { \mark \default s1*2 }
    \bar "|.
}
winds = \repeat unfold 120 { c'\'4 }
trumpet = { \repeat unfold 8 g'2 R1*16 \repeat unfold 4 g'2 R1*8 }
trombone = { \repeat unfold 4 c'1 R1*8 d'1 R1*17 }
strings = \repeat unfold 240 { c'\'8 }

#(set-global-staff-size 16)
paper {
    systems-per-page = 5
    ragged-last-bottom = ##f
}

layout {
    indent = 15\mm
\context {  
  \name MarkLine  
  \type Engraver_group  
  \consists Output_property_engraver  
  \consists Axis_group_engraver  
  \consists Mark_engraver  
  \consists Metronome_mark_engraver  
  \consists Staff_collecting_engraver  
  \override VerticalAxisGroup.remove-empty = ##t  
  \override VerticalAxisGroup.remove-layer = #'any  
  \override VerticalAxisGroup.staff-affinity = #DOWN  
  \override VerticalAxisGroup.nonstaff-relatedstaff-spacing.padding = 1  
  \keepAliveInterfaces = #'()  
}

\context {  
  \Staff  
  \override VerticalAxisGroup.remove-empty = ##t  
  \override VerticalAxisGroup.remove-layer = ##f  
}

\context {  
  \StaffGroup  
  \accepts MarkLine  
  \consists Keep_alive_together_engraver  
}

\context {  
  \Score  
  \remove Mark_engraver  
  \remove Metronome_mark_engraver  
  \remove Staff_collecting_engraver  
}

\score {  
  \new StaffGroup = "winds" \with {  
    \instrumentName = "Winds"  
    \shortInstrumentName = "Winds"  
  }  
  \new MarkLine \bars  
  \new Staff \winds  
  \new StaffGroup = "brass" \<  
  \new MarkLine \bars  
  \new Staff = "trumpet" \with {  
    \instrumentName = "Trumpet"  
    \shortInstrumentName = "Tpt"  
  } \trumpet  
  \new Staff = "trombone" \with {  
    \instrumentName = "Trombone"  
    \shortInstrumentName = "Tbn"  
  } \trombone
\new StaffGroup = "strings" \with {
  instrumentName = "Strings"
  shortInstrumentName = "Strings"
}\ <<
\new MarkLine \bars
\new Staff = "strings" { \strings }
\> \>
Vertical aligned StaffGroups without connecting SystemStartBar

This snippet shows how to achieve vertically aligned StaffGroups with a SystemStartBar for each StaffGroup, but without connecting them.

```plaintext
#(set-global-staff-size 18)

\paper {
    indent = 0
    ragged-right = ##f
    print-all-headers = ##t
}

\layout {
  \context {
    \StaffGroup
    \consists Text_mark_engraver
    \consists Staff_collecting_engraver
    systemStartDelimiterHierarchy =
      #'(SystemStartBrace (SystemStartBracket a b))
  }

  \context {
    \Score
    \remove Text_mark_engraver
    \remove Staff_collecting_engraver
    \override SystemStartBrace.style = #'bar-line
    \override SystemStartBrace.padding = #'-0.1
    \override SystemStartBrace.thickness = #1.6
    \override StaffGrouper.staffgroup-staff-spacing.basic-distance = #15
  }
}
%% EXAMPLE

txt = \lyricmode {
    Wer sich nur den lie -- ben Gott läßt wal2 -- ten
    und hof -- fet auf ihn al -- le Zeit.
}

% First StaffGroup "exercise"

eI = \relative c' {
    \textMark \markup {
        \bold Teacher:
        This is a simple setting of the choral. Please improve it.
    }
    \key a \minor
    \time 4/4
    \voiceOne

    \partial 4
    e4
    a b c b
    a b gis2
    e4\fermata g! g f
    e a a gis
    a2.\fermata
    \bar "|.|"
}

eII = \relative c' {
    \key a \minor
    \time 4/4
    \voiceTwo
    \partial 4
    c4
    e e e gis
    a f e2
    b4 b d d
    c c d d
    c2.
    \bar "|.|"
}

eIII = \relative c' {
    \key a \minor
    \time 4/4
    \clef bass
    \voiceOne
\partial 4 
a4 
c b a b 
c d b2 
gis4 g g b 
c a f e 
e2. 
}

\text{eIV} = 
\relative c' { 
  \key a \minor 
  \time 4/4 
  \clef bass 
  \voiceTwo 
  \partial 4 
a,4 
a' gis a e 
a, d e2 
e,4 \text{fermata} e' b g 
c f d e 
a,2 \text{fermata} 
  \bar ":\.|." 
}

\text{exercise} = 
\text{new StaffGroup} = "exercise"
<< 
  \text{new Staff} 
  << 
    \text{new Voice \eI} 
    \text{new Voice \eII} 
  >> 

\text{new Lyrics \txt}

\text{new Staff} 
<< 
  \text{new Voice \eIII} 
  \text{new Voice \eIV} 
>> 

% Second StaffGroup "simple Bach"

\text{sbI} = 
\relative c' { 
  \text{markup} { \text{\textbf{Pupil:}} \text{\textquoteright{Here's my version!}}} 
  \key a \minor 
  \time 4/4 
}
\voiceOne
\partial 4
e4
a b c b
a b gis2
e4:\fermata g! g f
e a a gis
a2.:\fermata
\bar ".:|.")

sbII =
\relative c' {
  \key a \minor
  \time 4/4
  \voiceTwo
  \partial 4
c8 d
e4 e e8 f g4
  f f e2
  b4 b8 c d4 d
e8 d c4 b8 c d4
c2.
  \bar ".:|.")
}

sbIII =
\relative c' {
  \key a \minor
  \time 4/4
  \clef bass
  \voiceOne

  \partial 4
  a8 b
c4 b a b8 c
d4 d8 c b2
gis4 g g8 a b4
  b a8 g f4 e
e2.
}

sbIV =
\relative c' {
  \key a \minor
  \time 4/4
  \clef bass
  \voiceTwo

  \partial 4
  a,4
\new \StaffGroup = "simple Bach"
<<
  \new \Staff
    <<
      \new \Voice \sbI
      \new \Voice \sbII
    >>

  \new \Lyrics \txt

  \new \Staff
    <<
      \new \Voice \sbIII
      \new \Voice \sbIV
    >>

% Third StaffGroup "chromatic Bach"

\cbI = \relative c' {
  \textMark \markup {
    \text "Teacher:" \column {
      "Well, you simply copied and transposed a version of J.S.Bach."
      "Do you know this one?"
    }
  }
  \key a \minor
  \time 4/4
  \voiceOne

  \partial 4
e4
  a b c b
  a b gis4. fis8
e4\fermata g! g f
e a a8 b gis4
  a2\fermata
  \bar ":.1."}
cbII =
\relative c' {{
  \key a \minor
  \time 4/4
  \partial 4
  c8 d
e4 e e8 fis gis4
a8 g! f!4 e2
b4 e e d
d8\[ cis\] d dis e fis e4
e2.
  \bar ":.:."
}
}

cbIII =
\relative c' {{
  \key a \minor
  \time 4/4
  \clef bass
  \partial 4
  a8 b
c[ b] a gis8 a4 d,
e8[ e'] d c b4. a8
gis4 b c d8 c
b[ a] a b c b b c16 d
c2.
}
}

cbIV =
\relative c' {{
  \key a \minor
  \time 4/4
  \clef bass
  \partial 4
  a4
c, e a, b
c d e2
e4\fermata e a b8 c
gis[ g] fis f e dis e4
a,2.\fermata
  \bar ":.:."
}
}

cromaticBach =
\new StaffGroup = "chromatic Bach"
<<
Exercise: Improve the given choral
Teacher: This is a simple setting of the choral. Please improve it.

Pupil: Here's my version!

Teacher: Well, you simply copied and transposed a version of J.S.Bach. Do you know this one?
Volta below chords

By adding the `Volta_engraver` to the relevant staff, volte can be put under chords.

```latex
\score { 
  \chords { 
    c1 
    c1 
  } 
  \new Staff \with { 
    \consists "Volta_engraver" 
  } 
  \repeat volta 2 { c'1 } 
  \alternative { c' } 
} 
\layout { 
  \context { 
    \Score 
    \remove "Volta_engraver" 
  } 
}```
Volta multi staff

By adding the Volta_engraver to the relevant staff, volte can be put over staves other than the topmost one in a score.

```plaintext
voltaMusic = \relative c' { 
  \repeat volta 2 { 
    c1 
  } 
  \alternative { 
    d1 
    e1 
  } 
}

<< \new StaffGroup << 
  \new Staff \ voltaMusic  \ voltaMusic 
  \new Staff \ voltaMusic 
>> \new StaffGroup << 
  \new Staff \ with { \consists "Volta_engraver" } 
  \ voltaMusic  \ voltaMusic 
>> 
>>
```
Editorial annotations

Section “Editorial annotations” in Notation Reference

Adding fingerings to a score

Fingering instructions can be entered using a simple syntax.

\relative c' {  
  c4-1 d-2 f-4 e-3
}

Adding links to objects

To add a link to a grob stencil you can use add-link as defined here. It works both with \override and \tweak.

Drawback: point-and-click is disturbed for the linked grobs.

Limitation: Works for PDF only.

The linked objects are colored with a separate command. Note that the links are not displayed and are not clickable from inside the LSR.

```lilypond
%(define (add-link url-strg)
(lambda (grob)
  (let* ((stil (ly:grob-property grob 'stencil)))
    (if (ly:stencil? stil)
      (let* ((x-ext (ly:stencil-extent stil X))
             (y-ext (ly:stencil-extent stil Y))
             (url-expr `(url-link ,url-strg ,x-ext ,y-ext))
             (new-stil
              (ly:stencil-add
               (ly:make-stencil url-expr x-ext y-ext)
               stil)))
       (ly:grob-set-property! grob 'stencil new-stil))))))

%%% test

%% For easier maintenance of this snippet the URL is formatted to use the
%% actually used LilyPond version.
%% Of course a literal URL would work as well.

%(define major.minor-version
  (string-join (take (string-split (lilypond-version) #\.) 2) "."))

urlI =
%(format #f
"http://lilypond.org/doc/v~a/Documentation/notation/writing-pitches"
major.minor-version)

urlII =
```
Editorial annotations

#(format #f
 "http://lilypond.org/doc/v~a/Documentation/notation/rhythms"
 major.minor-version)

urlIII =
#(format #f
 "http://lilypond.org/doc/v~a/Documentation/notation/note-heads"
 major.minor-version)

urlIV =
#(format #f
 "http://lilypond.org/doc/v~a/Documentation/notation/beams"
 major.minor-version)

urlV =
#(format #f
 "http://lilypond.org/doc/v~a/Documentation/notation/note-head-styles"
 major.minor-version)

urlVI =
#(format #f
 "http://lilypond.org/doc/v~a/Documentation/notation/writing-pitches"
 major.minor-version)

\relative c' {
  \key cis \minor

  \once \override Staff.Clef.color = #green
  \once \override Staff.Clef.after-line-breaking =
    #(add-link urlI)

  \once \override Staff.TimeSignature.color = #green
  \once \override Staff.TimeSignature.after-line-breaking =
    #(add-link urlII)

  \once \override NoteHead.color = #green
  \once \override NoteHead.after-line-breaking =
    #(add-link urlIII)

cis'1
  \once \override Beam.color = #green
  \once \override Beam.after-line-breaking =
    #(add-link urlIV)
cis8 dis e fis gis2
<gis,
  \tweak Accidental.color #green
  \tweak Accidental.after-line-breaking #(add-link urlVI)
  \tweak color #green
  \tweak after-line-breaking #(add-link urlV)
  \tweak style #`harmonic
  bis
  dis
Adding markups in a tablature

By default markups does not show in a tablature.

To make them appear, simply use the command \revert TabStaff.TextScript.stencil

%% http://lsr.di.unimi.it/LSR/Item?id=919
% by P.P.Schneider on June 2014

\begin{verbatim}
high  = { r4 r8 <g c'> q r8 r4 }
low   = { c4 r4 c8 r8 g,8 b, }
pulse = { s8"1" s"&" s"2" s"&" s"3" s"&" s"4" s"&" }
\end{verbatim}

\score { \new TabStaff { \repeat unfold 2 << \high \ \low \ \pulse >> } \layout { \context { \TabStaff \clef moderntab \revert TextScript.stencil \override TextScript.font-series = #'bold \override TextScript.font-size = #-2 \override TextScript.color = #red } } \context { \Score \proportionalNotationDuration = #(ly:make-moment 1/8) } } }

Allowing fingerings to be printed inside the staff

By default, vertically oriented fingerings are positioned outside the staff; that behavior, however, may be disabled. Attention needs to be paid to situations where fingerings and stems are in
the same direction: by default, fingerings will avoid only beamed stems. That setting can be changed to avoid no stems or all stems; the following example demonstrates these two options, as well as how to go back to the default behavior.

```
relative c' {
  <c-1 e-2 g-3 b-5>2
  \override Fingering.staff-padding = #'()
  <c-1 e-2 g-3 b-5>4 g'-0
  a8[-1 b]-2 g-0 r
  \override Fingering.add-stem-support = ##f
  a[-1 b]-2 g-0 r
  \override Fingering.add-stem-support = ##t
  a[-1 b]-2 g-0 r
  \override Fingering.add-stem-support = #only-if-beamed
  a[-1 b]-2 g-0 r
}
```

### Alternative bar numbering

Two alternative methods for bar numbering can be set, especially for when using repeated music.

```
relative c' {
  \set Score.alternativeNumberingStyle = #'numbers
  \repeat volta 3 { c4 d e f | }
  \alternative {
    { c4 d e f | c2 d \break }
    { f4 g a b | f4 g a b | f2 a | \break }
    { c4 d e f | c2 d }
  }
  c1 \break
  \set Score.alternativeNumberingStyle = #'numbers-with-letters
  \repeat volta 3 { c,4 d e f | }
  \alternative {
    { c4 d e f | c2 d \break }
    { f4 g a b | f4 g a b | f2 a | \break }
    { c4 d e f | c2 d }
  }
  c1
}
```

---

The text describes the default setting for fingerings, which avoids only beamed stems. It also explains how to change this setting to avoid no stems or all stems, and provides an example demonstrating these options. Additionally, it introduces two alternative methods for bar numbering, with examples showing how these methods can be used in a score.
Analysis brackets above the staff

Simple horizontal analysis brackets are added below the staff by default. The following example shows a way to place them above the staff instead.

\layout {  
  \context {  
    \Voice 
    \consists "Horizontal_bracket_engraver"  
  }  
} 

\relative c'' {  
  \once \override HorizontalBracket.direction = #UP  
  c2\startGroup  
  d2\stopGroup  
} 

Analysis brackets with labels

Text markup may be added to analysis brackets through the text property of the HorizontalBracketText grob. Adding different texts to brackets beginning at the same time requires the \tweak command.

Bracket text will be parenthesized after a line break.

\paper { \tagline = ##f } 

\layout {  
  \context {  
    \Voice 
    \consists "Horizontal_bracket_engraver"  
  }  
}
Applying note head styles depending on the step of the scale

The `shapeNoteStyles` property can be used to define various note head styles for each step of the scale (as set by the key signature or the tonic property).

This property requires a set of symbols, which can be purely arbitrary (geometrical expressions such as triangle, cross, and xcircle are allowed) or based on old American engraving tradition (some Latin note names are also allowed).

That said, to imitate old American song books, there are several predefined note head styles available through shortcut commands such as \aikenHeads or \sacredHarpHeads.

This example shows different ways to obtain shape note heads, and demonstrates the ability to transpose a melody without losing the correspondence between harmonic functions and note head styles.

```
fragment = {
    \key c \major
    c2 d
e2 f
g2 a
b2 c
}
```
Blanking staff lines using the \whiteout command

The \whiteout command underlays a markup with a white box. Since staff lines are in a lower layer than most other grobs, this white box will not overlap any other grob.

Changing a single note’s size in a chord

Individual note heads in a chord can be modified with the \tweak command inside a chord, by altering the font-size property.

Inside the chord (within the brackets < >), before the note to be altered, place the \tweak command, followed by font-size and define the proper size like #2 (a tiny note head).
Changing the appearance of a slur from solid to dotted or dashed

The appearance of slurs may be changed from solid to dotted or dashed.

Coloring notes depending on their pitch

It is possible to color note heads depending on their pitch and/or their names: the function used in this example even makes it possible to distinguish enharmonics.
(cons (ly:make-pitch 0 6 FLAT) (x11-color 'blue)))

%Compare pitch and alteration (not octave).
#(define (pitch-equals? p1 p2)
  (and
   (= (ly:pitch-alteration p1) (ly:pitch-alteration p2))
   (= (ly:pitch-notename p1) (ly:pitch-notename p2))))

#(define (pitch-to-color pitch)
  (let ((color (assoc pitch color-mapping pitch-equals?)))
    (if color
      (cdr color)))))

#(define (color-notehead grob)
  (pitch-to-color
   (ly:event-property (event-cause grob) 'pitch)))

\score {
  \new Staff \relative c' {
    \override NoteHead.color = #color-notehead
    c8 b d dis ees f g aes
  }
}

Controlling the placement of chord fingerings

The placement of fingering numbers can be controlled precisely. For fingering orientation to apply, it must be used within a chord construct <>, even for single notes. Orientation for string numbers and right-hand fingerings may be set in a similar way.

\relative c' {
  \set fingeringOrientations = #'(left)
  <c-1 e-3 a-5>4
  \set fingeringOrientations = #'(down)
  <c-1 e-3 a-5>4
  \set fingeringOrientations = #'(down right up)
  <c-1 e-3 a-5>4
  \set fingeringOrientations = #'(up)
  <c-1 e-3 a-5>4
  \set fingeringOrientations = #'(left)
  <c-1>2
  \set fingeringOrientations = #'(down)
  <e-3>2
  \set stringNumberOrientations = #'(up left down)
  <f\3 a\2 c\1>1
  \set strokeFingerOrientations = #'(down right up)
  <<\rightHandFinger #1 e\rightHandFinger #2 c\rightHandFinger #4 >
Creating a delayed turn

Creating a delayed turn, where the lower note of the turn uses the accidental, requires several overrides. The outside-staff-priority property must be set to #f, as otherwise this would take precedence over the avoid-slur property. Changing the fraction 2/3 adjusts the horizontal position.

\relative c' { 
  \after 2*2/3 \turn c2( d4) r | 
  \after 4 \turn c4.( d8) 
  \after 4 
  { 
    \once \set suggestAccidentals = ##t 
    \once \override AccidentalSuggestion.outside-staff-priority = ##f 
    \once \override AccidentalSuggestion.avoid-slur = #'inside 
    \once \override AccidentalSuggestion.font-size = -3 
    \once \override AccidentalSuggestion.script-priority = -1 
    \once \hideNotes 
    cis8\turn \noBeam 
  } 
  d4.( e8) 
}

Creating blank staves

To create blank staves, generate empty measures then remove the Bar_number_engraver from the Score context, and the Time_signature_engraver, Clef_engraver and Bar_engraver from the Staff context.

#(set-global-staff-size 20)

\score { 
  \repeat unfold 12 { s1 \break } 
} 
\layout { 
  indent = 0\in 
  \context { 
    \Staff 
    \remove "Time_signature_engraver" 
    \remove "Clef_engraver" 
    \remove "Bar_engraver" 
}
\context { 
  \Score 
  \remove "Bar_number_engraver"
}
%

% uncomment these lines for "letter" size
%
\paper {
  #(set-paper-size "letter")
  ragged-last-bottom = ##f
  line-width = 7.5\in
  left-margin = 0.5\in
  bottom-margin = 0.25\in
  top-margin = 0.25\in
}
%

% uncomment these lines for "A4" size
%
\paper {
  #(set-paper-size "a4")
  ragged-last-bottom = ##f
  line-width = 180
  left-margin = 15
  bottom-margin = 10
  top-margin = 10
}
%}
Creating double-digit fingerings

Creating fingerings larger than 5 is possible.

```latex
\relative c' {
    c1-10
    c1-50
    c1-36
    c1-29
}
```

Default direction of stems on the center line of the staff

The default direction of stems on the center line of the staff is set by the Stem property neutral-direction.

```latex
\relative c'' {
    a4 b c b
    \override Stem.neutral-direction = #up
    a4 b c b
    \override Stem.neutral-direction = #down
    a4 b c b
}
```

Different font size settings for instrumentName and shortInstrumentName

Choose different font sizes for instrumentName and shortInstrumentName as a context override.

```lisp
InstrumentNameFontSize =
#(define-music-function (font-size-pair)(pair?)
"Sets the @code{font-size} of @code{InstrumentName}.
)
The font-size for the initial `instrumentName` is taken from the first value in `font-size-pair`. `shortInstrumentName` will get the second value of `font-size-pair`.

```
;; This code could be changed/extended to set different values for each occurance of 'shortInstrumentName'

#{
override InstrumentName.after-line-breaking =
  #(lambda (grob)
    (let* ((orig (ly:grob-original grob))
           (siblings (if (ly:grob? orig)
                         (ly:spanner-broken-into orig)
                         '())))
      (if (pair? siblings)
        (begin
          (ly:grob-set-property!
            (car siblings)
            'font-size
            (car font-size-pair))
          (for-each
            (lambda (g)
              (ly:grob-set-property! g
                               'font-size (cdr font-size-pair))))
        (cdr siblings)))))
}

layout {
  context {
    Staff
      InstrumentNameFontSize #'(6 . -3)
  }
}

new StaffGroup <<
new Staff
  with {
    instrumentName = "Flute"
    shortInstrumentName = "Fl."
  }
  { c''1 \break c'\break c'' }
new Staff
  with {
    instrumentName = "Violin"
    shortInstrumentName = "Vl."
  }
  { c''1 \break c'\break c'' }
>>
Drawing boxes around grobs

The print-function can be overridden to draw a box around an arbitrary grob.

```latex
\relative c' {
  \override TextScript.stencil =
    #(make-stencil-boxer 0.1 0.3 ly:text-interface::print)
  c'4"foo"

  \override Stem.stencil =
    #(make-stencil-boxer 0.05 0.25 ly:stem::print)
  \override Score.RehearsalMark.stencil =
    #(make-stencil-boxer 0.15 0.3 ly:text-interface::print)
  b8

  \revert Stem.stencil
  \revert Flag.stencil
  c4. c4
  \mark \default
  c1
}
Drawing circles around note heads

Here is how to circle a note.

```latex
\texttt{circle} = \texttt{\once \override \\texttt{NoteHead.stencil} = \texttt{\#(lambda \ (grob) (let* ((note \ (ly:note-head::print \ grob)) (combo-stencil \ (ly:stencil-add \ note (circle-stencil \ note \ 0.1 \ 0.8)))) \ (ly:make-stencil \ (ly:stencil-expr \ combo-stencil) (ly:stencil-extent \ note \ X) (ly:stencil-extent \ note \ Y)))}} \{ \texttt{\circle c''}}
```

Drawing circles around various objects

The \texttt{\circle} markup command draws circles around various objects, for example fingering indications. For other objects, specific tweaks may be required: this example demonstrates two strategies for rehearsal marks and measure numbers.

```latex
\texttt{\relative c' \{ \set \texttt{Score.rehearsalMarkFormatter} = \texttt{\#(lambda \ (mark \ context) \ (make-circle-markup \ (format-mark-numbers \ mark \ context)))}} \texttt{\mark \ default \}
\texttt{c2 \d``\markup { \override \'\texttt{\ thickness} .3 \{} \texttt{\circle \finger 2 \}} \texttt{\override \texttt{Score.BarNumber.break-visibility} = \texttt{\#all-visible \}} \texttt{\override \texttt{Score.BarNumber.stencil} = \texttt{\#(make-stencil-circler \ 0.1 \ 0.25 \ ly:text-interface::print)}}
```

Embedding native PostScript in a \texttt{\markup} block

PostScript code can be directly inserted inside a \texttt{\markup} block. 

```
% PostScript is a registered trademark of Adobe Systems Inc.
\texttt{\relative c'' \{ %
```
Grid lines: changing their appearance

The appearance of grid lines can be changed by overriding some of their properties.

```latex
\score { \\
  \new ChoirStaff << \\
  \new Staff { \\
    \relative c' { \\
      \stemUp \\
      c'4. d8 e8 f g4 \\
    } \\
  } \\
  \new Staff { \\
    \relative c { \\
      % this moves them up one staff space from the default position \\
      \override Score/GridLine.extra-offset = #'(0.0 . 1.0) \\
    } \\
  } \\
\context { \\
  \Staff \\
  % set up grids \\
  \consists "Grid_point_engraver" \\
  % set the grid interval to one quarter note \\
  gridInterval = #(ly:make-moment 1/4) \\
} \\
\context { \\
  \Score \\
  \consists "Grid_line_span_engraver" \\
  % this moves them to the right half a staff space
Grid lines: emphasizing rhythms and notes synchronization

Regular vertical lines can be drawn between staves to show note synchronization; however, in case of monophonic music, you may want to make the second stave invisible, and make the lines shorter like in this snippet.

```latex
\score {
\new ChoirStaff {
  \relative c' <<
  \new Staff {
    \time 12/8
    \stemUp
    c4. d8 e8 f g4 f8 e8. d16 c8
  }
  \new Staff {
    % hides staff and notes so that only the grid lines are visible
    \hideNotes
    \hide Staff.BarLine
    \override Staff.StaffSymbol.line-count = #0
    \hide Staff.TimeSignature
    \hide Staff.Clef
    % dummy notes to force regular note spacing
    \once \override Score.GridLine.thickness = #4.0
    \once \override Score.GridLine.thickness = #3.0
    \once \override Score.GridLine.thickness = #4.0
    \once \override Score/GridLine.thickness = #3.0
  }
}
\layout {
  \context {\Score
    \consists "Grid_line_span_engraver"
    \override Staff.StaffSymbol.line-count = #0
    \override Staff.TimeSignature
    \override Staff.Clef
    % center grid lines horizontally below note heads
}```
\override NoteColumn.X-offset = #-0.5
}
\context {
  \Staff
  \consists "Grid_point_engraver"
  \gridInterval = #(ly:make-moment 1/8)
  \% set line length and positioning:
  \% two staff spaces above center line on hidden staff
  \% to four spaces below center line on visible staff
  \override GridPoint.Y-extent = #'(2 . -4)
}

ragged-right = ##t

Hammer on and pull off

Hammer-on and pull-off can be obtained using slurs.

\new TabStaff {
  \relative c' {
    d4( e\2)
    a( g)
  }
}

Hammer on and pull off using chords

When using hammer-on or pull-off with chored notes, only a single arc is drawn. However “double arcs” are possible by setting the doubleSlurs property to #t.

\new TabStaff {
  \relative c' {
    \% chord hammer-on and pull-off
    \set doubleSlurs = ##t
    <g' b>8( <a c> <g b>)
  }
}

\override GridPoint.Y-extent = #'(2 . -4)
Hammer on and pull off using voices

The arc of hammer-on and pull-off is upwards in voices one and three and downwards in voices two and four:

\new TabStaff {
  \relative c' {
    << { \voiceOne g2( a ) }
    \ \ { \voiceTwo a, ( b ) }
    >> \oneVoice
  }
}

Making some staff lines thicker than the others

For educational purposes, a staff line can be thickened (e.g., the middle line, or to emphasize the line of the G clef). This can be achieved by adding extra lines very close to the line that should be emphasized, using the line-positions property of the StaffSymbol object.

{ 
  \override Staff.StaffSymbol.line-positions =
  #'(-4 -2 -0.2 0 0.2 2 4)
  d'4 e' f' g'
}

Marking notes of spoken parts with a cross on the stem (Sprechstimme)

This example shows how to put crosses on stems. Mark the beginning of a spoken section with the \speakOn keyword, and end it with the \speakOff keyword.

speakOn = {
  \override Stem.stencil =
  #(lambda (grob)
    (let* ((x-parent (ly:grob-parent grob X))
      (is-rest? (ly:grob? (ly:grob-object x-parent 'rest))))
      (if is-rest?
        empty-stencil
        (ly:stencil-combine-at-edge
         (ly:stem::print grob))
        Y
      )))
}
(- (ly:grob-property grob 'direction))
(grob-interpret-markup grob
 (markup #:center-align #:fontsize -4
            #:musicglyph "noteheads.s2cross")
   -2.3))))
}

speakOff = {
  \revert Stem.stencil
  \revert Flag.stencil
}

\score {
  \new Staff {
    \relative c' {
      a4 b a c
      \speakOn
      g4 f r g
      b4 r d e
      \speakOff
      c4 a g f
    }
  }
}

\new \context Voice = "foo" {
  \clef bass
  c4 r g r
  c4 r g r
  c4 r g r
  c4 r g r
}
\context Voice = "foo" {
  \set countPercentRepeats = ##t
  hide PercentRepeat
  \override PercentRepeatCounter.staff-padding = #1
  \repeat percent 4 { s1 }
}

Measure counter

This snippet provides a workaround for emitting measure counters using transparent percent repeats.

<<
\context Voice = "foo" {
  \clef bass
  c4 r g r
  c4 r g r
  c4 r g r
  c4 r g r
}
\context Voice = "foo" {
  \set countPercentRepeats = ##t
  hide PercentRepeat
  \override PercentRepeatCounter.staff-padding = #1
  \repeat percent 4 { s1 }
}

>>
Measure spanner

Measure spanners are an alternate way to print annotated brackets. As opposed to horizontal brackets, they extend between two bar lines rather than two notes. The text is displayed in the center of the bracket.

\paper { tagline = ##f }
\layout {
  \context {
    \Staff
      \consists Measure_spanner_ engraver
  }
}

<<
\new Staff \relative c'' {
  \key d \minor
  \tie \times 2
  \tweak text "Answer"
  \startMeasureSpanner
  \tuplet 3/2 8 {
    a16[ b c] d[ c b] c[ d e] f[ e d]
  }
  e8 a gis g
  fis f e d- d c b e
  \stopMeasureSpanner
}
\new Staff \relative c' {
  \key d \minor
  \tweak text "Subject"
  \tweak direction #DOWN
  \startMeasureSpanner
  \tuplet 3/2 8 {
    d16[ e f] g[ f e] f[ g a] bes[ a g]
  }
  a8 d cis c
  b bes a g- g f e a
  \stopMeasureSpanner
  \tweak text "Counter-subject"
  \tweak direction #DOWN
  \startMeasureSpanner
  f8 e a r \tie \times 6 b, c d e fis g e
  a gis a b c fis, b a gis e a4 g8
  \stopMeasureSpanner
}
>>
Numbering groups of measures

This snippet demonstrates the use of the Measure_counter_engraver to number groups of successive measures. Any stretch of measures may be numbered, whether consisting of repetitions or not.

The engraver must be added to the appropriate context. Here, a Staff context is used; another possibility is a Dynamics context.

The counter is begun with \startMeasureCount and ended with \stopMeasureCount. Numbering will start by default with 1, but this behavior may be modified by overriding the count-from property.

When a measure extends across a line break, the number will appear twice, the second time in parentheses.

```latex
\layout {
  \context {
    \Staff
    \consists #Measure_counter_engraver
  }
}

\new Staff {
  \startMeasureCount
  \repeat unfold 7 {
    c'4 d' e' f'
  }
  \stopMeasureCount
  \bar "||"
  g'4 f' e' d'
  \override Staff.MeasureCounter.count-from = #2
  \startMeasureCount
  \repeat unfold 5 {
    g'4 f' e' d'
  }
  g'4 f'
```
Positioning fingering indications precisely

Generally the options available for positioning the fingering of chords work well by default, but if one of the indications needs to positioned more precisely the following tweak may be used. This is particularly useful for correcting the positioning when intervals of a second are involved.

\relative c' {
  \set fingeringOrientations = #'(left)
  <c-1 d-2 a'-5>4
  <c-1 d> \tweak extra-offset #'(0 . 0.2)-2 a'-5>4
  \set fingeringOrientations = #'(down)
  <c-1 d-2 a'-5>4
  <c-1 d> \tweak extra-offset #'(-1.2 . -1.8)-2 a'-5>4
  \set fingeringOrientations = #'(down right up)
  <c-1 d> \tweak extra-offset #'(-0.3 . 0)-2 a'-5>4
  <c-1 d> \tweak extra-offset #'(-1 . 1.2)-2 a'-5>4
  \set fingeringOrientations = #'(up)
  <c-1 d> \tweak extra-offset #'(0 . 1.1)-2
  a' \tweak extra-offset #'(0 . 1)-5>4
  <c-1 d> \tweak extra-offset #'(-1.2 . 1.5)-2
  a' \tweak extra-offset #'(0 . 1.4)-5>4
}
Positioning text markups inside slurs

Text markups need to have the outside-staff-priority property set to false in order to be printed inside slurs.

\relative c' {
  \override TextScript.avoid-slr = #"inside"
  \override TextScript.outside-staff-priority = ##f
  c2(\markup { \hspace{-10} \natural } d4.) c8
}

\relative c {
  \clef "treble_8"
  \stringNumberSpanner "5"
  \textSpannerDown a8\startTextSpan
Using PostScript to generate special note head shapes

When a note head with a special shape cannot easily be generated with graphic markup, PostScript code can be used to generate the shape. This example shows how a parallelogram-shaped note head is generated.

```
parallelogram =
#(ly:make-stencil list 'embedded-ps
"gsave
currentpoint translate
newpath
0 0.25 moveto
1.3125 0.75 lineto
1.3125 -0.25 lineto
0 -0.75 lineto
closepath
fill
grestore"
)(cons 0 1.3125)
(cons -.75 .75))
```

```
myNoteHeads = \override NoteHead.stencil = \parallelogram
normalNoteHeads = \revert NoteHead.stencil

\relative c' {
  \myNoteHeads
  g4 d'
  \normalNoteHeads
  <f, \tweak stencil \parallelogram b e>4 d
}
```

Using the whiteout property

Any graphical object can be printed over a white background to mask parts of objects that lie beneath. This can be useful to improve the appearance of collisions in complex situations when repositioning objects is impractical. It is necessary to explicitly set the layer property to control which objects are masked by the white background. In this example the collision of the tie with the time signature is improved by masking out the part of the tie that crosses the
time signature by setting the whiteout property of TimeSignature. To do this TimeSignature is moved to a layer above Tie, which is left in the default layer of 1, and StaffSymbol is moved to a layer above TimeSignature so it is not masked.

```
\override Score.StaffSymbol.layer = #4
\override Staff.TimeSignature.layer = #3
b'2 b'~
\once \override Staff.TimeSignature.whiteout = ##t
\time 3/4
b' r4
```
**Text**

Section “Text” in *Notation Reference*

**Adding a QR code**

This snippet lets you draw a QR-code, for example to provide a link to the composer’s, or the music editor’s website. Actually encoding the URL into a QR-code is not done here (this just draws the QR-code from a grid of "black" or "white" values), but see the code for a short Python snippet you can use to avoid having to fill for each small square if it’s black or white.

%% (snippet author: Jean Abou Samra <jean@abou-samra.fr>)

```
\paper { tagline = ##f }

(define (index-map f . lsts)
"Applies @code{f} to corresponding elements of @code{lists}, just as @code{map},
providing an additional counter starting at zero. @code{f} needs to have the
counter in its arguments like @code{(index-map (lambda (i arg) <body>) lists)}"
  (let loop ((lsts lsts)
            (acc '())
            (i 0))
    (if (any null? lsts)
        (reverse! acc)
        (loop (map cdr lsts)
              (cons (apply f i (map car lsts))
                    acc)
              (1+ i)))))

(define-markup-command (qr-code layout props data) (string?)
#:properties ((width 10))
  (let* (;; Return lines in reversed order, since translating in Y-axis
         ;; uses increasing values. Meaning lines will be stacked upwards.
         (lines (reverse (remove string-null? (map string-trim-both (string-split data "\newline"))))))
    (n (length lines))
    (square-width (/ width n))
    (box (make-filled-box-stencil `(0 . ,square-width)
                                 `(0 . ,square-width)))))

;; Build the final qr-code-stencil from line-stencils list
(apply ly:stencil-add
  ;; Get a list of line-stencils
  (index-map
    (lambda (i line)
      ;; Build a line-stencil from square-stencils list
      (apply ly:stencil-add
        ;; Get a list of (already translated) square-stencils
        ;; per line
        (index-map
          (apply ly:stencil-add
            ;; Get a list of (already translated) square-stencils
(lambda (j char)
    (ly:stencil-translate
        (stencil-with-color
            box
            (case char
                ((#\0) white)
                ((#\1) black)
                (else
                    (ly:warning
                        "unrecognized character -a, should be 0 or 1"
                        char)
                    red))
            (cons (* j square-width)
                (* i square-width))))
        (string->list line))))

{%
A string representation of the QR code. 0 means white, 1 means black.
You can generate this automatically using Python and the pyqrcode module
("pip install pyqrcode"). Use this line of code in a Python prompt:

>>> import pyqrcode; print(pyqrcode.create("https://lilypond.org").text(quiet_zone=0))%

lilypondDotOrg =
"1111110011111111010111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111
Adding markups in a tablature

By default markups does not show in a tablature.

To make them appear, simply use the command \revert TabStaff.TextScript.stencil

%% http://lsr.di.unimi.it/LSR/Item?id=919
% by P.P.Schneider on June 2014

\begin{music}
\begin{score}
\new TabStaff { 
  \repeat unfold 2 \<< \high \\\low \\\pulse \>> 
}
\layout { 
  \context { 
    \TabStaff

\end{music}
Adding the current date to a score

With a little Scheme code, the current date can easily be added to a score.

首先，定义一个变量来存储格式化的日期:

```scheme
% date = #(strftime "%d-%m-%Y" (localtime (current-time)))
```

使用它在标题块中:

```scheme
\header {title = "Including the date!" subtitle = \date}
```

使用它在一个`\markup`块中:

```scheme
\markup {\date}
```

Including the date!

13-12-2022
Adjusting lyrics vertical spacing

This snippet shows how to bring the lyrics line closer to the staff.

% Default layout:
<<
\new Staff \new Voice = melody \relative c' {
  c4 d e f
g4 f e d
c1
}
\new Lyrics \lyricsto melody { aa aa aa aa aa aa aa aa }

\new Staff {
  \new Voice = melody \relative c' {
    c4 d e f
g4 f e d
c1
  }
}
% Reducing the minimum space below the staff and above the lyrics:
\new Lyrics \with {
  \override VerticalAxisGroup.nonstaff-relatedstaff-spacing = #'(basic-distance . 1))
}
\lyricsto melody { aa aa aa aa aa aa aa aa }
>>

Aligning and centering instrument names

The horizontal alignment of instrument names is tweaked by changing the Staff.InstrumentName.self-alignment-X property. The layout variables indent and short-indent define the space in which the instrument names are aligned before the first and the following systems, respectively.

\paper { left-margin = 3\cm }

\score {
  \new StaffGroup <<

    \new Staff \with {
      \override InstrumentName.self-alignment-X = #LEFT
      instrumentName = \markup \left-column {
        "Left aligned"
        "instrument name"
    }
shortInstrumentName = "Left"
}
{
\new Staff \with {
  \override InstrumentName.self-alignment-X = #CENTER
  \begin{InstrumentName} = \markup \center-column {
    \centered
    "instrument name"
  }\end{InstrumentName}
  shortInstrumentName = "Centered"
}
{
\new Staff \with {
  \override InstrumentName.self-alignment-X = #RIGHT
  \begin{InstrumentName} = \markup \right-column {
    "Right aligned"
    "instrument name"
  }\end{InstrumentName}
  shortInstrumentName = "Right"
}
{
e'1 e'1
}

\layout {
  \ragged-right = ##t
  \indent = 4\text{cm}
  \short-indent = 2\text{cm}
}
Aligning syllables with melisma

By default, lyrics syllables that start a melisma are left aligned on their note. The alignment can be altered using the \lyricMelismaAlignment property.

```latex
\score { <<
  \new Staff {
    \relative c''
    \new Voice = "vocal" {
      c d~\markup default d e
      c d~\markup "right aligned" d e
      c d~\markup "center aligned" d e
      c d~\markup "reset to default" d e
    }
  }
  \new Lyrics \lyricsto "vocal" {
    word word word
    \set lyricMelismaAlignment = #RIGHT
    word word word
    \set lyricMelismaAlignment = #CENTER
    word word word
    \unset lyricMelismaAlignment
    word word word
  }
  >>
}
```

Blanking staff lines using the \whiteout command

The \whiteout command underlays a markup with a white box. Since staff lines are in a lower layer than most other grobs, this white box will not overlap any other grob.

```latex
\layout {
  ragged-right = ##f
}
\relative c' {
```
Center text below hairpin dynamics

This example provides a function to typeset a hairpin (de)crescendo with some additional text below it, such as “molto” or “poco”. The added text will change the direction according to the direction of the hairpin. The Hairpin is aligned to DynamicText.

The example also illustrates how to modify the way an object is normally printed, using some Scheme code.

\paper { tagline = ##f }

\override Voice.Hairpin.after-line-breaking = #(lambda (grob)
  (let* ((stencil (ly:hairpin::print grob))
      (par-y (ly:grob-parent grob Y))
      (dir (ly:grob-property par-y 'direction))
      (staff-line-thickness
       (ly:output-def-lookup (ly:grob-layout grob) 'line-thickness))
      (new-stencil (ly:stencil-aligned-to
        (ly:stencil-combine-at-edge
         (ly:stencil-aligned-to stencil X CENTER) Y dir
         (ly:stencil-aligned-to
          (ly:grob-interpret-markup grob
           (make-fontsize-markup
            (magnification->font-size
             (+ (ly:staff-symbol-staff-space grob)
               (/ staff-line-thickness 2)))
             text)) X CENTER)))
    (staff-space (ly:output-def-lookup
      (ly:grob-layout grob) 'staff-space))
    (par-x (ly:grob-parent grob X))
    (dyn-text (grob::has-interface par-x 'dynamic-text-interface))
    (dyntext-stencil-x-length
      (if dyn-text
        (interval-length
         (ly:stencil-extent (ly:grob-property par-x 'stencil) X))
        0))
    (x-shift
      (if stencil
        (ly:stencil-extent (ly:stencil-stencil-width grob)
          0)
        (ly:staff-symbol-staff-space grob))
    )
  )
)
(if dyn-text
   (=
      (+ staff-space dyn-text-stencil-x-length)
      (* 0.5 staff-line-thickness)) 0))

(ly:grob-set-property! grob 'Y-offset 0)
(ly:grob-set-property! grob 'stencil
   (ly:stencil-translate-axis
      new-stencil
      x-shift X))))
#

hairpinMolto =
\hairpinWithCenteredText \markup { \italic molto }

hairpinMore =
\hairpinWithCenteredText \markup { \larger moltissimo }
\layout { ragged-right = ##f }
\relative c' {
   \hairpinMolto c2< c\f
   \hairpinMore c2\pppp< c\f
   \break
   \hairpinMolto c2^< c\f
   \hairpinMore c2\pppp< c\f
}

Changing ottava text

Internally, \ottava sets the properties ottavation (for example, to 8va or 8vb) and middleCPosition. To override the text of the bracket, set ottavation after invoking \ottava.

Short text is especially useful when a brief ottava is used.

{c'2
Changing the default text font family

The default font families for text can be overridden with \makepangofonttree.

{%
You may have to install additional fonts.

Red Hat Fedora

dejavu-fonts-all

Debian GNU/Linux, Ubuntu

f\-dejavu-core
f\-dejavu-extra
%

\paper{
% change for other default global staff size.
myStaffSize = #20
%
run
lilypond -dshow-available-fonts
to show all fonts available in the process log.
%

#(define fonts
(make-pangofonttree "DejaVu Serif"
 "DejaVu Sans"
 "DejaVu Sans Mono"

(/ myStaffSize 20)))
}

{
g''4\markup{
DejaVu Serif: \bold bold
\italic italic
\italic \bold { bold italic }
Combining dynamics with markup texts

Some dynamics may involve text indications (such as “più forte” or “piano subito”). These can be produced using a \markup block.

\markup { \italic pi`u \dynamic f }

\layout { \ragged-right = ##f }

\relative c' { c2\f c-\piuF }

Combining two parts on the same staff

The part combiner tool (partCombine command) allows the combination of several different parts on the same staff. Text directions such as “solo” or “a2” are added by default; to remove them, simply set the property printPartCombineTexts to f.

For vocal scores (hymns), there is no need to add “solo/a2” texts, so they should be switched off. However, it might be better not to use it if there are any solos, as they won’t be indicated. In such cases, standard polyphonic notation may be preferable.

This snippet presents the three ways two parts can be printed on a same staff: standard polyphony, partCombine without texts, and partCombine with texts.

%% Combining pedal notes with clef changes
\musicUp = \relative c'\' \{ \\
\time 4/4 \\
a4 c4.( g8) a4 | \\
g4 e' g, ( a8 b) | \\
c b a2. \\
\}

\musicDown = \relative c'\' \{ \\
g4 e4.( d8) c4 | \\
r2 g'4( f8 e) | \\
d2 \stemDown a \\
\}

\score { 
\<< 
\new Staff \with { instrumentName = "Standard polyphony" } 
\<< \musicUp \ \ \ \musicDown >> 
\new Staff \with { 
\instrumentName = "PartCombine without text" 
\printPartCombineTexts = ##f 
} 
\partCombine \musicUp \musicDown 
\new Staff \with { instrumentName = "PartCombine with text" } 
\partCombine \musicUp \musicDown 
\>> 
\layout { 
indent = 6.0\cm 
\context { 
\Score 
\override SystemStartBar-collapse-height = #30 
} 
} 
}
Creating "real" parenthesized dynamics

Although the easiest way to add parentheses to a dynamic mark is to use a \markup block, this method has a downside: the created objects will behave like text markups, and not like dynamics.

However, it is possible to create a similar object using the equivalent Scheme code (as described in the Notation Reference), combined with the make-dynamic-script function. This way, the markup will be regarded as a dynamic, and therefore will remain compatible with commands such as \dynamicUp or \dynamicDown.

\begin{verbatim}
paren = #\{define-event-function (dyn) (ly:event?)
   (make-dynamic-script
    #{ \markup \concat
       \normal-text \italic \fontsize #2
       \pad-x #0.2 #(ly:music-property dyn 'text)
       \normal-text \italic \fontsize #2
    }
   #})

relative c'' {
    c4\paren\f c c \dynamicUp c\paren\p
}
\end{verbatim}

Creating text spanners

The \startTextSpan and \stopTextSpan commands allow the creation of text spanners as easily as pedal indications or octavations. Override some properties of the TextSpanner object to modify its output.

\begin{verbatim}
paper { ragged-right = ##f }

relative c'' {
   \override TextSpanner.bound-details.left.text = #'bla
   \override TextSpanner.bound-details.right.text = #'blu
   a4 \startTextSpan
   b4 c
   a4 \stopTextSpan

   \override TextSpanner.style = #'line
   \once \override TextSpanner.bound-details.left.stencil-align-dir-y = #CENTER
   a4 \startTextSpan
   b4 c
   a4 \stopTextSpan

   \override TextSpanner.style = #'dashed-line
   \override TextSpanner.bound-details.left.text = \markup { \draw-line #'(0 . 1) }
\end{verbatim}
\override TextSpanner.bound-details.right.text = 
  \markup { \draw-line #'(0 \ -.2) }
\once \override TextSpanner.bound-details.right.padding = \override 2

\startTextSpan
b4 c
\stopTextSpan

\set Staff.middleCPosition = \override 13
\override TextSpanner.dash-period = \override 10
\override TextSpanner.dash-fraction = \override 0.5
\override TextSpanner.thickness = \override 10
\startTextSpan
b4 c
\stopTextSpan

\textvertblbar

Demonstrating all headers

All header fields with special meanings.

\header {
  \copyright = "copyright"
  \title = "title"
  \subtitle = "subtitle"
  \composer = "composer"
  \arranger = "arranger"
  \instrument = "instrument"
  \meter = "meter"
  \opus = "opus"
  \piece = "piece"
  \poet = "poet"
  \texidoc = "All header fields with special meanings."
  \copyright = "public domain"
  \enteredby = "jcn"
  \source = "urtext"
}

\layout {
  \ragged-right = ##f
}

\score {
  \relative c'' { c1 | c | c | c }
}

\score {
  \relative c'' { c1 | c | c | c }
}
Embedding native PostScript in a \markup block

PostScript code can be directly inserted inside a \markup block.

\markup { \postscript "3 4 moveto 5 3 rlineto stroke" }
\markup { \postscript "[ 0 1 ] 0 setdash 3 5 moveto 5 -3 rlineto stroke " }
\markup { \postscript "3 4 moveto 0 0 1 2 8 4 20 3.5 rcurveto stroke" }

\relative c' { 
\markup { \postscript "3 4 moveto 5 3 rlineto stroke" }
\markup { \postscript "[ 0 1 ] 0 setdash 3 5 moveto 5 -3 rlineto stroke " }
\markup { \postscript "3 4 moveto 0 0 1 2 8 4 20 3.5 rcurveto stroke" }
}
Formatting lyrics syllables

Markup mode may be used to format individual syllables in lyrics.

```
mel = \relative c'' { c4 c c c }
lyr = \lyricmode {
    Lyrics \markup { \italic can } \markup { \with-color #red contain }
    \markup { \fontsize #8 \bold Markup! }
}
```

How to put ties between syllables in lyrics

This can be achieved by separating those syllables by tildes.

```
\lyrics {
    wa~o~a
}
```

```
w\_a
```

Lyrics alignment

Horizontal alignment for lyrics can be set by overriding the `self-alignment-X` property of the `LyricText` object. `-1` is left, `0` is center and `1` is right; however, you can use `#LEFT`, `#CENTER` and `#RIGHT` as well.

```
\relative { ragged-right = ##f }
\relative c'' { 
    c1 
    c1 
    c1 
}
\addlyrics {
    \once \override LyricText.self-alignment-X = #LEFT
    "This is left-aligned"
    \once \override LyricText.self-alignment-X = #CENTER
    "This is centered"
    \once \override LyricText.self-alignment-X = #1
    "This is right-aligned"
}
```

```
This is left-aligned This is centered This is right-aligned
```
Il y avait en Westphalie, dans le château de M. le baron de Thunder-ten-tronckh, un jeune garçon à qui la nature avait donné les mœurs les plus douces. Sa physionomie annonçait son âme. Il avait le jugement assez droit, avec l'esprit le plus simple. C'est, je crois, pour cette raison qu'on le nommait Candide. Les ancients domestiques de la maison soupçonnaient qu'il était fils de la sœur de monsieur le baron et d'un bon et honnête gentilhomme du voisinage, que cette demoiselle ne voulut jamais épouser parce qu'il n'avait pu prouver que soixante et onze quartiers, et que le reste de son arbre généalogique avait été perdu par l'injure du temps.


Il y avait en Westphalie, dans le château de M. le baron de Thunder-ten-tronckh, un jeune garçon à qui la nature avait donné les mœurs les plus douces. Sa physionomie annonçait son âme. Il avait le jugement
assez droit, avec l'esprit le plus simple ; c'est, je crois, pour cette raison qu'on le nommait Candide. Les anciens domestiques de la maison soupçonnaient qu'il était fils de la sœur de monsieur le baron et d'un bon et honnête gentilhomme du voisinage, que cette demoiselle ne voulut jamais épouser parce qu'il n'avait pu prouver que soixante et onze quartiers, et que le reste de son arbre généalogique avait été perdu par l'injure du temps.

Monsieur le baron était un des plus puissants seigneurs de la Westphalie, car son château avait une porte et des fenêtres. Sa grande salle même était ornée d'une tapisserie. Tous les chiens de ses basses-cours composaient une meute dans le besoin; ses palefreniers étaient ses piqueurs; le vicaire du village était son grand-aumônier. Ils l'appelaient tous monseigneur, et ils riaient quand il faisait des contes.
Multi-measure rest markup

Markups attached to a multi-measure rest will be centered above or below it. Long markups attached to multi-measure rests do not cause the measure to expand. To expand a multi-measure rest to fit the markup, use an empty chord with an attached markup before the multi-measure rest. Text attached to a spacer rest in this way is left-aligned to the position where the note would be placed in the measure, but if the measure length is determined by the length of the text, the text will appear to be centered.

Of the ubiquity of markup objects

Text objects are entered either as simple strings between double quotes or as \markup blocks that can accept a variety of advanced text formatting and graphical enhancements.

As such, markup blocks may be used:

- in any TextScript object (attached to notes with -, ~, or _),
- any TextMark introduced with the \textMark or \textEndMark command, or other similar objects such as MetronomeMark introduced with \tempo,
- as standalone markup blocks, entered at the top level outside of any \score block,
- in any definition inside the \header block (e.g. title, subtitle, composer) or in some variables defined inside the \paper block such as evenHeaderMarkup for page numbers.

\markup may additionally be used for lyrics, in chord names, and as dynamics. In fact, it is possible to use \markup to customize the appearance of virtually any object, as demonstrated in this example using various methods.


\paper {
  paper-width = 8\cm  paper-height = 8\cm
}
\header {
  title = \markup "Header"
  tagline = \markup "(tagline)"
}
\markup "Top-level markup"
\dyn = #(make-dynamic-script \text "DynamicText" #)
\score {
  \new ChordNames
  \with { majorSevenSymbol = \markup "majorSevenSymbol" }\chordmode { c1:maj7 }\
  \new Staff {
    \tempo \markup "MetronomeMark"
    \textMark "TextMark"
    \once \override TupletNumber.text = \markup "TupletNumber"
    \tuplet 3/2 {
      \once \override NoteHead.stencil = #ly:text-interface::print
      \once \override NoteHead.text = \markup \lower #0.5 "NoteHead"
      c''8\markup "TextScript"
      \once \override Rest.stencil = #(lambda (grob)
        (grob-interpret-markup grob #{
          \markup "Rest"
          #}))
      \r4
    }
  }
  \new Lyrics \lyricmode { \markup "LyricText" 1 }
  \new Dynamics { s1\dyn }
  >>
}

\Header

Top-level markup

\MetronomeMark
\TextMark
\C majorSevenSymbol
\TextScript
\NoteHead Rest
\TupletNumber
\LyricText
\DynamicText

Outputting the version number

It is possible to print the version number of LilyPond in markup.
\markup { Processed with LilyPond version #(lilypond-version) }

Processed with LilyPond version 2.24.0

Piano template with centered lyrics

Instead of having a full staff for the melody and lyrics, lyrics can be centered between the staves of a piano staff.
\upper = \relative c'\'} {
\clef treble
\key c \major
\time 4/4

a4 b c d

lower = \relative c {
    \clef bass
    \key c \major
    \time 4/4
    a2 c
}

text = \lyricmode {
    Aaa Bee Cee Dee
}

\score {
    \new PianoStaff <<
        \new Staff = upper { \new Voice = "singer" \upper }
        \new Lyrics \lyricsto "singer" \text
        \new Staff = lower { \lower }
    >>
    \layout { }
    \midi { }
}

Printing bar numbers with changing regular intervals
Using the set-bar-number-visibility context function, bar number intervals can be changed.

\relative c' {
    \override Score.BarNumber.break-visibility = #end-of-line-invisible
    \context Score \applyContext #(set-bar-number-visibility 4)
    \repeat unfold 10 c'1
    \context Score \applyContext #(set-bar-number-visibility 2)
    \repeat unfold 10 c
}
Printing marks on every staff

Although marks are normally only printed above the topmost staff, they may also be printed on every staff.

```latex
\score {<<
    \new Staff { \mark \default c''1 \textMark "molto" c'\'}
    \new Staff { \mark \default c'1 \textMark "molto" c' \'}
>>
\layout {
    \context {
        \Score
        \remove Mark_engraver
        \remove Text_mark_engraver
        \remove Staff_collecting_engraver
    }
    \context {
        \Staff
        \consists Mark_engraver
        \consists Text_mark_engraver
        \consists Staff_collecting_engraver
    }
}
}
```

Printing text from right to left

It is possible to print text from right to left in a markup object, as demonstrated here.

```latex
{\markup {
    \override #'(text-direction . -1)
    \line { ingirumimusnocte}
}}
```

```latex
{b1\markup {
    \line { ingirumimusnocte}
}}
```
Putting lyrics inside the staff

Lyrics can be moved vertically to place them inside the staff. The lyrics are moved with \override LyricText.extra-offset = #'(0 . dy) and there are similar commands to move the extenders and hyphens. The offset needed is established with trial and error.

<<
\new Staff <<
  \new Voice = "voc" \relative c' { \stemDown a bes c8 b c4 }
>>
\new Lyrics \with {
  \override LyricText.extra-offset = #'(0 . 8.6)
  \override LyricExtender.extra-offset = #'(0 . 8.6)
  \override LyricHyphen.extra-offset = #'(0 . 8.6)
} \lyricsto "voc" { La la -- la __ _ la }
>>

Stand-alone two-column markup

Stand-alone text may be arranged in several columns using \markup commands:

\markup {
  \fill-line {
    \hspace #1
    \column {
      \line { O sacrum convivium }
      \line { in quo Christus sumitur, }
      \line { recolitur memoria passionis ejus, }
      \line { mens impletur gratia, }
      \line { futurae gloriae nobis pignus datur. }
      \line { Amen. }
    }
    \hspace #2
    \column \italic {
      \line { O sacred feast }
      \line { in which Christ is received, }
      \line { the memory of His Passion is renewed, }
      \line { the mind is filled with grace, }
      \line { and a pledge of future glory is given to us. }
      \line { Amen. }
    }
    \hspace #1
  }
}
O sacrum convivium
in quo Christus sumitur,
recolitur memoria passionis ejus,
mens impletur gratia,
futurae gloriae nobis pignus datur.
Amen.

O sacred feast
in which Christ is received,
the memory of His Passion is renewed,
the mind is filled with grace,
and a pledge of future glory is given to us.
Amen.

String number extender lines

Make an extender line for string number indications, showing that a series of notes is supposed to be played all on the same string.

\relative c { 
\clef "treble_8"
\stringNumberSpanner "5"
\textSpannerDown a8\startTextSpan b c d e f\stopTextSpan
\stringNumberSpanner "4"
\textSpannerDown g\startTextSpan a
bes4 a g2\stopTextSpan
}

Three-sided box

This example shows how to add a markup command to get a three sided box around some text (or other markup).

% New command to add a three sided box, with sides north, west and south
% Based on the box-stencil command defined in scm/stencil.scm
% Note that ";;" is used to comment a line in Scheme
#(define-public (NWS-box-stencil stencil thickness padding)
 "Add a box around STENCIL, producing a new stencil."
 (let* ((x-ext (interval-widen (ly:stencil-extent stencil X) padding))
        (y-ext (interval-widen (ly:stencil-extent stencil Y) padding)))
(y-rule (make-filled-box-stencil (cons 0 thickness) y-ext))
(x-rule (make-filled-box-stencil
    (interval-widen x-ext thickness) (cons 0 thickness))))

;; (set! stencil (ly:stencil-combine-at-edge stencil X I y-rule padding))
(set! stencil (ly:stencil-combine-at-edge stencil X LEFT y-rule padding))
(set! stencil (ly:stencil-combine-at-edge stencil Y UP x-rule 0.0))
(set! stencil (ly:stencil-combine-at-edge stencil Y DOWN x-rule 0.0))
(stencil))

% The corresponding markup command, based on the \box command defined
% in scm/define-markup-commands.scm
%(define-markup-command (NWS-box layout props arg) (markup?)
  #:properties ((thickness 0.1) (font-size 0) (box-padding 0.2))
  "Draw a box round @var{arg}. Looks at @code{thickness},
  @code{box-padding} and @code{font-size} properties to determine line
  thickness and padding around the markup."
  (let ((pad (* (magstep font-size) box-padding))
    (m (interpret-markup layout props arg)))
      (NWS-box-stencil m thickness pad))))

% Test it:

\relative c' {
  c1\markup { \NWS-box ABCD } 
  c1\markup { \NWS-box \note {4} #1.0 }
}

UTF-8

Various scripts may be used for texts (like titles and lyrics) by entering them in UTF-8 encoding,
and using a Pango based backend. Depending on the fonts installed, this fragment will render
Bulgarian (Cyrillic), Hebrew, Japanese and Portuguese.

%f
You may have to install additional fonts.

Red Hat Fedora

  linux-libertine-fonts (Latin, Cyrillic, Hebrew)
  google-noto-serif-jp-fonts (Japanese)

Debian GNU/Linux, Ubuntu

  fonts-linuxlibertine (Latin, Cyrillic, Hebrew)
  fonts-noto-cjk (Japanese)
  f}

% 'Linux Libertine' fonts also contain Cyrillic and Hebrew glyphs.
\paper {
  \{%define fonts
  (set-global-fonts
    #:roman "Linux Libertine O, Noto Serif CJK JP, Noto Serif JP"
  ))
%
}

bulgarian = \lyricmode {
  Жълтата дюля беше щастлива, че пухът, който пълна, замръзна като гън.
}

hebrew = \lyricmode {

}

japanese = \lyricmode {

}

%
"a nice song for you"

portuguese = \lyricmode {
  à vo -- cê uma can -- çao le -- gal
}

\relative c' {
  c2 d
  e2 f
  g2 f
  e2 d
}

\addlyrics { \bulgarian }
\addlyrics { \hebrew }
\addlyrics { \japanese }
\addlyrics { \portuguese }

\score {
  \newStaff {
    \stemdown \defaultleaf \breath
    \modernclef staff-1 4 \clef bass
  }

  \input timesig \times \context \noindent \context

  \input noteheads \context

  \addlyrics { \bulgarian }
  \addlyrics { \hebrew }
  \addlyrics { \japanese }
  \addlyrics { \portuguese }

  \paper {
    \{%define fonts
      (set-global-fonts
        #:roman "Linux Libertine O, Noto Serif CJK JP, Noto Serif JP"
      ))
%
    }

    bulgarian = \lyricmode {
      Жълтата дюля беше щастлива, че пухът, който пълна, замръзна като гън.
    }

    hebrew = \lyricmode {
      
    }

    japanese = \lyricmode {
      
    }

    portuguese = \lyricmode {
      à vo -- cê uma can -- çao le -- gal
    }

    \relative c' {
      c2 d
      e2 f
      g2 f
      e2 d
    }

    \addlyrics { \bulgarian }
    \addlyrics { \hebrew }
    \addlyrics { \japanese }
    \addlyrics { \portuguese }
  }
}

\makeindex
Vocal ensemble template with lyrics aligned below and above the staves

This template is basically the same as the simple “Vocal ensemble” template, with the exception that here all the lyrics lines are placed using alignAboveContext and alignBelowContext.

global = {
  \key c \major
  \time 4/4
}

sopMusic = \relative c' {
  c4 c c8(\b) c4
}

sopWords = \lyricmode {
  hi hi hi hi
}

altoMusic = \relative c' {
  e4 f d e
}

altoWords = \lyricmode {
  ha ha ha ha
}

tenorMusic = \relative c' {
  g4 a f g
}

tenorWords = \lyricmode {
  hu hu hu hu
}

bassMusic = \relative c {
  c4 c g c
}

bassWords = \lyricmode {
  ho ho ho ho
}

\score {
  \new ChoirStaff <<
    \new Staff = "women" <<
      \new Voice = "sopranos" { \voiceOne << \global \sopMusic >> }
      \new Voice = "altos" { \voiceTwo << \global \altoMusic >> }
  }
Volta text markup using repeatCommands

Though volte are best specified using \repeat volta, the context property repeatCommands must be used in cases where the volta text needs more advanced formatting with \markup.

Since repeatCommands takes a list, the simplest method of including markup is to use an identifier for the text and embed it in the command list using the Scheme syntax #(list (list 'volta textIdentifier)). Start- and end-repeat commands can be added as separate list elements:

\voltaAdLib = \markup { 1. 2. 3... \text \italic { ad lib. } }
1.2.3... ad lib.

\[ \text{Music notation image} \]
Vocal music

Section “Vocal music” in Notation Reference

Adding ambitus per voice

Ambitus can be added per voice. In this case, the ambitus must be moved manually to prevent collisions.

\new Staff <<
\new Voice \with {
   \consists "Ambitus_engraver"
} \relative c'' {
   \override Ambitus.X-offset = #2.0
   voiceOne c4 a d e
   f1
}
\new Voice \with {
   \consists "Ambitus_engraver"
} \relative c' {
   voiceTwo es4 f g as
   b1
}
>>

Adding indicators to staves which get split after a break

This snippet defines the splitStaffBarLine, convUpStaffBarLine and convDownStaffBarLine commands. These add arrows at a bar line, to denote that several voices sharing a staff will each continue on a staff of their own in the next system, or that voices split in this way recombine.

#(define-markup-command (arrow-at-angle layout props angle-deg length fill)
   (number? number? boolean?)
   (let* ( (PI-OVER-180 (/ (atan 1 1) 34))
            (degrees->radians (lambda (degrees) (* degrees PI-OVER-180)))
            (angle-rad (degrees->radians angle-deg))
            (target-x (* length (cos angle-rad)))
            (target-y (* length (sin angle-rad))))
   (interpret-markup layout props
      markup
      #:translate (cons (/ target-x 2) (/ target-y 2))
      #:rotate angle-deg
      #:translate (cons (/ length -2) 0)
      #:concat (#:draw-line (cons length 0)
                  #:arrow-head X RIGHT fill))))
splitStaffBarLineMarkup = \markup \with-dimensions #'(0 . 0) #'(0 . 0) { 
\combine \\
\arrow-at-angle #45 #(sqrt 8) ##t \\
\arrow-at-angle #-45 #(sqrt 8) ##t }

splitStaffBarLine = { 
\once \override Staff.BarLine.stencil = 
#(lambda (grob)  
(ly:stencil-combine-at-edge  
(ly:bar-line::print grob)  
X RIGHT  
(grob-interpret-markup grob splitStaffBarLineMarkup)  
0))  
\break }

convDownStaffBarLine = { 
\once \override Staff.BarLine.stencil = 
#(lambda (grob)  
(ly:stencil-combine-at-edge  
(ly:bar-line::print grob)  
X RIGHT  
(grob-interpret-markup grob \{ 
\markup \with-dimensions #'(0 . 0) #'(0 . 0) {  
\translate #'(0 . -.13)\arrow-at-angle #-45 #(sqrt 8) ##t  
}\}#))  
0))  
\break }

convUpStaffBarLine = { 
\once \override Staff.BarLine.stencil = 
#(lambda (grob)  
(ly:stencil-combine-at-edge  
(ly:bar-line::print grob)  
X RIGHT  
(grob-interpret-markup grob \{ 
\markup \with-dimensions #'(0 . 0) #'(0 . 0) {  
\translate #'(0 . .14)\arrow-at-angle #45 #(sqrt 8) ##t  
}\}#))  
0))  
\break }

\paper {  
  ragged-right = ##t  
  short-indent = 10\mm 
}
separateSopranos = {
    \set Staff.instrumentName = "AI AII"
    \set Staff.shortInstrumentName = "AI AII"
    \splitStaffBarLine
    \change Staff = "up"
}
convSopranos = {
    \convDownStaffBarLine
    \change Staff = "shared"
    \set Staff.instrumentName = "S A"
    \set Staff.shortInstrumentName = "S A"
}
sI = {
    \voiceOne
    \repeat unfold 4 f''2
    \separateSopranos
    \repeat unfold 4 g''2
    \convSopranos
    \repeat unfold 4 c''2
}
sII = {
    s1*2
    \voiceTwo
    \change Staff = "up"
    \repeat unfold 4 d''2
}
aI = {
    \voiceTwo
    \repeat unfold 4 a'2
    \voiceOne
    \repeat unfold 4 b'2
    \convUpStaffBarLine
    \voiceTwo
    \repeat unfold 4 g'2
}
aII = {
    s1*2
    \voiceTwo
    \repeat unfold 4 g'2
}
ten = {
    \voiceOne
    \repeat unfold 4 c'2
    \repeat unfold 4 d'2
    \repeat unfold 4 c'2
}
bas = {
    \voiceTwo
    \repeat unfold 4 f2
    \repeat unfold 4 g2
\repeat unfold 4 c2

\score {
  \new ChoirStaff <<
  \new Staff = up \with {
    instrumentName = "SI SII"
    shortInstrumentName = "SI SII"
  } { s1*4 }
  \new Staff = shared \with {
    instrumentName = "S A"
    shortInstrumentName = "S A"
  } <<
  \new Voice = sopI \sI
  \new Voice = sopII \sII
  \new Voice = altI \aI
  \new Voice = altII \aII
  >>
  \new Lyrics \with {
    alignBelowContext = up
  }
  \lyricsto sopII { e f g h }
  \new Lyrics \lyricsto altI { a b c d e f g h i j k l }

  \new Staff = men \with {
    instrumentName = "T B"
    shortInstrumentName = "T B"
  } <<
  clef F
  \new Voice = ten \ten
  \new Voice = bas \bas
  >>
  \new Lyrics \lyricsto bas { a b c d e f g h i j k l }
  >>
  >>
  \layout {
    \context {
      \Staff \RemoveEmptyStaves
      \override VerticalAxisGroup.remove-first = ##t
    }
  }
}
Adding orchestral cues to a vocal score

This shows one approach to simplify adding many orchestral cues to the piano reduction in a vocal score. The music function \cueWhile takes four arguments: the music from which the cue is to be taken, as defined by \addQuote, the name to be inserted before the cue notes, then either \#UP or \#DOWN to specify either \voiceOne with the name above the staff or \voiceTwo with the name below the staff, and finally the piano music in parallel with which the cue notes are to appear. The name of the cued instrument is positioned to the left of the cued notes. Many passages can be cued, but they cannot overlap each other in time.

cueWhile =
#(define-music-function
  (instrument name dir music)
  (string? string? ly:dir? ly:music?)
#)
\cueDuring $instrument #dir {
  \once \override TextScript.self-alignment-X = #RIGHT
  \once \override TextScript.direction = $dir

<\-\ markup \{ \tiny \#name \}
$music
}
#
)

flute = \relative c'' \{
  \transposition c'
  s4 s4 e g
}
\addQuote "flute" \{ \flute \}

clarinet = \relative c' \{
  \transposition bes
  fis4 d d c
}
\addQuote "clarinet" \{ \clarinet \}

singer = \relative c'' \{ c4. g8 g4 bes4 \}
words = \lyricmode \{ here's the lyr -- ics \}

pianoRH = \relative c'' \{
  \transposition c'
  \cueWhile "clarinet" "Clar." \#DOWN \{ c4. g8 \}
  \cueWhile "flute" "Flute" \#UP \{ g4 bes4 \}
}

pianoLH = \relative c \{ c4 <c' e> e, <g c> \}

\score
{
  <<
    \new Staff \{
      \new Voice = "singer" \{
        singer
      \}
    \}
    \new Lyrics \{
      \lyricsto "singer"
      \words
    \}
    \new PianoStaff <<
      \new Staff \{
        \new Voice \{
          \pianoRH
        \}
      \}
      \new Staff \{
        \clef "bass"
        \pianoLH
      \}
    >>
  >>
}
Adjusting lyrics vertical spacing

This snippet shows how to bring the lyrics line closer to the staff.

```latex
\% Default layout:
\<
  \new Staff \new Voice = melody \relative c' {
    c4 d e f
g4 f e d
c1
  }
\new Lyrics \lyricsto melody { aa aa aa aa aa aa aa aa }
\>

\% Reducing the minimum space below the staff and above the lyrics:
\new Staff {
  \new Voice = melody \relative c' {
    c4 d e f
g4 f e d
c1
  }
}
\new Lyrics \with {
  \override VerticalAxisGroup.nonstaff-relatedstaff-spacing = #'((basic-distance . 1))
\}
\lyricsto melody { aa aa aa aa aa aa aa }
```

Aligning syllables with melisma

By default, lyrics syllables that start a melisma are left aligned on their note. The alignment can be altered using the `lyricMelismaAlignment` property.

```latex
\score {
```
Ambitus

Ambitus indicate pitch ranges for voices.

Accidentals only show up if they are not part of the key signature. AmbitusNoteHead grobs also have ledger lines.

```latex
\layout {
  \context {
    \Voice
    \consists "Ambitus_engraver"
  }
}
```

```
\new Staff {
  \relative c' {
    \time 2/4
    \c4 f'
  }
}
```

```
\new Staff {
  \relative c' {
    \time 2/4
    \key d \major
    \cis4 \as'
  }
}
```
Ambitus after key signature

By default, ambitus are positioned at the left of the clef. The `\ambitusAfter` function allows for changing this placement. Syntax is `\ambitusAfter grob-interface` (see Graphical Object Interfaces (http://lilypond.org/doc/v2.22/Documentation/internals/graphical-object-interfaces) for a list of possible values for grob-interface.)

A common use case is printing the ambitus between key signature and time signature.

\new Staff \with {
  \consists Ambitus_engraver
} \relative {
  \ambitusAfter key-signature
  \key d \major
  es'8 g bes cis d2
}

Ambitus with multiple voices

Adding the `Ambitus_engraver` to the `Staff` context creates a single ambitus per staff, even in the case of staves with multiple voices.

\new Staff \with {
  \consists "Ambitus_engraver"
}
<<
\new Voice \relative c' { 
  \voiceOne 
  c4 a d e 
  f1 
} 
\new Voice \relative c' { 
  \voiceTwo 
  es4 f g as 
  b1 
}
>>
Ancient notation template – modern transcription of gregorian music

This example demonstrates how to do modern transcription of Gregorian music. Gregorian music has no measure, no stems; it uses only half and quarter note heads, and special marks, indicating rests of different length.

```
\include "gregorian.ly"

chant = \relative c' {
  \set Score.timing = ##f
  f4 a2 \divisioMinima
  g4 b a2 f2 \divisioMaior
  g4 ( f) f( g) a2 \finalis
}

verba = \lyricmode {
  Lo -- rem ip -- sum do -- lor sit a -- met
}

\score {
  \new GregorianTranscriptionStaff <<
    \new GregorianTranscriptionVoice = "melody" \chant
    \new GregorianTranscriptionLyrics = "one" \lyricsto melody \verba
  >>
}
```

Lorem ipsum dolor sit amet

Anglican psalm template

This template shows one way of setting out an Anglican psalm chant. It also shows how the verses may be added as stand-alone text under the music. The two verses are coded in different styles to demonstrate more possibilities.

```
SopranoMusic = \relative g' {
  g1 | c2 b | a1 | \bar "||"
  a1 | d2 c | c b | c1 | \bar "||"
}

AltoMusic = \relative c' {
  e1 | g2 g | f1 |
  f1 | f2 e | d d | e1 |
}

TenorMusic = \relative a {
```
Vocal music

\begin{verbatim}
c1  |  c2  c  |  c1  |
d1  |  g,2  g  |  g  g  |  g1  |
\end{verbatim}

\textbf{BassMusic} = \texttt{\textbackslash relative c \{}
\begin{verbatim}
c1  |  e2  e  |  f1  |
d1  |  b2  c  |  g'  g  |  c,1  |
\end{verbatim}\texttt{\}

\textbf{global} = \{
\texttt{\textbackslash time 2/2}
\}

dot = \texttt{\textbackslash markup \{}
\texttt{\textbackslash raise #0.7 \texttt{\textbackslash musicglyph "dots.dot"}}
\texttt{\}}

tick = \texttt{\textbackslash markup \{}
\texttt{\textbackslash raise #1 \texttt{\textbackslash fontsize #-5 \texttt{\textbackslash musicglyph "scripts.rvarcomma"}}}
\texttt{\}}

\% Use \texttt{markup} to center the chant on the page
\texttt{\textbackslash markup \{}
\texttt{\textbackslash fill-line \{}
\texttt{\textbackslash score \{}  \% centered
<<
\texttt{\textbackslash new ChoirStaff \<}
\texttt{\new Staff \<}
\texttt{\global}
\texttt{\clef "treble"}
\texttt{\new Voice = "Soprano" \<}
\texttt{\voiceOne}
\texttt{\SopranoMusic}
\texttt{>>}
\texttt{\new Voice = "Alto" \<}
\texttt{\voiceTwo}
\texttt{\AltoMusic}
\texttt{>>}
\texttt{>>}
\texttt{\new Staff \<}
\texttt{\clef "bass"}
\texttt{\global}
\texttt{\new Voice = "Tenor" \<}
\texttt{\voiceOne}
\texttt{\TenorMusic}
\texttt{>>}
\texttt{\new Voice = "Bass" \<}
\texttt{\voiceTwo}
\texttt{\BassMusic}
\texttt{>>}
\texttt{>>}
\texttt{>>}
\end{verbatim}
\layout {
  \context {
    \Score
    \override SpacingSpanner.base-shortest-duration = #(ly:make-moment 1/2)
  }
  \context {
    \Staff
    \remove "Time_signature_engraver"
  }
  % End score
}
% End markup

\markup {
  \fill-line {
  \column {
    \left-align {
      \null \null \null
      \line {
        \fontsize #5 0
        \fontsize #3 come
        \text { let us }\text{ bold sing } | \text{ unto }\text{ dot } \text{ the } | \text{ Lord } : \text{ let }
      }
      \line {
        \text { us heartily }
        \concat { \text re }\text{ bold joice }
        \text { in the } | \text{ strength of } | \text{ our }
      }
      \line {
        \text { sal } | \text{ vation. }
      }
      \null
      \line {
        \hspace #2.5 8. \text{ Today if ye will hear his voice } *
      }
      \line {
        \concat { \text bold hard en }
        \text{ tick not your }\text{ tick }\text{ hearts } : \text{ as in the pro- }
      }
      \line {
        \vocation * and as in the \text{ bold day of tempt- }\text{ tick }
      }
      \line {
        \text{ -ation }\text{ tick }\text{ in the }\text{ tick }\text{ wilderness. }
      }
    }
  }
}
}
O come let us sing | unto the | Lord: let us heartily rejoice in the | strength of | our salvation.

8. Today if ye will hear his voice *

harden not your hearts: as in the provocation * and as in the day of temptation '
 -ation in the 'wilderness.

Arranging separate lyrics on a single line

Sometimes you may want to put lyrics for different performers on a single line: where there is rapidly alternating text, for example. This snippet shows how this can be done with \override VerticalAxisGroup.nonstaff-nonstaff-spacing.minimum-distance = ##f.

```latex
\layout {
  \context {
    \Lyrics
    \override VerticalAxisGroup.nonstaff-nonstaff-spacing.minimum-distance = ##f
  }
}

aliceSings = \markup { \smallCaps "Alice" }
eveSings = \markup { \smallCaps "Eve" }

<<
\new Staff <<
\new Voice = "alice" {
  f'4^\aliceSings g' r2 |
  s1 |
  f'4^\aliceSings g' r2 |
  s1 | \break
  \%
  voiceOne
  s2 a'8^\aliceSings a' b'4 |
  \oneVoice
  g'1
}
\new Voice = "eve" {
  s1 |
```
Changing stanza fonts

Fonts can be changed independently for each stanza, including the font used for printing the stanza number.

%{
You may have to install additional fonts.
}%

Red Hat Fedora

dejavu-fonts-all

Debian GNU/Linux, Ubuntu

fonts-dejavu-core
fonts-dejavu-extra
\relative c' { 
\time 3/4 
g2 e4 
a2 f4 
g2. 
}
\addlyrics { 
\set stanza = #"1. " 
Hi, my name is Bert. 
}
\addlyrics { 
\override StanzaNumber.font-name = #'DejaVu Sans 
\set stanza = #"2. " 
\override LyricText.font-family = #'typewriter 
Oh, ché -- ri, je t'aime 
}

\score { 
\new Staff \with { \remove "Time_signature_engraver" } 
{ 
\key g \minor 
\cadenzaOn 
\stemOff a'\breve bes'4 g'4 
\stemOn a'2 \section 
\stemOff a'\breve g'4 a'4 
\stemOn f'2 \section 
\stemOff a'\breve\markup { \italic flexe } 
\stemOn g'2 \fine 
} 
}

Chant or psalms notation
This form of notation is used for Psalm chant, where verses aren’t always the same length.

stemOff = \hide Staff.Stem
stemOn = \undo \stemOff
Forcing hyphens to be shown

If LilyPond does not think there is space for a hyphen, it will be omitted. The behaviour can be overridden with the `minimum-distance` property of `LyricHyphen`.

\relative c'' {  
    c32 c c c  
    c32 c c c  
    c32 c c c  
    c32 c c c  
}  
\addlyrics {  
    syl -- lab word word  
    \override LyricHyphen.minimum-distance = #1.0  
    syl -- lab word word  
    \override LyricHyphen.minimum-distance = #2.0  
    syl -- lab word word  
    \revert LyricHyphen.minimum-distance  
    syl -- lab word word  
}  

Formatting lyrics syllables

Markup mode may be used to format individual syllables in lyrics.

\mel = \relative c'' { c4 c c c }  
\lyr = \lyricmode {  
    Lyrics \markup { \italic can } \markup { \with-color #red contain }  
    \markup { \fontsize #8 \bold Markup! }  
}  

<<  
    \new Voice = melody \mel  
    \new Lyrics \lyricsto melody \lyr  
>>  

Lyrics can contain Markup!

How to put ties between syllables in lyrics

This can be achieved by separating those syllables by tildes.

\lyrics {  
    wa~o~a  
}
Hymn template

This code shows one way of setting out a hymn tune when each line starts and ends with a partial measure. It also shows how to add the verses as stand-alone text under the music.

Timeline = {
    \time 4/4
    \tempo 4=96
    \partial 2
    s2 | s1 | s2 \breathe s2 | s1 | s2 \caesura \break
    s2 | s1 | s2 \breathe s2 | s1 | s2 \fine
}

SopranoMusic = \relative g' {
    g4 g | g g g g | g g g g | g g g g | g2
    g4 g | g g g g | g g g g | g g g g | g2
}

AltoMusic = \relative c' {
    d4 d | d d d d | d d d d | d d d d | d2
    d4 d | d d d d | d d d d | d d d d | d2
}

TenorMusic = \relative a {
    b4 b | b b b b | b b b b | b b b b | b2
    b4 b | b b b b | b b b b | b b b b | b2
}

BassMusic = \relative g {
    g4 g | g g g g | g g g g | g g g g | g2
    g4 g | g g g g | g g g g | g g g g | g2
}

global = {
    \key g \major
}

(score { % Start score
    \new PianoStaff << % Start pianostaff
    \new Staff << % Start Staff = RH
    \global
    \clef "treble"
    \new Voice = "Soprano" << % Start Voice = "Soprano"
    \Timeline
    \voiceOne
    \SopranoMusic
    >> % End Voice = "Soprano"
    \new Voice = "Alto" << % Start Voice = "Alto"
    \Timeline
    \voiceTwo
}
\AltoMusic
>> % End Voice = "Alto"
>> % End Staff = RH
\new Staff << % Start Staff = LH
\global
\clef "bass"
\new Voice = "Tenor" << % Start Voice = "Tenor"
\Timeline
\voiceOne
\TenorMusic
>> % End Voice = "Tenor"
\new Voice = "Bass" << % Start Voice = "Bass"
\Timeline
\voiceTwo
\BassMusic
>> % End Voice = "Bass"
>> % End Staff = LH
>> % End pianostaff
} % End score

\markup {
\fill-line { 
  
  \column {
    \left-align {
      "This is line one of the first verse"
      "This is line two of the same"
      "And here's line three of the first verse"
      "And the last line of the same"
    }
  }
} 
""
}

\layout {
\context {
  \Score
  caesuraType = #'((bar-line . "||"))
  fineBarType = "||"
}
}

\paper { % Start paper block
  indent = 0 % don't indent first system
  line-width = 130 % shorten line length to suit music
} % End paper block
This is line one of the first verse
This is line two of the same
And here's line three of the first verse
And the last line of the same

Lyrics alignment

Horizontal alignment for lyrics can be set by overriding the self-alignment-X property of the LyricText object. #~1 is left, #0 is center and #1 is right; however, you can use #LEFT, #CENTER and #RIGHT as well.

```latex
\layout { ragged-right = ##f }
\relative c'' {
  c1
  c1
}

\addlyrics {
  \once \override LyricText.self-alignment-X = #LEFT
  "This is left-aligned"
  \once \override LyricText.self-alignment-X = #CENTER
  "This is centered"
  \once \override LyricText.self-alignment-X = #1
  "This is right-aligned"
}
```

This is left-aligned This is centered This is right-aligned

Marking notes of spoken parts with a cross on the stem (Sprechstimme)

This example shows how to put crosses on stems. Mark the beginning of a spoken section with the \speakOn keyword, and end it with the \speakOff keyword.

```latex
speakOn = {
```
\override Stem.stencil =
#(lambda (grob)
  (let* ((x-parent (ly:grob-parent grob x))
         (is-rest? (ly:grob? (ly:grob-object x-parent 'rest))))
     (if is-rest?
         empty-stencil
         (ly:stencil-combine-at-edge
          (ly:stem::print grob)
          Y (- (ly:grob-property grob 'direction))
          (grob-interpret-markup grob
           (markup #:center-align #:fontsize -4
                    #:musicglyph "noteheads.s2cross")
           -2.3))))
  )

speakOff = {
  \revert Stem.stencil
  \revert Flag.stencil
}

\score {
  \new Staff {
    \relative c'' {
      a4 b c 
      \speakOn 
      g4 f r g 
      b4 r d e 
      \speakOff 
      c4 a g f 
    }
  }
}

\begin{music}
\begin{staff}
E4 E4 E4 & F4 F4 F4 | \\
G4 G4 G4 & F4 F4 F4 | \\
% VERSE ONE
fis4 fis fis | \break
\end{staff}
\end{music}

Obtaining 2.12 lyrics spacing in newer versions

The vertical spacing engine changed since version 2.14. This can cause lyrics to be spaced differently.

It is possible to set properties for Lyric and Staff contexts to get the spacing engine to behave as it did in version 2.12.

global = {
  \key d \major
  \time 3/4
}

sopMusic = \relative c' {
  % VERSE ONE
  fis4 fis fis | \break
fis4. e8 e4
}

altoMusic = \relative c' {  
% VERSE ONE  
d4 d d |  
d4. b8 b4 |  
}

tenorMusic = \relative c' {  
a4 a a |  
b4. g8 g4 |  
}

bassMusic = \relative c {  
d4 d d |  
g,4. g8 g4 |  
}

words = \lyricmode {  
Great is Thy faith -- ful -- ness,  
}

\score {  
\new ChoirStaff <<  
\new Lyrics = sopranos  
\new Staff = women <<  
\new Voice = "sopranos" {  
\voiceOne  
\global \sopMusic  
}  
\new Voice = "altos" {  
\voiceTwo  
\global \altoMusic  
}  
>>  
\new Lyrics = "altos"  
\new Lyrics = "tenors"  
\new Staff = men <<  
\clef bass  
\new Voice = "tenors" {  
\voiceOne  
\global \tenorMusic  
}  
\new Voice = "basses" {  
\voiceTwo \global \bassMusic  
}  
>>  
\new Lyrics = basses  
\context Lyrics = sopranos \lyricsto sopranos \words  
\context Lyrics = altos \lyricsto altos \words  
\context Lyrics = tenors \lyricsto tenors \words
\context Lyrics = basses \lyricsto basses \words

\layout {
    \context {
        \Lyrics
        \override VerticalAxisGroup.staff-affinity = #f
        \override VerticalAxisGroup.staff-staff-spacing = 
            #'((basic-distance . 0) (minimum-distance . 2) (padding . 2))
    }
    \context {
        \Staff
        \override VerticalAxisGroup.staff-staff-spacing = 
            #'((basic-distance . 0) (minimum-distance . 2) (padding . 2))
    }
}
Orchestra, choir and piano template

This template demonstrates the use of nested StaffGroup and GrandStaff contexts to subgroup instruments of the same type together, and a way to use \transpose so that variables hold music for transposing instruments at concert pitch.

\set-global-staff-size 17
\paper {
  indent = 3.0\cm  \% add space for instrumentName
  short-indent = 1.5\cm  \% add less space for shortInstrumentName
}

fluteMusic = \relative c' { \key g \major g'1 b }

% Pitches as written on a manuscript for Clarinet in A
% are transposed to concert pitch.

clarinetMusic = \transpose c' a
  \relative c'' { \key bes \major bes1 d }

trumpetMusic = \relative c { \key g \major g''1 b }

% Key signature is often omitted for horns

hornMusic = \transpose c' f
  \relative c { d'1 fis }

percussionMusic = \relative c { \key g \major g1 b }

sopranoMusic = \relative c' { \key g \major g'1 b }

sopranoLyrics = \lyricmode { Lyr -- ics }

altoIMusic = \relative c' { \key g \major g'1 b }

altoIIMusic = \relative c' { \key g \major g'1 b }

altoILyrics = \relative c { \key g \major g'1 b }

altoIILyrics = \lyricmode { Ah -- ah }

tenorMusic = \relative c' { \clef "treble_8" \key g \major g1 b }

tenorLyrics = \relative c { \key g \major g1 b }

pianoRHMusic = \relative c { \key g \major g''1 b }

pianoLHMusic = \relative c { \clef bass \key g \major g1 b }

violinIMusic = \relative c' { \key g \major g'1 b }

violinIIIMusic = \relative c' { \key g \major g'1 b }
violaMusic = relative c { clef alto key g major g'1 b }
celloMusic = relative c { clef bass key g major g1 b }
bassMusic = relative c { clef "bass_8" key g major g,1 b }

\score { <<
  \new StaffGroup = "StaffGroup_woodwinds" <<
  \new Staff = "Staff_flute" \with { instrumentName = "Flute" }
  \fluteMusic

  \new Staff = "Staff_clarinet" \with {
    instrumentName = \markup { \concat { "Clarinet in B" \flat } }
  }

  \new StaffGroup = "StaffGroup_brass" <<
  \new Staff = "Staff_hornI" \with { instrumentName = "Horn in F" }
    \transposition f
  \transpose f c' \hornMusic

  \new Staff = "Staff_trumpet" \with { instrumentName = "Trumpet in C" }
  \trumpetMusic

  \new RhythmicStaff = "RhythmicStaff_percussion"
  \with { instrumentName = "Percussion" }
    \percussionMusic

  \new PianoStaff \with { instrumentName = "Piano" }
    \new Staff \{ \pianoRHMusic \}
    \new Staff \{ \pianoLHMusic \}

  \new ChoirStaff = "ChoirStaff_choir" <<
    \new Staff = "Staff_soprano" \with { instrumentName = "Soprano" }
    \new Voice = "soprano"
    \sopranoMusic

  \new Lyrics \lyricsto "soprano" \{ \sopranoLyrics \}
  \new GrandStaff = "GrandStaff_altos"
    \with { \accepts Lyrics } <<
\new Staff = "Staff_altoI" \with { instrumentName = "Alto I" }
\new Voice = "altoI"
\altoIMusic

\new Lyrics \lyricsto "altoI" { \altoILyrics }
\new Staff = "Staff_altoII" \with { instrumentName = "Alto II" }
\new Voice = "altoII"
\altoIIMusic

\new Lyrics \lyricsto "altoII" { \altoIIlyrics }
>>

\new Staff = "Staff_tenor" \with { instrumentName = "Tenor" }
\new Voice = "tenor"
\tenorMusic

\new Lyrics \lyricsto "tenor" { \tenorLyrics }
>>
\new StaffGroup = "StaffGroup_strings" <<
\new GrandStaff = "GrandStaff_violins" <<
\new Staff = "Staff_violinI" \with { instrumentName = "Violin I" }
\violinIMusic

\new Staff = "Staff_violinII" \with { instrumentName = "Violin II" }
\violinII Music
>>

\new Staff = "Staff_viola" \with { instrumentName = "Viola" }
\violaMusic

\new Staff = "Staff_cello" \with { instrumentName = "Cello" }
\celloMusic

\new Staff = "Staff_bass" \with { instrumentName = "Double Bass" }
\bassMusic
>>&>

\layout { }
}
Piano template with melody and lyrics

Here is a typical song format: one staff with the melody and lyrics, with piano accompaniment underneath.

```
melody = \relative c' { 
    \clef treble 
    \key c \major 
    \time 4/4 
    a b c d
}
```

```
text = \lyricmode { 
    Aaa Bee Cee Dee
}
```

```
upper = \relative c' { 
```
\clef treble
\key c \major
\time 4/4
a4 b c d
}

lower = \relative c {
\clef bass
\key c \major
\time 4/4
a2 c
}

\score {
<<
\new Voice = "mel" { \autoBeamOff \melody }
\new Lyrics \lyricsto mel \text
\new PianoStaff <<
  \new Staff = "upper" \upper
  \new Staff = "lower" \lower
>>
>>
\layout {
  \context { \Staff \RemoveEmptyStaves }
}
\midi { }
}

Putting lyrics inside the staff

Lyrics can be moved vertically to place them inside the staff. The lyrics are moved with \override LyricText.extra-offset = #'(0 . dy) and there are similar commands to move the extenders and hyphens. The offset needed is established with trial and error.

<<
\new Staff <<
  \new Voice = "voc" \relative c' { \stemDown a bes c8 b c4 }
>>
\new Lyrics \with {
  \override LyricText.extra-offset = #'(0 . 8.6)
SATB Choir template - four staves

SATB choir template (four staves)

```
global = {
    \key c \major
    \time 4/4
    \dynamicUp
}
sopranonotes = \relative c'' {
    c2 \p \< d c d \f
}
sopranowords = \lyricmode { do do do do }
altonotes = \relative c'' {
    c2\p d c d
}
altonords = \lyricmode { re re re re }
tenornotes = {
    \clef "G_8"
    c2\mp d c d
}
tenorwords = \lyricmode { mi mi mi mi }
bassnotes = {
    \clef bass
    c2\mf d c d
}
basswords = \lyricmode { mi mi mi mi }

\score {
    \new ChoirStaff <<
    \new Staff <<
        \new Voice = "soprano" <<
            \global
            \sopranonotes
        >>
        \new Lyrics \lyricsto "soprano" \sopranowords
    >>
    \new Staff <<
        \new Voice = "alto" <<
            \global
            \altonotes
        >>
```
Vocal music

\new Lyrics \lyricsto "alto" \altowords

>>
\new Staff <<
\new Voice = "tenor" <<
\global
\tenornotes
>>
\new Lyrics \lyricsto "tenor" \tenorwords
>>
\new Staff <<
\new Voice = "bass" <<
\global
\bassnotes
>>
\new Lyrics \lyricsto "bass" \basswords
>>

}

Single staff template with notes, lyrics, and chords

This template allows the preparation of a song with melody, words, and chords.

\begin{Verbatim}
melody = \relative c' {
  \clef treble
  \key c \major
  \time 4/4

  a4 b c d
}
\end{Verbatim}

\begin{Verbatim}
text = \lyricmode {
  Aaa Bee Cee Dee
}
\end{Verbatim}
harmonies = \chordmode {
  a2 c
}

\score {
  \new ChordNames {
    \set chordChanges = ##t
    \harmonies
  }
  \new Voice = "one" { \autoBeamOff \melody }
  \new Lyrics \lyricsto "one" \text
  >>
}

layout { }

single staff template with notes, lyrics, chords and frets

Here is a simple lead sheet template with melody, lyrics, chords and fret diagrams.

verseI = \lyricmode {
  \set stanza = "1."
  This is the first verse
}

verseII = \lyricmode {
  \set stanza = "2."
  This is the second verse.
}

theChords = \chordmode {
  % insert chords for chordnames and fretboards here
  c2 g4 c
}

staffMelody = \relative c' {
  \key c \major
  \clef treble
  % Type notes for melody here
  c4 d8 e f4 g
  \bar "| ."
}

\score {
  <<
    \context ChordNames { \theChords }
}
\context FretBoards { \theChords }
\new Staff {
  \context Voice =  "voiceMelody" { \staffMelody }
}
\new Lyrics = "lyricsI" {
  \lyricsto "voiceMelody" \verseI
}
\new Lyrics = "lyricsII" {
  \lyricsto "voiceMelody" \verseII

1. This is the first verse
2. This is the second verse.

Single staff template with notes and lyrics

This small template demonstrates a simple melody with lyrics. Cut and paste, add notes, then
words for the lyrics. This example turns off automatic beaming, which is common for vocal
parts. To use automatic beaming, change or comment out the relevant line.

\melody = \relative c' {
  \clef treble
  \key c \major
  \time 4/4

  a4 b c d
}

\text = \lyricmode {
  Aaa Bee Cee Dee
}

\score{
  <<
    \new Voice =  "one" {
      \autoBeamOff
      \melody
    }
    \new Lyrics \lyricsto "one" \text
  >>
  \layout { }
  \midi { }
}
Skips in lyric mode

The syntax for skips is only available in note mode and chord mode. In other situations, for example, when entering lyrics, using the \skip command is recommended.

<< \relative c'' { a1 | a } \new Lyrics \lyricmode { \skip 1 bla1 } >>

Skips in lyric mode (2)

Although skips cannot be used in \lyricmode (it is taken to be a literal “s”, not a space), double quotes ("") or underscores (_) are available.

So for example:

<< \relative c'' { a4 b c d } \new Lyrics \lyricmode { a4 "" _ gap } >>

Using arpeggioBracket to make divisi more visible

The arpeggioBracket can be used to indicate the division of voices where there are no stems to provide the information. This is often seen in choral music.

\include "english.ly"

\score {
  \relative c'' {
    \key a \major
    \time 2/2
    << \new Voice = "upper"
    <<
      { \voiceOne \arpeggioBracket
          a2( b2 <b d>1\arpeggio)
          <cs e>\arpeggio ~
      }
Using tags to produce mensural and modern music from the same source

Using tags, it is possible to produce both mensural and modern notation from the same music. In this snippet, a function `menrest` is introduced, allowing mensural rests to be pitched as in the original, but with modern rests in the standard staff position. Tags can also be used where other differences are needed: for example using “whole measure rests” (R1, R\breve{}, etc.) in modern music, but normal rests (r1, r\breve{}, etc.) in the mensural version. Converting mensural music to its modern equivalent is usually referred to as “transcription”.

```latex
\documentclass{article}
\usepackage{music}\usepackage{musicx}

\begin{document}

\begin{music}

<cs e>4
\end{music}
\addlyrics { \lyricmode { A -- men. } }

new \Voice = "lower"
\{ \VoiceTwo 
\a1 ~ 
\a ~ 
\a4 \textbar |.
\}

\layout { ragged-right = ##t }

\begin{music}

\begin{lay}
\end{lay}

\begin{lay}
\end{lay}

\text{A -- men.}

\end{music}

Using tags, it is possible to produce both mensural and modern notation from the same music.

```

MenStyle = {
\autoBeamOff
\override NoteHead.style = #'petrucci
\override Score.BarNumber.transparent = ##t
\override Stem.neutral-direction = #up
}

finalis = \section

Music = \relative c' { 
\set Score.tempoHideNote = ##t
\key f \major
\time 4/4
g1 d'2 \menrest bes4 bes2 a2 r4 g4 fis2.
\finalis
```

Using tags, it is possible to produce both mensural and modern notation from the same music. In this snippet, a function `menrest` is introduced, allowing mensural rests to be pitched as in the original, but with modern rests in the standard staff position. Tags can also be used where other differences are needed: for example using “whole measure rests” (R1, R\breve{}, etc.) in modern music, but normal rests (r1, r\breve{}, etc.) in the mensural version. Converting mensural music to its modern equivalent is usually referred to as “transcription”.

```

MenStyle = {
\autoBeamOff
\override NoteHead.style = #'petrucci
\override Score.BarNumber.transparent = ##t
\override Stem.neutral-direction = #up
}

finalis = \section

Music = \relative c' { 
\set Score.tempoHideNote = ##t
\key f \major
\time 4/4
g1 d'2 \menrest bes4 bes2 a2 r4 g4 fis2.
\finalis
```
Vertically aligning ossias and lyrics

This snippet demonstrates the use of the context properties `alignBelowContext` and `alignAboveContext` to control the positioning of lyrics and ossias.

\paper {

```tex
MenLyr = \lyricmode { So farre, deere life, deare life }
ModLyr = \lyricmode { So far, dear life, dear life }

score {
  \keepWithTag #'mens {
    <<
      \new MensuralStaff {
        \new MensuralVoice = Cantus
        \clef "mensural-c1" \MenStyle \Music
      }
      \new Lyrics \lyricsto Cantus \MenLyr
    >>
  }
}

score {
  \keepWithTag #'mod {
    \new ChoirStaff <<
      \new Staff {
        \new Voice = Sop \with {
          \remove "Note_heads_engraver"
          \consists "Completion_heads_engraver"
          \remove "Rest_engraver"
          \consists "Completion_rest_engraver" }
        {
          \shiftDurations #1 #0 { \autoBeamOff \Music }
        }
        \new Lyrics \lyricsto Sop \ModLyr
      >>
  }
}
```

So farre, deere life, deare life

So far, dear life, dear life

Vocal music

---

Score notation for the lyrics 'So farre, deere life, deare life' and 'So far, dear life, dear life'. The score demonstrates the alignment of lyrics and ossias using the `alignBelowContext` and `alignAboveContext` properties.
Vertically centered common lyrics

In a vocal piece where there are several (two, four or more) lines of lyrics and common lyrics for all voices at some point, the common lyrics may be made to appear vertically centered, as shown in the following example:

```plaintext
dropLyrics = {
  \override LyricText.extra-offset = #'(0 . -4.5)
  \override LyricHyphen.extra-offset = #'(0 . -4.5)
  \override LyricExtender.extra-offset = #'(0 . -4.5)
  \override StanzaNumber.extra-offset = #'(0 . -4.5)
}```
The first verse has used in all four.
In stanza two, so appear.
By the third verse, the common words are getting dull.
Last stanza, and get used once more.
Vocal ensemble template

Here is a standard four-part SATB vocal score. With larger ensembles, it is often useful to include a section which is included in all parts. For example, the time signature and key signature are almost always the same for all parts. Like in the “Hymn” template, the four voices are regrouped on only two staves.

\paper {
  top-system-spacing.basic-distance = #10
  score-system-spacing.basic-distance = #20
  system-system-spacing.basic-distance = #20
  last-bottom-spacing.basic-distance = #10
}

global = {
  \key c \major
  \time 4/4
}
sopMusic = \relative {
  c'4 c c8[( b)] c4
}
sopWords = \lyricmode {
  hi hi hi hi
}

altoMusic = \relative {
  e'4 f d e
}
altoWords = \lyricmode {
  ha ha ha ha
}

tenorMusic = \relative {
  g4 a f g
}
tenorWords = \lyricmode {
  hu hu hu hu
}

bassMusic = \relative {
  c4 c g c
}
bassWords = \lyricmode {
  ho ho ho ho
}

\score {
  \new ChoirStaff <<
    \new Lyrics = "sopranos" \with {
      % this is needed for lyrics above a staff
      \override VerticalAxisGroup.staff-affinity = #DOWN
    }
}
Vocal music

\new Staff = "women" <<
  \new Voice = "sopranos" {
    \voiceOne
    << \global \sopMusic >>
  }
  \new Voice = "altos" {
    \voiceTwo
    << \global \altoMusic >>
  }
  >>
\new Lyrics = "altos"
\new Lyrics = "tenors" \with {
  \override VerticalAxisGroup.staff-affinity = #DOWN
}
\new Staff = "men" <<
  \clef bass
  \new Voice = "tenors" {
    \voiceOne
    << \global \tenorMusic >>
  }
  \new Voice = "basses" {
    \voiceTwo << \global \bassMusic >>
  }
  >>
\new Lyrics = "basses"
\context Lyrics = "sopranos" \lyricsto "sopranos" \sopWords
\context Lyrics = "altos" \lyricsto "altos" \altoWords
\context Lyrics = "tenors" \lyricsto "tenors" \tenorWords
\context Lyrics = "basses" \lyricsto "basses" \bassWords
}

Vocal ensemble template with automatic piano reduction

This template adds an automatic piano reduction to the standard SATB vocal score demonstrated in “Vocal ensemble template”. This demonstrates one of the strengths of LilyPond – you can use a music definition more than once. If any changes are made to the vocal notes (say, tenorMusic), then the changes will also apply to the piano reduction.
\paper {
top-system-spacing.basic-distance = #10
score-system-spacing.basic-distance = #20
system-system-spacing.basic-distance = #20
last-bottom-spacing.basic-distance = #10
}

global = {
    key c \major
    time 4/4
}

sopMusic = \relative {
    c'4 c c8[(b)] c4
}
sopWords = \lyricmode {
    hi hi hi hi
}

altoMusic = \relative {
    e'4 f d e
}
altoWords = \lyricmode {
    ha ha ha ha
}

tenorMusic = \relative {
    g4 a f g
}
tenorWords = \lyricmode {
    hu hu hu hu
}

bassMusic = \relative {
    c4 c g c
}
bassWords = \lyricmode {
    ho ho ho ho
}

\score {
    <<
        \new ChoirStaff <<
            \new Lyrics = "sopranos" \with {
                % This is needed for lyrics above a staff
                \override VerticalAxisGroup.staff-affinity = #DOWN
            }
            \new Staff = "women" <<
                \new Voice = "sopranos" { \voiceOne << \global \sopMusic >> }
                \new Voice = "altos" { \voiceTwo << \global \altoMusic >> }
            >>
            \new Lyrics = "altos"
            \new Lyrics = "tenors" \with {
\% This is needed for lyrics above a staff
\override VerticalAxisGroup.staff-affinity = \#DOWN

\new Staff = "men" <<
  \clef bass
\new Voice = "tenors" { \voiceOne << \global \tenorMusic >> }
\new Voice = "basses" { \voiceTwo << \global \bassMusic >> }
>>
\new Lyrics = "basses"
\context Lyrics = "sopranos" \lyricsto "sopranos" \sopWords
\context Lyrics = "altos" \lyricsto "altos" \altoWords
\context Lyrics = "tenors" \lyricsto "tenors" \tenorWords
\context Lyrics = "basses" \lyricsto "basses" \bassWords
>>
\new PianoStaff <<
\new Staff <<
  \set Staff.printPartCombineTexts = ##f
  \partCombine
    << \global \sopMusic >>
    << \global \altoMusic >>
>>
\new Staff <<
  \clef bass
\set Staff.printPartCombineTexts = ##f
  \partCombine
    << \global \tenorMusic >>
    << \global \bassMusic >>
>>
>>
>>
Vocal ensemble template with lyrics aligned below and above the staves

This template is basically the same as the simple “Vocal ensemble” template, with the exception that here all the lyrics lines are placed using `alignAboveContext` and `alignBelowContext`.

```plaintext
global = {
  key c \major
  time 4/4
}

sopMusic = \relative c' {{
  c4 c c8[[ b]] c4
}

sopWords = \lyricmode {
  hi hi hi hi
}

altoMusic = \relative c' {{
  e4 f d e
}

altoWords = \lyricmode {
  ha ha ha ha
}

tenorMusic = \relative c' {{
  g4 a f g
}

tenorWords = \lyricmode {
  hu hu hu hu
}

bassMusic = \relative c {{
  c4 c g c
}

bassWords = \lyricmode {
  ho ho ho ho
}

\score {
  \new ChoirStaff <<
    \new Staff = "women" <<
      \new Voice = "sopranos" { \voiceOne << \global \sopMusic >> }
      \new Voice = "altos" { \voiceTwo << \global \altoMusic >> }
    >>
    \new Lyrics \with { alignAboveContext = #"women" }
      \lyricsto "sopranos" \sopWords
    \new Lyrics \with { alignBelowContext = #"women" }
      \lyricsto "altos" \altoWords
    % we could remove the line about this with the line below, since % we want the alto lyrics to be below the alto Voice anyway.
    % \new Lyrics \lyricsto "altos" \altoWords
    \new Staff = "men" <<
  }
```
Vocal ensemble template with verse and refrain

This template creates a score which starts with a solo verse and continues into a refrain for two voices. It also demonstrates the use of spacer rests within the \global variable to define meter changes (and other elements common to all parts) throughout the entire score.

global = {
    \key g \major

    % verse
    \time 3/4
    s2.*2
    \break

    % refrain
    \time 2/4
    s2*2
    \bar "|."
}

SoloNotes = \relative g' {
    \clef "treble"

    % verse
    g4 g g |
    b4 b b |

    % refrain
Vocal music

R2*2 | 
} 

SoloLyrics = \lyricmode {
  One two three |
  four five six |
} 

SopranoNotes = \relative c' { 
  \clef "treble"
  \% verse
  R2.*2 |
  \% refrain
  c4 c |
  g4 g |
} 

SopranoLyrics = \lyricmode {
  la la |
  la la |
} 

BassNotes = \relative c { 
  \clef "bass"
  \% verse
  R2.*2 |
  \% refrain
  c4 e |
  d4 d |
} 

BassLyrics = \lyricmode {
  dum dum |
  dum dum |
} 

\score {
  <<
    \new Voice = "SoloVoice" \global \SoloNotes >>\new Lyrics \lyricsto "SoloVoice" \SoloLyrics

    \new ChoirStaff <<
        \new Voice = "SopranoVoice" \global \SopranoNotes >>\new Lyrics \lyricsto "SopranoVoice" \SopranoLyrics

        \new Voice = "BassVoice" \global \BassNotes >>\new Lyrics \lyricsto "BassVoice" \BassLyrics
    >>
\\layout {
  \ragged-right = ##t
  \context { \Staff
  \override VerticalAxisGroup.remove-first = ##t
  } \RemoveEmptyStaves 
}

One two three four five six

la la la la

dum dum dum dum
Chords

Section “Chord notation” in Notation Reference

Adding a figured bass above or below the notes

When writing a figured bass, you can place the figures above or below the bass notes, by defining the BassFigureAlignmentPositioning.direction property (exclusively in a Staff context). Choices are #UP (or #1), #CENTER (or #0) and #DOWN (or #-1).

This property can be changed as many times as you wish. Use \once \override if you don’t want the override to apply to the whole score.

```latex
bass = {
  \clef bass
  g4 b, c d
e d8 c d2
}

continuo = \figuremode {
  _>4 <6>4 <5/>4
  \override Staff.BassFigureAlignmentPositioning.direction = #UP
  \bassFigureStaffAlignmentUp
  < _>4 <6>
  \set Staff.useBassFigureExtenders = ##t
  \override Staff.BassFigureAlignmentPositioning.direction = #DOWN
  \bassFigureStaffAlignmentDown
  <4>4. <4>8 <_->4
}

\score {
  <<
    \new Staff = bassStaff \bass
    \context Staff = bassStaff \continuo
  >>
}
```

Adding bar lines to ChordNames context

To add bar line indications in the ChordNames context, add the Bar_ engraver.

```latex
\new ChordNames \with {
  \override BarLine.bar-extent = #'(-2 . 2)
  \consists "Bar_ engraver"
}

\chordmode {
  f1:maj7 f:7 bes:7
}
```
F\textsuperscript{\#} | F\textsuperscript{7} | B\textsuperscript{b\#} |

Adjusting figured bass alteration glyphs

In figured bass, specially designed glyphs for 6\textbackslash, 7\textbackslash, and 9\textbackslash are used by default. Similarly, specially designed glyphs for symbols 2\+, 4\+, and 5\+ are used by default if plus signs appear after the number.

To change that, pass an alist to figuredBassPlusStrokedAlist and set the glyph in question to #f (or omit it).

\begin{verbatim}
\figures{
  \set figuredBassPlusDirection = #RIGHT
  <6\/> <7\/> <9\/> r
  <2\+> <4\+> <5\+> r

  \set figuredBassPlusStrokedAlist =
    #'((2 . "figbass.twoplus")
      ;; (4 . "figbass.fourplus")
      ;; (5 . "figbass.fiveplus")
      (6 . "figbass.sixstroked")
      ;; (7 . "figbass.sevenstroked")
      ;; (9 . "figbass.ninestroked")
    )
  <6\/> <7\/> <9\/> r
  <2\+> <4\+> <5\+> r
}
\end{verbatim}

Changing chord separator

The separator between different parts of a chord name can be set to any markup.

\begin{verbatim}
\chords{
  c:7sus4
  \set chordNameSeparator = \markup { \typewriter | }
  c:7sus4
}
\end{verbatim}

C\textsuperscript{7sus4} C\textsuperscript{7|sus4}

Changing the chord names to German or semi-German notation

The english naming of chords (default) can be changed to german (\germanChords replaces B and Bes with H and B) or semi-german (\semiGermanChords replaces B and Bes with H and Bb).

\begin{verbatim}
scm = \chordmode{
  c1/c | cis/cis
  b1/b | bis/bis | bes/bes
}
\end{verbatim}
Changing the positions of figured bass alterations

Accidentals and plus signs can appear before or after the numbers, depending on the figuredBassAlterationDirection and figuredBassPlusDirection properties.

If plus signs appear after the number, specially designed glyphs are provided for some figures.
\figures {
  \<5\>+ \<5+ 4\>+ \<6 4- 2\>+ \r
\set figuredBassAlterationDirection = \#RIGHT
  \<5\>+ \<5+ 4\>+ \<6 4- 2\>+ \r
\set figuredBassPlusDirection = \#RIGHT
  \<5\>+ \<5+ 4\>+ \<6 4- 2\>+ \r
\set figuredBassAlterationDirection = \#LEFT
  \<5\>+ \<5+ 4\>+ \<6 4- 2\>+ \r
}\}

\begin{verbatim}
\new ChordNames \theMusic
\new Voice \theMusic
\end{verbatim}

Chord name exceptions

The property chordNameExceptions can be used to store a list of special notations for specific chords.

% modify maj9 and 6(add9)
% Exception music is chords with markups
\begin{verbatim}
chExceptionMusic = {
  \(<c e g b d'>1\)->\markup { \super "maj9" }
  \(<c e g a d'>1\)->\markup { \super "6(add9)" }
}\end{verbatim}

% Convert music to list and prepend to existing exceptions.
\begin{verbatim}
chExceptions = #(append
  (sequential-music-to-chord-exceptions chExceptionMusic #t)
  ignatzekExceptions)
\end{verbatim}

\begin{verbatim}
theMusic = \chordmode {
  \g1:maj9 \g1:6.9
\set chordNameExceptions = #chExceptions
  \g1:maj9 \g1:6.9
}\end{verbatim}

\begin{verbatim}
\layout {
  \ragged-right = ##t
}\end{verbatim}

\new ChordNames \theMusic
\new Voice \theMusic

\begin{verbatim}
G\(\Delta\)9  G6 9  G\(\Delta\)9  G6 9
\end{verbatim}

chord name major7

The layout of the major 7 can be tuned with majorSevenSymbol.
Chord names alternative

Chord names are generated from a list of pitches. The functions which construct these names can be customised.

Here are shown chords following Ignatzek (pp. 17-18, 1995), used by default since LilyPond 1.7.20, compared with an alternative Jazz chord notation and Harald Banter’s (1987) notation. A smaller font is used in the latter case, as these tend to be overly verbose.

This mirrors the mechanism originally used in early LilyPond versions (pre-1.7); not having been properly maintained, however, some features have been lost (mainly chord exception lists) and bugs have been introduced.

%%%% Legacy chord naming functions (formerly in scm/chord-generic-names.scm)
%%%% Copyright (C) 2003--2015 Jan Nieuwenhuizen <janneke@gnu.org>

#(set-global-staff-size 19.7)

#(define-public (banter-chordnames pitches bass inversion context)
  (old_chord->markup 'banter pitches bass inversion context))

#(define-public (jazz-chordnames pitches bass inversion context)
  (old_chord->markup 'jazz pitches bass inversion context))

#(define (define-translator-property symbol type? description)
  (if (not (and (symbol? symbol)
                (procedure? type?)
                (string? description)))
    (ly:error "error in call of define-translator-property")))

  (if (not (equal? (object-property symbol 'translation-doc) #f))
    (ly:error (G_ "symbol ~S redefined") symbol))

  (set-object-property! symbol 'translation-type? type?)
  (set-object-property! symbol 'translation-doc description) symbol)

#(for-each
  (lambda (x)
    (apply define-translator-property x))
  `((chordNameExceptionsFull ,list? "An alist of full chord exceptions. Contains @code{(@var{chord} . @var{markup})} entries.")
    (chordNameExceptionsPartial ,list? "An alist of partial chord exceptions. Contains @code{(@var{chord} . (@var{prefix-markup} @var{suffix-markup}))} entries.")))')

#(define-public (old_chord->markup
Chords 295

"Entry point for \texttt{Chord\_name\_engraver}. \texttt{pitches}, \texttt{bass}, and \texttt{inversion} are lily pitches."

\begin{verbatim}
(define (default-note-namer pitch)
  (note-name->markup pitch #f))

(define (markup-or-empty-markup markup)
  "Return MARKUP if markup, else empty-markup"
  (if (markup? markup) markup empty-markup))

(define (accidental->markup alteration)
  "Return accidental markup for ALTERATION."
  (if (= alteration 0)
      (make-line-markup (list empty-markup))
      (conditional-kern-before
       (alteration->text-accidental-markup alteration)
       (= alteration FLAT) 0.094725)))

(define (list-minus a b)
  "Return list of elements in A that are not in B."
  (lset-difference eq? a b))

(define (markup-join markups sep)
  "Return line-markup of MARKUPS, joining them with markup SEP"
  (if (pair? markups)
      (make-line-markup (list-insert-separator markups sep))
      empty-markup))

(define (conditional-kern-before markup bool amount)
  "Add AMOUNT of space before MARKUP if BOOL is true."
  (if bool
      (make-line-markup
       (list (make-hspace-markup amount) markup))
      markup))

(define (step-nr pitch)
  (let* ((pitch-nr (+ (* 7 (ly:pitch-octave pitch))
                       (ly:pitch-notename pitch)))
         (root-nr (+ (* 7 (ly:pitch-octave (car pitches)))
                     (ly:pitch-notename (car pitches))))
         (+ 1 (- pitch-nr root-nr))))

(define (next-third pitch)
  (ly:pitch-transpose pitch
   (ly:make-pitch 0 2 (if (or (= (step-nr pitch) 3)
                       (= (step-nr pitch) 5))
                        FLAT 0))))

(define (step-alteration pitch)
  (let* ((diff (ly:pitch-diff (ly:make-pitch 0 0 0) (car pitches)))
         (normalized-pitch (ly:pitch-transpose pitch diff))
         (alteration (ly:pitch-transpose (if (= (ly:pitch-diff pitch diff) 1)
                                           FLAT 0))))
   (case alteration
     ((FLAT) 0.094725)
     ((SHARP 1) 0.094725)
     ((FLAT 1) 0.094725)
     ((SHARP 2) 0.094725)
     ((FLAT 2) 0.094725)
     ((SHARP 3) 0.094725)
     ((FLAT 3) 0.094725)
     ((SHARP 4) 0.094725)
     ((FLAT 4) 0.094725)
     ((SHARP 5) 0.094725)
     ((FLAT 5) 0.094725))

(define (make-line-markup markups)
  "Return line-markup of MARKUPS"
  (make-markup markups #f))

(define (list-insert-separator markups sep)
  "Insert SEPARATOR between elements in MARKUPS"
  (if (pair? markups)
      (make-markup (cons sep markups) #f)
      empty-markup))

(define (conditional-kern markups)
  "Add kerning before MARKUPS"
  (if (pair? markups)
      (make-markup (list-insert-separator markups #f) #f)
      empty-markup))

(define (make-markup markups kerning)
  "Create a markup with MARKUPS and optional KERNING"
  (list-markup kerning markups))

(define (list-markup kerning markups)
  "Create a list-markup with KERNING and MARKUPS"
  (make-markup (cons kerning markups) #f))
\end{verbatim}
(alteration (ly:pitch-alteration normalized-pitch))
(if (= (step-nr pitch) 7) (+ alteration SEMI-TONE) alteration))

(define (pitch-unalter pitch)
  (let ((alteration (step-alteration pitch)))
    (if (= alteration 0)
      pitch
      (ly:make-pitch (ly:pitch-octave pitch) (ly:pitch-notename pitch)
        (~ (ly:pitch-alteration pitch) alteration))))

(define (step-even-or-altered? pitch)
  (let ((nr (step-nr pitch)))
    (if (!= (modulo nr 2) 0)
      (= (step-alteration pitch) 0)
      #t)))

(define (step->markup-plusminus pitch)
  (let ((alt (step-alteration pitch)))
    (make-line-markup
      (list
        (number->string (step-nr pitch))
        (cond
          ( (= alt DOUBLE-FLAT) "--")
          ( (= alt FLAT) "-")
          ( (= alt NATURAL) ")")
          ( (= alt SHARP) "+")
          ( (= alt DOUBLE-SHARP) "++")))))

(define (step->markup-accidental pitch)
  (make-line-markup
    (list (accidental->markup (step-alteration pitch))
      (make-simple-markup (number->string (step-nr pitch))))))

(define (step->markup-ignatzek pitch)
  (make-line-markup
    (if (and (= (step-nr pitch) 7)
             (= (step-alteration pitch) 1))
      (list (ly:context-property context 'majorSevenSymbol))
      (list (accidental->markup (step-alteration pitch))
        (make-simple-markup (number->string (step-nr pitch))))))

;; tja, kennok
(define (make-sub->markup step->markup)
  (lambda (pitch)
    (make-line-markup (list (make-simple-markup "no")
      (step->markup pitch)))))

(define (step-based-sub->markup step->markup pitch)
  (make-line-markup (list (make-simple-markup "no")
    (step->markup pitch)))))

(define (get-full-list pitch)
  (if (<= (step-nr pitch) (step-nr (last pitches)))
    ...)
(cons pitch (get-full-list (next-third pitch)))
'())

(define (get-consecutive nr pitches)
  (if (pair? pitches)
    (let* ((pitch-nr (step-nr (car pitches)))
            (next-nr (if (not (= (modulo pitch-nr 2) 0)) (+ pitch-nr 2) nr)))
      (if (< pitch-nr nr)
        (cons (car pitches) (get-consecutive next-nr (cdr pitches)))
        ''()))
    '())))

;;; FIXME -- exceptions no longer work. -vv

(define (full-match exceptions)
  (if (pair? exceptions)
    (let* ((e (car exceptions))
           (e-pitches (car e)))
      (if (equal? e-pitches pitches)
        e
        (full-match (cdr exceptions))))
    #f))

(define (partial-match exceptions)
  (if (pair? exceptions)
    (let* ((e (car exceptions))
           (e-pitches (car e)))
      (if (equal? e-pitches (take pitches (length e-pitches)))
        e
        (partial-match (cdr exceptions))))
    #f))

;;; FIXME: exceptions don't work anyway.
(if #f (begin
    (write-me "pitches: " pitches)))

(let* ((ly:context-property context 'chordNameExceptionsFull))
  (full-exceptions
    (full-match full-exceptions)
    (full-markup if full-exception (cadr full-exception) '())
    (partial-exceptions
      (ly:context-property context 'chordNameExceptionsPartial)
      (partial-match partial-exceptions)
      (partial-pitches if partial-exception (car partial-exception) '())
      (partial-markup-prefix
        (if partial-exception (markup-or-empty-markup
               (cadr partial-exception)) empty-markup))
      (partial-markup-suffix
        (if (and partial-exception (pair? (cddr partial-exception)))
          (markup-or-empty-markup (caddr partial-exception)) empty-markup))
      (root (car pitches))
      (full (get-full-list root))
    ))

;; kludge alert: replace partial matched lower part of all with
;; 'normal' pitches from full
;; (all pitches)
(all (append (take full (length partial-pitches))
  (drop pitches (length partial-pitches))))

(highest (last all))
(missing (list-minus full (map pitch-unalter all)))
(consecutive (get-consecutive 1 all))
(rest (list-minus all consecutive))
altered (filter step-even-or-altered? all))
(con-s-alt (filter step-even-or-altered? consecutive))
(base (list-minus consecutive altered))

(if #f (begin
  (write-me "full:" full)
  ;; (write-me "partial-pitches:" partial-pitches)
  (write-me "full-markup:" full-markup)
  (write-me "partial-markup-prefix:" partial-markup-prefix)
  (write-me "partial-markup-suffix:" partial-markup-suffix)
  (write-me "all:" all)
  (write-me "altered:" altered)
  (write-me "missing:" missing)
  (write-me "consecutive:" consecutive)
  (write-me "rest:" rest)
  (write-me "base:" base)))

(case style
  ((banter)
;; root
;; + steps:altered + (highest all -- if not altered)
;; + subs:missing

  (let* ((root->markup default-note-namer)
    (step->markup step->markup-plusminus)
    (sub->markup (lambda (x)
      (step-based-sub->markup step->markup x)))
    (sep (make-simple-markup "/")))

  (if
    (pair? full-markup)
    (make-line-markup (list (root->markup root) full-markup)))

  (make-line-markup
    (list
      (root->markup root)
      partial-markup-prefix
      (make-super-markup
        (markup-join
          (append
            (map step->markup
              (append altered
              (append consecutive altered))))))))))

;; 'normal' pitches from full
;; (all pitches)
(all (append (take full (length partial-pitches))
  (drop pitches (length partial-pitches))))

(highest (last all))
(missing (list-minus full (map pitch-unalter all)))
(consecutive (get-consecutive 1 all))
(rest (list-minus all consecutive))
altered (filter step-even-or-altered? all))
(con-s-alt (filter step-even-or-altered? consecutive))
(base (list-minus consecutive altered))

(if #f (begin
  (write-me "full:" full)
  ;; (write-me "partial-pitches:" partial-pitches)
  (write-me "full-markup:" full-markup)
  (write-me "partial-markup-prefix:" partial-markup-prefix)
  (write-me "partial-markup-suffix:" partial-markup-suffix)
  (write-me "all:" all)
  (write-me "altered:" altered)
  (write-me "missing:" missing)
  (write-me "consecutive:" consecutive)
  (write-me "rest:" rest)
  (write-me "base:" base)))

(case style
  ((banter)
;; root
;; + steps:altered + (highest all -- if not altered)
;; + subs:missing

  (let* ((root->markup default-note-namer)
    (step->markup step->markup-plusminus)
    (sub->markup (lambda (x)
      (step-based-sub->markup step->markup x)))
    (sep (make-simple-markup "/")))

  (if
    (pair? full-markup)
    (make-line-markup (list (root->markup root) full-markup)))

  (make-line-markup
    (list
      (root->markup root)
      partial-markup-prefix
      (make-super-markup
        (markup-join
          (append
            (map step->markup
              (append altered
              (append consecutive altered))))))))

;; 'normal' pitches from full
;; (all pitches)
(all (append (take full (length partial-pitches))
  (drop pitches (length partial-pitches))))

(highest (last all))
(missing (list-minus full (map pitch-unalter all)))
(consecutive (get-consecutive 1 all))
(rest (list-minus all consecutive))
altered (filter step-even-or-altered? all))
(con-s-alt (filter step-even-or-altered? consecutive))
(base (list-minus consecutive altered))

(if #f (begin
  (write-me "full:" full)
  ;; (write-me "partial-pitches:" partial-pitches)
  (write-me "full-markup:" full-markup)
  (write-me "partial-markup-prefix:" partial-markup-prefix)
  (write-me "partial-markup-suffix:" partial-markup-suffix)
  (write-me "all:" all)
  (write-me "altered:" altered)
  (write-me "missing:" missing)
  (write-me "consecutive:" consecutive)
  (write-me "rest:" rest)
  (write-me "base:" base)))

(case style
  ((banter)
;; root
;; + steps:altered + (highest all -- if not altered)
;; + subs:missing

  (let* ((root->markup default-note-namer)
    (step->markup step->markup-plusminus)
    (sub->markup (lambda (x)
      (step-based-sub->markup step->markup x)))
    (sep (make-simple-markup "/")))

  (if
    (pair? full-markup)
    (make-line-markup (list (root->markup root) full-markup)))

  (make-line-markup
    (list
      (root->markup root)
      partial-markup-prefix
      (make-super-markup
        (markup-join
          (append
            (map step->markup
              (append altered
              (append consecutive altered))))))))

;; 'normal' pitches from full
;; (all pitches)
(all (append (take full (length partial-pitches))
  (drop pitches (length partial-pitches))))

(highest (last all))
(missing (list-minus full (map pitch-unalter all)))
(consecutive (get-consecutive 1 all))
(rest (list-minus all consecutive))
altered (filter step-even-or-altered? all))
(con-s-alt (filter step-even-or-altered? consecutive))
(base (list-minus consecutive altered))

(if #f (begin
  (write-me "full:" full)
  ;; (write-me "partial-pitches:" partial-pitches)
  (write-me "full-markup:" full-markup)
  (write-me "partial-markup-prefix:" partial-markup-prefix)
  (write-me "partial-markup-suffix:" partial-markup-suffix)
  (write-me "all:" all)
  (write-me "altered:" altered)
  (write-me "missing:" missing)
  (write-me "consecutive:" consecutive)
  (write-me "rest:" rest)
  (write-me "base:" base)))
(if (and (> (step-nr highest) 5)
         (not (step-even-or-altered? highest)))
   (list highest)'()))
(list partial-markup-suffix)
(map sub->markup missing))
sep)))))

((jazz)
;; root
;; + steps:(highest base) + cons-alt
;; + 'add'
;; + steps:rest
(let* ((root->markup default-note-namer)
       (step->markup step->markup-ignatzek)
       (sep (make-simple-markup " "))
       (add-prefix (make-simple-markup " add")))
(if
  (pair? full-markup)
  (make-line-markup (list (root->markup root) full-markup))
  (make-line-markup
   (list (root->markup root)
         partial-markup-prefix
         (make-super-markup
          (make-line-markup
           (list
            ;; kludge alert: omit <= 5
            ;; (markup-join (map step->markup
            ;;                 (cons (last base) cons-alt)) sep)

            ;; This fixes:
            ;; c  C5 -> C
            ;; c:2 C5 2 -> C2
            ;; c:3- Cm5 -> Cm
            ;; c:6.9 C5 6add9 -> C6 add 9 (add?)
            ;; ch = \chords { c c:2 c:3- c:6.9"7 }
            (markup-join (map step->markup
                          (let ((tb (last base)))
                            (if (> (step-nr tb) 5)
                               (cons tb cons-alt)
                               (cons-alt)))
                          sep))

            (if (pair? rest)
                add-prefix
                empty-markup)
            (markup-join (map step->markup rest) sep)
            partial-markup-suffix))))))))))
(else empty-markup))))

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%
%%%% Here begins the actual snippet:

chs = \transpose c' c' {
  <c e g>1
  <c es g>  % m = minor triad
  <c e gis>
  <c es ges> \break
  <c e g bes>
  <c es g bes>
  <c e g b>  % triangle = maj
  <c es ges beses>
  <c es ges b> \break
  <c e gis bes>
  <c es g b>
  <c e gis b>
  <c es ges bes> \break
  <c e g a>  % 6 = major triad with added sixth
  <c es g a>  % m6 = minor triad with added sixth
  <c e g bes d'> \break
  <c es g bes d' f' a' >
  <c es g bes d' f' >
  <c es ges bes d' >
  <c e g bes des'> \break
  <c e g bes dis'>
  <c e g bes d' f'>
  <c e g bes d' fis'>
  <c e g bes d' f' a'> \break
  <c e g bes d' fis' as'>
  <c e gis bes dis'>
  <c e g bes dis' fis'>
  <c e g bes d' f' as'> \break
  <c e g bes des' f' as'>
  <c e g bes d' fis'>
  <c e g b d'>
  <c e g bes d' f' as'> \break
  <c e g bes des' f' as'>
  <c e g bes des' f' a'>
  <c e g b d'>
  <c e g b d' f' a'> \break
  <c e g b d' fis'>
  <c e g bes des' f' a'>
  <f g>
  <c f g bes> \break
  <c f g bes d'>
  <c e g d'>  % add9
\new ChordNames {
  \set chordNameFunction = #ignatzek-chord-names
  \set instrumentName = "Ignatzek"
  \set shortInstrumentName = "Def"
  \chs
}
\new ChordNames {
  \set chordNameFunction = #jazz-chordnames

% already set by default:
% \new ChordNames {
%  \set chordNameFunction = #ignatzek-chord-names
%  \set instrumentName = "Ignatzek"
%  \set shortInstrumentName = "Def"
%  \chs
%}

% Lydian
% altered chord
\begin{music}
<\ch e g b fis'>
<\ch e g bes des' ees' fis' aes'>
\end{music}

% alternate Jazz notation
\begin{music}
\texttt{efullmusicJazzAlt} = \{
<\ch es g f'>
<\ch e g b fis'> \texttt{markup} { '+' }
<\ch e g bes des' ees' fis' aes'> \texttt{markup} {
\texttt{normal-size-super}
  \texttt{markup} { 'M' }
}\texttt{markup} { \texttt{font-family . math} } "M"
\texttt{markup} { \texttt{font-family . math} } "M"
\}
\end{music}
\begin{music}
<\ch es ges>
<\ch es ges bes>
<\ch es ges beses>
\end{music}

\begin{music}
\texttt{epartialmusicJazzAlt} = \{
<\ch d1>
<\ch es>
<\ch f>
<\ch g>
\texttt{markup} { \texttt{normal-size-super} "2" }
\texttt{markup} { "m" }
\texttt{markup} { \texttt{normal-size-super} "sus4" }
\texttt{markup} { \texttt{normal-size-super} "5" }
\texttt{markup} { "m" }-\texttt{markup} { \texttt{normal-size-super} "sus4" }
\texttt{markup} { "m" }-\texttt{markup} { \texttt{normal-size-super} "sus2" }
\}
\end{music}
%% This is the Banter (1987) style. It gives exceedingly
%% verbose (wide) names, making the output file take up to 4 pages.

\new ChordNames {
  \set chordNameFunction = \#banter-chordnames
  \override ChordName.font-size = #-3
  \set instrumentName = "Banter"
  \set shortInstrumentName = "Ban"
}

\new Staff \transpose c c' \{ \chs \}
\layout {
  #(layout-set-staff-size 16)
  system-system-spacing.basic-distance = #0
  \context {
    \ChordNames
    \consists "Instrument_name_engraver"
  }
  \context {
    \Score
    \remove "Bar_number_engraver"
  }
}
**Chords with stretched fingering for FretBoards and TabVoice**

Sometimes chords with a stretched fingering are required. If not otherwise specified the context-property maximumFretStretch is set to 4, though. Resulting in a warning about "No string for pitch ..." and the note is omitted. You may set maximumFretStretch to an appropriate value or explicitly assign string-numbers to all notes of a chord.

```plaintext
%% The code below will print two warnings, which may be omitted by uncommenting:
%%(for-each (lambda (x) (ly:expect-warning "No string for pitch")) (iota 2))

mus = {
  <c' bes'>
  <c\'2 bes'>
  \set maximumFretStretch = 5
  <c' bes'>
  <c\'2 bes'\1>
}

<<
\new FretBoards \mus
\new TabVoice \mus
>>
```

**Clusters**

Clusters are a device to denote that a complete range of notes is to be played.

```plaintext
fragment = \relative c' {
  c4 f <e d'>4
  <g a>8 <e a> a4 c2 <d b>4
  e2 c
}

<<
\new Staff fragment
\new Staff \makeClusters fragment
>>
```
Controlling the placement of chord fingerings

The placement of fingering numbers can be controlled precisely. For fingering orientation to apply, it must be used within a chord construct $<>$, even for single notes. Orientation for string numbers and right-hand fingerings may be set in a similar way.

```
\relative c' {
  \set fingeringOrientations = #'(left)  
  <c-1 e-3 a-5>4
  \set fingeringOrientations = #'(down)  
  <c-1 e-3 a-5>4
  \set fingeringOrientations = #'(down right up)  
  <c-1 e-3 a-5>4
  \set fingeringOrientations = #'(up)  
  <c-1 e-3 a-5>4
  \set fingeringOrientations = #'(left)  
  <c-1>2
  \set fingeringOrientations = #'(down)  
  <e-3>2
  \set stringNumberOrientations = #'(up left down)  
  <\f\3 a\2 c\1>1
  \set strokeFingerOrientations = #'(down right up)  
  <c\rightHandFinger #1 e\rightHandFinger #2 c\rightHandFinger #4 >
}
```

Cross-staff chords - beaming problems workaround

Sometimes it is better to use stems from the upper staff for creating cross-staff chords, because no problems with automatic beam collision avoidance then arise. If the stems from the lower staff were used in the following example, it would be necessary to change the automatic beam collision avoidance settings so that it doesn’t detect collisions between staves using `\override Staff.Beam.collision-voice-only = ##t`

```
\new PianoStaff <<
  \new Staff = up
  \relative c' {
    <<
      { r4
        \override Stem.cross-staff = ##t
    }
  }
```
Customizing the chord grid style

Custom divisions of chord squares can be defined through the measure-division-lines-alist and measure-division-chord-placement-alist properties of ChordSquare. These are both alists. Their keys are measure divisions, namely lists which give the fraction of the measure that each chord (or rest, or skip) represents. More precisely, a measure division alist is made of positive, exact numbers adding up to 1, for example: '(1/2 1/4 1/4). The exactness requirement means that, e.g., 1/2 is valid but not 0.5.

The values in measure-division-lines-alist are lists of lines, which are represented as (x1 y1 x2 y2). The line starts at the point (x1 y1) and ends at (x2 y2). Coordinates are expressed in the [-1, 1] scale relative to the extent of the square.

The values in measure-division-chord-placement-alist are lists of (x y) pairs giving the placement of the respective chords.

This example defines a peculiar chord grid style that has a rule for measures divided in three equal parts.

\paper {
  line-width = 10\cm
  ragged-right = ##f
}

\new ChordGrid \with {
  \override ChordSquare.measure-division-lines-alist =
Customizing the no-chord symbol

By default, rests in a ChordNames context cause the “N.C.” symbol to be printed. This markup can be customized.

```
<<
\chords {
  \set noChordSymbol = "---"
  \override R1 \set noChordSymbol = \markup \italic "Ssh!"
}
{ \once \override R1*3 }
>>
```

Displaying complex chords

Here is a way to display a chord where the same note is played twice with different accidentals.

```latex
\begin{verbatim}
\texttt{fixA} = \{
  \once \override \Stem\length = \#11
\}\n
\texttt{fixB} = \{
  \once \override \NoteHead.X-offset = \#1.7
  \once \override \Stem\length = \#7
  \once \override \Stem\rotation = \#'(45 0 0)
  \once \override \Stem\extra-offset = \#'(-0.1 . -0.2)
\}\n\end{verbatim}
```
\once \override Flag.style = #'no-flag
\once \override Accidental.extra-offset = #'(4 . -.1)
}

\relative c' { << { \fixA <b d!>8 } \\ { \voiceThree \fixB dis } >> s }

\relative c' {
\new Staff \relative c'' { c1 c1 }
\new FiguredBass \bassfigures
>>

Print ChordNames with same root and different bass as slash and bass-note
To print subsequent ChordNames only differing in its bass note as slash and bass note use the here defined engraver. The behaviour may be controlled in detail by the chordChanges context property.

#(define Bass_changes_equal_root_engraver
  (lambda (ctx)
    "For sequential @code{ChordNames} with same root, but different bass, the root markup is dropped: D D/C D/B -> D /C /B
The behaviour may be controlled by setting the @code{chordChanges} context-property."
    (let ((chord-pitches '())
          (last-chord-pitches '())
          (bass-pitch #f))
      (make-engraver
       ((initialize this-engraver)
        (let ((chord-note-namer (ly:context-property ctx 'chordNoteNamer))))
;; Set 'chordNoteNamer, respect user setting if already done
(ly:context-set-property! ctx 'chordNoteNamer
  (if (procedure? chord-note-namer)
      chord-note-namer
      note-name->markup))))

(listeners
  ((note-event this-engraver event)
    (let*
      ((pitch (ly:event-property event 'pitch))
       (pitch-name (ly:pitch-notename pitch))
       (pitch-alt (ly:pitch-alteration pitch))
       (bass (ly:event-property event 'bass #f))
       (inversion (ly:event-property event 'inversion #f)))
      ;; Collect notes of the chord
      ;; - to compare inversed chords we need to collect the bass note
      ;; - as usual member of the chord, whereas an added bass must be
      ;;   treated separate from the usual chord-notes
      ;; - notes are stored as pairs containing their
      ;;   pitch-name (an integer), i.e. disregarding their octave and
      ;;   their alteration
      (cond (bass (set! bass-pitch pitch))
        (inversion
         (set! bass-pitch pitch)
         (set! chord-pitches
          (cons (cons pitch-name pitch-alt) chord-pitches)))))
      (else
       (set! chord-pitches
        (cons (cons pitch-name pitch-alt) chord-pitches)))))))

(acknowledgers
  ((chord-name-interface this-engraver grob source-engraver)
    (let ((chord-changes (ly:context-property ctx 'chordChanges #f)))
      ;; If subsequent chords are equal apart from their bass,
      ;; reset the 'text-property.
      ;; Equality is done by comparing the sorted lists of this chord's
      ;; elements and the previous chord. Sorting is needed because
      ;; inverted chords may have a different order of pitches.
      ;; 'chord-changes' needs to be true
      (if (and bass-pitch
           chord-changes
           (equal?
            (sort chord-pitches car<)
            (sort last-chord-pitches car<)))
        (ly:grob-set-property! grob 'text
         (make-line-markup
          (list
           (ly:context-property ctx 'slashChordSeparator)
           ((ly:context-property ctx 'chordNoteNamer)
            bass-pitch
            (ly:context-property ctx 'chordNameLowercaseMinor))))))
      (set! last-chord-pitches chord-pitches)
      (set! chord-pitches '())
      (set! bass-pitch #f)))))

((finalize this-engraver)
Showing chords at changes

By default, every chord entered is printed; this behavior can be modified so that chord names are printed only at the start of lines and when the chord changes.
Simple lead sheet

When put together, chord names, a melody, and lyrics form a lead sheet:

```
\chords { c2 g:sus4 f e }
\new Staff \relative c' \{ \harmonies }
\addlyrics { One day this shall be free__ }
```

Single staff template with notes, lyrics, and chords

This template allows the preparation of a song with melody, words, and chords.

```
\lilypond
\melody = \relative c' { \\
     \clef treble \\
     \key c \major \\
     \time 4/4 \\
     a4 b c d \\
}

\text = \lyricmode { \\
    Aaa Bee Cee Dee \\
}

\harmonies = \chordmode { \\
    a2 c \\
}
Single staff template with notes, lyrics, chords and frets

Here is a simple lead sheet template with melody, lyrics, chords and fret diagrams.

\verbatim
verseI = \lyricmode {
    \set stanza = "1."
    This is the first verse
}

verseII = \lyricmode {
    \set stanza = "2."
    This is the second verse.
}

theChords = \chordmode {
    % insert chords for chordnames and fretboards here
    c2 g4 c
}

staffMelody = \relative c' {
    \key c \major
    \clef treble
    % Type notes for melody here
    c4 d8 e f4 g
    \bar "|." 
}
\verbatim
Single staff template with notes and chords

Want to prepare a lead sheet with a melody and chords? Look no further!

```plaintext
\melody = \relative c' { \\
    \clef treble \\
    \key c \major \\
    \time 4/4 \\
    f4 e8[ c] d4 g \\
    a2 - a \\
}

\harmonies = \chordmode { \\
    c4:m f:min7 g:maj c:aug \\
    d2:dim b4:5 e:sus \\
}

\score { \\
    << \\
        \new ChordNames { \\
            \set chordChanges = ##t \\
            \harmonies \\
        } \\
        \new Staff \melody \\
    >> \\
    \layout{ } \\
    \midi{ } \\
}
```

1. This is the first verse
2. This is the second verse.
Vertically centering paired figured bass extenders

Where figured bass extender lines are being used by setting \useBassFigureExtenders to true, pairs of congruent figured bass extender lines are vertically centered if \figuredBassCenterContinuations is set to true.

```
\relative c' {
  c8 c b b a a c16 c b b
  c8 c b b a a c16 c b b
  c8 c b b a a c c b b
}
\figures {
  \set useBassFigureExtenders = ##t
  <6+ 4 3>4 <6 4 3>8 r
  <6+ 4 3>4 <6 4 3>8 <4 3++16 r
  \set figuredBassCenterContinuations = ##t
  <6+ 4 3>4 <6 4 3>8 r
  <6+ 4 3>4 <6 4 3>8 <4 3++16 r
  \set figuredBassCenterContinuations = ##f
  <6+ 4 3>4 <6 4 3>8 r
  <6+ 4 3>4 <6 4 3>8 <4 3++8
}
```

Volta below chords

By adding the \Volta_engraver to the relevant staff, volte can be put under chords.

```
\score {
  \chords {
    c1
    c1
  }
  \new Staff \with {
    \consists "Volta_engraver"
  }
  {\repeat volta 2 { c'1 }
    \alternative { c' }
  }
```
Keyboards

Section “Keyboard and other multi-staff instruments” in Notation Reference

Accordion-discant symbols

This snippet has been obsoleted by predefined markup commands, see 'Discant symbols' in the Notation Reference. It’s still useful as a simple demonstration of how to combine symbols: the placement of the symbols added with \markup can be tweaked by changing the \translate-scaled arguments. \translate-scaled is used here rather than \translate in order to let the positioning of the symbol parts adapt to changes of font-size.

\layout { ragged-right = ##t }

% 16 voets register
accBasson = \markup {
   \combine
   \discant
   \translate-scaled #'(0 . 0.5) \dot
}

% een korig 8 en 16 voets register
accBandon = \markup {
   \combine
   \discant
   \combine
   \translate-scaled #'(0 . 0.5) \dot
   \translate-scaled #'(0 . 1.5) \dot
}

accVCello = \markup {
   \combine
   \discant
   \combine
   \translate-scaled #'(0 . 0.5) \dot
   \combine
   \translate-scaled #'(0 . 1.5) \dot
   \translate-scaled #'(1 . 1.5) \dot
}

% 4–8–16 voets register
accHarmon = \markup {
   \combine
   \discant
   \combine
   \translate-scaled #'(0 . 0.5) \dot
\combine
\translate-scaled #'(0 . 1.5) \dot
\translate-scaled #'(0 . 2.5) \dot
}

accTrombon = \markup { 
\combine
\discant
\combine
\translate-scaled #'(0 . 0.5) \dot
\combine
\translate-scaled #'(0 . 1.5) \dot
\combine
\translate-scaled #'(1 . 1.5) \dot
\translate-scaled #'(-1 . 1.5) \dot
}

% eenkorig 4 en 16 voets register
accOrgan = \markup { 
\combine
\discant
\combine
\translate-scaled #'(0 . 0.5) \dot
\translate-scaled #'(0 . 2.5) \dot
}

accMaster = \markup { 
\combine
\discant
\combine
\translate-scaled #'(0 . 0.5) \dot
\combine
\translate-scaled #'(0 . 1.5) \dot
\combine
\translate-scaled #'(1 . 1.5) \dot
\combine
\translate-scaled #'(-1 . 1.5) \dot
\translate-scaled #'(0 . 2.5) \dot
}

accAccord = \markup { 
\combine
\discant
\combine
\translate-scaled #'(0 . 1.5) \dot
\combine
\translate-scaled #'(1 . 1.5) \dot
\combine
\translate-scaled #'(-1 . 1.5) \dot
\translate-scaled #'(0 . 2.5) \dot
}
accMusette = \markup {
  \combine
  \discant
  \combine
    \translate-scaled #'(0 . 1.5) \dot
  \combine
    \translate-scaled #'(1 . 1.5) \dot
  \translate-scaled #'(-1 . 1.5) \dot
}

accCeleste = \markup {
  \combine
  \discant
  \combine
    \translate-scaled #'(0 . 1.5) \dot
  \translate-scaled #'(-1 . 1.5) \dot
}

accOboe = \markup {
  \combine
  \discant
  \combine
    \translate-scaled #'(0 . 1.5) \dot
  \translate-scaled #'(0 . 2.5) \dot
}

accClarin = \markup {
  \combine
  \discant
  \translate-scaled #'(0 . 1.5) \dot
}

accPiccolo = \markup {
  \combine
    \discant
    \translate-scaled #'(0 . 2.5) \dot
}

accViolin = \markup {
  \combine
    \discant
    \translate-scaled #'(0 . 1.5) \dot
  \combine
    \translate-scaled #'(1 . 1.5) \dot
  \translate-scaled #'(0 . 2.5) \dot
}

\relative c'' {
  c4 d \accBasson e f
c4 d \accBandon e f
c4 d \accVCello e f
Accordone register symbols

Accordone register symbols are available as \mark up as well as as standalone music events (as register changes tend to occur between actual music events). Bass registers are not overly standardized. The available commands can be found in 'Discant symbols' in the Notation Reference.

#(use-modules (lily accreg))

\new PianoStaff
<<
\new Staff \relative {
    \clef treble
    \discant "10"
    r8 s32 f' [ bes f] s e [ a e] s d[ g d] s16 e32[ a]
    <<
        \{ r16 <f bes> r <e a> r <d g> \}
    \}
    \{ d r a r bes r \}
    >> |
    <cis e a>1
}
Changing the text for sustain markings

Staff.pedalSustainStrings can be used to set the text used for pedal down and up. Note that the only valid strings are those found in the list of pedal glyphs - the values used this snippet constitute an exhaustive list.

sustainNotes = { c4\sustainOn d e\sustainOff\sustainOn f\sustainOff }

\relative c' {
  \sustainNotes
  \set Staff.pedalSustainStrings = #'("P" "P-" ";")
  \sustainNotes
  \set Staff.pedalSustainStrings = #'("d" "de" ";")
  \sustainNotes
  \set Staff.pedalSustainStrings = #'("M" "M-" ";")
  \sustainNotes
  \set Staff.pedalSustainStrings = #'("Ped" "*Ped" ";")
  \sustainNotes
}

Clusters

Clusters are a device to denote that a complete range of notes is to be played.
fragment = \relative c' {
Controlling the placement of chord fingerings

The placement of fingering numbers can be controlled precisely. For fingering orientation to apply, it must be used within a chord construct `<>`, even for single notes. Orientation for string numbers and right-hand fingerings may be set in a similar way.

```
relative c' {
    set fingeringOrientations = #'(left)
    <c-1 e-3 a-5>4
    set fingeringOrientations = #'(down)
    <c-1 e-3 a-5>4
    set fingeringOrientations = #'(down right up)
    <c-1 e-3 a-5>4
    set fingeringOrientations = #'(up)
    <c-1 e-3 a-5>4
    set fingeringOrientations = #'(left)
    <c-1>2
    set fingeringOrientations = #'(down)
    <e-3>2
    set stringNumberOrientations = #'(up left down)
    <f\3 a\2 c\1>1
    set strokeFingerOrientations = #'(down right up)
    <c\rightHandFinger #1 e\rightHandFinger #2 c\rightHandFinger #4 >
}
```

Creating slurs across voices

In some situations, it may be necessary to create slurs between notes from different voices. The solution is to add invisible notes to one of the voices, using \hideNotes.
This example is measure 235 of the Ciaconna from Bach’s 2nd Partita for solo violin, BWV 1004.

\relative c' {  
  <<  
    {  
      d16(a') s a s a[s a] s a[s a]  
    }  
  \}  
\slurUp
bes.16[ s e](

\hideNotes a)  
\unHideNotes f[(
\hideNotes a)  
\unHideNotes fis](
\hideNotes a)  
\unHideNotes g[(
\hideNotes a)  
\unHideNotes gis](
\hideNotes a)  
}  
>>  
}

Cross-staff chords - beaming problems workaround

Sometimes it is better to use stems from the upper staff for creating cross-staff chords, because no problems with automatic beam collision avoidance then arise. If the stems from the lower staff were used in the following example, it would be necessary to change the automatic beam collision avoidance settings so that it doesn’t detect collisions between staves using \override Staff.Beam.collision-voice-only = ##t

\new PianoStaff <<  
\new Staff = up  
\relative c' {  
<<  
  { r4  
    \override Stem.cross-staff = ##t  
    \override Stem.length = #19 % this is in half-spaces,  
      % so it makes stems 9.5 staffspaces long  
    \override Stem.Y-offset = #-6 % stems are normally lengthened  
      % upwards, so here we must lower the stem by the amount  
      % equal to the lengthening - in this case (19 - 7) / 2  
      % (7 is default stem length)  
    e e e }  
  }  
\change Staff = "bottom"  
\override NoteColumn.ignore-collision = ##t
Cross-staff tremolos

Since \repeat tremolo expects exactly two musical arguments for chord tremolos, the note or chord which changes staff within a cross-staff tremolo should be placed inside curly braces together with its \change Staff command.

\new PianoStaff <<
\new Staff = "up" \relative c'' {
  \key a \major
  \time 3/8
  s4.
}
\new Staff = "down" \relative c'' {
  \key a \major
  \time 3/8
  \voiceOne
  \repeat tremolo 6 {
    <a e'>32
    {
      \change Staff = "up"
      \voiceTwo
      <cis a' dis>32
    }
  }
}
>>
Fine-tuning pedal brackets

The appearance of pedal brackets may be altered in different ways.

```latex
\paper { ragged-right = ##f }
\relative c' { 
c2\sostenutoOn c
c2\sostenutoOff c
\once \override Staff.PianoPedalBracket.shorten-pair = '#(-7 . -2) 
c2\sostenutoOn c
c2\sostenutoOff c
\once \override Staff.PianoPedalBracket.edge-height = '#(0 . 3) 
c2\sostenutoOn c
c2\sostenutoOff c
}
```

![Pedal brackets with altered appearance](image)

Indicating cross-staff chords with arpeggio bracket

An arpeggio bracket can indicate that notes on two different staves are to be played with the same hand. In order to do this, the `PianoStaff` must be set to accept cross-staff arpeggios and the arpeggios must be set to the bracket shape in the `PianoStaff` context.

*(Debussy, *Les collines d’Anacapri*, m. 65)*

```latex
\new PianoStaff << 
\set PianoStaff.connectArpeggios = ##t
\override PianoStaff.Arpeggio.stencil = 
\ly:arpeggio::brew-chord-bracket
\new Staff { 
\relative c' { 
\key b \major 
\time 6/8 
b8-.\arpeggio fis'-.\> cis-.
e-. gis-. b-.)\!\!\!\!\!\!\!\!fermata\laissezVibrer \bar "||"
} 
}\new Staff { 
\relative c' { 
\clef bass 
\key b \major
<< 
{ <a e cis>2.\arpeggio 
} \\ 
{ <a, e a,>2. 
} >> 
}
```
Jazz combo template

This is quite an advanced template, for a jazz ensemble. Note that all instruments are notated in \key c \major. This refers to the key in concert pitch; the key will be automatically transposed if the music is within a \transpose section.

\header {
  title = "Song"
  subtitle = "(tune)"
  composer = "Me"
  meter = "moderato"
  piece = "Swing"
  tagline = \markup {
    \column {
      "LilyPond example file by Amelie Zapf,"
      "Berlin 07/07/2003"
    }
  }
}

% To make the example display in the documentation
\paper {
  paper-width = 130
}

%#(set-global-staff-size 16)
\include "english.ly"

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% Some macros %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

sl = { 
  \override NoteHead.style = #'slash 
  \hide Stem 
}

nsl = { 
  \revert NoteHead.style 
  \undo \hide Stem 
}

crOn = \override NoteHead.style = #'cross 
crOff = \revert NoteHead.style 

%%% insert chord name style stuff here.
jazzChords = { }

% Keys'n'thangs

global = { \time 4/4 }

Key = { \key c \major }

% Horns

% ------ Trumpet ------
trpt = \transpose c d \relative c'' { 
  \Key
  c | c | c |
}
trpHarmony = \transpose c' d { 
  \jazzChords
}

% ------ Alto Saxophone ------
alto = \transpose c a \relative c' { 
  \Key
  c | c | c |
}
altoHarmony = \transpose c' a { 
  \jazzChords
}

% ------ Baritone Saxophone ------
bari = \transpose c a' \relative c { 
  \Key
  c1
  c1
  \sl
  d4~"Solo" d d d
  \nsl
}
bariHarmony = transpose c' a \chordmode { \jazzChords s1 s d2:maj e:m7 }
bariSax = { \global \clef treble << \bari >> }

% ------ Trombone ------
tbone = \relative c { \Key c1 | c | c }
tboneHarmony = \chordmode { \jazzChords }
trombone = { \global \clef bass << \tbone >> }

% ############ Rhythm Section ############

% ------ Guitar ------
gtr = \relative c'' { \Key c1 \sl b4 b b b \nsl c1 }
gtrHarmony = \chordmode { \jazzChords s1 c2:min7+ d2:maj9 }
guitar = { \global \clef treble << \gtr >> }

%% ------ Piano ------
rhUpper = \relative c'' {
\voiceOne
\Key
c | c | c
}
rhLower = \relative c' { 
\voiceTwo
\Key
e | e | e
}
lhUpper = \relative c' { 
\voiceOne
\Key
g | g | g
}
lhLower = \relative c { 
\voiceTwo
\Key
c | c | c
}
PianoRH = {
\clef treble
\global
<<
  \new Voice = "one" \rhUpper
  \new Voice = "two" \rhLower
>>
PianoLH = {
\clef bass
\global
<<
  \new Voice = "one" \lhUpper
  \new Voice = "two" \lhLower
>>
}
piano = {
<<
  \new Staff = "upper" \PianoRH
  \new Staff = "lower" \PianoLH
>>
}
% ------ Bass Guitar ------
Bass = \relative c { 
\Key
  c | c | c
}
bass = {
\global
%------ Drums ------
up = \drummode { 
  \voiceOne
  \h intestine { }  \h intestine { }  \h intestine { }
  \h intestine { }  \h intestine { }  \h intestine { }
}
down = \drummode { 
  \voiceTwo
  \b drum { }  \b drum { }  \b drum { }
  \b drum { }  \b drum { }  \b drum { }
}
drumContents = { 
  \global
  \new DrumVoice \up
  \new DrumVoice \down
}

% It All Goes Together Here %

score { 
  \new StaffGroup = "horns" <<
  \new Staff = "trumpet" \with { instrumentName = "Trumpet" }
  \trumpet
  \new Staff = "altosax" \with { instrumentName = "Alto Sax" }
  \altosax
  \new ChordNames = "barichords" \with { instrumentName = "Trumpet" }
  \bbarichords
  \new Staff = "barisax" \with { instrumentName = "Bari Sax" }
  \barisax
  \new Staff = "trombone" \with { instrumentName = "Trombone" }
  \trombone
}

\new StaffGroup = "rhythm" <<
  \new ChordNames = "chords" \gtrHarmony
  \new Staff = "guitar" \with { instrumentName = "Guitar" }
  \guitar
  \new PianoStaff = "piano" \with {
    instrumentName = "Piano"
    midiInstrument = "acoustic grand"
\} \piano
\new Staff = "bass" \with { instrumentName = "Bass" }
\bass
\new DrumStaff \with { instrumentName = "Drums" }
\drumContents

\greater

\layout {
  \context { \Staff \RemoveEmptyStaves }
  \context {
    \Score
    \override BarNumber.padding = #3
    \override RehearsalMark.padding = #2
    skipBars = ##t
  }
}
\midi { }
\}

\Song
\(\text{tune}\)

\moderato

\Swing
Laissez vibrer ties

Laissez vibrer ties have a fixed size. Their formatting can be tuned using 'tie-configuration'.

\relative c' {
  <c e g>4\laissezVibrer r <c f g>\laissezVibrer r
  <c d f g>4\laissezVibrer r <c d f g>4.\laissezVibrer r8
  <c d e f>4\laissezVibrer r
  \override LaissezVibrerTieColumn.tie-configuration
    = #'((-7 ,DOWN)
        (-5 ,DOWN)
        (-3 ,UP)
        (-1 ,UP))
  <c d e f>4\laissezVibrer r
}

\times 4\times 4
Piano template (simple)

Here is a simple piano staff with some notes.

```latex
upper = \relative c'' {
  \clef treble
  \key c \major
  \time 4/4

  a4 b c d
}

lower = \relative c {
  \clef bass
  \key c \major
  \time 4/4

  a2 c
}

\score {\new PianoStaff \with { instrumentName = "Piano" } << \new Staff = "upper" \upper \new Staff = "lower" \lower >> \layout { } \midi { } }
```

Piano template with centered lyrics

Instead of having a full staff for the melody and lyrics, lyrics can be centered between the staves of a piano staff.

```latex
upper = \relative c'' {
  \clef treble
  \key c \major
  \time 4/4

  a4 b c d
}
```
lower = \relative c { \\
    \clef bass \\
    \key c \major \\
    \time 4/4 \\
    a2 c 
}

text = \lyricmode { \\
    Aaa Bee Cee Dee 
}

\score { \\
    \new PianoStaff << \\
    \new Staff = upper { \new Voice = "singer" \upper } \\
    \new Lyrics \lyricsto "singer" \text \\
    \new Staff = lower { \lower } \\
    >> \\
    \layout { } \\
    \midi { } 
}

Piano template with melody and lyrics
Here is a typical song format: one staff with the melody and lyrics, with piano accompaniment underneath.

melody = \relative c' { \\
    \clef treble \\
    \key c \major \\
    \time 4/4 \\
    a b c d 
}

text = \lyricmode { \\
    Aaa Bee Cee Dee 
}

upper = \relative c'' { \\
    \clef treble \\
    \key c \major \\
    \time 4/4 \\
    a4 b c d
Removing brace on first line of piano score

This snippet removes the first brace from a PianoStaff or a GrandStaff.

It may be useful when cutting and pasting the engraved image into existing music.

It uses \alterBroken.

someMusic = {
    \once \override Staff.Clef.stencil = ##f
    \once \override Staff.TimeSignature.stencil = ##f
    \repeat unfold 3 c1 \break
    \repeat unfold 5 c1 \break
    \repeat unfold 5 c1
}

\score {
    \new PianoStaff
    <<
Using autochange with more than one voice

Using autochange with more than one voice.

```plaintext
\new Staff = "right" \relative c' \someMusic
\new Staff = "left" \relative c' \clef F \someMusic

\layout {
  indent=75
  \context {
    \PianoStaff
    \alterBroken transparent #'(#t) SystemStartBrace
  }
}

Using autochange with more than one voice

\score
{
  \new PianoStaff
  \new Staff = "up" {
    \set Timing.beamExceptions = #'()
    \set Timing.beatStructure = #'(4)
    \new Voice {
      \voiceOne
      \autoChange
      \relative c' {
        g8 a b c d e f g
        g,8 a b c d e f g
      }
    }
  }
}
Vocal ensemble template with automatic piano reduction

This template adds an automatic piano reduction to the standard SATB vocal score demonstrated in “Vocal ensemble template”. This demonstrates one of the strengths of LilyPond – you can use a music definition more than once. If any changes are made to the vocal notes (say, tenorMusic), then the changes will also apply to the piano reduction.

\paper {  
  top-system-spacing.basic-distance = #10  
  score-system-spacing.basic-distance = #20  
  system-system-spacing.basic-distance = #20  
  last-bottom-spacing.basic-distance = #10  
}

global = {  
  \key c \major  
  \time 4/4  
}

sopMusic = \relative {  
  c''4 c c8[( b)] c4  
}

sopWords = \lyricmode {  
  hi hi hi hi  
}

altoMusic = \relative {  
  e'4 f d e  
}
altoWords = \lyricmode { 
    ha ha ha ha
}

tenorMusic = \relative { 
    g4 a f g
}

tenorWords = \lyricmode { 
    hu hu hu hu
}

bassMusic = \relative { 
    c4 c g c
}

bassWords = \lyricmode { 
    ho ho ho ho
}

\score { 
    \new ChoirStaff <<
      \new Lyrics = "sopranos" \with { 
        % This is needed for lyrics above a staff
        \override VerticalAxisGroup.staff-affinity = #DOWN 
      } 
      \new Staff = "women" <<
        \new Voice = "sopranos" { \voiceOne << \global \sopMusic >> } 
        \new Voice = "altos" { \voiceTwo << \global \altoMusic >> } 
      >>
      \new Lyrics = "altos"
      \new Lyrics = "tenors" \with { 
        % This is needed for lyrics above a staff
        \override VerticalAxisGroup.staff-affinity = #DOWN 
      } 
      \new Staff = "men" <<
        \clef bass 
        \new Voice = "tenors" { \voiceOne << \global \tenorMusic >> } 
        \new Voice = "basses" { \voiceTwo << \global \bassMusic >> } 
      >>
      \new Lyrics = "basses"
      \context Lyrics = "sopranos" \lyricsto "sopranos" \sopWords
      \context Lyrics = "altos" \lyricsto "altos" \altoWords
      \context Lyrics = "tenors" \lyricsto "tenors" \tenorWords
      \context Lyrics = "basses" \lyricsto "basses" \bassWords
    >>
    \new PianoStaff <<
      \new Staff <<
        \set Staff.printPartCombineTexts = ##f 
        \partCombine 
        << \global \sopMusic >>
<< \global \altoMusic >>
>>
\new Staff <<
\clef bass
\set Staff.printPartCombineTexts = ##f
\partCombine
<< \global \tenorMusic >>
<< \global \bassMusic >>
>>
>>
}}
Percussion

Section “Percussion” in Notation Reference

Adding drum parts

Using the powerful pre-configured tools such as the \drummode function and the DrumStaff context, inputting drum parts is quite easy: drums are placed at their own staff positions (with a special clef symbol) and have note heads according to the drum. Attaching an extra symbol to the drum or restricting the number of lines is possible.

\[ \text{drh} = \text{\textbf{\textbackslash drummode}} \{ \\
\text{cymc4.} \text{\textasciitilde "crash" hhc16}'\text{"h.h." hh hhch8 hho hhch8 hh16 hh} \\
\text{hhc4 r4} \text{ r2} \\
\} \]

\[ \text{drl} = \text{\textbf{\textbackslash drummode}} \{ \\
\text{bd4 sn8 bd bd4} \text{<< bd ss >>} \\
\text{bd8 tommh tommh bd toml toml bd tomfh16 tomfh} \\
\} \]

\[ \text{timb} = \text{\textbf{\textbackslash drummode}} \{ \\
\text{timh4 ssh timh8 ssh r timh r4} \\
\text{ssh8 timl r4 cb8 cb} \\
\} \]

\text{\textbackslash score} \{  \\
<<  \\
\text{\new DrumStaff} \text{\textbf{\textbackslash with}} \{ \\
\text{instrumentName = "timbales"} \\
\text{drumStyleTable = \#timbales-style} \\
\text{\textbf{\textbackslash override}} \text{StaffSymbol.line-count = \#2} \\
\text{\textbf{\textbackslash override}} \text{BarLine.bar-extent = \#1{-1 . 1}} \\
\} \}
<<  \\
\text{\textbf{\textbackslash timb}} \\
>>  \\
\text{\new DrumStaff} \text{\textbf{\textbackslash with}} \{ \text{instrumentName = "drums"} \}
<<  \\
\text{\new DrumVoice} \{ \text{\textbf{\textbackslash stemUp}} \text{\textbackslash drh} \} \\
\text{\new DrumVoice} \{ \text{\textbf{\textbackslash stemDown}} \text{\textbackslash drl} \} \\
>>  \\
>>  \\
\text{\textbf{\textbackslash layout}} \{ \}  \\
\text{\textbf{\textbackslash midi}} \{ \text{\textbf{\textbackslash tempo}} \text{4 = 120} \} \\
\}

![Drum notation examples](image-url)
**Cow and ride bell example**

Two different bells, entered with 'cb' (cowbell) and 'rb' (ridebell).

\paper { tagline = ##f }

\define mydrums '((ridebell default #f 3) (cowbell default #f -2))

\new DrumStaff \with { instrumentName = "Different Bells" }

\drummode {
  \set DrumStaff.drumStyleTable = #(alist->hash-table mydrums)
  \set DrumStaff.clefPosition = 0.5
  \override DrumStaff.StaffSymbol.line-positions = #'(-2 3)
  \override Staff.BarLine.bar-extent = #'(-1.0 . 1.5)

  \time 2/4
  rb8 8 cb8 16 rb16-> ~ |
  16 8 16 cb8 8 |}

Different Bells

---

**Customized drum notation in printed and MIDI output**

Customized drum “pitch” names (suitable for a custom drum style, for example) may be used both in printed and MIDI output by defining such variables as drumPitchNames, drumStyleTable and midiDrumPitches, as demonstrated here. In short, this snippet:

- defines some "pitch" names,
- defines how they will be rendered,
- tells LilyPond to use them for layout,
- assigns pitches to the names,
- tells LilyPond to use them for MIDI output.

%% This snippet tries to amend
%% NR 2.5.1 Common notation for percussion - Custom percussion staves
%% http://lilypond.org/doc/v2.18/Documentation/notation/common-notation-for-percussion#custom-percussion-staves

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%% To use custom drum pitch names for your score and midi you need to follow
%% this route:
%%
%% LAYOUT:
%%
%% (1) Define a name and put it in 'drumPitchNames'
%% This can be done at toplevel with
%% Percussion

%% drumPitchNames.my-name = #'my-name
%% It's possible to add an alias as well.
%% (2) Define how it should be printed
%% Therefore put them into a top-level list, where each entry should
%% be of the form:
%% (my-name
%%   note-head-style-or-default
%%   articulation-type-or-#f
%%   staff-position)
%% Example:
%% (define my-style
%%  '(my-name default tenuto -1)
%%  ; ...)
%% (3) Tell LilyPond to use these custom definitions, with
%% drumStyleTable = #(alist->hash-table my-style)
%% in a \layout or \with block
%%
%% Now we're done for layout. Here is a short but complete example:
%% \new DrumStaff
%% \with { drumStyleTable = #(alist->hash-table my-style) }
%% \drummode { my-name }
%%

%%% MIDI:
%%% (1) Again at top-level, assign a pitch to your custom note name
%% midiDrumPitches.my-name = ges
%% Note that you have to use the name, which is in drumPitchNames, no alias
%% (2) Tell LilyPond to use this pitch(es), with
%% drumPitchTable = #(alist->hash-table midiDrumPitches)
%%
%% Example:
%% \score {
%%   \new DrumStaff
%%   \with {
%%     drumStyleTable = #(alist->hash-table my-style)
%%     drumPitchTable = #(alist->hash-table midiDrumPitches)
%%   }
%%   \drummode { my-name4 }
%%   \layout {}
%%   \midi {}
%% }

%%% TESTING
%%% TESTING
%%% TESTING

%%% To test whether all is fine, run the following sequence in terminal:
%%% lilypond my-file.ly
%% midi2ly my-file.midi
%% gedit my-file-midi.ly
%%
%% This will do the following:
%% 1. create pdf and midi
%% 2. transform the midi back to a .ly-file
%% (note: midi2ly is not always good in correctly identifying enharmonic pitches)
%% 3. open this file in gedit (or use another editor)
%% Now watch what you've got.
%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
%% FULL EXAMPLE
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\\define djambe
((\dbass default #f -2)
 (\dbassmute default stopped -2)
 (\dopen default #f 0)
 (\dopenmute default stopped 0)
 (\dslap default #f 2)
 (\dslapmute default stopped 2)))

\\define midiDrumPitches
\\\dbass = \g
\\\dbassmute = \fis
\\\dopen = \a
\\\dopenmute = \gis
\\\dslap = \b
\\\dslapmute = \ais

\one = \drummode { r4 dba4 do ds r dbm dom dsm }

\score {
  \new DrumStaff
  \with {
    \\override StaffSymbol.line-count = #3
    instrumentName = #"Djembe 
    drumStyleTable = #(alist->hash-table djambe)
    drumPitchTable = #(alist->hash-table midiDrumPitches)
Heavily customized polymetric time signatures

Though the polymetric time signature shown was not the most essential item here, it has been included to show the beat of this piece (which is the template of a real Balkan song!).

```
melody = \relative c' \{ 
  \key g \major 
  \compoundMeter #'((3 8) (2 8) (2 8) (3 8) (2 8) (2 8) 
    (2 8) (2 8) (3 8) (2 8) (2 8))
  c8 c c d4 c8 c b c b a4 g fis8 e d c b' c d e4-- fis8 g \break
  c,4. d4 c4 d4. c4 d c2 d4. e4-- d4
  c4. d4 c4 d4. c4 d c2 d4. e4-- d4 \break
  c4. d4 c4 d4. c4 d c2 d4. e4-- d4 \break
}
```

```
drum = \new DrumStaff \drummode { 
  \repeat volta 2 { 
    bd4.\markup { Drums } sn4 bd \bar ";"
    sn4. bd4 sn \bar ";"
    bd sn bd4. sn4 bd 
  }
}
```

```
\new Staff \with { 
  instrumentName = \markup { \concat { "B" \flat " Sop." } } 
}
```

```
High and Low woodblock example

Two Woodblocks, entered with ‘wbh’ (high woodblock) and ‘wbl’ (low woodblock). The length of the barline has been altered with an \override command otherwise it would be too short. The positions of the two stafflines also have to be explicitly defined.

\paper {  tagline = ##f  }

%! These lines define the position of the woodblocks in the stave;
%! if you like, you can change it or you can use special note heads
%! for the woodblocks.
!#(define mydrums '((hiwoodblock default #f 3)
!  (lowoodblock default #f -2)))

woodstaff = {
  % This defines a staff with only two lines.
  % It also defines the positions of the two lines.
  \override Staff.StaffSymbol.line-positions = #'(-2 3)

  % This is necessary; if not entered,  
  % the barline would be too short!
  \override Staff.BarLine.bar-extent = #'(-1.0 . 1.5)
  % small correction for the clef:
  \set DrumStaff.clefPosition = 0.5
}

\new DrumStaff 
  % with this you load your new drum style table
  \set DrumStaff.drumStyleTable = #(alist->hash-table mydrums)

\woodstaff
\drummode {
  \time 2/4
  wb18 16 16 8-> 8 |
  wb18 16 16-> ~ 16 16 r8 |
}
Jazz combo template

This is quite an advanced template, for a jazz ensemble. Note that all instruments are notated in \key c \major. This refers to the key in concert pitch; the key will be automatically transposed if the music is within a \transpose section.

\header {
  title = "Song"
  subtitle = "(tune)"
  composer = "Me"
  meter = "moderato"
  piece = "Swing"
  tagline = \markup {
    \column {
      "LilyPond example file by Amelie Zapf,"
      "Berlin 07/07/2003"
    }
  }
}

% To make the example display in the documentation
\paper {
  paper-width = 130
}

%#(set-global-staff-size 16)
\include "english.ly"

%%%%%%%%%%%%%%%% Some macros %%%%%%%%%%%%%%%%%

sl = {
  \override NoteHead.style = #'slash
  \hide Stem
}

nsl = {
  \revert NoteHead.style
  \undo \hide Stem
}

crOn = \override NoteHead.style = #'cross
crOff = \revert NoteHead.style

% % insert chord name style stuff here.

jazzChords = { }

%%%%%%%%%%%%%%%% Keys'n'thangs %%%%%%%%%%%%%%%%%

global = { \time 4/4 }

Key = { \key c \major }

% ###### Horns ######

% ------- Trumpet -------

    trpt = \transpose c d \relative c'' {
\Key
c1 | c | c |
}
trpHarmony = \transpose c' d {
   \jazzChords
}
trumpet = {
   \global
   \clef treble
   <<
      \trpt
   >>
}

% ------ Alto Saxophone ------
alto = \transpose c a \relative c' {
   \Key
   c1 | c | c |
}
altoHarmony = \transpose c' a {
   \jazzChords
}
altoSax = {
   \global
   \clef treble
   <<
      \alto
   >>
}

% ------ Baritone Saxophone ------
bari = \transpose c a' \relative c {
   \Key
c1
c1
   \sl
d4-"Solo" d d d
   \nsl
}
bariHarmony = \transpose c' a \chordmode {
   \jazzChords s1 s d2:maj e:m7
}
bariSax = {
   \global
   \clef treble
   <<
      \bari
   >>
}

% ------ Trombone ------
tbone = \relative c {

\begin{verbatim}
g1 | g | g 
\}
lhLower = \relative c { \\
  \voiceTwo \\
  \Key \\
  c1 | c | c 
\}

PianoRH = { \\
  \clef treble \\
  \global \\
  \<< \\
    \new Voice = "one" \rhUpper \\
    \new Voice = "two" \rhLower \\
  \>> 
}

PianoLH = { \\
  \clef bass \\
  \global \\
  \<< \\
    \new Voice = "one" \lhUpper \\
    \new Voice = "two" \lhLower \\
  \>> 
}

piano = { \\
  \<< \\
    \new Staff = "upper" \PianoRH \\
    \new Staff = "lower" \PianoLH \\
  \>> 
}

% ------ Bass Guitar ------
Bass = \relative c { \\
  \Key \\
  c1 | c | c 
}

bass = { \\
  \global \\
  \clef bass \\
  \<< \\
    \Bass \\
  \>> 
}

% ------ Drums ------
up = \drummode { \\
  \voiceOne \\
  hh4 <hh sn> hh <hh sn> \\
  hh4 <hh sn> hh <ch sn> \\
  hh4 <hh sn> hh <hh sn> 
}
down = \drummode {
  \voiceTwo
  bd4 s bd s
  bd4 s bd s
  bd4 s bd s
}

drumContents = {
  \global
  <<
    \new DrumVoice \up
    \new DrumVoice \down
  >>
}

%%%%%% It All Goes Together Here %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\score {
  <<
    \new StaffGroup = "horns" <<
      \new Staff = "trumpet" \with { instrumentName = "Trumpet" }
      \trumpet
      \new Staff = "altosax" \with { instrumentName = "Alto Sax" }
      \altoSax
      \new ChordNames = "barichords" \with { instrumentName = "Trumpet" }
      \bariHarmony
      \new Staff = "barisax" \with { instrumentName = "Bari Sax" }
      \bariSax
      \new Staff = "trombone" \with { instrumentName = "Trombone" }
      \trombone
    >>

    \new StaffGroup = "rhythm" <<
      \new ChordNames = "chords" \gtrHarmony
      \new Staff = "guitar" \with { instrumentName = "Guitar" }
      \guitar
      \new PianoStaff = "piano" \with {
        instrumentName = "Piano"
        midiInstrument = "acoustic grand"
      }
      \piano
      \new Staff = "bass" \with { instrumentName = "Bass" }
      \bass
      \new DrumStaff \with { instrumentName = "Drums" }
      \drumContents
    >>

    >>
  
  \layout {
    \context { \Staff \RemoveEmptyStaves }
    \context {
      \Score
      \override BarNumber.padding = #3
    }
  }
}
Song
(tune)

moderato

Swing

\override RehearsalMark.padding = #2
skipBars = ##t
$
\}\midi$
$
}\}
Percussion beaters

Graphic symbols for percussion instruments are not natively supported; however it is possible to include such symbols, either as an external EPS file or as embedded PostScript code inside a markup, as demonstrated in this example.

```
stick = \markup {
\with-dimensions #'(0 . 5) #'(0 . 5)
\postscript "
  0 6 translate
  0.8 -0.8 scale
  0 0 setrgbcolor
  [] 0 setdash
  1 setlinewidth
  0 setlinejoin
  0 setlinecap
  gsave [1 0 0 1 0 0] concat
  gsave [1 0 0 -3.5406095 -199.29342] concat
  gsave
  0 0 0 setrgbcolor
  newpath
  7.1434065 200.94354 moveto
  7.2109628 200.90454 7.2785188 200.86554 7.3460747 200.82654 curveto
  8.8625264 203.92115 8.0029664 202.43233 7.1434065 200.94354 curveto
  closepath
  eofill
  grestore
  gsave
  <<
  /ShadingType 3
  /ColorSpace /DeviceRGB
  /Coords [113.13708 207.87465 0 113.13708 207.87465 16.162441]
  /Extend [true true]
  /Domain [0 1]
  /Function <<
  /FunctionType 3
  /Functions
  [
  <<
  /FunctionType 2
```
\score { 
  b1^-\stick
}
Percussion example

A short example taken from Stravinsky’s *L’Histoire du soldat*.

```lilypond
#(define mydrums '(((bassdrum default #f 4)
    (snare default #f -4)
    (tambourine default #f 0)))

(global = {
    \time 3/8 s4.
    \time 2/4 s2*2
    \time 3/8 s4.
    \time 2/4 s2
})

drumsA = {
    \context DrumVoice <<
    \global
    \drummode {
        \autoBeamOff
        \stemDown sn8 \stemUp tamb s8 |
        sn4 \stemDown sn4 |
        \stemUp tamb8 \stemDown sn8 \stemUp sn16 \stemDown sn \stemUp sn8 |
        \stemDown sn8 \stemUp tamb s8 |
        \stemUp sn4 s8 \stemUp tamb
    }
    >>
}

drumsB = {
    \drummode {
        s4 bd8 s2*2 s4 bd8 s4 bd8 s8
    }
}

\layout {
    \indent = 40
    \context {
        \DrumStaff
        drumStyleTable = #(alist->hash-table mydrums)
    }
}

\score {
    \new StaffGroup <<
    \new DrumStaff \with {
        \instrumentName = \markup \center-column {
            "Tambourine"
            "et"
            "caisse claire s. timbre"
        }
    }
}
Printing music with different time signatures

In the following snippet, two parts have a completely different time signature, yet remain synchronized.

The bar lines can no longer be printed at the Score level; to allow independent bar lines in each part, the Timing_translator is moved from the Score context to the Staff context.

If bar numbers are required, the Bar_number_engraver should also be moved, since it relies on properties set by the Timing_translator; a \with block can be used to add bar numbers to the relevant staff.

\begin{verbatim}
\paper {
    indent = #0
    ragged-right = ##t
}
global = { \time 3/4 { s2.*3 } \bar "" \break { s2.*3 } }
\layout {
    \context {
        \Score
        \remove "Timing_translator"
        \remove "Bar_number_engraver"
        \override SpacingSpanner.uniform-stretching = ##t
        \override SpacingSpanner.strict-note-spacing = ##t
        proportionalNotationDuration = #(ly:make-moment 1/64)
    }
    \context {
        \Staff
        \consists "Timing_translator"
    }
    \context {
        \Voice
        \remove "Forbid_line_break_engraver"
        tupletFullLength = ##t
    }
}\end{verbatim}
Bassklarinette = \new Staff \with { \consists "Bar_number_engraver" barNumberVisibility = #(every-nth-bar-number-visible 2) \override BarNumber.break-visibility = #end-of-line-invisible } << \global { \bar "|" \clef treble \time 3/8 d''4. \bar "|" \time 3/4 r8 des''2( c''8) \bar "|" \time 7/8 r4. ees''2 ~ \bar "|" \time 2/4 \tupletUp \tuplet 3/2 \{ ees''4 r4 d''4 ~ \} \bar "|" \time 3/8 \tupletUp \tuplet 4/3 \{ d''4 r4 \} \bar "|" \time 2/4 e''2 \bar "|" \time 3/8 es''4. \bar "|" \time 3/4 r8 d''2 r8 \bar "|" \time 7/8 r4 c'2 ~ } >>

Perkussion = \new StaffGroup << \new Staff << \global { \bar "|" \clef percussion \time 3/4 r4 c'2 ~}
\bar "|"
c'2.

\bar "|
R2.

\bar "|
r2 g'4 ~
\bar "|
g'2. ~
\bar "|
g'2.
}

>>
\new Staff <<
\global {
\bar "|
\clef percussion
\time 3/4
R2.

\bar "|
g'2. ~
\bar "|
g'2.
\bar "|
r4 g'2 ~
\bar "|
g'2 r4
\bar "|
g'2.
}

>>

\score {
<<
\Bassklarinette
\Perkussion
>>
}
Tam-tam example

A tam-tam example, entered with 'tt'

\(\texttt{(define mydrums '((tamtam default #f 0))})\)

\texttt{\new DrumStaff \with \{ instrumentName = \"Tamtam\" \}}

\texttt{\drummode \{}
\texttt{\set DrumStaff.drumStyleTable = \#(alist->hash-table mydrums)}
\texttt{\override Staff.StaffSymbol.line-positions = \#'( 0 )}
\texttt{\override Staff.BarLine.bar-extent = \#'(-1.5 . 1.5) }
\texttt{tt 1 \pp \laissezVibrer \}}

Tamtam \texttt{pp}
Tambourine example

A tambourine example, entered 'tamb'
\paper { tagline = ##f }

#(define mydrums '((tambourine default #f 0)))

\new DrumStaff \with { instrumentName = "Tambourine" }

\drummode {
  \set DrumStaff.drumStyleTable = #(alist->hash-table mydrums)
  \override Staff.StaffSymbol.line-positions = #'( 0 )
  \override Staff.BarLine.bar-extent = '#(-1.5 . 1.5)

  \time 6/8
  tamb8. 16 8 8 8 8 |
  tamb4. 8 8 8 |
  % the trick with the scaled duration and the shorter rest
  % is neccessary for the correct ending of the trill-span!
  tamb2.*5/6 \startTrillSpan s8 \stopTrillSpan |
}

![Tambourine example notation]
Fretted strings

Section “Fretted string instruments” in Notation Reference

Adding fingerings to a score
Fingering instructions can be entered using a simple syntax.
\relative c'' { 
    c4-1 d-2 f-4 e-3 
}

Adding fingerings to tablatures
To add fingerings to tablatures, use a combination of \markup and \finger.
\score { 
    \new TabStaff { 
        \tabFullNotation 
        \stemUp 
        e8\^\one b2 <g3 e'1>\threeTwo \threeFour 
    } 
}

\override #'(baseline-skip . 2) 
\column { 
    \finger 3 
    \finger 2 
}

\override #'(baseline-skip . 2) 
\column { 
    \finger 3 
    \finger 4 
}

\new TabStaff { 
    \tabFullNotation 
    \stemUp 
    e8\^\one b2 <g3 e'1>\threeTwo 
    <a3 fis'1>\threeFour 
}
Adding markups in a tablature

By default markups does not show in a tablature.

To make them appear, simply use the command \revert TabStaff.TextScript.stencil
\%
http://lsr.di.unimi.it/LSR/Item?id=919
% by P.P.Schneider on June 2014

\begin{verbatim}
high  = \{ r4 r8 <g c'> q r8 r4 \}
low   = \{ c4 r4 c8 r8 g,8 b, \}
pulse = \{ s8``1'' s``2'' s``3'' s``4'' s``5'' \}
\end{verbatim}

\begin{verbatim}
\score { \new TabStaff { \repeat unfold 2 << \high \\low \pulse >> } \layout { \context { \TabStaff \clef moderntab \revert TextScript.stencil \override TextScript.font-series = #'bold \override TextScript.font-size = #-2 \override TextScript.color = #red } } } \end{verbatim}

Allowing fingerings to be printed inside the staff

By default, vertically oriented fingerings are positioned outside the staff; that behavior, however, may be disabled. Attention needs to be paid to the situations where fingerings and stems are in the same direction: by default, fingerings will avoid only beamed stems. That setting can be changed to avoid no stems or all stems; the following example demonstrates these two options, as well as how to go back to the default behavior.

\begin{verbatim}
\relative c' { <c-1 e-2 g-3 b-5>2 \override Fingering.staff-padding = '#'() \<c-1 e-2 g-3 b-5>4 g'-0 a8[-1 b]-2 g-0 } \override Fingering.add-stem-support = ##f
\end{verbatim}
Automatic Fretboards Barre

When automatic fretboards are used, barre indicators will be drawn whenever one finger is responsible for multiple strings.

If no finger indications are given in the chord from which the automatic fretboard is created, no barre indicators will be included, because there is no way to identify where barres should be placed.

\new FretBoards {
  <f,-1 c-3 f-4 a-2 c'-1 f'-1>1
  <f, c f a c' f'>1
}

Changing fret orientations

Fret diagrams can be oriented in three ways. By default the top string or fret in the different orientations will be aligned.

\include "predefined-guitar-fretboards.ly"

<<
\chords {
  c1
  c1
  c1
}
\new FretBoards {
  \chordmode {
    c1
    \override FretBoard.fret-diagram-details.orientation = #'landscape
    c1
    \override FretBoard.fret-diagram-details.orientation = #'opposing-landscape
    c1
  }
}
Chord glissando in tablature

Slides for chords are indicated by default in both Staff and TabStaff.

String numbers are necessary for TabStaff because automatic string calculations are different for chords and for single notes.

```latex
myMusic = \relative c' { 
  <c e g>1 \glissando <f a c> 
}
```

```latex
\score { 
  << 
    \new Staff { 
      \clef "treble_8" 
      \myMusic 
    } 
    \new TabStaff \myMusic 
  >> 
}
```

```latex
\score { 
  << 
    \new Staff { 
      \clef "treble_8" 
      \myMusic 
    } 
    \new TabStaff \with { \override Glissando.style = #'none } { 
      \myMusic 
    } 
  >> 
}
```
Fretted strings

ChordChanges for FretBoards

FretBoards can be set to display only when the chord changes or at the beginning of a new line. \include "predefined-guitar-fretboards.ly"

myChords = \chordmode {
  c1 c1 \break
  set chordChanges = ##t
  c1 c1 \break
  c1 c1
}

<<
\new ChordNames { \myChords }
\new FretBoards { \myChords }
\new Staff { \myChords }
>>

Chords with stretched fingering for FretBoards and TabVoice

Sometimes chords with a stretched fingering are required. If not otherwise specified the context-property maximumFretStretch is set to 4, though. Resulting in a warning about "No string for
pitch ..." and the note is omitted. You may set maximumFretStretch to an appropriate value or explicitly assign string-numbers to all notes of a chord.

%% The code below will print two warnings, which may be omitted by uncommenting:
%#(for-each (lambda (x) (ly:expect-warning "No string for pitch")) (iota 2))

mus = {
    <c' bes'>
    <c'\2 bes'>
    \set maximumFretStretch = 5
    <c' bes'>
    <c'\2 bes'\1>
}

<<
 \new FretBoards \mus
 \new TabVoice \mus
>>

Controlling the placement of chord fingerings

The placement of fingering numbers can be controlled precisely. For fingering orientation to apply, it must be used within a chord construct <>, even for single notes. Orientation for string numbers and right-hand fingerings may be set in a similar way.

\relative c' {
    \set fingeringOrientations = #'(left)
    <c-1 e-3 a-5>4
    \set fingeringOrientations = #'(down)
    <c-1 e-3 a-5>4
    \set fingeringOrientations = #'(down right up)
    <c-1 e-3 a-5>4
    \set fingeringOrientations = #'(up)
    <c-1 e-3 a-5>4
    \set fingeringOrientations = #'(left)
    <c-1>2
    \set fingeringOrientations = #'(down)
    <e-3>2
    \set stringNumberOrientations = #'(up left down)
    <f\3 a\2 c\1>1
    \set strokeFingerOrientations = #'(down right up)
    <<\rightHandFinger #1 e\rightHandFinger #2 c'\rightHandFinger #4 >>
}
Customizing fretboard fret diagrams

Fret diagram properties can be set through 'fret-diagram-details. For FretBoard fret diagrams, overrides are applied to the FretBoards.FretBoard object. Like Voice, FretBoards is a bottom level context, therefore can be omitted in property overrides.

\include "predefined-guitar-fretboards.ly"
\storePredefinedDiagram #default-fret-table \chordmode { c' }
  #guitar-tuning
  #"x;1-1-(;3-2;3-3;3-4;1-1-);"

% shorthand
oo = #(define-music-function
  (grob-path value)
  (list? scheme?)
  #{ \once \override $grob-path = #value #})

<<
\new ChordNames {
  \chordmode { c1 | c | c | d }
}
\new FretBoards {
  \% Set global properties of fret diagram
  \override FretBoards.FretBoard.size = #'1.2
  \override FretBoard.fret-diagram-details.finger-code = #'in-dot
  \override FretBoard.fret-diagram-details.dot-color = #'white
  \chordmode {
    c
      \oo FretBoard.size #'1.0
      \oo FretBoard.fret-diagram-details.barre-type #'straight
      \oo FretBoard.fret-diagram-details.dot-color #'black
      \oo FretBoard.fret-diagram-details.finger-code #'below-string
    c'
      \oo FretBoard.fret-diagram-details.barre-type #'none
      \oo FretBoard.fret-diagram-details.number-type #'arabic
      \oo FretBoard.fret-diagram-details.orientation #'landscape
      \oo FretBoard.fret-diagram-details.mute-string #'"M"
      \oo FretBoard.fret-diagram-details.label-dir #LEFT
      \oo FretBoard.fret-diagram-details.dot-color #'black
    c'
      \oo FretBoard.fret-diagram-details.finger-code #'below-string
      \oo FretBoard.fret-diagram-details.dot-radius #0.35
      \oo FretBoard.fret-diagram-details.dot-position #0.5
      \oo FretBoard.fret-diagram-details.fret-count #3
    d
  }

d
Customizing markup fret diagrams

Fret diagram properties can be set through `'fret-diagram-details`. For markup fret diagrams, overrides can be applied to the `Voice.TextScript` object or directly to the markup.

```plaintext
\% C major for guitar, no barre, using defaults
\% terse style
\textLengthOn
\\new Voice { c'1 | c' | c' | d' }
}
\normalsize

\% C major for guitar, barred on third fret
\% verbose style
\% size 1.0
\% roman fret label, finger labels below string, straight barre
\textLengthOn
\\new Voice = "mel" {
\\textLengthOn
\\override TextScript.size = '#1.2
\\override TextScript.fret-diagram-details.finger-code = #'in-dot
\\override TextScript.fret-diagram-details.dot-color = #'white

\% C major for guitar, no barre, using defaults
\% terse style
\textLengthOn
\\new Voice { c'1 | c | c | d }
%% C major for guitar, barred on third fret
% verbose style
% landscape orientation, arabic numbers, M for mute string
% no barre, fret label down or left, small mute label font
\markup {\override #'(fret-diagram-details . (  (finger-code . below-string)  (number-type . arabic)  (label-dir . -1)  (mute-string . "M")  (orientation . landscape)  (barre-type . none)  (xo-font-magnification . 0.4)  (xo-padding . 0.3)))}{\fret-diagram-verbose #'(mute 6)  (place-fret 5 3 1)  (place-fret 4 5 2)  (place-fret 3 5 3)  (place-fret 2 5 4)  (place-fret 1 3 1)  (barre 5 1 3))}
}
}

%% simple D chord
% terse style
% larger dots, centered dots, fewer frets
% label below string
\markup {\override #'(fret-diagram-details . (  (finger-code . below-string)  (dot-radius . 0.35)  (dot-position . 0.5)  (fret-count . 3)))}{\fret-diagram-terse "x;x;o;2-1;3-2;2-3;"}
}
}

>>
Defining predefined fretboards for other instruments

Predefined fret diagrams can be added for new instruments in addition to the standards used for guitar. This file shows how this is done by defining a new string-tuning and a few predefined fretboards for the Venezuelan *cuatro*.

This file also shows how fingerings can be included in the chords used as reference points for the chord lookup, and displayed in the fret diagram and the TabStaff, but not the music.

These fretboards are not transposable because they contain string information. This is planned to be corrected in the future.

% add FretBoards for the Cuatro
% Note: This section could be put into a separate file predefined-cuatro-fretboards.ly and \included into each of your compositions

\begin{verbatim}
cuartoTuning = #\((\text{ly:make-pitch } 0 \ 6 \ 0),\ (\text{ly:make-pitch } 1 \ 3 \ \text{SHARP}),\ (\text{ly:make-pitch } 1 \ 1 \ 0),\ (\text{ly:make-pitch } 0 \ 5 \ 0)\)\

dSix = \{ <a\4 b\1 d\3 fis\2> \}
dMajor = \{ <a\4 d\1 d\3 fis \2> \}
aMajSeven = \{ <a\4 cis\1 e\3 g\2> \}
dMajSeven = \{ <a\4 c\1 d\3 fis\2> \}
gMajor = \{ <b\4 b\1 d\3 g\2> \}

\storePredefinedDiagram \#default-fret-table \dSix \ #cuatroTuning \ "o;o;o;o;"
\storePredefinedDiagram \#default-fret-table \dMajor \ #cuatroTuning \ "o;o;o;3-3;"
\storePredefinedDiagram \#default-fret-table \aMajSeven \ #cuatroTuning \ "o;2-2;1-1;2-3;"
\storePredefinedDiagram \#default-fret-table \dMajSeven \ #cuatroTuning \ "o;o;o;1-1;"
\storePredefinedDiagram \#default-fret-table \gMajor \ #cuatroTuning \ "2-2;o;1-1;o;"

% end of potential include file /predefined-cuatro-fretboards.ly
\end{verbatim}

#{set-global-staff-size 16}

primerosNames = \chordmode \{  
d:6 d a:maj7 d:maj7  
g \}
primeros = \{  
\dSix \dMajor \aMajSeven \dMajSeven
\gMajor
}

\score {
<<
  \new ChordNames {
    \set chordChanges = ##t
    \primerosNames
  }

  \new Staff {
    \new Voice \with {
      \remove "New_fingering_engraver"
    }
    \relative c' {
      \primeros
    }
  }

  \new FretBoards {
    \set Staff.stringTunings = #cuatroTuning
    \override FretBoard
    \override #(fret-diagram-details string-count) = 4
    \override FretBoard.fret-diagram-details.finger-code = #'in-dot
    \primeros
  }

  \new TabStaff \relative c' {
    \set TabStaff.stringTunings = #cuatroTuning
    \primeros
  }
}

>>

\layout {
  \context {\Score \override SpacingSpanner.base-shortest-duration = #(ly:make-moment 1 16)}
}

\midi { }
}
Faking a hammer in tablatures

A hammer in tablature can be faked with slurs.

\score { 
  \new TabStaff { 
    \relative c' { 
      \tabFullNotation 
      c4 (d) d (d) 
      d2 (c) 
    } 
  } 
}

Fingerings, string indications, and right-hand fingerings

This example combines left-hand fingering, string indications, and right-hand fingering.

#(define RH rightHandFinger)

\relative c { 
  \clef "treble_8" 
  <c-3\5\RH #1 >4 
  <e-2\4\RH #2 >4 
  <g-0\3\RH #3 >4 
  <c-1\2\RH #4 >4 
}

Flamenco notation

For flamenco guitar, special notation is used:

- a *golpe* symbol to indicate a slap on the guitar body with the nail of the ring finger
- an arrow to indicate (the direction of) strokes
• different letters for fingering ("p": thumb, "i": index finger, "m": middle finger, "a": ring finger and "x": little finger)
• 3- and 4-finger rasgueados; stroke upwards with all fingers, ending with an up- and down using the index finger
• abanicos: strokes (in tuples) with thumb (down), little and index finger (both up). There’s also an abanico 2 where middle and ring finger are used instead of the little finger.
• alza pua: fast playing with the thumb

Most figures use arrows in combination with fingering; with abanicos and rasgueados, note-heads are printed only for the first chord.

This snippet contains some header-like code that can be copied as ‘flamenco.ly’ and included in source files.

%%%%%%% Cut here ----- Start 'flamenco.ly'

%% Text indicators :
abanico = ^\markup\small \textit{Abanico}\markup\small
rasgueado = ^\markup\small \textit{Ras.}\markup\small
alzapua = ^\markup\small \textit{Alzapua}\markup\small

%% Finger stroke symbols :
strokeUp = ^\markup\combine\override #'(thickness . 1.3) \draw-line #'(0 . 2) \raise #2 \arrow-head #Y #UP ##f
strokeDown = ^\markup\combine\arrow-head #Y #DOWN ##f \override #'(thickness . 1.3) \draw-line #'(0 . 2)

golpe = \markup {
\filled-box #'(0 . 1) #'(0 . 1) #0
\hspace #-1.6
\with-color #white
\filled-box #'(0.15 . 0.85) #'(0.15 . 0.85) #0
}

%% Strokes, fingers and golpe command :
RHp = \rightHandFinger #1
RHi = \rightHandFinger #2
RHm = \rightHandFinger #3
RHa = \rightHandFinger #4
RHx = \rightHandFinger #5
RHu = \rightHandFinger \strokeUp
RHd = \rightHandFinger \strokeDown
RHg = \rightHandFinger \golpe

tupletOff = {
\once \omit TupletNumber
\once \omit TupletBracket
}

tupletsOff = {
\omit TupletNumber
\override TupletBracket.bracket-visibility = #'if-no-beam
}
tupletsOn = {
\override TupletBracket.bracket-visibility = #'default
\undo \omit TupletNumber
}
headsOff = {
\hide TabNoteHead
\hide NoteHead
\override NoteHead.no-ledgers = ##t
}
headsOn = {
\override TabNoteHead.transparent = ##f
\override NoteHead.transparent = ##f
\override NoteHead.no-ledgers = ##f
}

%%%%%%% Cut here ----- End 'flamenco.ly'

part = \relative c' {
\set strokeFingerOrientations = #'(up)
\key a\major
< \a, \e' a cis e\RHu\RH1>8
< \a e’ a cis e\RHd\RH1>8
r4
r2^\markup\golpe
< \a e’ a cis e\RHu\RH1>8
< \a e’ a cis e\RHd\RH1>8
< \a e’ a cis e\RHu\RH\RHg>8
< \a e’ a cis e\RHd\RH1>8
r2
< \a e’ a cis e\RHu\RH\Ha>16\rasgueado
\headsOff
< \a e’ a cis e\RHu\RHm>
< \a e’ a cis e\RHu\RH1>
< \a e’ a cis e\RHd\RH1>-
\headsOn
< \a e’ a cis e>2
r4
\tupletOff
\tuplet 5/4 {
< \a e’ a cis e\RHu\RHx>16\rasgueado
\headsOff
< \a e’ a cis e\RHu\RHa>
< \a e’ a cis e\RHu\RHm>
< \a e’ a cis e\RHu\RH1>
< \a e’ a cis e\RHd\RH1>-
\headsOn

Fret diagrams explained and developed

This snippet shows many possibilities for obtaining and tweaking fret diagrams.

\chords {
\[\text{new Voice} = "\text{mel}" \]

\% Set global properties of fret diagram
\% \text{override TextScript.size} = #1.2
\% \text{override TextScript.fret-diagram-details.finger-code} = #\'below-string
\% \text{override TextScript.fret-diagram-details.dot-color} = #\'black

%% A chord for ukulele
a'2\markup {
  \\text{override} #'(fret-diagram-details . ( (string-count . 4) (dot-color . white) (finger-code . in-dot))) {
    \fret-diagram "4-2-2;3-1-1;2-o;1-o;"
  }
}

%% A chord for ukulele, with formatting defined in definition string
% 1.2 * size, 4 strings, 4 frets, fingerings below string
% dot radius .35 of fret spacing, dot position 0.55 of fret spacing
a'2\markup {
  \\text{override} #'(fret-diagram-details . ( (dot-color . white) (open-string . "o"))) {
    \fret-diagram "s:1.2;w:4;h:3;f:2;d:0.35;p:0.55;4-2-2;3-1-1;2-o;1-o;"
  }
}

%% These chords will be in normal orientation

%% C major for guitar, barred on third fret
% verbose style
% roman fret label, finger labels below string, straight barre
c'2\markup {
  % 110\% of default size
  \\text{override} #'(size . 1.1) {
    \\text{override} #'(fret-diagram-details . ( (number-type . roman-lower) (finger-code . below-string) (barre-type . straight))) {
      \fret-diagram-verbose #'(mute 6) (place-fret 5 3 1) (place-fret 4 5 2) (place-fret 3 5 3) (place-fret 2 5 4) (place-fret 1 3 1)
%% C major for guitar, barred on third fret
%% Double barre used to test barre function
%%% verbose style
c'2\markup {
  \override #'(size . 1.1) {
    \override #'(fret-diagram-details . (  
      (number-type . arabic)  
      (dot-label-font-mag . 0.9)  
      (finger-code . in-dot)  
      (fret-label-font-mag . 0.6)  
      (fret-label-vertical-offset . 0)  
      (label-dir . -1)  
      (mute-string . "M")  
      (xo-font-magnification . 0.4)  
      (xo-padding . 0.3))) {
      \fret-diagram-verbose #'(mute 6)  
      (place-fret 5 3 1)  
      (place-fret 4 5 2)  
      (place-fret 3 5 3)  
      (place-fret 2 5 4)  
      (place-fret 1 3 1)  
      (barre 4 2 5)  
      (barre 5 1 3))
      }
    }
  }
}\markup {
  \override #'(size . 1.1) {
    \override #'(fret-diagram-details . (  
      (number-type . roman-upper)  
      (dot-label-font-mag . 0.9)  
      (finger-code . none)  
      (fret-label-vertical-offset . 0.5)  
      (xo-font-magnification . 0.4)  
      (xo-padding . 0.3))) {
      \fret-diagram-verbose #'(mute 6)  
      (capo 3)  
      (open 5)  
      (place-fret 4 5 1)  
      (place-fret 3 5 2)  
      (place-fret 2 5 3)  
      (open 1))
  }
}
%% simple D chord
\makeup \verbatim
\override #\{(fret-diagram-details .
  (finger-code . below-string)
  (dot-radius . 0.35)
  (string-thickness-factor . 0.3)
  (dot-position . 0.5)
  (fret-count . 3))
\} \verb|fret-diagram-terse| "x;x;o;2-1;3-2;2-3;"
\}

%% simple D chord, large top fret thickness
\makeup \verbatim
\override #\{(fret-diagram-details .
  (finger-code . below-string)
  (dot-radius . 0.35)
  (dot-position . 0.5)
  (top-fret-thickness . 7)
  (fret-count . 3))
\} \verb|fret-diagram-terse| "x;x;o;2-1;3-2;2-3;"
\}

% These chords will be in landscape orientation
\override TextScript.fret-diagram-details.orientation = #'landscape

%% C major for guitar, barred on third fret
% verbose style
% roman fret label, finger labels below string, straight barre
\makeup \verbatim
\override #\{(size . 1.1) \{ 
  \override #\{(fret-diagram-details .
    (number-type . roman-lower)
    (finger-code . below-string)
    (barre-type . straight))) \{
  \fret-diagram-verbose #\{(\mute 6)
    (place-fret 5 3 1)
    (place-fret 4 5 2)
    (place-fret 3 5 3)
    (place-fret 2 5 4)
    (place-fret 1 3 1)
    (barre 5 1 3)
  \}
\} \}
\}
%% C major for guitar, barred on third fret
%% Double barre used to test barre function
% verbose style
c'2^\markup {
  % 110% of default size
  \override #(size . 1.1) {
    \override #(fret-diagram-details . ( (number-type . arabic) (dot-label-font-mag . 0.9) (finger-code . in-dot) (fret-label-font-mag . 0.6) (fret-label-vertical-offset . 0) (label-dir . -1) (mute-string . "M") (xo-font-magnification . 0.4) (xo-padding . 0.3))) {
      \fret-diagram-verbose #'(mute 6) (place-fret 5 3 1) (place-fret 4 5 2) (place-fret 3 5 3) (place-fret 2 5 4) (place-fret 1 3 1) (barre 4 2 5) (barre 5 1 3))
    }
  }
}

%% C major for guitar, with capo on third fret
% verbose style
c'2^\markup {
  % 110% of default size
  \override #(size . 1.1) {
    \override #(fret-diagram-details . ( (number-type . roman-upper) (dot-label-font-mag . 0.9) (finger-code . none) (fret-label-vertical-offset . 0.5) (xo-font-magnification . 0.4) (xo-padding . 0.3))) {
      \fret-diagram-verbose #'(mute 6) (capo 3) (open 5) (place-fret 4 5 1) (place-fret 3 5 2) (place-fret 2 5 3) (open 1))
    }
  }
}

%% simple D chord
Fretted strings

\markup {\override #'(fret-diagram-details . (  
  (finger-code . below-string)  
  (dot-radius . 0.35)  
  (dot-position . 0.5)  
  (fret-count . 3))) {  
  \fret-diagram-terse "x;x;o;2-1;3-2;2-3;"
}}

%% simple D chord, large top fret thickness
\markup {\override #'(fret-diagram-details . (  
  (finger-code . below-string)  
  (dot-radius . 0.35)  
  (dot-position . 0.5)  
  (top-fret-thickness . 7)  
  (fret-count . 3))) {  
  \fret-diagram-terse "x;x;o;2-1;3-2;2-3;"
}}

% These chords will be in opposing-landscape orientation
\override TextScript.fret-diagram-details.orientation = #'opposing-landscape

%% C major for guitar, barred on third fret
% verbose style
% roman fret label, finger labels below string, straight barre
\markup {\override #(size . 1.1) {  
  \override #'(fret-diagram-details . (  
    (number-type . roman-lower)  
    (finger-code . below-string)  
    (barre-type . straight))) {  
    \fret-diagram-verbose #'(mute 6)  
    (place-fret 5 3 1)  
    (place-fret 4 5 2)  
    (place-fret 3 5 3)  
    (place-fret 2 5 4)  
    (place-fret 1 3 1)  
    (barre 5 1 3))
}}

%% C major for guitar, barred on third fret
%% Double barre used to test barre function
% verbose style
\markup {\override #(size . 1.1) {

\override #'(fret-diagram-details . (  
  (number-type . arabic)  
  (dot-label-font-mag . 0.9)  
  (fret-label-font-mag . 0.6)  
  (fret-label-vertical-offset . 0)  
  (label-dir . -1)  
  (mute-string . "M")  
  (xo-font-magnification . 0.4)  
  (xo-padding . 0.3))) { 
  \fret-diagram-verbose #'((mute 6)  
    (place-fret 5 3 1)  
    (place-fret 4 5 2)  
    (place-fret 3 5 3)  
    (place-fret 2 5 4)  
    (place-fret 1 3 1)  
    (barre 4 2 5)  
    (barre 5 1 3))  
}  
}  

%%%% C major for guitar, with capo on third fret  
% verbose style  
c'2^\markup {  
  \% 110% of default size  
  \override #'(size . 1.1) {  
    \override #'(fret-diagram-details . (  
      (number-type . roman-upper)  
      (dot-label-font-mag . 0.9)  
      (fret-label-font-mag . 0.5)  
      (fret-label-vertical-offset . 0.5)  
      (xo-font-magnification . 0.4)  
      (xo-padding . 0.3))) { 
      \fret-diagram-verbose #'( (mute 6)  
        (capo 3)  
        (open 5)  
        (place-fret 4 5 1)  
        (place-fret 3 5 2)  
        (place-fret 2 5 3)  
        (open 1))  
    }  
  }  
}  

%%%% simple D chord  
d'2^\markup {  
  \override #'(fret-diagram-details . (  
    (finger-code . below-string)  
    (dot-radius . 0.35)  
    (dot-position . 0.5)  
    (fret-count . 3))) {
Fretted strings

Fretboards alternate tables
Alternate fretboard tables can be created. These would be used in order to have alternate fretboards for a given chord.

In order to use an alternate fretboard table, the table must first be created. Fretboards are then added to the table.

The created fretboard table can be blank, or it can be copied from an existing table.

The table to be used in displaying predefined fretboards is selected by the property \predefinedDiagramTable.
\include "predefined-guitar-fretboards.ly"

% Make a blank new fretboard table
#(define custom-fretboard-table-one
  (make-fretboard-table))

% Make a new fretboard table as a copy of default-fret-table
#(define custom-fretboard-table-two
  (make-fretboard-table default-fret-table))
% Add a chord to custom-fretboard-table-one
\storePredefinedDiagram #custom-fretboard-table-one
  \chordmode {c}
  \guitar-tuning
  "3-(;3;5;5;5;3-);"

% Add a chord to custom-fretboard-table-two
\storePredefinedDiagram #custom-fretboard-table-two
  \chordmode {c}
  \guitar-tuning
  "x;3;5;5;5;o;"

<<
  \chords {
      c1 | d1 |
      c1 | d1 |
      c1 | d1 |
  }

\new FretBoards {
  \chordmode {
      \set predefinedDiagramTable = #default-fret-table
      c1 | d1 |
      \set predefinedDiagramTable = #custom-fretboard-table-one
      c1 | d1 |
      \set predefinedDiagramTable = #custom-fretboard-table-two
      c1 | d1 |
  }
}

\new Staff {
  \clef "treble_8"
  <<
    \chordmode {
      c1 | d1 |
      c1 | d1 |
      c1 | d1 |
    }
    {
      s1\markup "Default table" | s1 |
      s1\markup \column {"New table" "from empty"} | s1 |
      s1\markup \column {"New table" "from default"} | s1 |
    }
    >>
}
>>
Fretted-string harmonics in tablature

Demonstrates fretted-string harmonics in tablature

```
pinchedHarmonics = {
    \textSpannerDown
    \override TextSpanner.bound-details.left.text = \markup {\halign #-0.5 \teeny "PH" } \\
    \override TextSpanner.style = #'dashed-line \\
    \override TextSpanner.dash-period = #0.6 \\
    \override TextSpanner.bound-details.right.attach-dir = #1 \\
    \override TextSpanner.bound-details.right.text = \markup { \draw-line #'(0 . 1) } \\
    \override TextSpanner.bound-details.right.padding = #-0.5
}
```

```
harmonics = {
    %artificial harmonics (AH)
    \textLengthOn
    \langle\parenthesize b b'\harmonic>4\rangle\_\markup \{ \teeny "AH 16" } \\
    \langle\parenthesize g g'\harmonic>4\rangle\_\markup \{ \teeny "AH 17" } \\
    \langle\parenthesize d' d''\harmonic>2\rangle\_\markup \{ \teeny "AH 19" } \\
    %pinched harmonics (PH)
    \pinchedHarmonics
    \langle a'\harmonic>2\rangle\_\hstartTextSpan \\
    \langle d'\harmonic>4 \\
    \hstopTextSpan
    %tapped harmonics (TH)
    \langle\parenthesize g \_\harmonic>4\rangle\_\markup \{ \teeny "TH 17" } \\
    \langle\parenthesize a \_\harmonic>4\rangle\_\markup \{ \teeny "TH 19" } \\
    \langle\parenthesize c'3\rangle\_\harmonic>2\rangle\_\markup \{ \teeny "TH 17" } \\
    %touch harmonics (TCH)
    a4( \langle e'\harmonic>2\rangle\_\markup \{ \teeny "TCH" } \\
}
```

```
frettedStrings = {
    %artificial harmonics (AH)
    \harmonicByFret 4 g4\_3 \\
    \harmonicByFret 5 d4\_4 \\
    \harmonicByFret 7 g2\_3 \\
    %pinched harmonics (PH)
    \harmonicByFret 7 d2\_4
}
```
Guitar slides

Unlike glissandos, slides may go from an imprecise point of the fretboard to a specific fret. A good way to do this is to add a hidden grace note before the note which is actually played, as demonstrated in the following example.

%% Hide fret number: useful to draw slide into/from a casual point of
%% the fretboard.

hideFretNumber = {
  \once \hide TabNoteHead
  \once \hide NoteHead
  \once \hide Stem
  \once \override NoteHead.no-ledgers = ##t
  \once \override Glissando.bound-details.left.padding = #0.3
}

music= \relative c' {
Guitar strum rhythms

For guitar music, it is possible to show strum rhythms, along with melody notes, chord names and fret diagrams.

\include "predefined-guitar-fretboards.ly"

\new ChordNames {
  \chordmode {
    c1 | f | g | c
  }
}

\new FretBoards {
  \chordmode {
    c1 | f | g | c
  }
}

\new Voice \with {
  \consists "Pitch_squash_engraver"
} {
  \relative c' {
    \improvisationOn
    c4 c8 c c4 c8 c
Hammer on and pull off

Hammer-on and pull-off can be obtained using slurs.

\new TabStaff {
  \relative c' {
    d4( e\2)
    a( g)
  }
}

Hammer on and pull off using chords

When using hammer-on or pull-off with charded notes, only a single arc is drawn. However “double arcs” are possible by setting the doubleSlurs property to #t.

\new TabStaff {
Hammer on and pull off using voices

The arc of hammer-on and pull-off is upwards in voices one and three and downwards in voices two and four:

```latex
\new TabStaff {
  \relative c' {
    \set doubleSlurs = ##t
    <g' b>8( <a c> <g b>)
  }
}
```

How to change fret diagram position

If you want to move the position of a fret diagram, for example, to avoid collision, or to place it between two notes, you have various possibilities:

1) modify `padding` or `extra-offset` values (as shown in the first snippet)

2) you can add an invisible voice and attach the fret diagrams to the invisible notes in that voice (as shown in the second example).

If you need to move the fret according with a rhythmic position inside the bar (in the example, the third beat of the measure) the second example is better, because the fret is aligned with the third beat itself.

```latex
harmonies = \chordmode
{
  a8:13
  % THE FOLLOWING IS THE COMMAND TO MOVE THE CHORD NAME
  \once \override ChordNames.ChordName.extra-offset = #'(10 . 0)
  b8:13 s2.
  % THIS LINE IS THE SECOND METHOD
  s4 s4 b4:13
}
```

```latex
\score {
  <<
```
Jazz combo template

This is quite an advanced template, for a jazz ensemble. Note that all instruments are notated in \key c \major. This refers to the key in concert pitch; the key will be automatically transposed if the music is within a \transpose section.

\header {
  title = "Song"
  subtitle = "(tune)"
  composer = "Me"
  meter = "moderato"
  piece = "Swing"
  tagline = \markup {
    \column {
      "LilyPond example file by Amelie Zapf,"
      "Berlin 07/07/2003"
    }
  }
}

% To make the example display in the documentation
\paper {
  paper-width = 130
\include{english.ly}

% Some macros

\sl = {
  \override NoteHead.style = #'slash
  \hide Stem
}
\nsl = {
  \revert NoteHead.style
  \undo \hide Stem
}
\crOn = \override NoteHead.style = #'cross
\crOff = \revert NoteHead.style

%%%% insert chord name style stuff here.
\jazzChords = { }

% Keys'n'thangs
\global = { \time 4/4 }
\Key = { \key c \major }

%%%%### Horns %%%%%###

% ------ Trumpet ------
\trpt = \transpose c d \relative c'' { 
  \Key
  c1 | c | c |
}\n\trpHarmony = \transpose c' d { 
  \jazzChords
}\n\trumpet = {
  \global
  \clef treble
  << 
    \trpt
  >>
}\n
% ------ Alto Saxophone ------
\alto = \transpose c a \relative c' { 
  \Key
    c1 | c | c |
}\n\altoHarmony = \transpose c' a { 
  \jazzChords
Fretted strings

}\}
{altoSax}

\global\clef treble
<<\alto
>>
}

% ------ Baritone Saxophone ------
bari = \transpose c a' \relative c {
  \Key
  c1
c1
  \sl
d4-"Solo" d d d
  \ns1
}
bariHarmony = \transpose c' a \chordmode {
  \jazzChords s1 s d2:maj e:m7
}
bariSax = {
  \global\clef treble
  <<\bari
  >>
}

% ------ Trombone ------
tbone = \relative c {
  \Key
  c1 | c | c
}
tboneHarmony = \chordmode {
  \jazzChords
}
trombone = {
  \global\clef bass
  <<\tbone
  >>
}

% ############ Rhythm Section ############

% ------ Guitar ------
gtr = \relative c'' {
  \Key
  c1
  \sl
\[ b4 \ b \ b \ b \]
\[ \text{nsl} \]
\[ c1 \]
\}
gtrHarmony = \chordmode \{
\text{jazzChords}
  s1 \ c2:\text{min7+} \ d2:\text{maj9}
\}
guitar = \{
\text{global}
  \text{clef treble}
  \ll<< \gtr \rr>> \}

%%% ------ Piano ------
\text{rhUpper} = \relative c'\prime \{
  \text{voiceOne}
  \text{Key}
  c1 \mid c \mid c
\}
\text{rhLower} = \relative c' \{
  \text{voiceTwo}
  \text{Key}
  e1 \mid e \mid e
\}
\text{lhUpper} = \relative c' \{
  \text{voiceOne}
  \text{Key}
  g1 \mid g \mid g
\}
\text{lhLower} = \relative c \{
  \text{voiceTwo}
  \text{Key}
  c1 \mid c \mid c
\}

\text{PianoRH} = \{
  \text{clef treble}
  \text{global}
  \ll<< \text{new Voice} = \text{"one"} \ \text{rhUpper}
  \text{new Voice} = \text{"two"} \ \text{rhLower}
  \gg
\}
\text{PianoLH} = \{
  \text{clef bass}
  \text{global}
  \ll<< \text{new Voice} = \text{"one"} \ \text{lhUpper}
  \gg
\}
\new Voice = "two\" \lhLower
}>
piano = {
<<
\new Staff = "upper\" \PianoRH
\new Staff = "lower\" \PianoLH
>>
}

% ------ Bass Guitar ------
\Bass = \relative c {
 \Key
c1 | c | c
}
bass = {
 \global
 \clef bass
<<
 \Bass
>>
}

% ------ Drums ------
\up = \drummode {
 \voiceOne
 hh4 <hh sn> hh <hh sn>
 hh4 <hh sn> hh <hh sn>
 hh4 <hh sn> hh <hh sn>
}
down = \drummode {
 \voiceTwo
 bd4 s bd s
 bd4 s bd s
 bd4 s bd s
}
drumContents = {
 \global
<<
 \new DrumVoice \up
 \new DrumVoice \down
>>
}

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%% It All Goes Together Here %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\score {
<<
 \new StaffGroup = "hornas" <<
 \new Staff = "trumpet\" \with { instrumentName = "Trumpet" }
}
Song
(tune)

Me

moderato

Swing
Laissez vibrer ties

Laissez vibrer ties have a fixed size. Their formatting can be tuned using 'tie-configuration.'

```latex
\relative c' {
  \override LaissezVibrerTieColumn.tie-configuration
  = #`((-7 ,DOWN)
      (-5 ,DOWN)
      (-3 ,UP)
      (-1 ,UP))
  \laissezVibrer r
  \laissezVibrer r
  \laissezVibrer r
  \laissezVibrer r
  \laissezVibrer r
  \laissezVibrer r
  \laissezVibrer r
  \laissezVibrer r
  \laissezVibrer r

  \relative f#4 {
    \laissezVibrer r
    \laissezVibrer r
  }

  \relative c#4 {
    \laissezVibrer r
    \laissezVibrer r
    \laissezVibrer r
    \laissezVibrer r
    \laissezVibrer r
    \laissezVibrer r
    \laissezVibrer r
    \laissezVibrer r
  }
}
```
Let TabStaff print the topmost string at bottom

In tablatures usually the first string is printed topmost. If you want to have it at the bottom change the `stringOneTopmost-context-property`. For a context-wide setting this could be done in layout as well.

```plaintext
% layout {
    context {
        Score {
            stringOneTopmost = ##f
        }
    }
    TabStaff {
        tablatureFormat = #fret-letter-tablature-format
    }
}
```

```
m = {
    \cadenzaOn
    e, b, e gis! b e'
    \bar " || "
}
```

```
\new Staff { \clef "G_8" \relative c { c4 d e f }
\new TabStaff {
    \set Score.stringOneTopmost = ##f
    \set TabStaff.tablatureFormat = #fret-letter-tablature-format
}
```

---

Letter tablature formatting

Tablature can be formatted using letters instead of numbers.

```plaintext
music = \relative c {
    c4 d e f
}
```
Open string harmonics in tablature

This snippet demonstrates open-string harmonics.

```plaintext
openStringHarmonics = {
    \textSpannerDown
    \override TextSpanner.staff-padding = #3
    \override TextSpanner.dash-fraction = #0.3
    \override TextSpanner.dash-period = #1

    %first harmonic
    \override TextSpanner.bound-details.left.text =
     \markup\small "1st harm."
    \harmonicByFret #12 e,6\startTextSpan
    \harmonicByRatio #1/2 e,6\stopTextSpan

    %second harmonic
    \override TextSpanner.bound-details.left.text =
     \markup\small "2nd harm."
    \harmonicByFret #7 e,6\startTextSpan
    \harmonicByRatio #1/3 e,6
    \harmonicByFret #19 e,6
    \harmonicByRatio #2/3 e,6\stopTextSpan
    %harmonicByFret #19 < e,6 a,5 d,4 >
    %harmonicByRatio #2/3 < e,6 a,5 d,4 >

    %third harmonic
    \override TextSpanner.bound-details.left.text =
```
\markup small "3rd harm."
\harmonicByFret #5 e, e6
\harmonicByRatio #1/4 e, e6
\harmonicByFret #24 e, e6
\harmonicByRatio #3/4 e, e6
\textSpan

Override TextSpanner. bound-details.left.text =
\markup small "4th harm."
\harmonicByFret #4 e, e6\startTextSpan
\harmonicByRatio #1/5 e, e6
\harmonicByFret #9 e, e6
\harmonicByRatio #2/5 e, e6
\harmonicByFret #16 e, e6
\harmonicByRatio #3/5 e, e6\stopTextSpan

Override TextSpanner. bound-details.left.text =
\markup small "5th harm."
\harmonicByFret #3 e, e6\startTextSpan
\harmonicByRatio #1/6 e, e6\stopTextSpan
\textSpan

Override TextSpanner. bound-details.left.text =
\markup small "6th harm."
\harmonicByFret #2.7 e, e6\startTextSpan
\harmonicByRatio #1/7 e, e6\stopTextSpan

Override TextSpanner. bound-details.left.text =
\markup small "7th harm."
\harmonicByFret #2.3 e, e6\startTextSpan
\harmonicByRatio #1/8 e, e6\stopTextSpan

Override TextSpanner. bound-details.left.text =
\markup small "8th harm."
\harmonicByFret #2 e, e6\startTextSpan
\harmonicByRatio #1/9 e, e6\stopTextSpan

}%fourth harmonic

%fifth harmonic

%sixth harmonic

%seventh harmonic

%eighth harmonic

score {
  <<
    \new Staff
    \with { \omit StringNumber } {
      \new Voice {
        \clef "treble_8"
        \openStringHarmonics
      }
    }
}
Placement of right-hand fingerings

It is possible to exercise greater control over the placement of right-hand fingerings by setting a specific property, as demonstrated in the following example.

\begin{verbatim}
#define RH rightHandFinger

\relative c { 
  \clef "treble_8"

  \set strokeFingerOrientations = #'(up down)
  <c\RH #1 e\RH #2 g\RH #3 c\RH #4 >4

  \set strokeFingerOrientations = #'(up right down)
  <c\RH #1 e\RH #2 g\RH #3 c\RH #4 >4

  \set strokeFingerOrientations = #'(left)
  <c\RH #1 e\RH #2 g\RH #3 c\RH #4 >2
\end{verbatim}
Polyphony in tablature

Polyphony is created the same way in a TabStaff as in a regular staff.

**upper** = \relative c' {\time 12/8 \key e \minor \voiceOne r4. r8 e, fis g16 b g e e' b c b a g fis e }

**lower** = \relative c {\key e \minor \voiceTwo r16 e d c b a g4 fis8 e fis g a b c }

```latex
\score { << \new StaffGroup = "tab with traditional" << \new Staff = "guitar traditional" << \clef "treble_8" \new Voice = "upper" \upper \new Voice = "lower" \lower >> \new TabStaff = "guitar tab" << \new TabVoice = "upper" \upper \new TabVoice = "lower" \lower >> >> }
```

Polytonal strings
Slides in tablature

Slides can be typeset in both Staff and TabStaff contexts:

```plaintext
slides = {
    c'8\3(g\glissando d'8\3)
    c'8\3\glissando d'8\3
    \hideNotes
    \grace { g16\glissando }
    \unhideNotes
    c'4\3
    \afterGrace d'4\3\glissando {
    \stemDown \hideNotes
    g16 }
    \unHideNotes
}

\score {
    \new Staff { \clef "treble_8" \slides }
    \new TabStaff { \slides }
}

\layout {
    \context {
        \Score
        \override Glissando.minimum-length = #4
        \override Glissando.springs-and-rods = 
            \ly:spanner::set-spacing-rods
        \override Glissando.thickness = #2
        \omit StringNumber
        % or:
        %\override StringNumber.stencil = ##f
    }
}
```

Stem and beam behavior in tablature

The direction of stems is controlled the same way in tablature as in traditional notation. Beams can be made horizontal, as shown in this example.

```plaintext
\new TabStaff {
    \relative c {
        \tabFullNotation
        g16 b d g b d g b
        \stemDown
        \override Beam.concaveness = #10000
    }
}
```
Fretted strings

\g,,16 b d g b d g b
\}

\begin{center}
\begin{music}
\relative c {
    \clef "treble_8"
    \stringNumberSpanner "5"
    \textSpannerDown a8\startTextSpan b c d e f\stopTextSpan
    \stringNumberSpanner "4"
    g\startTextSpan a
    bes4 a g2\stopTextSpan
}
\end{music}
\end{center}

String number extender lines

Make an extender line for string number indications, showing that a series of notes is supposed to be played all on the same string.

\textbf{stringNumberSpanner} =
\begin{verbatim}
#(define-music-function (StringNumber) (string?)
  #{
    \override TextSpanner.style = #'solid
    \override TextSpanner.font-size = #-5
    \override TextSpanner.bound-details.left.stencil-align-dir-y = #CENTER
    \markup { \circle \number $StringNumber }
  }#}
\end{verbatim}
\begin{center}
\begin{music}
\relative c {
    \clef "treble_8"
    \stringNumberSpanner "5"
    \textSpannerDown a8\startTextSpan b c d e f\stopTextSpan
    \stringNumberSpanner "4"
    g\startTextSpan a
    bes4 a g2\stopTextSpan
}
\end{music}
\end{center}
Unfretted strings

Section “Unfretted string instruments” in Notation Reference

Creating slurs across voices

In some situations, it may be necessary to create slurs between notes from different voices. The solution is to add invisible notes to one of the voices, using \hideNotes.

This example is measure 235 of the Ciaconna from Bach’s 2nd Partita for solo violin, BWV 1004.

\relative c' { 
  << 
  { 
    d16( a') s a s a[ s a] s a[ s a] 
  } 
  \slurUp 
  bes,16[ s e]( 
    \hideNotes a) 
  \unHideNotes f[( 
    \hideNotes a) 
  \unHideNotes fis]( 
    \hideNotes a) 
  \unHideNotes g[( 
    \hideNotes a) 
  \unHideNotes gis]( 
    \hideNotes a) 
  } 
  >> 
}

Dotted harmonics

Artificial harmonics using \harmonic do not show dots. To override this behavior, set the context property harmonicDots.

\relative c''' { 
  \time 3/4 
  \key f \major 
  \set harmonicDots = ##t 
  <bes f'\harmonic>2. ~ 
  <bes f'\harmonic>4. <a e'\harmonic>8( <gis dis'\harmonic> <g d'\harmonic>) 
  <fis cis'\harmonic>2. 
  <bes f'\harmonic>2. 
}
Snap-pizzicato or Bartok pizzicato

A snap-pizzicato (also known as “Bartok pizzicato”) is a “strong pizzicato where the string is plucked vertically by snapping and rebounds off the fingerboard of the instrument” (Wikipedia). It is denoted by a circle with a vertical line going from the center upwards outside the circle.

\relative c' {
  c4\snappizzicato
  \<c' e g>4\snappizzicato
  \<c' e g>4\-\snappizzicato
  \<c, e g>4\-\snappizzicato
}

String quartet template (simple)

This template demonstrates a simple string quartet. It also uses a global section for time and key signatures

\global = {
  \time 4/4
  \key c \major
}\global=

\relative c' {
  \new Voice \relative c'' {
    c2 d
    e1
    \bar "|.|.
  }\relative c' {
    \new Voice \relative c'' {
      g2 f
      e1
      \bar "|.|.
  }\relative c' {
    \new Voice \relative c'' {
      c4\snappizzicato
      \<c' e g>4\snappizzicato
      \<c' e g>4\-\snappizzicato
      \<c, e g>4\-\snappizzicato
  }

violinOne = \new Voice \relative c' {
  c2 d
  e1
  \bar "|.|.
}

violinTwo = \new Voice \relative c' {
  g2 f
  e1
  \bar "|.|.
}

viola = \new Voice \relative c' {
  \clef alto
  e2 d
  c1
  \bar "|.|.
}


String quartet template with separate parts

The “String quartet template” snippet produces a nice string quartet, but what if you needed to print parts? This new template demonstrates how to use the \tag feature to easily split a piece into individual parts.

You need to split this template into separate files; the filenames are contained in comments at the beginning of each file. piece.ly contains all the music definitions. The other files – score.ly, vn1.ly, vn2.ly, vla.ly, and vlc.ly – produce the appropriate part.

Do not forget to remove specified comments when using separate files!

%%%%% piece.ly
%%%%% (This is the global definitions file)

global= {
    \time 4/4
    \key c \major
Unfretted strings

Violinone = \new Voice { 
  \relative c'' { 
    c2 d e1 
    \bar "\.|." 
  } 
}

Violintwo = \new Voice { 
  \relative c'' { 
    g2 f e1 
    \bar "\.|." 
  } 
}

Viola = \new Voice { 
  \relative c' { 
    \clef alto 
    e2 d c1 
    \bar "\.|." 
  } 
}

Cello = \new Voice { 
  \relative c' { 
    \clef bass 
    c2 b a1 
    \bar "\.|." 
  } 
}

music = { 
  << 
    \tag #'score \tag #'vn1 
    \new Staff \with { instrumentName = "Violin 1" } 
    \tag #'score \tag #'vn2 
    \new Staff \with { instrumentName = "Violin 2" } 
    \tag #'score \tag #'vla 
    \new Staff \with { instrumentName = "Viola" } 
    \tag #'score \tag #'vlc 
}
\new Staff \with { instrumentName = "Cello" }
<< \global \Cello >>
>>
}

% These are the other files you need to save on your computer

% score.ly
% (This is the main file)

% uncomment the line below when using a separate file
%\include "piece.ly"

#(set-global-staff-size 14)

\score { 
  \new StaffGroup \keepWithTag #'score \music 
  \layout { } 
  \midi { } 
}

% Uncomment this block when using separate files

% vn1.ly
% (This is the Violin 1 part file)

\include "piece.ly"
\score { 
  \keepWithTag #'vn1 \music 
  \layout { } 
}

% vn2.ly
% (This is the Violin 2 part file)

\include "piece.ly"
\score { 
  \keepWithTag #'vn2 \music 
  \layout { } 
}

% vla.ly
% (This is the Viola part file)

\include "piece.ly"
\score { 
  \keepWithTag #'vla \music 
  \layout { } 
}
\% vlc.ly
\% (This is the Cello part file)

\include "piece.ly"
\score {
    \keepWithTag #'vlc \music
    \layout { }
}

\}%
Winds

Section “Wind instruments” in Notation Reference

Changing the size of woodwind diagrams
The size and thickness of woodwind diagrams can be changed.

\relative c' '{
    \textLengthOn
    \override \woodwind-diagram #'piccolo #'()
}

\override #'(size . 1.5) {
    \woodwind-diagram #'piccolo #'()
}

\override #'(thickness . 0.15) {
    \woodwind-diagram #'piccolo #'()
}

Fingering symbols for wind instruments
Special symbols can be achieved by combining existing glyphs, which is useful for wind instruments.

centermarkup = {
    \once \override TextScript.self-alignment-X = #CENTER
    \once \override TextScript.X-offset =#(lambda (g) (+ (ly:self-alignment-interface::centered-on-x-parent g) (ly:self-alignment-interface::x-aligned-on-self g)))
Flute slap notation

It is possible to indicate special articulation techniques such as a flute “tongue slap” by replacing the note head with the appropriate glyph. For that we can draw the accent-like note head with\markup.

\slap =
#{(define-music-function (music) (ly:music?))#
#{
   \temporary \override NoteHead.stencil = #ly:text-interface::print
   \temporary \override NoteHead.text =
   \markup
   \translate #'(1 . 0)
   \override #'(thickness . 1.4)
   \overlay {
      \draw-line #'(-1.2 . 0.4)
      \draw-line #'(-1.2 . -0.4)
   }
   \temporary \override NoteHead.stem-attachment =
   #(lambda (grob)
      (let* ((stem (ly:grob-object grob 'stem))
         (dir (ly:grob-property stem 'direction UP))
         (is-up (eqv? dir UP)))
         (cons dir (if is-up 0 -0.8))))
   #music
   \revert NoteHead.stencil}
Graphical and text woodwind diagrams

In many cases, the keys other than the central column can be displayed by key name as well as by graphical means.

Recorder fingering chart

The following example demonstrates how fingering charts for wind instruments can be realized.

% range chart for paetzold contrabass recorder

centermarkup = {
```
\once \override TextScript.self-alignment-X = #CENTER
\once \override TextScript.X-offset = #\(\text{\texttt{(lambda (g)}}
  (+ (ly: self-alignment-interface::centered-on-x-parent g)
    (ly: self-alignment-interface::x-aligned-on-self g)))\)

score {
\new Staff \with {
  \remove "Time_signature_engraver"
  \omit Stem
  \omit Flag
  \consists "Horizontal_bracket_engraver"
}
{
  \clef bass
  \set Score.timing = ##f
  f,1*1/4 \glissando
  gis'1*1/4
  \stemDown a'4~\markup {1)}
  \centermarkup
  \once \override TextScript.padding = #2
  bes'1*1/4 \markup {\override #'(baseline-skip . 1.7) \column
    { \fontsize #-5 \slashed-digit #0 \finger 1 \finger 2
      \finger 3 \finger 4 \finger 5 \finger 6 \finger 7} }
  b'1*1/4
  c''4~\markup {1)}
  \centermarkup
  \once \override TextScript.padding = #2
  cis''1*1/4
  deh''1*1/4
  \centermarkup
  \once \override TextScript.padding = #2
  \once \override Staff.HorizontalBracket.direction = #UP
  e''1*1/4 \markup {\override #'(baseline-skip . 1.7) \column
    { \fontsize #-5 \slashed-digit #0 \finger 1 \finger 2
      \finger 4 \finger 5} }\startGroup
  f''1*1/4 \markup {2)}\stopGroup
}
```

![Image of musical notation with accidentals and fingerings]
Woodwind diagrams key lists

The snippet below produces a list of all possible keys and key settings for woodwind diagrams as defined in `scm/define-woodwind-diagrams.scm`. The list will be displayed in the log file, but not in the music. If output to the console is wanted, omit the `(current-error-port)` from the commands.

```lilypond
#(print-keys-verbose 'piccolo (current-error-port))
#(print-keys-verbose 'flute (current-error-port))
#(print-keys-verbose 'flute-b-extension (current-error-port))
#(print-keys-verbose 'tin-whistle (current-error-port))
#(print-keys-verbose 'oboe (current-error-port))
#(print-keys-verbose 'clarinet (current-error-port))
#(print-keys-verbose 'bass-clarinet (current-error-port))
#(print-keys-verbose 'low-bass-clarinet (current-error-port))
#(print-keys-verbose 'saxophone (current-error-port))
#(print-keys-verbose 'soprano-saxophone (current-error-port))
#(print-keys-verbose 'alto-saxophone (current-error-port))
#(print-keys-verbose 'tenor-saxophone (current-error-port))
#(print-keys-verbose 'baritone-saxophone (current-error-port))
#(print-keys-verbose 'bassoon (current-error-port))
#(print-keys-verbose 'contrabassoon (current-error-port))
\score {c''1}
```

Woodwind diagrams listing

The following music shows all of the woodwind diagrams currently defined in LilyPond.

```lilypond
\layout 
  \indent = 0
} \relative c' {
  \textLengthOn c1^
  \markup {
    \center-column {
      'tin-whistle
    }
    \woodwind-diagram
      #'tin-whistle
      #'()
  }
}
\markup {
  \center-column {
    'piccolo
  }
  \center-column {
```
\woodwind-diagram

\markup {
  \center-column {
    'flute
    " "
    \woodwind-diagram
    #'flute
    #'()
  }
}
}
\markup {
  \center-column {
    'oboe
    " "
    \woodwind-diagram
    #'oboe
    #'()
  }
}
\markup {
  \center-column {
    'clarinet
    " "
    \woodwind-diagram
    #'clarinet
    #'()
  }
}
\markup {
  \center-column {
    'bass-clarinet
    " "
    \woodwind-diagram
    #'bass-clarinet
    #'()
  }
}
\markup {
  \center-column {
    'saxophone
    " "
    \woodwind-diagram
    }
}
Winds

#'saxophone
#'()
}
}
c1~\markup {
  \center-column {
    'bassoon
    " "
    \woodwind-diagram
    #'bassoon
    #'()
  }
}
}
c1~\markup {
  \center-column {
    'contrabassoon
    " "
    \woodwind-diagram
    #'contrabassoon
    #'()
  }
}
}
Ancient notation

Section “Ancient notation” in Notation Reference

Adding a figured bass above or below the notes

When writing a figured bass, you can place the figures above or below the bass notes, by defining the BassFigureAlignmentPositioning.direction property (exclusively in a Staff context). Choices are #UP (or #1), #CENTER (or #0) and #DOWN (or #-1).

This property can be changed as many times as you wish. Use \once \override if you don’t want the override to apply to the whole score.

```lilypond
bass = {
    \clef bass
    g4 b, c d
    e d8 c d2
}
```

```lilypond
continuo = \figuremode {
    <_;>4 <6>4 <5/>4
    \override Staff.BassFigureAlignmentPositioning.direction = #UP
    \bassFigureStaffAlignmentUp
    <_;>4 <6>
    \set Staff.useBassFigureExtenders = ##t
    \override Staff.BassFigureAlignmentPositioning.direction = #DOWN
    \bassFigureStaffAlignmentDown
    <4>_4. <4>8 <_;>_4
}
```

```lilypond
\score {
    \new Staff = bassStaff \bass
    \context Staff = bassStaff \continuo
}
```

![Ancient notation symbols](image)

Ancient fonts

Shown here are many of the symbols that are included in LilyPond’s ancient notation.

```lilypond
upperStaff = \new VaticanaStaff = "upperStaff" \<<
    \context VaticanaVoice \<<
        \transpose c c \{
            \override NoteHead.style = #'vaticana.punctum
            \key es \major
            \clef "vaticana-fa2"
            c1 des e f ges
        }
```

417
\override NoteHead.style = #'vaticana.inclinatum
a! b ces'
\bar "|"

\override NoteHead.style = #'vaticana.quilisma
b! des'! ges! fes!
\breathe
\clef "vaticana-fa1"
\override NoteHead.style = #'vaticana.plica
es d
\override NoteHead.style = #'vaticana.reverse.plica
c d
\bar "|"

\override NoteHead.style = #'vaticana.punctum.cavum
es f
\override NoteHead.style = #'vaticana.lpes
g as
\override NoteHead.style = #'vaticana.upes
bes as
\override NoteHead.style = #'vaticana.vupes
g f
\override NoteHead.style = #'vaticana.linea.punctum
\once \override Staff.BarLine.bar-extent = '#(-1 . 1) \bar "|"
es d
\override NoteHead.style = #'vaticana.epiphonus
c d
\override NoteHead.style = #'vaticana.cephalicus
es f

\set Staff.alterationGlyphs =
  #alteration-medicaea-glyph-name-alist
\override Staff.Custos.style = #'medicaea
\override NoteHead.style = #'medicaea.punctum
\clef "medicaea-fa2"
ces des
\bar "|"

e! f! ges
\clef "medicaea-do2"
\override NoteHead.style = #'medicaea.inclinatum
a! b! ces'
\override NoteHead.style = #'medicaea.virga
b! a!
\bar "|"

ges fes
\clef "medicaea-fa1"
\override NoteHead.style = #'medicaea.rvirga
e des ces
\set Staff.alterationGlyphs =
  #alteration-hufnagel-glyph-name-alist
\override Staff.Custos.style = #'hufnagel
\override NoteHead.style = #'hufnagel.punctum
\clef "hufnagel-fa2"
  ces des es
\bar "|

fes ges
\clef "hufnagel-do2"
\override NoteHead.style = #'hufnagel.lpes
  as! bes! ces'
\override NoteHead.style = #'hufnagel.virga
  bes! as!
\bar "|

ges! fes!
\clef "hufnagel-do-fa"
\override NoteHead.style = #'hufnagel.punctum
  es! des ces des! es! fes!
\bar "||"

s32*1
  }
  >>
  >>

lowerStaff = \new MensuralStaff = "lowerStaff" <<
\context MensuralVoice <<
\transpose c c {

  \key a \major
  cis'1 d\breve gis'\breve e'\breve c[ e'\longa fis'\longa ]
  \set Staff.forceClef = ##t
  \clef "neomensural-c2"
  cis1
  \bar "|

  [ g\breve dis''\longa ]
  b\breve c[ a\longa d\longa ]
  \clef "petrucci-c2"
  fis1 ces1
  \clef "petrucci-c2"
  r\longa
  \set Staff.forceClef = ##t
  \clef "mensural-c2"
  r\breve
  \bar "|

  r2
  \clef "mensural-g"
r4 r8 r16 r16
\override NoteHead.style = #'mensural
\override Rest.style = #'mensural
\clef "petrucci-f"
c8 b, c16 b, c32 b, c64 b, c64 b,
d8 e d16 e d32 e d64 e d64 e
r\longa
\set Staff.forceClef = ##t
\clef "petrucci-f"
r\breve
\bar "|
\breve
\clef "mensural-f"
r2 r4 r8 r16 r16
\set Staff.forceClef = ##t
\clef "mensural-f"
e\breve f g a1
\clef "mensural-g"
[ bes'\longa a'\longa c'\longa \longa]
e'1 d' c' d' \bar "|
\bar "|
bes'\longa fis'\longa as'\longa ges'\longa \longa % lig
\set Staff.forceClef = ##t
\clef "mensural-g"
e'2 d' c' \bar "|
\set Staff.forceClef = ##t
\clef "petrucci-g"
c'2 d' e' f'
\clef "petrucci-g"
g' as'! bes'! cis''!
bes'! as'! gis'! fis'!
\set Staff.forceClef = ##t
\clef "mensural-g"
es'! des'! cis'!1 \bar "||"
}

>>
>>

\paper {
  line-thickness = #(/
  staff-space 5.0)
}

\score {
  <<
    \upperStaff
    \lowerStaff
  >>
Ancient notation template – modern transcription of gregorian music

This example demonstrates how to do modern transcription of Gregorian music. Gregorian music has no measure, no stems; it uses only half and quarter note heads, and special marks, indicating rests of different length.

\include "gregorian.ly"

chant = \relative c' {
  \set Score.timing = ##f
  f4 a2 \divisioMinima
  g4 b a2 f2 \divisioMaior
  g4( f) f( g) a2 \finalis
}

verba = \lyricmode {
  Lo -- rem ip -- sum do -- lor sit a -- met
}

\score {
  \new GregorianTranscriptionStaff <<
  \new GregorianTranscriptionVoice = "melody" \ chant
  \new GregorianTranscriptionLyrics = "one" \lyricsto melody \verba
  >>
}

Lorem ipsum dolor sit amet
Ancient notation

Ancient time signatures

Time signatures may also be engraved in an old style.

\{ 
  \override Staff.TimeSignature.style = #'neomensural
  s1
}\n
\begin{music}
\begin{musicnote}
\relative c' \stemOff \stemOn 
\end{musicnote}
\end{music}

Chant or psalms notation

This form of notation is used for Psalm chant, where verses aren’t always the same length.

stemOff = \hide Staff.Stem
stemOn = \undo \stemOff

\score {
  \new Staff \with { \remove "Time_signature_ engraver" }
  { 
    \key g \minor
    \cadenzaOn
    \stemOff a' \breve b e s'4 g'4
    \stemOn a'2 \section
    \stemOff a' \breve g'4 a'4
    \stemOn f'2 \section
    \stemOff a' \breve \markup { \italic flexe }
    \stemOn g'2 \fine
  }
}\n
\begin{music}
\begin{musicnote}
\relative c' \stemOff \stemOn 
\end{musicnote}
\end{music}

Custodes

Custodes may be engraved in various styles.

\layout { ragged-right = ##t }

\new Staff \with { \consists "Custos_ engraver" } \relative c' {
  \override Staff.Custos.neutral-position = #4

\override Staff.Custos.style = #'hufnagel
  c1"hufnagel" \break
  <d a' f'>1

\override Staff.Custos.style = #'medicae
  c1"medicae" \break
  <d a' f'>1

}
Incipit

When transcribing mensural music, an incipit at the beginning of the piece is useful to indicate the original key and tempo. While today musicians are used to bar lines in order to faster recognize rhythmic patterns, bar lines were not yet invented during the period of mensural music; in fact, the meter often changed after every few notes. As a compromise, bar lines are often printed between the staves rather than on the staves.

%% With 2.23. this throws:
%% programming error: Loose column does not have right side to attach to.
%% Likely "Hidden BarLine during note yields programming error"
%% https://gitlab.com/lilypond/lilypond/-/issues/4084
%% --Harm

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% A short excerpt from the Jubilate Deo by Orlande de Lassus
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

global = {
  \set Score.skipBars = ##t
  \key g \major
  \time 4/4
\skip 1*8

\override Staff.BarLine.transparent = ##f

\bar "|.

\discantusIncipit = {
  \clef "neomensural-c1"
  \key f \major
  \time 2/2
  c''1.
}

\discantusNotes = {
  \transpose c' c'' {
    \clef "treble"
    d'2. d'4 |
    b e' d'2 |
    c'4 e'4.( d'8 c' b |
    a4) b a2 |
    b4.( c'8 d'4) c'4 |
    \once \hide NoteHead
    c'1 |
    b\breve |
  }
}

\discantusLyrics = \lyricmode {
  Ju -- bi -- la -- te De -- o,
  om -- nis ter -- ra, __ om-
  "...
  -us.
}

\altusIncipit = {
  \clef "neomensural-c3"
  \key f \major
  \time 2/2
  r1 f'1.
}

\altusNotes = {
  \transpose c' c'' {
    \clef "treble"
    r2 g2. e4 fis g |
    a2 g4 e |
    fis g4.( fis16 e fis4) |

Ancient notation

```
\altusLyrics = \lyricmode {
  Ju -- bi -- la -- te
  De -- o, om -- nis ter -- ra,
  "..."
  -us.
}

\tenorIncipit = {
  \clef "neomensural-c4"
  \key f \major
  \time 2/2
  r\longa
  r\breve
  r1 c'1.
}

\tenorNotes = {
  \transpose c' c' {
    \clef "treble_8"
    R1 |
    R1 |
    R1 |
    \% two measures
    r2 d'2. d'4 b e' |
    \once \hide NoteHead
    e'1 |
    d'\breve |
  }
}

\tenorLyrics = \lyricmode {
  Ju -- bi -- la -- te
  "..."
  -us.
}

\bassusIncipit = {
  \clef "mensural-f"
  \key f \major
  \time 2/2
  r\maxima
  f1.
}

\bassusNotes = {
```
\transpose c' c' {
\clef "bass"
R1 | R1 | R1 | R1 |
g2. e4 |
\once \hide NoteHead
e1 | g\breve |
}

bassusLyrics = \lyricmode {
Ju -- bi-
"..."
-us.
}

\score {
<<
\new StaffGroup = choirStaff <<
\new Voice = "discantusNotes" <<
\set Staff.instrumentName = "Discantus"
\incipit \discantusIncipit
\global \discantusNotes
>>
\new Lyrics \lyricsto discantusNotes { \discantusLyrics }
\new Voice = "altusNotes" <<
\set Staff.instrumentName = "Altus"
\global \incipit \altusIncipit
\altusNotes
>>
\new Lyrics \lyricsto altusNotes { \altusLyrics }
\new Voice = "tenorNotes" <<
\set Staff.instrumentName = "Tenor"
\global \incipit \tenorIncipit
\tenorNotes
>>
\new Lyrics \lyricsto tenorNotes { \tenorLyrics }
\new Voice = "bassusNotes" <<
\set Staff.instrumentName = "Bassus"
\global \incipit \bassusIncipit
\bassusNotes
>>
\new Lyrics \lyricsto bassusNotes { \bassusLyrics }
>>
>>
\layout { 
  \context { 
    \Score 
    \%\% no bar lines in staves or lyrics 
    \hide BarLine 
  } 
  \%\% the next two instructions keep the lyrics between the bar lines 
  \context { 
    \Lyrics 
    \consists "Bar_engraver" 
    \consists "Separating_line_group_engraver" 
  } 
  \context { 
    \Voice 
    \%\% no slurs 
    \hide Slur 
    \%\% Comment in the below \"\remove\" command to allow line 
    \%\% breaking also at those bar lines where a note overlaps 
    \%\% into the next measure. The command is commented out in this 
    \%\% short example score, but especially for large scores, you 
    \%\% will typically yield better line breaking and thus improve 
    \%\% overall spacing if you comment in the following command. 
    \\remove "Forbid_line_break_engraver" 
  } 
  \indent = 6\cm 
  \incipit-width = 4\cm 
}
Mensurstriche layout (bar lines between the staves)

*Mensurstriche,* bar lines between but not through staves, can be printed by setting `measureBarType` to "-\span|" and using a grouping context that allows span bars, such as `StaffGroup`.

```
\layout {
  \context {\Staff
    measureBarType = "-\span|"
  }
}
```

```
music = \fixed c'' { 
  c1 
  d2 \section e2 
  f1 \fine 
}
```

```
\new StaffGroup <<
  \new Staff \music
  \new Staff \music
>>
```

Rest styles

Rests may be used in various styles.

```
\new Staff \relative c { 
  \omit Score.TimeSignature
```
\cadenzaOn

\override Staff.Rest.style = #'mensural
r'maxima\markup \typewriter { mensural }
    r'\longa r'\breve r1 r2 r4 r8 r16 s32 s64 s128 s128
\bar ""
\break

\override Staff.Rest.style = #'neomensural
r'maxima\markup \typewriter { neomensural }
    r'\longa r'\breve r1 r2 r4 r8 r16 s32 s64 s128 s128
\bar ""
\break

\override Staff.Rest.style = #'classical
r'maxima\markup \typewriter { classical }
    r'\longa r'\breve r1 r2 r4 r8 r16 r32 r64 r128 s128
\bar ""
\break

\override Staff.Rest.style = #'z
r'maxima\markup \typewriter { z-style }
    r'\longa r'\breve r1 r2 r4 r8 r16 r32 r64 r128 s128
\bar ""
\break

\override Staff.Rest.style = #'default
r'maxima\markup \typewriter { default }
    r'\longa r'\breve r1 r2 r4 r8 r16 r32 r64 r128 s128
}
Using tags to produce mensural and modern music from the same source

Using tags, it is possible to produce both mensural and modern notation from the same music. In this snippet, a function `menrest` is introduced, allowing mensural rests to be pitched as in the original, but with modern rests in the standard staff position. Tags can also be used where other differences are needed: for example using “whole measure rests” (R1, R\breve, etc.) in modern music, but normal rests (r1, r\breve, etc.) in the mensural version. Converting mensural music to its modern equivalent is usually referred to as “transcription”.

```lilypond
menrest = #(define-music-function (note)
  (ly:music?)
  #{
    \tag #'mens $(make-music 'RestEvent note)
    \tag #'mod $(make-music 'RestEvent note 'pitch '())
  } }

MenStyle = {
  \autoBeamOff
  \override NoteHead.style = #'petrucci
  \override Score.BarNumber.transparent = ##t
  \override Stem.neutral-direction = #up
}

finalis = \section

Music = \relative c'' {
  \set Score.tempoHideNote = ##t
  \key f \major
  \time 4/4
g1 d'2 \menrest bes4 bes2 a2 r4 g4 fis2.
  \finalis
}

MenLyr = \lyricmode { So farre, deere life, deare life }
ModLyr = \lyricmode { So far, dear life, dear life }

\score {
  \keepWithTag #'mens {
    <<
      \new MensuralStaff
      {\new MensuralVoice = Cantus \clef "mensural-c1" \MenStyle \Music}
    \new Lyrics \lyricsto Cantus \MenLyri
    >>
  }
}

\score {
  \keepWithTag #'mod {
    \new ChoirStaff <<
      \new Staff
  }
```

(Ancient notation 431)

(Ancient notation 431)
Vertical line as a baroque articulation mark

This short vertical line placed above the note is commonly used in baroque music. Its meaning can vary, but generally indicates notes that should be played with more “weight”. The following example demonstrates how to achieve such a notation.

upline =
\tweak stencil
#(lambda (grob)
    (grob-interpret-markup grob #{ \markup \draw-line #'(0 . 1) #}))
\stopped
\relative c' {
    a'4^\upline a( c d')_\upline
}
World music

Section “World music” in Notation Reference

Arabic improvisation

For improvisations or *taqasim* which are temporarily free, the time signature can be omitted and \cadenzaOn can be used. Adjusting the accidental style might be required, since the absence of bar lines will cause the accidental to be marked only once. Here is an example of what could be the start of a *hijaz* improvisation:

\include "arabic.ly"

\relative sol' {
  \key re \kurd
  \accidentalStyle \forget
  \cadenzaOn
  sol4 sol sol sol fad mib sol1 fad8 mib re4. r8 mib1 fad sol
}

Makam example

Makam is a type of melody from Turkey using 1/9th-tone microtonal alterations. Consult the initialization file ‘ly/makam.ly’ for details of pitch names and alterations.

% Initialize makam settings
\include "makam.ly"

\relative c' {
  \set Staff.KeyAlterations = \*\((6 . ,(- KOMA)) (3 . ,BAKIYE))
  c4 cc db fk
gbm4 gfc gfb efk
  fk4 db cc c
}

Printing text from right to left

It is possible to print text from right to left in a markup object, as demonstrated here.

{\b1^\markup {
  \line { i n g i r u m i m u s n o c t e }
}f'_\markup {
  \override \#'(text-direction . -1)
  \line { i n g i r u m i m u s n o c t e }
Turkish Makam example

This template uses the start of a well-known Turkish Saz Semai that is familiar in the repertoire in order to illustrate some of the elements of Turkish music notation.

\paper { tagline = ##f }

% Initialize makam settings
\include "turkish-makam.ly"

\header {
  title = "Hüseyni Saz Semaisi"
  composer = "Lavtacı Andon"
}

\relative {
  \set Staff.extraNatural = ##f
  \set Staff.autoBeaming = ##f

  \key a \huseyni
  \time 10/8

  a'4 g'16 [fb] e8. [d16] d [c d e] c [d c8] bfc |
  a16 [bfc a8] bfc c16 [d c8] d16 [e d8] e4 fb8 |
  d4 a'8 a16 [g fb e] fb8 [g] a8. [b16] a16 [g] |
  g4 g16 [fb] fb8. [e16] e [g fb e] e4 r8 |
}

\Hüseyni Saz Semaisi

Lavtacı Andon
Adding a figured bass above or below the notes

When writing a figured bass, you can place the figures above or below the bass notes, by defining the \texttt{BassFigureAlignmentPositioning.direction} property (exclusively in a Staff context). Choices are \texttt{#UP} (or \texttt{#1}), \texttt{#CENTER} (or \texttt{#0}) and \texttt{#DOWN} (or \texttt{#-1}).

This property can be changed as many times as you wish. Use \texttt{\once \override} if you don’t want the override to apply to the whole score.

```plaintext
bass = {
  \clef bass
  g4 b, c d
e d8 c d2
}

\figmode {
  \override Staff.BassFigureAlignmentPositioning.direction = #UP
  \bassFigureStaffAlignmentUp
  <_+>4 <6>\)
  \set Staff.useBassFigureExtenders = ##t
  \override Staff.BassFigureAlignmentPositioning.direction = #DOWN
  \bassFigureStaffAlignmentDown
  \figmode {
}
```

\score {
  <<
    \new Staff = bassStaff \bass
    \context Staff = bassStaff \continuo
  >>
}

An extra staff can be added (possibly temporarily) after the start of a piece.

```plaintext
\score {
  <<
    \new Staff \relative c'' {n
      c1 | c | c | c | c
    }
    \new StaffGroup \relative c'' {
      \new Staff {
```
Adding an extra staff at a line break

When adding a new staff at a line break, some extra space is unfortunately added at the end of the line before the break (to fit in a key signature change, which will never be printed anyway). The workaround is to add a setting of `Staff.explicitKeySignatureVisibility` as is shown in the example.

```latex
\score {  
  \new StaffGroup \relative c''' {  
    \new Staff  
    \key f \major  
    c1 c"Unwanted extra space" \break  
    << { c1 | c }  
    \new Staff {  
      \key f \major  
      \once \omit Staff.TimeSignature  
      c1 | c  
    }  
  }  
  \break  
  << { c1 | c }  
  \new Staff {  
    \once \set Staff.explicitKeySignatureVisibility = #end-of-line-invisible  
    \key f \major  
    \once \omit Staff.TimeSignature  
    c1 | c  
  }  
}  
```
Automatically changing the stem direction of the middle note based on the melody

LilyPond can alter the stem direction of the middle note on a staff so that it follows the melody, by adding the Melody_engraver to the Voice context.

The context property suspendMelodyDecisions may be used to turn off this behavior locally.

```
relative c'' \{
  time 3/4
  a8 b g f b g |
  set suspendMelodyDecisions = ##t
  a b g f b g |
  unset suspendMelodyDecisions
  c b d c b c |
}
```

```
layout \{
  context \{
    Voice
    \consists "Melody_engraver"
    \autoBeamOff
  }
}
```
Centered measure numbers

Scores of large ensemble works often have bar numbers placed beneath the system, centered horizontally on the measure’s extent. This snippet shows how the Measure_counter_engraver may be used to simulate this notational practice. Here, the engraver has been added to a Dynamics context.

This snippet presents a legacy method: starting from LilyPond 2.23.3, \set Score.centerBarNumbers = ##t is enough.

\layout {
  \context {
    \Dynamics
    \override MeasureCounter.direction = #DOWN
    \override MeasureCounter.font-encoding = #'latin1
    \override MeasureCounter.font-shape = #'italic
    \% to control the distance of the Dynamics context from the staff:
    \override VerticalAxisGroup.nonstaff-relatedstaff-spacing.padding = #2
  }
  \context {
    \Score
    \remove "Bar_number_engraver"
  }
}

pattern = \repeat unfold 7 { c'4 d' e' f' }

\new StaffGroup <<
  \new Staff {
    \pattern
  }
  \new Staff {
    \pattern
  }
  \new Dynamics {
    \startMeasureCount s1*7
    \stopMeasureCount
  }
}
Changing MIDI output to one channel per voice

When outputting MIDI, the default behavior is for each staff to represent one MIDI channel, with all the voices on a staff amalgamated. This minimizes the risk of running out of MIDI channels, since there are only 16 available per track.

However, by moving the Staff_performer to the Voice context, each voice on a staff can have its own MIDI channel, as is demonstrated by the following example: despite being on the same staff, two MIDI channels are created, each with a different midiInstrument.

\[\text{\texttt{score}} \{\text{\texttt{\new Staff \{}} \\text{\texttt{\new Voice \relative c''' \{} \text{\texttt{\set midiInstrument = \"flute\" \voiceOne \key g \major \time 2/2 \r2 g-\"Flute\" ~ g \fis ~ \fis4 g8 \fis \e2 ~ \e4 d8 \cis d2 \}}} \\text{\texttt{\texttt{\}}}} \\text{\texttt{\new Voice \relative c' \{} \text{\texttt{\set midiInstrument = \"clarinet\" \voiceTwo \b1-\"Clarinet\" \a2. \b8 \a \g2. \fis8 \e \fis2 \r \}}} \text{\texttt{\texttt{\}}}} \\text{\texttt{\}}}} \\text{\texttt{\}}}}\]

\[\text{\texttt{\texttt{\}}}}\]

\[\text{\texttt{\texttt{\}}}\]

\[\text{\texttt{\texttt{\texttt{\}}}}\]

\[\text{Flute}\]

\[\text{Clarinet}\]
Changing time signatures inside a polymetric section using \scaleDurations

The measureLength property, together with measurePosition, determines when a bar line is needed. However, when using \scaleDurations, the scaling of durations makes it difficult to change time signatures. In this case, measureLength should be set manually, using the ly:make-moment callback. The second argument must be the same as the second argument of \scaleDurations.

```latex
\layout {
  \context { 
    \Score 
    \remove "Timing_translator"
  }
  \context { 
    \Staff 
    \consists "Timing_translator"
  }
}

\new Staff {
  \scaleDurations 8/5 { 
    \time 6/8 
    \set Timing.measureLength = #(ly:make-moment 6/5)
    b8 b b b b b 
    \time 2/4 
    \set Timing.measureLength = #(ly:make-moment 4/5)
    b4 b 
  } 
}
\new Staff {
  \clef bass 
  \time 2/4 
  c2 d e f 
}
```

Chant or psalms notation

This form of notation is used for Psalm chant, where verses aren’t always the same length.

```latex
stemOff = \hide Staff.Stem
stemOn = \undo \stemOff

\score { 
  \new Staff \with { \remove "Time_signature_engraver" } 
  
  \new Staff { 
  \clef bass 
  \time 2/4 
  c2 d e f 
  } 
} 
```
Creating blank staves

To create blank staves, generate empty measures then remove the Bar_number_engraver from the Score context, and the Time_signature_engraver, Clef_engraver and Bar_engraver from the Staff context.

\#(set-global-staff-size 20)

\score {
  \repeat unfold 12 { s1 \break }
}

\layout {
  indent = 0\in
  \context {
    \Staff
    \remove "Time_signature_engraver"
    \remove "Clef_engraver"
    \remove "Bar_engraver"
  }
  \context {
    \Score
    \remove "Bar_number_engraver"
  }
}

% uncomment these lines for "letter" size
%
\paper {
  #(set-paper-size "letter")
  ragged-last-bottom = ##f
  line-width = 7.5\in
  left-margin = 0.5\in
  bottom-margin = 0.25\in
  top-margin = 0.25\in
}
% uncomment these lines for "A4" size
{%
\paper {
  #(set-paper-size "a4")
  ragged-last-bottom = ##f
  line-width = 180
  left-margin = 15
  bottom-margin = 10
  top-margin = 10
}
{%}
Creating custom key signatures

LilyPond supports custom key signatures. In this example, print for D minor with an extended range of printed flats.

```
\new Staff \with {
    \override StaffSymbol.line-count = #8
    \override KeySignature.flat-positions = #'((-7 . 6))
    \override KeyCancellation.flat-positions = #'((-7 . 6))
% presumably sharps are also printed in both octaves
    \override KeySignature.sharp-positions = #'((-6 . 7))
    \override KeyCancellation.sharp-positions = #'((-6 . 7))

    \override Clef.stencil = #
        (\lambda (grob) (grob-interpret-markup grob
            #\{ \markup \combine
                \musicglyph "clefs.C"
                \translate #'(=3 . -2)
                \musicglyph "clefs.F"
            \})
            clefPosition = #3
            middleCPosition = #3
            middleCClefPosition = #3
        )
}

\key d\minor
f bes, f bes,
```

Cross staff stems

This snippet shows the use of the \Span_stem_engraver and \crossStaff to connect stems across staves automatically.

The stem length need not be specified, as the variable distance between noteheads and staves is calculated automatically.

```
\layout {
    \context {
        \PianoStaff
            \consists "Span_stem_engraver"
    }
}

\new PianoStaff \with {
    \new Staff {
        <b d'>4 r d'16\> e'8. g8 r\!
        e'8 f' g'4 e'2
    }
```
\new Staff {
  \clef bass
  \voiceOne
  \autoBeamOff
  \crossStaff { <e g>4 e, g16 a8. c8} d
  \autoBeamOn
  g8 f g4 c2
}

\([100x726]>>\)\}

---

**Defining an engraver in Scheme: ambitus engraver**

This example demonstrates how the ambitus engraver may be defined on the user side, with a Scheme engraver. This is basically a rewrite in Scheme of the code from lily/ambitus-engraver.cc.

```scheme
#(use-modules (oop goops))

%%% Grob utilities
%%% These are literal rewrites of some C++ methods used by the ambitus engraver.

#(define (ly:separation-item::add-conditional-item grob grob-item)
    "Add @var{grob-item} to the array of conditional elements of @var{grob}.
    Rewrite of @code{Separation_item::add_conditional_item} from @file{lily/separation-item.cc}.
    (ly:pointer-group-interface::add-grob grob 'conditional-elements grob-item))

#(define (ly:accidental-placement::accidental-pitch accidental-grob)
    "Get the pitch from the grob cause of @var{accidental-grob}.
    Rewrite of @code{accidental_pitch} from @file{lily/accidental-placement.cc}.
    (ly:event-property (ly:grob-property (ly:grob-parent accidental-grob Y) 'cause) 'pitch))

#(define (ly:accidental-placement::add-accidental grob accidental-grob)
    "Add @var{accidental-grob}, an @code{Accidental} grob, to the list of the accidental grobs of @var{grob}, an @code{AccidentalPlacement} grob.
    Rewrite of @code{Accidental_placement::add_accidental} from @file{lily/accidental-placement.cc}.
    (let ((pitch (ly:accidental-placement::accidental-pitch accidental-grob)))
      (set! (ly:grob-parent accidental-grob X) grob)
      (let* ((accidentals (ly:grob-object grob 'accidental-grobs))
              (handle (assq (ly:pitch-notename pitch) accidentals))
              (entry (if handle (cdr handle) '())))
```

---

\[
\begin{align*}
  \text{\textbackslash new Staff} & \{ \\
  & \text{\textbackslash clef} \text{ bass} \\
  & \text{\textbackslash voiceOne} \\
  & \text{\textbackslash autoBeamOff} \\
  & \text{\textbackslash crossStaff} \{ <e g>4 e, g16 a8. c8\} d \\
  & \text{\textbackslash autoBeamOn} \\
  & g8 f g4 c2 \\
\end{align*}
\]
(set! (ly:grob-object grob 'accidental-grobs)
  (assq-set! accidentals
     (ly:pitch-notename pitch)
     (cons accidental-grob entry)))))

%%% Ambitus data structure

%%% The <ambitus> class holds the various grobs that are created
%%% to print an ambitus:
%%% - ambitus-group: the grob that groups all the components of an ambitus
%%%   (Ambitus grob);
%%% - ambitus-line: the vertical line between the upper and lower ambitus
%%%   notes (AmbitusLine grob);
%%% - ambitus-up-note and ambitus-down-note: the note head and accidental
%%%   for the lower and upper note of the ambitus (see <ambitus-note> class
%%%   below).
%%% The other slots define the key and clef context of the engraver:
%%% - start-c0: position of middle c at the beginning of the piece. It
%%%   is used to place the ambitus notes according to their pitch;
%%% - start-key-sig; the key signature at the beginning of the piece. It
%%%   is used to determine if accidentals shall be printed next to ambitus
%%%   notes.

#(define-class <ambitus> ()
  (ambitus-group #:accessor ambitus-group)
  (ambitus-line #:accessor ambitus-line)
  (ambitus-up-note #:getter ambitus-up-note
     #:init-form (make <ambitus-note>))
  (ambitus-down-note #:getter ambitus-down-note
     #:init-form (make <ambitus-note>))
  (start-c0 #:accessor ambitus-start-c0
     #:init-value #f)
  (start-key-sig #:accessor ambitus-start-key-sig
     #:init-value '()))

%%% Accessor for the lower and upper note data of an ambitus
%(define-method (ambitus-note (ambitus <ambitus>) direction)
  "If @var{direction} is @code{UP}, then return the upper ambitus note
  of @var{ambitus}, otherwise return the lower ambitus note."
  (if (= direction UP)
    (ambitus-up-note ambitus)
    (ambitus-down-note ambitus)))

%%% The <ambitus-note> class holds the grobs that are specific to ambitus
%%% (lower and upper) notes:
%%% - head: an AmbitusNoteHead grob;
%%% - accidental: an AmbitusAccidental grob, to be possibly printed next
%%%   to the ambitus note head.
%%% Moreover:
%%% - pitch is the absolute pitch of the note
%%% - cause is the note event that causes this ambitus note, i.e. the lower
%%% or upper note of the considered music sequence.

#(define-class <ambitus-note> ()
  (head #:accessor ambitus-note-head
       #:init-value #f)
  (accidental #:accessor ambitus-note-accidental
             #:init-value #f)
  (cause #:accessor ambitus-note-cause
         #:init-value #f)
  (pitch #:accessor ambitus-note-pitch
         #:init-value #f))

%%% Ambitus engraving logics
%%% Rewrite of the code from @file{lily/ambitus-engraver.cc}.

#(define (make-ambitus translator)
  "Build an ambitus object: initialize all the grobs and their relations.

The Ambitus grob contain all other grobs:
Ambitus
  |- AmbitusLine
  |- AmbitusNoteHead for upper note
  |- AmbitusAccidental for upper note
  |- AmbitusNoteHead for lower note
  |- AmbitusAccidental for lower note

The parent of an accidental is the corresponding note head,
and the accidental is set as the 'accidental-grob of the note head
so that is printed by the function that prints notes."

;; make the ambitus object
(let ((ambitus (make <ambitus>)))
  ;; build the Ambitus grob, which will contain all other grobs
  (set! (ambitus-group ambitus) (ly:engraver-make-grob translator 'Ambitus '()))
  ;; build the AmbitusLine grob (line between lower and upper note)
  (set! (ambitus-line ambitus) (ly:engraver-make-grob translator 'AmbitusLine '()))
  ;; build the upper and lower AmbitusNoteHead and AmbitusAccidental
  (for-each (lambda (direction)
              (let ((head (ly:engraver-make-grob translator 'AmbitusNoteHead '()))
                   (accidental (ly:engraver-make-grob translator 'AmbitusAccidental '()))
                   (group (ambitus-group ambitus)))
                ;; The parent of the AmbitusAccidental grob is the
                ;; AmbitusNoteHead grob
                (set! (ly:grob-parent accidental Y) head)
                ;; The AmbitusAccidental grob is set as the accidental-grob
                ;; object of the AmbitusNoteHead. This is later used by the
                ;; function that prints notes.
                (set! (ly:grob-object head 'accidental-grob) accidental)
                ;; both the note head and the accidental grobs are added
                ;; to the main ambitus grob.)
          direction))
(ly:axis-group-interface::add-element group head)
(ly:axis-group-interface::add-element group accidental)
;; the note head and the accidental grobs are added to the
;; ambitus object
(set! (ambitus-note-head (ambitus-note ambitus direction))
  head)
(set! (ambitus-note-accidental (ambitus-note ambitus direction))
  accidental)))
(list DOWN UP))
;; The parent of the ambitus line is the lower ambitus note head
(set! (ly:grob-parent (ambitus-line ambitus) X)
  (ambitus-note-head (ambitus-note ambitus DOWN)))
;; the ambitus line is added to the ambitus main grob
(ly:axis-group-interface::add-element (ambitus-group ambitus) (ambitus-line ambitus))

#(define-method (initialize-ambitus-state (ambitus <ambitus>) translator)
  "Initialize the state of @var{ambitus}, by getting the starting
  position of middle C and key signature from @var{translator}'s context."
  (if (not (ambitus-start-c0 ambitus))
  (begin
    (set! (ambitus-start-c0 ambitus)
      (ly:context-property (ly:translator-context translator)
       'middleCPosition 0))
    (set! (ambitus-start-key-sig ambitus)
      (ly:context-property (ly:translator-context translator)
       'keyAlterations)))))

#(define-method (update-ambitus-notes (ambitus <ambitus>) note-grob)
  "Update the upper and lower ambitus pithes of @var{ambitus}, using
  @var{note-grob}."
  (let ((note-event (ly:grob-property note-grob 'cause)))
    (if (ly:in-event-class? note-event 'note-event)
      (let ((pitch (ly:event-property note-event 'pitch)))
        ;; get the pitch from the note event
        (let ((pitch (ly:event-property note-event 'pitch)))
          ;; if this pitch is lower than the current ambitus lower
          ;; note pitch (or it has not been initialized yet),
          ;; then this pitch is the new ambitus lower pitch,
          ;; and conversely for upper pitch.
          (for-each (lambda (direction pitch-compare)
                      (if (or (not (ambitus-note-pitch (ambitus-note ambitus direction)))
                          (pitch-compare pitch
                          (ambitus-note-pitch (ambitus-note ambitus direction))
                          (begin
                            (set! (ambitus-note-pitch (ambitus-note ambitus direction))
                              pitch)
                            (set! (ambitus-note-cause (ambitus-note ambitus direction))
                              note-event)))))
            list DOWN UP)
(list ly:pitch<? (lambda (p1 p2)
 (ly:pitch<? p2 p1)))))

;; Typeset the ambitus:
- place the lower and upper ambitus notes according to their pitch and
  the position of the middle C;
- typeset or delete the note accidentals, according to the key signature.
  An accidental, if it is to be printed, is added to an AccidentalPlacement
  grob (a grob dedicated to the placement of accidentals near a chord);
- both note heads are added to the ambitus line grob, so that a line should
  be printed between them.

;; check if there are lower and upper pitches
(if (and (ambitus-note-pitch (ambitus-note ambitus UP))
          (ambitus-note-pitch (ambitus-note ambitus DOWN)))
    ;; make an AccidentalPlacement grob, for placement of note accidentals
    (let ((accidental-placement (ly:engraver-make-grob
                                  translator
                                  'AccidentalPlacement
                                  (ambitus-note-accidental (ambitus-note ambitus DOWN)))))
      ;; For lower and upper ambitus notes:
      (for-each (lambda (direction)
                 (let ((pitch (ambitus-note-pitch (ambitus-note ambitus direction))))
                     ;; set the cause and the staff position of the ambitus note
                     ;; according to the associated pitch
                     (set! (ly:grob-property (ambitus-note-head (ambitus-note ambitus direction))
                             'cause)
                          (ambitus-note Cause (ambitus-note ambitus direction))))
                      (set! (ly:grob-property (ambitus-note-head (ambitus-note ambitus direction))
                          'staff-position)
                          (+ (ambitus-start-c0 ambitus)
                             (ly:pitch-steps pitch)))
                 ;; determine if an accidental shall be printed for this note,
                 ;; according to the key signature
                 (let* ((handle (or (assoc (cons (ly:pitch-octave pitch)
                                               (ly:pitch-notename pitch))
                                      (ambitus-start-key-sig ambitus))
                              (assoc (ly:pitch-notename pitch)
                                      (ambitus-start-key-sig ambitus))))
                     (sig-alter (if handle (cdr handle) 0)))
                 (cond ((= (ly:pitch-alteration pitch) sig-alter)
                         ;; the note alteration is in the key signature
                         ;; => it does not have to be printed
                         (ly:grob-suicide!
                          (ambitus-note-accidental (ambitus-note ambitus direction))))
                      (set! (ly:grob-object (ambitus-note-head (ambitus-note ambitus direction))
                                      'accidental-grob)
                          '()))
                 (else
                   ;; otherwise, the accidental shall be printed
                   (set! (ly:grob-property (ambitus-note-accidental
                                              (ambitus-note ambitus direction))
                           'accidental-grob)
                           '()))
    ...)
(ly:pitch-alteration pitch))))

;; add the AccidentalPlacement grob to the
;; conditional items of the AmbitusNoteHead
(ly:separation-item::add-conditional-item
  (ambitus-note-head (ambitus-note ambitus direction))
  accidental-placement)

;; add the AmbitusAccidental to the list of the
;; AccidentalPlacement grob accidentals
(ly:accidental-placement::add-accidental
  (ambitus-note-accidental (ambitus-note ambitus direction)))

;; add the AmbitusNoteHead grob to the AmbitusLine grob
(ly:pointer-group-interface::add-grob
  (ambitus-line ambitus)
  'note-heads
  (ambitus-note-head (ambitus-note ambitus direction)))))

(list DOWN UP))

;; add the AccidentalPlacement grob to the main Ambitus grob
(ly:axis-group-interface::add-element (ambitus-group ambitus) accidental-placement)

;; no notes ==> suicide the grobs
(begin
  (for-each (lambda (direction)
    (ly:grob-suicide! (ambitus-note-accidental (ambitus-note ambitus direction)))
    (ly:grob-suicide! (ambitus-note-head (ambitus-note ambitus direction))))
  (list DOWN UP)))

Ambitus engraver definition

#(define ambitus-engraver
  (lambda (context)
    (let ((ambitus #f))
      ;; when music is processed: make the ambitus object, if not already built
      (make-engraver
        ((process-music translator)
          (if (not ambitus)
            (set! ambitus (make-ambitus translator)))
            ;; set the ambitus clef and key signature state
            ((stop-translation-timestep translator)
              (if ambitus
                (initialize-ambitus-state ambitus translator)))
                ;; when a note-head grob is built, update the ambitus notes
                (acknowledgers
                  ((note-head-interface engraver grob source-engraver)
                    (if ambitus
                      (update-ambitus-notes ambitus grob))))
                      ;; finally, typeset the ambitus according to its upper and lower notes
                      ;; (if any).
                      ((finalize translator)
                        (if ambitus
                          ...
(typeset-ambitus ambitus translator))}

%%% Example

\score {
  \new StaffGroup <<
    \new Staff { c'4 des' e' fis' gis' }
    \new Staff { \clef "bass" c4 des ~ des ees b, }
  >>
  \layout { \context { \Staff \consists #ambitus-engraver } }
}

\new StaffGroup <<
  \new Staff { \texttt{with} }
    \instrumentName = "Flute"
    \shortInstrumentName = "Fl"
  \relative c' {
    \repeat unfold 3 { c'4 c c c | c c c | c c c | \break }
  }
>>

\new StaffGroup = "StaffGroup_Strings"
<<
  \new GrandStaff = "GrandStaff_violins"
  \new Staff = "StaffViolinI" \texttt{with} 
    \instrumentName = "Violin I"
    \shortInstrumentName = "Vi I"
  }

---

Displaying a whole GrandStaff system if only one of its staves is alive

In orchestral scores sometimes single or groups of instruments are silent for a while and their staves can be removed for that time (with \removeEmptyStaves).

When they play again it is often preferred to show the staves of all instruments of such a group. This can be done adding the Keep_alive_together_engraver in the grouper (e.g., a GrandStaff or a StaffGroup).

In the example the violins are silent in the 2nd system and in the 3rd system. Only the first violin plays the last measure but the staff of the second violin is also displayed.

\score {
  \new StaffGroup = "StaffGroup_woodwinds"
  \new Staff = "Staff_flute" \texttt{with} 
    \instrumentName = "Flute"
    \shortInstrumentName = "Fl"
  \relative c' {
    \repeat unfold 3 { c'4 c c c | c c c | c c c | \break }
  }
}
\relative c'' {
    a1 \repeat unfold 7 { s1 } \repeat unfold 12 a16 a4
}
\new Staff = "StaffViolinII" \with {
    instrumentName = "Violin II"
    shortInstrumentName = "Vi II"
}
\relative c' { e1 \repeat unfold 8 { s1 } }

>>
\new Staff = "Staff_cello" \with {
    instrumentName = "Cello"
    shortInstrumentName = "Ce"
}
\relative c { \clef bass \repeat unfold 9 { c1 } }

>>

} \layout {
    indent = 3.0\cm
    short-indent = 1.5\cm
    \context {
        \GrandStaff
        \consists Keep_alive_together_engraver
    }
    \context {
        \Staff
        \RemoveEmptyStaves
    }
}
Engravers one-by-one

The notation problem, creating a certain symbol, is handled by plugins. Each plugin is called an Engraver. In this example, engravers are switched on one by one, in the following order:

- note heads,
- staff symbol,
- clef,
- stem,
- beams, slurs, accents,
- accidentals, bar lines, time signature and key signature.

Engravers are grouped. For example, note heads, slurs, beams etc. form a Voice context. Engravers for key signature, accidentals, bar line, etc. form a Staff context.

%% sample music

topVoice = \relative c' { 
  \key d \major 
  es8([ g] a[ fis]) 
  b4 
  b16[-. b-. b-. cis-.] 
  d4->
}

botVoice = \relative c' { 
  \key d \major 
  c8([ f] b[ a]) 
  es4 
  es16[-. es-. es-. fis-.] 
  b4->
}

hoom = \relative c { 
  \key d \major 
  \clef bass 
  g8-. r 
  r4
\fis8-. 
\r8 
\r4 
\b'4-> 
\} 

\pah = \relative c' { 
  \r8 b-. 
  \r4 
  \r8 g8-. 
  \r16 g-. \r8 
  \clef treble 
  \fis'4-> 
}\} 

% 
% setup for Request->Element conversion. Guru-only 
% 
\MyStaff = \context { 
  \type "Engraver_group" 
  \name Staff 
  \description "Handles clefs, bar lines, keys, accidentals. It can contain \@code{Voice} contexts."
  \consists "Output_property_engraver"
  \consists "Font_size_engraver"
  \consists "Volta_engraver"
  \consists "Separating_line_group_engraver"
  \consists "Dot_column_engraver"
  \consists "Ottava_spanner_engraver"
  \consists "Rest_collision_engraver"
  \consists "Piano_pedal_engraver"
  \consists "Piano_pedal_align_engraver"
  \consists "Instrument_name_engraver"
  \consists "Grob_pq_engraver"
  \consists "Forbid_line_break_engraver"
  \consists "Axis_group_engraver"
  \consists "Pitch_squash_engraver"
  \localAlterations = #'() 
  \% explicitly set instrumentName, so we don't get 
  \% weird effects when doing instrument names for 
  \% piano staves 
  \instrumentName = #'()
shortInstrumentName = '#'()

\accepts "Voice"
\defaultchild "Voice"

MyVoice = \context {
   \type "Engraver_group"
   \name Voice

   \description "
   Corresponds to a voice on a staff. This context handles the
   conversion of dynamic signs, stems, beams, super- and subscripts,
   slurs, ties, and rests.

   You have to instantiate this explicitly if you want to have
   multiple voices on the same staff."

   localAlterations = '#'()
   \consists "Font_size_engraver"

   \%
   % must come before all
   \consists "Output_property_engraver"
   \consists "Arpeggio_engraver"
   \consists "Multi_measure_rest_engraver"
   \consists "Text_spanner_engraver"
   \consists "Grob_pq_engraver"
   \consists "Note_head_line_engraver"
   \consists "Glissando_engraver"
   \consists "Ligature_bracket_engraver"
   \consists "Breathing_sign_engraver"
   \%
   \consists "Rest_engraver"
   \consists "Grace_beam_engraver"
   \consists "New_fingering_engraver"
   \consists "Chord_tremolo_engraver"
   \consists "Percent_repeat_engraver"
   \consists "Slash_repeat_engraver"

   \%
   %{
   Must come before text_engraver, but after note_column engraver.
   %}
   \consists "Text_engraver"
   \consists "Dynamic_engraver"
   \consists "Dynamic_align_engraver"
   \consists "Fingering_engraver"

   \consists "Script_column_engraver"
   \consists "Rhythmic_column_engraver"
   \consists "Cluster_spanner_engraver"
   \consists "Tie_engraver"
   \consists "Tie_engraver"
\consists "Tuplet_engraver"
\consists "Note_heads_engraver"
\consists "Rest_engraver"

\score {
  \topVoice
  \layout {
    \context { \MyStaff }
    \context { \MyVoice }
  }
}

\MyStaff = \context {
  \MyStaff
  \consists "Staff_symbol_engraver"
}

\score {
  \topVoice
  \layout {
    \context { \MyStaff }
    \context { \MyVoice }
  }
}

\MyStaff = \context {
  \MyStaff
  \consists "Clef_engraver"
  \remove "Pitch_squash_engraver"
}

\score {
  \topVoice
  \layout {
    \context { \MyStaff }
    \context { \MyVoice }
  }
}

\MyVoice = \context {
  \MyVoice
  \consists "Stem_engraver"
}

\score {
  \topVoice
  \layout {
    \context { \MyStaff }
    \context { \MyVoice }
  }
}
MyVoice = \context {
  \MyVoice
  \consists "Beam_engraver"
}

\score {
  \topVoice
  \layout {
    \context { \MyStaff }
    \context { \MyVoice }
  }
}

MyVoice = \context {
  \MyVoice
  \consists "Phrasing_slur_engraver"
  \consists "Slur_engraver"
  \consists "Script_engraver"
}

\score {
  \topVoice
  \layout {
    \context { \MyStaff }
    \context { \MyVoice }
  }
}

MyStaff = \context {
  \MyStaff
  \consists "Bar_engraver"
  \consists "Time_signature_engraver"
}

\score {
  \topVoice
  \layout {
    \context { \MyStaff }
    \context { \MyVoice }
  }
}

MyStaff = \context {
  \MyStaff
  \consists "Accidental_engraver"
  \consists "Key_engraver"
}

\score {
Mensurstriche layout (bar lines between the staves)

*Mensurstriche*, bar lines between but not through staves, can be printed by setting `measureBarType` to "-span|" and using a grouping context that allows span bars, such as `StaffGroup`.

```latex
\topVoice
\layout {
  \context { \MyStaff }
  \context { \MyVoice }
}
```

```latex
music = \fixed c'' {
  c1
```
Nesting staves

The property \texttt{systemStartDelimiterHierarchy} can be used to make more complex nested staff groups. The command \texttt{\set StaffGroup.systemStartDelimiterHierarchy} takes an alphabetical list of the number of staves produced. Before each staff a system start delimiter can be given. It has to be enclosed in brackets and takes as much staves as the brackets enclose. Elements in the list can be omitted, but the first bracket takes always the complete number of staves. The possibilities are \texttt{SystemStartBar}, \texttt{SystemStartBracket}, \texttt{SystemStartBrace}, and \texttt{SystemStartSquare}.

\begin{verbatim}
\new StaffGroup <<
\new Staff \music
\new Staff \music
>>
\end{verbatim}
Numbering groups of measures

This snippet demonstrates the use of the Measure_counter_engraver to number groups of successive measures. Any stretch of measures may be numbered, whether consisting of repetitions or not.

The engraver must be added to the appropriate context. Here, a Staff context is used; another possibility is a Dynamics context.

The counter is begun with \startMeasureCount and ended with \stopMeasureCount. Numbering will start by default with 1, but this behavior may be modified by overriding the count-from property.

When a measure extends across a line break, the number will appear twice, the second time in parentheses.

\layout {
  \context {
    \Staff
    \consists #Measure_counter_engraver
  }
}

\new Staff {
  \startMeasureCount
  \repeat unfold 7 {
    c'4 d' e' f'
  }
  \stopMeasureCount
  \bar "||"
  g'4 f' e' d'
  \override Staff.MeasureCounter.count-from = #2
  \startMeasureCount
  \repeat unfold 5 {
    g'4 f' e' d'
  }
  g'4 f'
Print ChordNames with same root and different bass as slash and bass-note

To print subsequent ChordNames only differing in its bass note as slash and bass note use the here defined engraver. The behaviour may be controlled in detail by the chordChanges context property.

#(define Bass_changes_equal_root_engraver
  (lambda (ctx)
    "For sequential @code{ChordNames} with same root, but different bass, the root markup is dropped: D D/C D/B -> D /C /B
The behaviour may be controlled by setting the @code{chordChanges} context-property."
    (let ((chord-pitches '())
           (last-chord-pitches '())
           (bass-pitch #f))
      (make- engraver
        ((initialize this-engraver)
         (let ((chord-note-namer (ly:context-property ctx 'chordNoteNamer)))
           ;; Set 'chordNoteNamer, respect user setting if already done
           (ly:context-set-property! ctx 'chordNoteNamer
            (if (procedure? chord-note-namer)
                chord-note-namer
                note-name->markup)))))
      (listeners
        ((note-event this-engraver event)
         (let* ((pitch (ly:event-property event 'pitch))
                  (pitch-name (ly:pitch-notename pitch))
                  (pitch-alt (ly:pitch-alteration pitch))
                  (bass (ly:event-property event 'bass #f))
                  (inversion (ly:event-property event 'inversion #f)))
          )))
Collect notes of the chord
- to compare inverted chords we need to collect the bass note as usual member of the chord, whereas an added bass must be treated separate from the usual chord-notes
- notes are stored as pairs containing their pitch-name (an integer), i.e. disregarding their octave and their alteration

\(\text{cond (bass (set! bass-pitch pitch))}\)
\(\text{inversion}\)
\(\text{(set! bass-pitch pitch)}\)
\(\text{(set! chord-pitches}\)
\(\text{(cons (cons pitch-name pitch-alt) chord-pitches))}\)
\(\text{else}\)
\(\text{(set! chord-pitches}\)
\(\text{(cons (cons pitch-name pitch-alt) chord-pitches))}\)

(acknowledgers
((chord-name-interface this-engraver grob source-engraver)
(\text{let ((chord-changes (ly:context-property ctx 'chordChanges #f)))}}
\(\text{If subsequent chords are equal apart from their bass,}\)
\(\text{reset the 'text-property.}\)
\(\text{Equality is done by comparing the sorted lists of this chord's elements and the previous chord. Sorting is needed because inverted chords may have a different order of pitches.}\)
\(\text{`chord-changes' needs to be true}\)
\(\text{(if (and bass-pitch chord-changes}}\)
\(\text{(equal?}\)
\(\text{(sort chord-pitches car)}\)
\(\text{(sort last-chord-pitches car))}}\)
\(\text{(ly:grob-set-property! grob 'text}\)
\(\text{(make-line-markup}\)
\(\text{(list}\)
\(\text{(ly:context-property ctx 'slashChordSeparator)}\)
\(\text{((ly:context-property ctx 'chordNoteNamer) bass-pitch}\)
\(\text{(ly:context-property ctx 'chordNameLowercaseMinor))))))))(set! last-chord-pitches chord-pitches)\)
\(\text{(set! chord-pitches '()}}\)
\(\text{(set! bass-pitch #f)))\)
((\text{finalize this-engraver})))\)
\(\text{(set! last-chord-pitches '()))))))\)

\text{myChords = \chordmode {}}\n\%germanChords
\text{\set chordChanges = ##t}\n\text{d2:m d:m/cis}\nd:m/c\n\text{\set chordChanges = ##f}\nd:m/b
Removing bar numbers from a score

Bar numbers can be removed entirely by removing the Bar_number_engraver from the Score context.

\layout {
  \context {
    \Score
    \omit BarNumber
    \%
    \remove "Bar_number_engraver"
  }
}

\relative c'' {
  c4 c c c \break
  c4 c c c
}

Use square bracket at the start of a staff group

The system start delimiter SystemStartSquare can be used by setting it explicitly in a StaffGroup or ChoirStaff context.

```plaintext
\score {
  \new StaffGroup { <<
    \set StaffGroup.systemStartDelimiter = #'SystemStartSquare
    \new Staff { c'4 d' e' f' }
    \new Staff { c'4 d' e' f' }
   >> }
}
```

Using marklines in a Frenched score

Using MarkLine contexts (such as in LSR1010 (https://lsr.di.unimi.it/LSR/Item?id=1010)) in a Frenched score can be problematic if all the staves between two MarkLines are removed in one system. The Keep_alive_together_engraver can be used within each StaffGroup to keep the MarkLine alive only as long as the other staves in the group stay alive.

```plaintext
bars = {
  \tempo "Allegro" 4=120
  s1*2
  \repeat unfold 5 { \mark \default s1*2 }
  \bar "||"
  \tempo "Adagio" 4=40
  s1*2
  \repeat unfold 8 { \mark \default s1*2 }
  \bar "|."}

winds = \repeat unfold 120 { c''4 }
trumpet = { \repeat unfold 8 g'2 R1*16 \repeat unfold 4 g'2 R1*8 }
trombone = { \repeat unfold 4 c'1 R1*8 d'1 R1*17 }
strings = \repeat unfold 240 { c''8 }

#(set-global-staff-size 16)
paper {
  systems-per-page = 5
  ragged-last-bottom = ##f
}
```

\layout {
\indent = 15\text{mm}
\shortindent = 5\text{mm}
\context { 
  \name MarkLine
  \type Engraver_group
  \consists Output_property_engraver
  \consists Axis_group_engraver
  \consists Mark_engraver
  \consists Metronome_mark_engraver
  \consists Staff_collecting_engraver
  \code{override} VerticalAxisGroup.remove-empty = ##t
  \code{override} VerticalAxisGroup.remove-layer = #'any
  \code{override} VerticalAxisGroup.staff-affinity = #DOWN
  \code{override} VerticalAxisGroup.nonstaff-relatedstaff-spacing.padding = 1
  \code{keepAliveInterfaces} = #'()
}
\context { 
  \Staff
  \code{override} VerticalAxisGroup.remove-empty = ##t
  \code{override} VerticalAxisGroup.remove-layer = ##f
}
\context { 
  \StaffGroup
  \accepts MarkLine
  \consists Keep_alive_together_engraver
}
\context { 
  \Score
  \remove Mark_engraver
  \remove Metronome_mark_engraver
  \remove Staff_collecting_engraver
}
}
\score {
  <<
    \new StaffGroup = "winds" \with {
      instrumentName = "Winds"
      shortInstrumentName = "Winds"
    } <<
    \new MarkLine \bars
    \new Staff \winds
  >>
    \new StaffGroup = "brass" <<
    \new MarkLine \bars
    \new Staff = "trumpet" \with {
      instrumentName = "Trumpet"
      shortInstrumentName = "Tpt"
    } \trumpet
    \new Staff = "trombone" \with {
      instrumentName = "Trombone"
      shortInstrumentName = "Tbn"
    }\trombone
}
\new StaffGroup = "strings" \with {
    instrumentName = "Strings"
    shortInstrumentName = "Strings"
}\new MarkLine bars
\new Staff = "strings" { \strings }

Vocal ensemble template with lyrics aligned below and above the staves

This template is basically the same as the simple “Vocal ensemble” template, with the exception that here all the lyrics lines are placed using `alignAboveContext` and `alignBelowContext`.

```latex
\global = {
  key c \major 
  \time 4/4
}

sopMusic = \relative c' { 
  c4 c c8[( b)] c4 
}

sopWords = \lyricmode { 
  hi hi hi hi 
}

altoMusic = \relative c' { 
  e4 f d e 
}

altoWords = \lyricmode { 
  ha ha ha ha 
}

tenorMusic = \relative c' { 
  g4 a f g 
}

tenorWords = \lyricmode { 
  hu hu hu hu 
}

bassMusic = \relative c { 
  c4 c g c 
}
```
Vocal ensemble template with verse and refrain

This template creates a score which starts with a solo verse and continues into a refrain for two voices. It also demonstrates the use of spacer rests within the \global variable to define meter changes (and other elements common to all parts) throughout the entire score.

\global = {
  \key g \major
SoloNotes = \relative g' \{
    \clef "treble"
    \measure 3/4
    s2..\break
    \measure 2/4
    s2\break
    \bar "."
}\}

SoloLyrics = \lyricmode \{
    One two three |
    four five six |
}\}

SopranoNotes = \relative c'' \{
    \clef "treble"
    \measure
    R2..\break
    \measure
    \bar "."
}\}

SopranoLyrics = \lyricmode \{
    la la |
    la la |
}\}

BassNotes = \relative c \{
    \clef "bass"
    \measure
    R2..\break
    \measure
    \bar "."
}\}
BassLyrics = \lyricmode {
   dum dum |
   dum dum |
}

\score {
   <<
   \new Voice = "SoloVoice" << \global \SoloNotes >>
   \new Lyrics \lyricsto "SoloVoice" \SoloLyrics

   \new ChoirStaff <<
   \new Voice = "SopranoVoice" << \global \SopranoNotes >>
   \new Lyrics \lyricsto "SopranoVoice" \SopranoLyrics

   \new Voice = "BassVoice" << \global \BassNotes >>
   \new Lyrics \lyricsto "BassVoice" \BassLyrics
>>
   \layout {
      ragged-right = ##t
      \context { \Staff
         % these lines prevent empty staves from being printed
         \RemoveEmptyStaves
         \override VerticalAxisGroup.remove-first = ##t
      }
   }
}

One two three four five six

3

la la la la la

dum dum dum dum
Tweaks and overrides

Section “Changing defaults” in Notation Reference
   Section “Tweaking output” in Learning Manual

Adding an ottava marking to a single voice
If you have more than one voice on the staff, setting octavation in one voice transposes the position of notes in all voices for the duration of the ottava bracket. If the octavation is only intended to apply to one voice, the \Ottava_spanner_engraver should be moved to \Voice context.

\layout {
  \context {
    \Staff
    \remove \Ottava_spanner_engraver
  }
  \context {
    \Voice
    \consists \Ottava_spanner_engraver
  }
}

{ \clef bass
   \offset 0\cm << { <g d'>1~ q2 <c' e'> } \offset -0\cm }
   \offset 0\cm \ ottava -1
   \offset -0\cm <b,,, b,,,>4 ~ | \offset 0\cm q2
   \ottava 0
   \offset -0\cm <c e>2
  } >>
}

Adding links to objects
To add a link to a grob stencil you can use \add-link as defined here. It works both with \override and \tweak.

   Drawback: point-and-click is disturbed for the linked grobs.
   Limitation: Works for PDF only.
The linked objects are colored with a separate command. Note that the links are not displayed and are not clickable from inside the LSR.

```lisp
(define (add-link url-strg)
  (lambda (grob)
    (let* ((stil (ly:grob-property grob 'stencil)))
      (if (ly:stencil? stil)
          (let* ((x-ext (ly:stencil-extent stil X))
                  (y-ext (ly:stencil-extent stil Y))
                  (url-expr `(url-link ,url-strg ,x-ext ,y-ext))
                  (new-stil
                   (ly:stencil-add
                    (ly:make-stencil url-expr x-ext y-ext)
                    stil)))
            (ly:grob-set-property! grob 'stencil new-stil))))))

%%%% test

%% For easier maintenance of this snippet the URL is formatted to use the actually used LilyPond version.
%% Of course a literal URL would work as well.

(define major.minor-version
  (string-join (take (string-split (lilypond-version) #\.) 2) ".")

urlI = #(format #f
  "http://lilypond.org/doc/v~a/Documentation/notation/writing-pitches"
  major.minor-version)

urlII = #(format #f
  "http://lilypond.org/doc/v~a/Documentation/notation/rhythms"
  major.minor-version)

urlIII = #(format #f
  "http://lilypond.org/doc/v~a/Documentation/notation/note-heads"
  major.minor-version)

urlIV = #(format #f
  "http://lilypond.org/doc/v~a/Documentation/notation/beams"
  major.minor-version)

urlV = #(format #f
  "http://lilypond.org/doc/v~a/Documentation/notation/note-head-styles"
  major.minor-version)

urlVI = #(format #f
  "http://lilypond.org/doc/v~a/Documentation/notation/note-head-styles"
  major.minor-version)
By default markups does not show in a tablature.

To make them appear, simply use the command \revert TabStaff.TextScript.stencil

```
high = { r4 r8 <g c'> q r8 r4 }
low = { c4 r4 c8 r8 g,8 b, }
pulse = { s8"1" s""&" s"2" s""&" s"3" s""&" s"4" s""&" }
```
Adding timing marks to long glissandi

Skipped beats in very long glissandi are sometimes indicated by timing marks, often consisting of stems without noteheads. Such stems can also be used to carry intermediate expression markings.

If the stems do not align well with the glissando, they may need to be repositioned slightly.

\relative c' {  
  r8 f8 \glissando  
  \glissandoSkipOn  
  f4 g a a8 \noBeam  
  \glissandoSkipOff  
  a8
}
Adjusting grace note spacing

The space given to grace notes can be adjusted using the spacing-increment property of Score.GraceSpacing.

```latex
\texttt{graceNotes} = \{
    \texttt{\grace{c4 c8 c16 c32}}
\}
```

```latex
\texttt{\relative c'' {\graceNotes override \Score.GraceSpacing.spacing-increment = #2.0 \graceNotes revert \Score.GraceSpacing.spacing-increment \graceNotes}}
```

Adjusting lyrics vertical spacing

This snippet shows how to bring the lyrics line closer to the staff.

```latex
\texttt{\new \Staff \new \Voice = \melody \relative c' {\c4 \d \e \f \g4 \f \e \d \c1}}
```

```latex
\texttt{\new \Lyrics \lyricsto \melody {aa aa aa aa aa aa aa aa aa}}
```
\new Staff {
  \new Voice = melody \relative c' {
    c4 d e f
g4 f e d
c1
  }
}

% Reducing the minimum space below the staff and above the lyrics:
\new Lyrics \with {
  \override VerticalAxisGroup.nonstaff-relatedstaff-spacing = #'((basic-distance . 1))
}
\lyricsto melody { aa aa aa aa aa aa aa aa }

% Alternating the length of beamed stems

Stem lengths on beamed notes can be varied by overriding the beamed-lengths property of the details of the Stem. If a single value is used as an argument, the length applies to all stems. When multiple arguments are used, the first applies to eighth notes, the second to sixteenth notes and so on. The final argument also applies to all notes shorter than the note length of the final argument. Non-integer arguments may also be used.

\relative c' {
  \override Stem.details.beamed-lengths = #'(2)
a8[ a] a16[ a] a32[ a]
  \override Stem.details.beamed-lengths = #'(8 10 12)
a8[ a] a16[ a] a32[ a] r8
  \override Stem.details.beamed-lengths = #'(8)
a8[ a]
  \override Stem.details.beamed-lengths = #'(8.5)
a8[ a]
  \revert Stem.details.beamed-lengths
  a8[ a] a16[ a] a32[ a] r16
}

% Alternative bar numbering

Two alternative methods for bar numbering can be set, especially for when using repeated music.
\relative c'\{
  \set Score.alternativeNumberingStyle = #'numbers
  \repeat volta 3 { c4 d e f | }
  \alternative {
    { c4 d e f | c2 d \break }
    { f4 g a b | f4 g a b | f2 a | \break }
    { c4 d e f | c2 d }
  }
  c1 \break
  \set Score.alternativeNumberingStyle = #'numbers-with-letters
  \repeat volta 3 { c,4 d e f | }
  \alternative {
    { c4 d e f | c2 d \break }
    { f4 g a b | f4 g a b | f2 a | \break }
    { c4 d e f | c2 d }
  }
  c1
}\}

Analysis brackets above the staff

Simple horizontal analysis brackets are added below the staff by default. The following example shows a way to place them above the staff instead.

\layout {
  \context {
  ...
Analysis brackets with labels

Text markup may be added to analysis brackets through the text property of the HorizontalBracketText grob. Adding different texts to brackets beginning at the same time requires the \_tweak command.

Bracket text will be parenthesized after a line break.

\paper { tagline = ##f }

\layout {
  \context {
    \Voice
    \consists "Horizontal_bracket_engraver"
    \override HorizontalBracketText.text = "a"
    \once \override HorizontalBracketText.text = "a"'
    \startGroup
    \stopGroup
    \once \override HorizontalBracketText.text = "a"
    \startGroup
    \stopGroup
    \once \override HorizontalBracketText.text = "a"
    \startGroup
    \stopGroup
    \once \override HorizontalBracketText.text = "a"
    \startGroup
    \stopGroup
    \once \override HorizontalBracketText.text = "a"
    \startGroup
    \stopGroup
    \once \override HorizontalBracketText.text = "a"
    \startGroup
    \stopGroup
    \once \override HorizontalBracketText.text = "a"
    \startGroup
    \stopGroup
  }
}
Asymmetric slurs

Slurs can be made asymmetric to match an asymmetric pattern of notes better.

\[ \text{slurNotes} = \{ d,8(a' d f a f' d, a) \} \]

Caesura ("railtracks") with fermata

A caesura is sometimes denoted by a double “railtracks” breath mark with a fermata sign positioned above. This snippet shows an optically pleasing combination of railtracks and fermata.

\[ \text{\relative c' \{ \begin{array}{l}
\text{\stemDown} \\
\text{\slurUp} \\
\text{\once \override \text{Slur.eccentricity} = #3.0} \\
\text{\slurNotes}
\end{array} \}} \]

\[ \text{\relative c'' \{ c2.} \%
\text{\override \text{BreathingSign.text} = \markUp { \begin{array}{l}
\text{\override \#'(direction . 1)} \\
\text{\override \#'(baseline-skip . 1.8)} \\
\text{\dir-column { \begin{array}{l}
\text{\translate \#'(0.155 . 0)} \\
\text{\center-align \space{musicglyph} "scripts.caesura.curved"} \\
\text{\center-align \space{musicglyph} "scripts.ufermata"}
\end{array} \}}}
\end{array} \}} \%
\text{\breathe \text{c4}} \%
\text{\set the breathe mark back to normal} \%
\text{\revert \text{BreathingSign.text}} \%
\text{c2. \breathe \text{c4}} \%
\text{\bar "|."} \}} \]
Changing a single note’s size in a chord

Individual note heads in a chord can be modified with the \tweak command inside a chord, by altering the font-size property.

Inside the chord (within the brackets < >), before the note to be altered, place the \tweak command, followed by font-size and define the proper size like #-2 (a tiny note head).

```
\relative c' {  
  \tweak font-size #+2 c e g c  
  \tweak font-size #-2 e>1  
  ^\markup { A tiny e } \markup { A big c }  
}
```

A tiny e

A big c

Changing beam thickness and spacing

To make beams thicker or thinner alter the Beam.beam-thickness property. To adjust the spacing between beams alter the Beam.length-fraction property.

```
\relative f' {  
  \time 1/8  
  \override Beam.beam-thickness = #0.4  
  \override Beam.length-fraction = #0.8  
  c32 c c c  
  \revert Beam.beam-thickness % 0.48 is default thickness  
  \revert Beam.length-fraction % 1.0 is default spacing  
  c32 c c c  
  \override Beam.beam-thickness = #0.6  
  \override Beam.length-fraction = #1.3  
  c32 c c c  
}
```

Changing form of multi-measure rests

If there are ten or fewer measures of rests, a series of longa and breve rests (called in German “Kirchenpausen” - church rests) is printed within the staff; otherwise a simple line is shown. This default number of ten may be changed by overriding the expand-limit property.

```
\relative c'' {  
  \compressMMRests {  
    R1*2 | R1*5 | R1*9  
    \override MultiMeasureRest.expand-limit = #3  
    R1*2 | R1*5 | R1*9  
  }  
}
```
Changing properties for individual grobs

The \texttt{applyOutput} command allows the tuning of any layout object, in any context. It requires a Scheme function with three arguments.

\begin{verbatim}
#(define (mc-squared grob grob-origin context)
  (let ((sp (ly:grob-property grob 'staff-position)))
    (ly:grob-set-property!
      grob 'stencil
      (ly:grob-interpret-markup grob
        #{ \markup \lower #0.5
          relative c' {
            \textbf{\textit{cresc. poco}}
          }\textbf{\textit{mf}}\textbf{\textit{cresc. poco}}\textbf{\textit{mf}}
        "bla") #})))
#(case sp
  ((-5) "m")
  ((-3) "c ")
  ((-2) #\textbf{\textit{cresc. poco}}\textbf{\textit{mf}}
    (else "bla")) #))
\end{verbatim}

Changing text and spanner styles for text dynamics

The text used for crescendos and decrescendos can be changed by modifying the context properties \texttt{crescendoText} and \texttt{decrescendoText}.

The style of the spanner line can be changed by modifying the 'style property of \texttt{DynamicTextSpanner}. The default value is 'dashed-line, and other possible values include 'line, 'dotted-line and 'none.

\begin{verbatim}
\texttt{relative c' {
  \set crescendoText = \markup { \textit{cresc. poco} }
  \set decrescendoText = #'text
  \override DynamicTextSpanner.style = #'dotted-line
  a2\textbf{\textit{a}}
  a2 a
  a2 a\textbf{\textit{mf}}
}}
\end{verbatim}
Changing the default text font family

The default font families for text can be overridden with `make-pango-font-tree`.

```latex
%\%
You may have to install additional fonts.

\textit{Red Hat Fedora}

dejavu-fonts-all

\textit{Debian GNU/Linux, Ubuntu}

fonts-dejavu-core
fonts-dejavu-extra
%

\texttt{paper} {
  \%
  change for other default global staff size.
  \texttt{myStaffSize} = #20
  \%
  run
  \texttt{lilypond -dshow-available-fonts}
  to show all fonts available in the process log.
  \%
}

#(define fonts
  (make-pango-font-tree "DejaVu Serif"
   "DejaVu Sans"
   "DejaVu Sans Mono"
   (/ myStaffSize 20)))
}

{
  g'''4\markup {
    DejaVu Serif: \textbf{bold} bold
    \textit{italic} italic
    \textit{italic} \textbf{bold} { bold italic }
  }

  g4\markup {
    \texttt{override} #'(font-family . sans) {
      DejaVu Sans: \textbf{bold} bold
      \textit{italic} italic
      \textit{italic} \textbf{bold} { bold italic }
    }
  }

  g''2\markup {
    \texttt{override} #'(font-family . typewriter) {
      DejaVu Sans Mono: \textbf{bold} bold
      \textit{italic} italic
      \textit{italic} \textbf{bold} { bold italic }
    }
  }
}
Changing the staff size

Though the simplest way to resize staves is to use \#(set-global-staff-size xx), an individual staff’s size can be changed by scaling the properties ‘staff-space and fontSize.

\%
\new Staff { 
  \relative c' { 
    \dynamicDown 
    c8\ff c c c c c c c 
  } 
}
\new Staff \with { 
  fontSize = #-3 
  \override StaffSymbol.staff-space = #(magstep -3) 
} { 
  \clef bass 
  c8 c c c c\f c c c 
}
\%

Changing the tempo without a metronome mark

To change the tempo in MIDI output without printing anything, make the metronome mark invisible.

\score { 
\new Staff \relative c' { 
  \tempo 4 = 160 
  c4 e g b 
  c4 b d c 
  \set Score.tempoHideNote = ##t 
  \tempo 4 = 96 
  d,4 fis a cis 
  d4 cis e d 
} 
\layout { }
\midi { }
}

\relative c' {
\sustainNotes
\set Staff.pedalSustainStrings = #'("P" "P-" "-")
\sustainNotes
\set Staff.pedalSustainStrings = #'("d" "de" "e")
\sustainNotes
\set Staff.pedalSustainStrings = #'("M" "M-" "-")
\sustainNotes
\set Staff.pedalSustainStrings = #'("Ped" "*Ped" "*")
\sustainNotes
}

\override Hairpin.to-barline = ##f
\override Glissando.breakable = ##t
\% show hairpin
\override Hairpin.after-line-breaking = ##t
\% hide text span
\override TextSpanner.after-line-breaking =
\%ly:spanner::kill-zero-spanned-time
e2\<\startTextSpan

Changing the text for sustain markings

Staff.pedalSustainStrings can be used to set the text used for pedal down and up. Note that the only valid strings are those found in the list of pedal glyphs - the values used this snippet constitute an exhaustive list.

\sustainNotes = { c4\sustainOn d \sustainOff \sustainOn f \sustainOff }

\relative c'' {
\override Hairpin.to-barline = ##f
\override Glissando.breakable = ##t
\% show hairpin
\override Hairpin.after-line-breaking = ##t
\% hide text span
\override TextSpanner.after-line-breaking =
\%ly:spanner::kill-zero-spanned-time
e2\<\startTextSpan

Controlling spanner visibility after a line break

The visibility of spanners which end on the first note following a line break is controlled by the after-line-breaking callback \ly:spanner::kill-zero-spanned-time.

For objects such as glissandos and hairpins, the default behaviour is to hide the spanner after a break; disabling the callback will allow the left-broken span to be shown.

Conversely, spanners which are usually visible, such as text spans, can be hidden by enabling the callback.

\paper { ragged-right = ##t }

Controlling the vertical ordering of scripts

The vertical ordering of scripts is controlled with the 'script-priority property. The lower this number, the closer it will be put to the note. In this example, the TextScript (the sharp symbol) first has the lowest priority, so it is put lowest in the first example. In the second, the prall trill (the Script) has the lowest, so it is on the inside. When two objects have the same priority, the order in which they are entered determines which one comes first.

\relative c'' {  
  \once \override TextScript.script-priority = #-100  
a2 \prall \markup { \sharp }  
}  
\once \override Script.script-priority = #-100  
a2 \prall \markup { \sharp }  
}

Controlling tuplet bracket visibility

The default behavior of tuplet bracket visibility is to print a bracket unless there is a beam of the same length as the tuplet.

To control the visibility of tuplet brackets, set the property 'bracket-visibility to either #t (always print a bracket), 'if-no-beam (only print a bracket if there is no beam), or #f (never print a bracket). The latter is in fact equivalent to omitting the TupletBracket object altogether from the printed output.

music = \relative c'' {  
  \tuplet 3/2 { c16[ d e } f8]  
  \tuplet 3/2 { c8 d e }  
  \tuplet 3/2 { c4 d e }  
}  
\new Voice {  
  \relative c' {  

Creating a delayed turn

Creating a delayed turn, where the lower note of the turn uses the accidental, requires several overrides. The outside-staff-priority property must be set to #f, as otherwise this would take precedence over the avoid-slur property. Changing the fraction $\frac{2}{3}$ adjusts the horizontal position.

\begin{verbatim}
\relative c' { 
  \after 2*2/3 \turn c2( d4) r |
  \after 4 \turn c4.( d8) \after 4
  \{ 
    \once \set suggestAccidentals = ##t 
    \once \override AccidentalSuggestion.outside-staff-priority = ##f 
    \once \override AccidentalSuggestion.avoid-slur = #'inside 
    \once \override AccidentalSuggestion.font-size = -3 
    \once \override AccidentalSuggestion.script-priority = -1 
    \once \hideNotes cis8\turn \noBeam
  } 
  d4.( e8)
}
\end{verbatim}

Creating custom key signatures

LilyPond supports custom key signatures. In this example, print for D minor with an extended range of printed flats.
\new Staff \with { 
  \override StaffSymbol.line-count = #8
  \override KeySignature.flat-positions = #'((-7 . 6))
  \override KeyCancellation.flat-positions = #'((-7 . 6))
  % presumably sharps are also printed in both octaves
  \override KeySignature.sharp-positions = #'((-6 . 7))
  \override KeyCancellation.sharp-positions = #'((-6 . 7))

  \override Clef.stencil = #
  (lambda (grob)(grob-interpret-markup grob
  #( \markup\combine
    \musicglyph "clefs.C"
    \translate #'(-3 . -2)
    \musicglyph "clefs.F"
    #}))
  clefPosition = #3
  middleCPosition = #3
  middleCClefPosition = #3
}

{ 
  \key d\minor
  f bes, f bes,
}

Creating double-digit fingerings
Creating fingerings larger than 5 is possible.
\relative c' { 
  c1-10
  c1-50
  c1-36
  c1-29
}

Creating text spanners
The \startTextSpan and \stopTextSpan commands allow the creation of text spanners as easily as pedal indications or octavations. Override some properties of the TextSpanner object to modify its output.
\paper { ragged-right = ##f }
\relative c'' { 
  \override TextSpanner.bound-details.left.text = "bla" }
Cross-staff chords - beaming problems workaround

Sometimes it is better to use stems from the upper staff for creating cross-staff chords, because no problems with automatic beam collision avoidance then arise. If the stems from the lower staff were used in the following example, it would be necessary to change the automatic beam collision avoidance settings so that it doesn’t detect collisions between staves using \override Staff.Beam.collision-voice-only = ##t

\new PianoStaff <<
\new Staff = up
\relative c' { <<
\override Stem.cross-staff = ##t
\override Stem.length = #19 \%
% this is in half-spaces,
% so it makes stems 9.5 staffspaces long
\override Stem.Y-offset = #-6 \%

stems are normally lengthened
% upwards, so here we must lower the stem by the amount
% equal to the lengthening - in this case (19 - 7) / 2
% (7 is default stem length)
{ s4
  \change Staff = "bottom"
  \override NoteColumn.ignore-collision = ##t
  c, c c
}

\new Staff = bottom
  \relative c' {
    \clef bass
    \voiceOne
    g8 a g a g a g a
  }

Cross staff stems

This snippet shows the use of the Span_stem_engraver and \crossStaff to connect stems across staves automatically.

The stem length need not be specified, as the variable distance between noteheads and staves is calculated automatically.

\layout {
  \context {
    \PianoStaff
    \consists "Span_stem_engraver"
  }
}

{ \new PianoStaff <<
  \new Staff {
    <b d'>4 r d'16> e'8. g8 r\!
    e'8 f' g'4 e'2
  }
  \new Staff {
    \clef bass
    \voiceOne
    \autoBeamOff
    \crossStaff { <e g>4 e, g16 a8. c8} d
    \autoBeamOn
    g8 f g4 c2
}
Custodes

Custodes may be engraved in various styles.

\layout { ragged-right = ##t }

\new Staff \with { \consists "Custos_engraver" } \relative c' { 
\override Staff.Custos.neutral-position = #4 

\override Staff.Custos.style = #'hufnagel 
cl^"hufnagel" \break
<d a' f'>1

\override Staff.Custos.style = #'medicaea 
cl^"medicaea" \break
<d a' f'>1

\override Staff.Custos.style = #'vaticana 
cl^"vaticana" \break
<d a' f'>1

\override Staff.Custos.style = #'mensural 
cl^"mensural" \break
<d a' f'>1
}
Customizing fretboard fret diagrams

Fret diagram properties can be set through 'fret-diagram-details. For FretBoard fret diagrams, overrides are applied to the FretBoards.FretBoard object. Like Voice, FretBoards is a bottom level context, therefore can be omitted in property overrides.

\include "predefined-guitar-fretboards.ly"
\storePredefinedDiagram \default-fret-table \chordmode \{ c' \}
\guitar-tuning
\"x;1-1-;3-2-3-3;3-4-1-1-;\"

%%% shorthand
\oo = #(define-music-function
  (grob-path value)
  (list? scheme?)
  #\{ \once \override \$grob-path = #value \})

<<
\new ChordNames \{
  \chordmode \{ c1 | c | c | d \}
}\}
\new FretBoards \{
  \% Set global properties of fret diagram
  \override FretBoards.FretBoard.size = #'1.2
  \override FretBoard.fret-diagram-details.finger-code = #'in-dot
  \override FretBoard.fret-diagram-details.dot-color = #'white
  \chordmode \{
    c
    \oo FretBoard.size #'1.0
    \oo FretBoard.fret-diagram-details.barre-type #'straight
    \oo FretBoard.fret-diagram-details.dot-color #'black
    \oo FretBoard.fret-diagram-details.finger-code #'below-string
    c'
    \oo FretBoard.fret-diagram-details.barre-type #'none
    \oo FretBoard.fret-diagram-details.number-type #'arabic
    \oo FretBoard.fret-diagram-details.orientation #'landscape
    \oo FretBoard.fret-diagram-details.mute-string #"M"
    \oo FretBoard.fret-diagram-details.label-dir #LEFT
    \oo FretBoard.fret-diagram-details.dot-color #'black
    c'
    \oo FretBoard.fret-diagram-details.finger-code #'below-string
    \oo FretBoard.fret-diagram-details.dot-radius #0.35
    \oo FretBoard.fret-diagram-details.dot-position #0.5
    \oo FretBoard.fret-diagram-details.fret-count #3
    d
  }\}
\new Voice \{
Customizing markup fret diagrams

Fret diagram properties can be set through 'fret-diagram-details. For markup fret diagrams, overrides can be applied to the Voice.TextScript object or directly to the markup.

```plaintext
\chords { c1 | c | c | d }
\new Voice = "mel" {
\textLengthOn
  \override TextScript.size = #'1.2
  \override TextScript.fret-diagram-details.finger-code = #'in-dot
  \override TextScript.fret-diagram-details.dot-color = #'white

  \markup { \fret-diagram-terse "x;3-3;2-2;o;1-1;o;" }

  \markup { \fret-diagram-verbose "(mute 6)
    (place-fret 5 3 1)
    (place-fret 4 5 2)
    (place-fret 3 5 3)
    (place-fret 2 5 4)
    (place-fret 1 3 1)
    (barre 5 1 3)"
  }
}
```
%% C major for guitar, barred on third fret
% verbose style
% landscape orientation, arabic numbers, M for mute string
% no barre, fret label down or left, small mute label font
\markup {
  \override #'(fret-diagram-details . (
    (finger-code . below-string)
    (number-type . arabic)
    (label-dir . -1)
    (mute-string . "M")
    (orientation . landscape)
    (barre-type . none)
    (xo-font-magnification . 0.4)
    (xo-padding . 0.3))) {
    \fret-diagram-verbose 
      (mute 6)
      (place-fret 5 3 1)
      (place-fret 4 5 2)
      (place-fret 3 5 3)
      (place-fret 2 5 4)
      (place-fret 1 3 1)
      (barre 5 1 3)
    }
}

%% simple D chord
% terse style
% larger dots, centered dots, fewer frets
% label below string
\markup {
  \override #'(fret-diagram-details . (  
    (finger-code . below-string)
    (dot-radius . 0.35)
    (dot-position . 0.5)
    (fret-count . 3))){
    \fret-diagram-terse "x;x;o;2-1;3-2;2-3;"
  }
}

Display bracket with only one staff in a system

If there is only one staff in one of the staff types ChoirStaff or StaffGroup, by default the bracket and the starting bar line will not be displayed. This can be changed by overriding collapse-height to set its value to be less than the number of staff lines in the staff.
Note that in contexts such as PianoStaff and GrandStaff where the systems begin with a brace instead of a bracket, another property has to be set, as shown on the second system in the example.

```latex
\score { 
  \new StaffGroup <<
    % Must be lower than the actual number of staff lines
    \override StaffGroup.SystemStartBracket.collapse-height = #4
    \override Score.SystemStartBar.collapse-height = #4
  \new Staff { 
    c'1
  } 
} >>
}
\score { 
  \new PianoStaff <<
    \override PianoStaff.SystemStartBrace.collapse-height = #4
    \override Score.SystemStartBar.collapse-height = #4
  \new Staff { 
    c'1
  } 
} >>
}
```

![Music notation example]

### Displaying grob ancestry

When working with grob callbacks, it can be helpful to understand a grob’s ancestry. Most grobs have parents which influence the positioning of the grob. X- and Y-parents influence the horizontal and vertical positions for the grob, respectively. Additionally, each parent may have parents of its own.

Unfortunately, there are several aspects of a grob’s ancestry that can lead to confusion:

- The types of parents a grob has may depend on context.
- For some grobs, the X- and Y-parents are the same.
- A particular ancestor may be related to a grob in multiple ways.
- The concept of generations is misleading.

For example, the System grob can be both parent (on the Y-side) and grandparent (twice on the X-side) to a VerticalAlignment grob.

This macro prints (to the console) a textual representation of a grob’s ancestry.

When called this way:

```latex
{ \once \override NoteHead.before-line-breaking = #display-ancestry c }
```

The following output is generated:

NoteHead
X,Y: NoteColumn
  X: PaperColumn
  X,Y: System
Y: VerticalAxisGroup
  X: NonMusicalPaperColumn
  X,Y: System
Y: VerticalAlignment
  X: NonMusicalPaperColumn
  X,Y: System

%% http://lsr.di.unimi.it/LSR/Item?id=622
%% see also http://www.lilypond.org/doc/v2.18/Documentation/snippets/tweaks-and-
overrides#tweaks-and-overrides-displaying-grob-ancestry

%% Remark:
%% grob::name is in the source since 2.19.x could be deleted during next LSR-upgrade
#(define (grob::name grob)
  (assq-ref (ly:grob-property grob 'meta) 'name))

#(define (get-ancestry grob)
  (if (not (null? (ly:grob-parent grob X)))
    (list (grob::name grob)
      (get-ancestry (ly:grob-parent grob X))
      (get-ancestry (ly:grob-parent grob Y)))
    (grob::name grob)))

#(define (format-ancestry lst padding)
  (string-append
   (symbol->string (car lst))
   "\n"
   (let ((X-ancestry
         (if (list? (cadr lst))
           (format-ancestry (cadr lst) (+ padding 3))
           (symbol->string (cadr lst)))))
     (Y-ancestry
      (if (list? (caddr lst))
        (format-ancestry (caddr lst) (+ padding 3))
        (symbol->string (caddr lst)))))
    (if (equal? X-ancestry Y-ancestry)
      (string-append
       (format #f "%-&")
       (make-string padding \space)
       "X,Y: "
       (if (list? (cadr lst))
         (format-ancestry (cadr lst) (+ padding 5))
         (symbol->string (cadr lst))))
      (string-append
       (format #f "%-&")
       (make-string padding \space)
       "X: " X-ancestry
       "\n"
(make-string padding \space)
"Y: " Y-ancestry
(format #f "-&")))
(format #f "-&")))

#(define (display-ancestry grob)
(format (current-error-port)
"-3&-a-2%-a-&"
(make-string 36 \-)
(if (ly:grob? grob)
(format-ancestry (get-ancestry grob) 0)
(format #f "-a is not a grob" grob))))

\relative c' {
\once \override NoteHead.before-line-breaking = #display-ancestry
f4
\once \override Accidental.before-line-breaking = #display-ancestry
\once \override Arpeggio.before-line-breaking = #display-ancestry
<f as c>4\arpeggio
}

Dotted harmonics

Artificial harmonics using \harmonic do not show dots. To override this behavior, set the context property harmonicDots.

\relative c''' {
\time 3/4
\key f \major
\set harmonicDots = ##t
<br f'\harmonic>2. ~
<br f'\harmonic>4. <a e'\harmonic>8( <gis dis'\harmonic> <g d'\harmonic>)
<br fis cis'\harmonic>2.
<br f'\harmonic>2.
}

Drawing boxes around grobs

The print-function can be overridden to draw a box around an arbitrary grob.

\relative c' {
\override TextScript.stencil =
#(make-stencil-boxer 0.1 0.3 ly:text-interface::print)
c'4"foo"
Drawing circles around various objects

The \texttt{circle} markup command draws circles around various objects, for example finger indications. For other objects, specific tweaks may be required: this example demonstrates two strategies for rehearsal marks and measure numbers.

\begin{verbatim}
\relative c' { 
  \set Score.rehearsalMarkFormatter = 
    #(lambda (mark context) 
      (make-circle-markup (format-mark-numbers mark context)))

  \mark \default 
  c1 
  \markup { 
    \override #'(thickness . 3) { 
      \circle \finger 2
    } 
  }

  \override Score.BarNumber.break-visibility = #all-visible
  \override Score.BarNumber.stencil = 
    #(make-stencil-circler 0.1 0.25 ly:text-interface::print)
}
\end{verbatim}

Dynamics custom text spanner postfix

Postfix functions for custom crescendo text spanners. The spanners should start on the first note of the measure. One has to use \texttt{-\mycresc}, otherwise the spanner start will rather be assigned to the next note.

\begin{verbatim}
\% Two functions for (de)crescendo spanners where you can explicitly
\% give the spanner text.
\end{verbatim}
Tweaks and overrides

```latex
mycresc =
#(define-music-function (mymarkup) (markup?)
  (make-music 'CrescendoEvent
    'span-direction START
    'span-type 'text
    'span-text mymarkup))

mydecresc =
#(define-music-function (mymarkup) (markup?)
  (make-music 'DecrescendoEvent
    'span-direction START
    'span-type 'text
    'span-text mymarkup))

\relative c' {
  c4-\mycresc "custom cresc" c4 c4 c4 |
  c4 c4 c4 c4 |
  c4-\mydecresc "custom decresc" c4 c4 c4 |
  c4 c4\! c4 c4 |
}
```

Dynamics text spanner postfix

Custom text spanners can be defined and used with hairpin and text crescendos. \(<\) and \(\rangle\) produce hairpins by default, \(<\text{cresc}\) etc. produce text spanners by default.

```latex
\%
Some sample text dynamic spanners, to be used as postfix operators

crpoco =
#(make-music 'CrescendoEvent
  'span-direction START
  'span-type 'text
  'span-text "cresc. poco a poco")

\relative c' {
  c4\cresc d4 e4 f4 |
  g4 a4\! b4\crpoco c4 |
  c4 d4 e4 f4 |
  g4 a4\! b4\< c4 |
  g4\dim a4 b4\decresc c4\! |
}
```

```latex
\%
```
Extending a TrillSpanner

For TrillSpanner, the minimum-length property becomes effective only if the `set-spacing-rods` procedure is called explicitly. To do this, the `springs-and-rods` property should be set to `ly:spanner::set-spacing-rods`.

\relative c' { 
\key c\minor 
\time 2/4 
\once\override TrillSpanner.minimum-length = #15 
\once\override TrillSpanner.springs-and-rods = #ly:spanner::set-spacing-rods 
\afterGrace es4 
\startTrillSpan { d16[( \stopTrillSpan es)] } 
\c( c' g es c g' es d 
\hideNotes 
c8) }

Extending glissandi across repeats

A glissando which extends into several `\alternative` blocks can be simulated by adding a hidden grace note with a glissando at the start of each `\alternative` block. The grace note should be at the same pitch as the note which starts the initial glissando. This is implemented here with a music function which takes the pitch of the grace note as its argument.

Note that in polyphonic music the grace note must be matched with corresponding grace notes in all other voices.

\repeatGliss = #(define-music-function (grace) (ly:pitch?)) 
#{
% the next two lines ensure the glissando is long enough 
% to be visible 
\once \override Glissando.springs-and-rods 
 = #ly:spanner::set-spacing-rods 
\once \override Glissando.minimum-length = #3.5 
\once \hideNotes 
\grace $grace \glissando 
#})

\score { 
\relative c'' { 
\repeat volta 3 { c4 d e f\glissando } 
\alternative { 
{ g2 d } 
{ \repeatGliss f g2 e } 
{ \repeatGliss f e2 d } 
} }
Fine-tuning pedal brackets

The appearance of pedal brackets may be altered in different ways.

\paper { ragged-right = ##f }
\relative c'' { 
    c2\sostenutoOn c
    c2\sostenutoOff c
    \once \override Staff.PianoPedalBracket.shorten-pair = #'(-7 . -2)
    c2\sostenutoOn c
    c2\sostenutoOff c
    \once \override Staff.PianoPedalBracket.edge-height = #'(0 . 3)
    c2\sostenutoOn c
    c2\sostenutoOff c
}
Tweaks and overrides 500

Flat Ties
The function takes the default Tie.stencil as an argument, calculating the result relying on the extents of this default.

Further tweaking is possible by overriding Tie.details.height-limit or with \shape. It’s also possible to change the custom-definition on the fly.

% http://lsr.di.unimi.it/LSR/Item?id=1031

#(define ((flared-tie coords) grob))

(define (pair-to-list pair)
  (list (car pair) (cdr pair)))

(define (normalize-coords goods x y dir)
  (map
   (lambda (coord)
     ;(coord-scale coord (cons x (* y dir)))
     (cons (* x (car coord)) (* y dir (cdr coord)))
    goods))

(define (my-c-p-s points thick)
  (make-connected-path-stencil
   points
   thick
   1.0
   1.0
   #f
   #f))

;; outer let to trigger suicide
(let ((sten (ly:tie::print grob)))
  (if (grob::is-live? grob)
    (let* ((layout (ly:grob-layout grob))
      (line-thickness (ly:output-def-lookup layout 'line-thickness))
      (thickness (ly:grob-property grob 'thickness 0.1))
      (used-thick (* line-thickness thickness))
      (dir (ly:grob-property grob 'direction))
      (xex (ly:stencil-extent sten X))
      (yex (ly:stencil-extent sten Y))
      (lenx (interval-length xex))
      (leny (interval-length yex))
      (xtrans (car xex))
      (ytrans (if (> dir 0)(car yex) (cdr yex)))
    (uplist
(map pair-to-list
  (normalize-coords coords lenx (* leny 2) dir)))

(ly:stencil-translate
  (my-c-p-s uplist used-thick)
  (cons xtrans ytrans)))

#(define flare-tie
  (flared-tie '((0 . 0)(0.1 . 0.2) (0.9 . 0.2) (1.0 . 0.0))))
Force a cancellation natural before accidentals

The following example shows how to force a natural sign before an accidental.
\relative c' {
  \key es \major
  bes c des
  \tweak Accidental.restore-first ##t
  eis
}

Forcing horizontal shift of notes

When the typesetting engine cannot cope, the following syntax can be used to override typesetting decisions. The units of measure used here are staff spaces.
\relative c' <<
  
  \q<\q<d g>2 <\q<d g>}
  
  \q\q\q\q\q\q\q\q\q\
Tweaks and overrides

Fret diagrams explained and developed

This snippet shows many possibilities for obtaining and tweaking fret diagrams.

```plaintext

\chords {
  a2 a
  \repeat unfold 3 {
    c c c d d
  }
}

\new Voice = "mel" {
  \textLengthOn
  % Set global properties of fret diagram
  \override TextScript.size = #1.2
  \override TextScript.fret-diagram-details.finger-code = #'below-string
  \override TextScript.fret-diagram-details.dot-color = #'black

  %% A chord for ukulele
  a'2^\markup {
    \override \fret-diagram-details . ( (string-count . 4) (dot-color . white) (finger-code . in-dot)) { \fret-diagram "4-2-2;3-1-1;2-o;1-o;"
  }
}

  %% A chord for ukulele, with formatting defined in definition string
  % 1.2 * size, 4 strings, 4 frets, fingerings below string
  % dot radius .35 of fret spacing, dot position 0.55 of fret spacing
  a'2^\markup {
    \override \fret-diagram-details . ( (dot-color . white) (open-string . "o")) { \fret-diagram "s:1.2:w:4:h:3:f:2:d:0.35:p:0.55;4-2-2;3-1-1;2-o;1-o;"
  }
}

  %% These chords will be in normal orientation
```
%% C major for guitar, barred on third fret
% verbose style
% roman fret label, finger labels below string, straight barre
\markup {
  % 110% of default size
  \override #'(size . 1.1) {
    \override #'(fret-diagram-details . (
      (number-type . roman-lower)
      (finger-code . below-string)
      (barre-type . straight))) {
      \fret-diagram-verbose #'((mute 6)
        (place-fret 5 3 1)
        (place-fret 4 5 2)
        (place-fret 3 5 3)
        (place-fret 2 5 4)
        (place-fret 1 3 1)
        (barre 5 1 3))
    }
  }
}

%% C major for guitar, barred on third fret
%% Double barre used to test barre function
%% verbose style
\markup {
  % 110% of default size
  \override #'(size . 1.1) {
    \override #'(fret-diagram-details . (
      (number-type . arabic)
      (dot-label-font-mag . 0.9)
      (finger-code . in-dot)
      (fret-label-font-mag . 0.6)
      (fret-label-vertical-offset . 0)
      (label-dir . -1)
      (mute-string . "M")
      (xo-font-magnification . 0.4)
      (xo-padding . 0.3))) {
      \fret-diagram-verbose #'((mute 6)
        (place-fret 5 3 1)
        (place-fret 4 5 2)
        (place-fret 3 5 3)
        (place-fret 2 5 4)
        (place-fret 1 3 1)
        (barre 4 2 5)
        (barre 5 1 3))
    }
  }
}

%% C major for guitar, with capo on third fret
% verbose style
c'2\markup {
  \override #(size . 1.1) {
    /fret-diagram-details . (number-type . roman-upper) (dot-label-font-mag . 0.9) (fret-label-vertical-offset . 0.5) (xo-font-magnification . 0.4) (xo-padding . 0.3)) {
      \fret-diagram-verbose '((mute 6) (capo 3) (open 5) (place-fret 4 5 1) (place-fret 3 5 2) (place-fret 2 5 3) (open 1))
    }
  }
  \fret-diagram-terse "x;x;o;2-1;3-2;2-3;"
}

%% simple D chord
d'2\markup {
  /fret-diagram-details . (finger-code . below-string) (dot-radius . 0.35) (string-thickness-factor . 0.3) (dot-position . 0.5) (fret-count . 3)) {
    \fret-diagram-terse "x;x;o;2-1;3-2;2-3;"
  }
}

%% simple D chord, large top fret thickness
d'2\markup {
  /fret-diagram-details . (finger-code . below-string) (dot-radius . 0.35) (dot-position . 0.5) (top-fret-thickness . 7) (fret-count . 3)) {
    \fret-diagram-terse "x;x;o;2-1;3-2;2-3;"
  }
}

% These chords will be in landscape orientation
\override TextScript.fret-diagram-details.orientation = #'landscape

%% C major for guitar, barred on third fret
% verbose style
% roman fret label, finger labels below string, straight barre
c'2\markup {
    ...
}
Tweaks and overrides

%% 110% of default size
\override #\'(size . 1.1) {
  \override #\'(fret-diagram-details . (
    (number-type . roman-lower)
    (fret-label-font-mag . 0.9)
    (fret-label-vertical-offset . 0)
    (mute-string . "M")
    (xo-font-magnification . 0.4)
    (xo-padding . 0.3))) {
    \fret-diagram-verbose #\'((mute 6)
      (place-fret 5 3 1)
      (place-fret 4 5 2)
      (place-fret 3 5 3)
      (place-fret 2 5 4)
      (place-fret 1 3 1)
      (barre 5 1 3))
  }
}

%% C major for guitar, barred on third fret
%% Double barre used to test barre function
% verbose style
c\'2\markup {
  % 110% of default size
  \override #\'(size . 1.1) {
    \override #\'(fret-diagram-details . (
      (number-type . arabic)
      (dot-label-font-mag . 0.9)
      (fret-label-font-mag . 0.6)
      (fret-label-vertical-offset . 0)
      (label-dir . -1)
      (mute-string . "M")
      (xo-font-magnification . 0.4)
      (xo-padding . 0.3))) {
      \fret-diagram-verbose #\'((mute 6)
        (place-fret 5 3 1)
        (place-fret 4 5 2)
        (place-fret 3 5 3)
        (place-fret 2 5 4)
        (place-fret 1 3 1)
        (barre 4 2 5)
        (barre 5 1 3))
    }
  }
}

%% C major for guitar, with capo on third fret
% verbose style
c\'2\markup {
  % 110% of default size
  \override #\'(size . 1.1) {
    \override #\'(fret-diagram-details . (
      (number-type . roman-upper)
      (fret-label-font-mag . 0.9)
      (fret-label-vertical-offset . 0)
      (mute-string . "M")
      (xo-font-magnification . 0.4)
      (xo-padding . 0.3))) {
      \fret-diagram-verbose #\'((mute 6)
        (place-fret 5 3 1)
        (place-fret 4 5 2)
        (place-fret 3 5 3)
        (place-fret 2 5 4)
        (place-fret 1 3 1)
        (barre 4 2 5)
        (barre 5 1 3))
    }
  }
}
%% simple D chord
d'2\markup {
   \override #'(fret-diagram-details . ( (finger-code . below-string) (dot-radius . 0.35) (dot-position . 0.5) (fret-count . 3))) {
      \fret-diagram-terse "x;x;o;2-1;3-2;2-3;"
   }
}

%% simple D chord, large top fret thickness
d'2\markup {
   \override #'(fret-diagram-details . ( (finger-code . below-string) (dot-radius . 0.35) (dot-position . 0.5) (top-fret-thickness . 7) (fret-count . 3))) {
      \fret-diagram-terse "x;x;o;2-1;3-2;2-3;"
   }
}

% These chords will be in opposing-landscape orientation
\override TextScript.fret-diagram-details.orientation = #'opposing-landscape

%% C major for guitar, barred on third fret
% verbose style
% roman fret label, finger labels below string, straight barre
c'2\markup {
   % 110% of default size
   \override #'(size . 1.1) {
      \override #'(fret-diagram-details . ( (number-type . roman-lower) (finger-code . below-string) (barre-type . straight))) {

\fret-diagram-verbose #'((mute 6)
  (place-fret 5 3 1)
  (place-fret 4 5 2)
  (place-fret 3 5 3)
  (place-fret 2 5 4)
  (place-fret 1 3 1)
  (barre 5 1 3))

}\fret-diagram-verbose

%%% C major for guitar, barred on third fret
%%% Double barre used to test barre function
%%% verbose style
C2\markup { % 110% of default size
  \override #'(size . 1.1) {
    \override #'(fret-diagram-details . (number-type . arabic)
      (dot-label-font-mag . 0.9)
      (finger-code . in-dot)
      (fret-label-font-mag . 0.6)
      (fret-label-vertical-offset . 0)
      (label-dir . -1)
      (mute-string . "M")
      (xo-font-magnification . 0.4)
      (xo-padding . 0.3))) {
      \fret-diagram-verbose #'((mute 6)
        (place-fret 5 3 1)
        (place-fret 4 5 2)
        (place-fret 3 5 3)
        (place-fret 2 5 4)
        (place-fret 1 3 1)
        (barre 4 2 5)
        (barre 5 1 3))
    }\fret-diagram-verbose

%%% C major for guitar, with capo on third fret
%%% verbose style
C2\markup { % 110% of default size
  \override #'(size . 1.1) {
    \override #'(fret-diagram-details . (number-type . roman-upper)
      (dot-label-font-mag . 0.9)
      (finger-code . none)
      (fret-label-vertical-offset . 0.5)
      (xo-font-magnification . 0.4)
      (xo-padding . 0.3))) {
      \fret-diagram-verbose #'((mute 6)
        (place-fret 5 3 1)
        (place-fret 4 5 2)
        (place-fret 3 5 3)
        (place-fret 2 5 4)
        (place-fret 1 3 1)
        (barre 4 2 5)
        (barre 5 1 3))
    }\fret-diagram-verbose

%%% C major for guitar, barred on third fret
%%% Double barre used to test barre function
%%% verbose style
C2\markup { % 110% of default size
  \override #'(size . 1.1) {
    \override #'(fret-diagram-details . (number-type . arabic)
      (dot-label-font-mag . 0.9)
      (finger-code . in-dot)
      (fret-label-font-mag . 0.6)
      (fret-label-vertical-offset . 0)
      (label-dir . -1)
      (mute-string . "M")
      (xo-font-magnification . 0.4)
      (xo-padding . 0.3))) {
      \fret-diagram-verbose #'((mute 6)
        (place-fret 5 3 1)
        (place-fret 4 5 2)
        (place-fret 3 5 3)
        (place-fret 2 5 4)
        (place-fret 1 3 1)
        (barre 4 2 5)
        (barre 5 1 3))
    }\fret-diagram-verbose
(capo 3)
(open 5)
(place-fret 4 5 1)
(place-fret 3 5 2)
(place-fret 2 5 3)
(open 1))
}
}

%% simple D chord
d'2`\markup {
 \override #'(fret-diagram-details . ( 
 (finger-code . below-string)
 (dot-radius . 0.35)
 (dot-position . 0.5)
 (fret-count . 3))) { 
 \fret-diagram-terse "x;x;o;2-1;3-2;2-3;"
 }
}
}

%% simple D chord, large top fret thickness
d'2`\markup {
 \override #'(fret-diagram-details . ( 
 (finger-code . below-string)
 (dot-radius . 0.35)
 (dot-position . 0.5)
 (top-fret-thickness . 7)
 (fret-count . 3))) { 
 \fret-diagram-terse "x;x;o;2-1;3-2;2-3;"
 }
}
}
Generating custom flags

The `stencil` property of the `Flag` grob can be set to a custom scheme function to generate the glyph for the flag.

```scheme
(define-public (weight-flag grob)
  (let* ((stem-grob (ly:grob-parent grob X))
         (log (~ (ly:grob-property stem-grob 'duration-log) 2))
         (is-up? (eqv? (ly:grob-property stem-grob 'direction) UP))
         (yext (if is-up? (cons (* log -0.8) 0) (cons 0 (* log 0.8))))
         (flag-stencil (make-filled-box-stencil '(-0.4 . 0.4) yext))
         (stroke-style (ly:grob-property grob 'stroke-style))
         (stroke-stencil (if (equal? stroke-style "grace"
                                 (make-line-stencil 0.2 -0.9 -0.4 0.9 -0.4)
                                 empty-stencil)))

      (ly:stencil-add flag-stencil stroke-stencil)))

(define-public (inverted-flag grob)
  (let* ((stem-grob (ly:grob-parent grob X))
         (dir (if (eqv? (ly:grob-property stem-grob 'direction) UP) "d" "u"))
         (flag (retrieve-glyph-flag "" dir "" grob))
         (line-thickness (ly:staff-symbol-line-thickness grob))
         (stem-thickness (ly:grob-property stem-grob 'thickness))
         (stem-width (* line-thickness stem-thickness))
         (stroke-style (ly:grob-property grob 'stroke-style))
         (stencil (if (null? stroke-style)
                     flag
                     (add-stroke-glyph flag stem-grob dir stroke-style "")))))

  (rotated-flag (ly:stencil-rotate-absolute stencil 180 0 0)))

(ly:stencil-translate rotated-flag (cons (~ (/ stem-width 2)) 0))))

snippetexamplenotes =
{
  \autoBeamOff c'8 d'16 c'32 d'64 \acciaccatura {c'8} d'64
}

{
  \time 1/4
  \textMark "Normal flags"

  \textMark "Custom flag: inverted"
  \override Flag.stencil = #inverted-flag

  \textMark "Custom flag: weight"
  \override Flag.stencil = #weight-flag

  \textMark "Revert to normal"
  \revert Flag.stencil
}
\snippetexamplenotes

Glissandi can skip grobs

NoteColumn grobs can be skipped over by glissandi.
\relative c' {
  a2 \glissando
  \once \override NoteColumn.glissando-skip = ##t
  f''4 d,
}

Hairpins with different line styles

Hairpins can take any style from line-interface - dashed-line, dotted-line, line, trill or zigzag.
\relative c' {
  c2< c!\ 
  \override Hairpin.style = #'dashed-line
  c2< c!\ 
  \override Hairpin.style = #'dotted-line
  c2< c!\ 
  \override Hairpin.style = #'line
  c2< c!\ 
  \override Hairpin.style = #'trill
  c2< c!\ 
  \override Hairpin.style = #'zigzag
  c2< c!\ 
  \revert Hairpin.style
  c2< c!\
}

Horizontally aligning custom dynamics (e.g. "sempre pp", "piu f", "subito p")

Some dynamic expressions involve additional text, like “sempre pp”. Since dynamics are usually centered under the note, the \pp would be displayed way after the note it applies to.
To correctly align the “sempre pp” horizontally so that it is aligned as if it were only the \pp, there are several approaches:

- Simply use \once\override DynamicText.X-offset = #-9.2 before the note with the dynamics to manually shift it to the correct position. Drawback: This has to be done manually each time you use that dynamic markup...
- Add some padding (#:hspace 7.1) into the definition of your custom dynamic mark so that after LilyPond center-aligns it, it is already correctly aligned. Drawback: The padding really takes up that space and does not allow any other markup or dynamics to be shown in that position.
- Shift the dynamic script \once\override ... X-offset = .... Drawback: \once\override is needed for every invocation!
- Set the dimensions of the additional text to 0 (using #:with-dimensions '(0 . 0) '(0 . 0)). Drawback: For LilyPond, “sempre” has no extent now. This means it might put other stuff there, causing collisions (which are not detected by LilyPond’s collision detection algorithm!). There also seems to be some spacing, so it is not exactly the same alignment as without the additional text.
- Add an explicit shift directly inside the scheme function for the dynamic script.
- Set an explicit alignment inside the dynamic script. By default, this won’t have any effect, only if one sets X-offset! Drawback: One needs to set DynamicText.X-offset, which will apply to all dynamic texts! Also, it is aligned at the right edge of the additional text, not at the center of \pp.

\paper {
  \ragged-right = ##f
  \indent = 2.5\cm
}

% Solution 1: Using a simple markup with a particular halign value
% Drawback: It's a markup, not a dynamic command, so \dynamicDown etc. will have no effect
semppMarkup = \markup { \halign #1.4 \italic "sempre" \dynamic "pp" }

% Solution 2: Using a dynamic script & shifting with
% \once \override ...X-offset = ..
% Drawback: \once \override needed for every invocation
semppK =
  #(make-dynamic-script
    (markup #:line
      (#::normal-text
        #:italic "sempre"
        #:dynamic "pp")))

% Solution 3: Padding the dynamic script so the center-alignment
% \\ etc. puts it at the correct position
% Drawback: the padding really reserves the space, nothing else can be there
semppT =
  #(make-dynamic-script
    (markup #:line
      (#::normal-text
        #:italic "sempre"
        #:dynamic "pp"))
#:hspace 7.1)))

% Solution 4: Dynamic, setting the dimensions of the additional text to 0
% Drawback: To lilypond "sempre" has no extent, so it might put
% other stuff there => collisions
% Drawback: Also, there seems to be some spacing, so it's not exactly the
% same alignment as without the additional text

sempppM =
#:make-dynamic-script
(markup #:line
  (#:with-dimensions '(0 . 0) '(0 . 0)
    #:right-align
    #:normal-text
    #:italic "sempre"
    #:dynamic "pp")))

% Solution 5: Dynamic with explicit shifting inside the scheme function

sempGG =
#:make-dynamic-script
(markup #:hspace 0
  #:translate '(-18.85 . 0)
  #:line (#:normal-text
    #:italic "sempre"
    #:dynamic "pp")))

% Solution 6: Dynamic with explicit alignment. This has only effect
% if one sets X-offset!
% Drawback: One needs to set DynamicText.X-offset!
% Drawback: Aligned at the right edge of the additional text,
% not at the center of pp

sempppMII =
#:make-dynamic-script
(markup #:line
  (#:right-align
    #:normal-text
    #:italic "sempre"
    #:dynamic "pp")))

\new StaffGroup Backend<<
\new Staff = "s" \with { instrumentName = \markup \column { Normal } } <<
  \relative c' {
    \key es \major
    c4\pp c\p c c | c\ff c c\pp c
  }
>>
\new Staff = "sMarkup" \with {
  instrumentName = \markup \column { Normal markup } }
<<
  \relative c' {
    \key es \major
    c4-\semppMarkup c\p c c | c\ff c c-\semppMarkup c
Tweaks and overrides

\new Staff = "sK" \with {
  instrumentName = \markup \column { Explicit shifting }
}
\relative c'' {
  \key es \major
  \once \override DynamicText.X-offset = #-9.2
  c4\semppK c\p c c
  c4\ff c
  \once \override DynamicText.X-offset = #-9.2
  c4\semppK c
}
\new Staff = "sT" \with {
  instrumentName = \markup \column { Right padding }
}
\relative c'' {
  \key es \major
  c4\semppT c\p c c | c\ff c c\semppT c
}
\new Staff = "sM" \with {
  instrumentName = \markup \column { Set dimension "to zero" }
}
\relative c'' {
  \key es \major
  c4\semppM c\p c c | c\ff c c\semppM c
}
\new Staff = "sG" \with {
  instrumentName = \markup \column { Shift inside dynamics}
}
\relative c'' {
  \key es \major
  c4\semppG c\p c c | c\ff c c\semppG c
}
\new Staff = "sMII" \with {
  instrumentName = \markup \column { Alignment inside dynamics }
}
\relative c'' {
  \key es \major
  % Setting to ##f (false) gives the same result
  \override DynamicText.X-offset = #0
  c4\semppMII c\p c c | c\ff c c\semppMII c
}
How to change fret diagram position

If you want to move the position of a fret diagram, for example, to avoid collision, or to place it between two notes, you have various possibilities:

1) modify \padding or \extra-offset values (as shown in the first snippet)

2) you can add an invisible voice and attach the fret diagrams to the invisible notes in that voice (as shown in the second example).

If you need to move the fret according with a rhythmic position inside the bar (in the example, the third beat of the measure) the second example is better, because the fret is aligned with the third beat itself.

harmonies = \chordmode
{
  a8:13
  \once \override ChordNames.ChordName.extra-offset = #'(10 . 0)
  b8:13 s2.
  \once \override ChordNames.ChordName.extra-offset = #'(10 . 0)
  s4 s4 b4:13
}
\score
Inserting a caesura
Caesura marks can be created by overriding the `text` property of the `BreathingSign` object.
A curved caesura mark is also available.

```latex
\relative c' { 
\override BreathingSign.text = \markup { \musicglyph "scripts.caesura.straight" } 
c8 e4. \breathe g8. e16 c4 

\override BreathingSign.text = \markup { \musicglyph "scripts.caesura.curved" } 
g8 e'4. \breathe g8. e16 c4 
}```
Keep change clefs full sized

When a clef is changed, the clef sign displayed is smaller than the initial clef. This can be overridden with `full-size-change`.

```latex
\relative c' {
  \clef "treble" c1
  \clef "bass" c1
  \clef "treble" c1
  \override Staff.Clef.full-size-change = ##t
  \clef "bass" c1
  \clef "treble" c1
  \revert Staff.Clef.full-size-change
  \clef "bass" c1
  \clef "treble" c1
}
```

Line arrows

Arrows can be applied to text-spanners and line-spanners (such as the Glissando).

```latex
\relative c'' {
  \override TextSpanner.bound-padding = #1.0
  \override TextSpanner.style = #'line
  \override TextSpanner.bound-details.right.arrow = ##t
  \override TextSpanner.bound-details.left.text = #'fof'
  \override TextSpanner.bound-details.right.text = #'gag'
  \override TextSpanner.bound-details.right.padding = #0.6

  \override TextSpanner.bound-details.right.stencil-align-dir-y = #CENTER
  \override TextSpanner.bound-details.left.stencil-align-dir-y = #CENTER

  \override Glissando.bound-details.right.arrow = ##t
  \override Glissando.arrow-length = #0.5
  \override Glissando.arrow-width = #0.25

  a8\startTextSpan gis a4 b\glissando b,
  g'4 c\stopTextSpan c2
}
```
Making an object invisible with the ’transparent property

Setting the transparent property will cause an object to be printed in “invisible ink”: the object is not printed, but all its other behavior is retained. The object still takes up space, it takes part in collisions, and slurs, ties and beams can be attached to it.

This snippet demonstrates how to connect different voices using ties. Normally, ties only connect two notes in the same voice. By introducing a tie in a different voice, and blanking the first up-stem in that voice, the tie appears to cross voices.

```latex
\relative { \\
\time 2/4 
<< \\
\once \hide Stem \\
\once \override Stem.length = #8 
b'8 ~ 8\noBeam \\
\once \hide Stem \\
\once \override Stem.length = #8 
g8 ~ 8\noBeam 
} \\
\ \\
{ 
\once \override Stem.length = #8 
b8 g g e 
} \\
>>
```

Making glissandi breakable

Setting the breakable property to #t in combination with after-line-breaking allows a glissando to break if it occurs at a line break:

```latex
\relative c' { \\
\override NoteColumn.glissando-skip = ##t \\
\hide NoteHead \\
\override NoteHead.no-ledgers = ##t 
} \\
\relative { \\
\override Glissando.breakable = ##t \\
\override Glissando.after-line-breaking = ##t 
\first \glissando | 
\break  
\first \glissando 
\once \glissandoSkipOn 
\break 
\first a2 a4 r4 
}
```
Manually controlling beam positions

Beam positions may be controlled manually, by overriding the positions setting of the Beam grob.

```latex
\relative c' {
    \time 2/4
    % from upper staff-line (position 2) to center (position 0)
    \override Beam.positions = #'(2 . 0)
    c8 c
    % from center to one above center (position 1)
    \override Beam.positions = #'(0 . 1)
    c8 c
}
```

Measure-centered bar numbers

For film scores, a common convention is to center bar numbers within their measure. This is achieved through setting the centerBarNumbers context property to true. When this is used, the type of the bar number grobs is CenteredBarNumber rather than BarNumber.

This example demonstrates a number of settings: the centered bar numbers are boxed and placed below the staves.

```latex
\layout {
    \context {
        \Score
        centerBarNumbers = ##t
        barNumberVisibility = #all-bar-numbers-visible
        \override CenteredBarNumber.stencil
            = #(make-stencil-boxer 0.1 0.25 ly:~text-interface::print)
        \override CenteredBarNumberLineSpanner.direction = #DOWN
    }
}
\new StaffGroup <<
    \new Staff \relative c' {
        d4-. f8( e d4) bes'-> |
```
Mensurstriche layout (bar lines between the staves)

*Mensurstriche*, bar lines between but not through staves, can be printed by setting `measureBarType` to "-span|" and using a grouping context that allows span bars, such as `StaffGroup`.

```latex
\layout {
  \context {
    \Staff
      measureBarType = "-span|"
  }
}

\fixed c'' {
  c1
  d2 \section e2
  f1 \fine
}

\StaffGroup <<
  \Staff \music
  \Staff \music
}>>
```
Tweaks and overrides

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Modifying the Ottava spanner slope
It is possible to change the slope of the Ottava spanner.
\relative c'' {
\override Staff.OttavaBracket.stencil = #ly:line-spanner::print
\override Staff.OttavaBracket.bound-details =
#`((left . ((Y . 0)
(attach-dir . ,LEFT)
(padding . 0)
(stencil-align-dir-y . ,CENTER)))
(right . ((Y . 5.0) ; Change the number here
(padding . 0)
(attach-dir . ,RIGHT)
(text . ,(make-draw-dashed-line-markup
(cons 0 -1.2))))))
\override Staff.OttavaBracket.left-bound-info =
#ly:horizontal-line-spanner::calc-left-bound-info-and-text
\override Staff.OttavaBracket.right-bound-info =
#ly:horizontal-line-spanner::calc-right-bound-info
\ottava #1
c1
c'''1
}

8

 ª .

.

Moving dotted notes in polyphony
When a dotted note in the upper voice is moved to avoid a collision with a note in another voice,
the default is to move the upper note to the right. This behaviour can be over-ridden by using
the prefer-dotted-right property of NoteCollision.
\new Staff \relative c' <<
{
f2. f4
\override Staff.NoteCollision.prefer-dotted-right = ##f
f2. f4
\override Staff.NoteCollision.prefer-dotted-right = ##t
f2. f4
}
\\
{ e4 e e e e e e e e e e e }
>>

 ª h N P h h h h N h P h h h h h N P h h hh


**Moving slur positions vertically**

The vertical position of a slur can be adjusted using the positions property of Slur. The property has 2 parameters, the first referring to the left end of the slur and the second to the right. The values of the parameters are not used by LilyPond to make an exact movement of the slur - instead it selects what placement of the slur looks best, taking into account the parameter values. Positive values move the slur up, and are appropriate for notes with stems down. Negative values move downward slurs further down.

\begin{verbatim}
\relative c' { 
    \stemDown
    e4( a)
    \override Slur.positions = #'(1 . 1)
    e4( a)
    \override Slur.positions = #'(2 . 2)
    e4( a)
    \override Slur.positions = #'(3 . 3)
    e4( a)
    \override Slur.positions = #'(4 . 4)
    e4( a)
    \override Slur.positions = #'(5 . 5)
    e4( a)
    \override Slur.positions = #'(0 . 5)
    e4( a)
    \override Slur.positions = #'(-5 . -5)
    e4( a)
    \stemUp
    \override Slur.positions = #'(-5 . -5)
    e4( a)
    \stemDown
    \revert Slur.positions
    e4( a)
}
\end{verbatim}

**Nesting staves**

The property systemStartDelimiterHierarchy can be used to make more complex nested staff groups. The command \set StaffGroup.systemStartDelimiterHierarchy takes an alphabetical list of the number of staves produced. Before each staff a system start delimiter can be given. It has to be enclosed in brackets and takes as much staves as the brackets enclose. Elements in the list can be omitted, but the first bracket takes always the complete number of staves. The possibilities are SystemStartBar, SystemStartBracket, SystemStartBrace, and SystemStartSquare.

\begin{verbatim}
\new StaffGroup
\relative c'' { 
    \override StaffGroup.SystemStartSquare.collapse-height = #4
    \set StaffGroup.systemStartDelimiterHierarchy
        = #'(SystemStartSquare (SystemStartBrace (SystemStartBracket a
\end{verbatim}
Overriding articulations by type

Sometimes you may want to affect a single articulation-type. Although it is always possible
to use \tweak, it might become tedious to do so for every single sign of a whole score. The
following shows how to tweak articulations with a list of custom settings. One use-case might
be to create a style sheet.

With 2.16.2 and above it is possible to put the proposed function, \customScripts, into a
\layout-block.

% Code by David Nalesnik and Thomas Morley

#(define (custom-script-tweaks ls)
  (lambda (grob)
    (let* ((type (ly:event-property
      (ly:grob-property grob 'cause)
      'articulation-type))
      (tweaks (assoc-ref ls type))
      (if tweaks
        (for-each
          (lambda (x) (ly:grob-set-property! grob (car x) (cdr x)))
          tweaks)))))

customScripts =
#(define-music-function (settings) (list?)
#
  \override Script.before-line-breaking =
  #(custom-script-tweaks settings)
revertCustomScripts = \revert Script.before-line-breaking

% Example:
% Predefine a list of desired tweaks.
#(define my-settings-1
  '(
    (staccato . ((color . (1 0 0))
        (padding . 0.5)))
    (accent . ((font-size . 0)
        (color . (1 0 0))))
    (tenuto . ((rotation . (45 0 0))
        (padding . 2)
        (font-size . 10)))))
    (staccatissimo . ((padding . 1)
        (color . (1 0 0))))
    (segno . ((font-size . 0)
        (color . (1 0 0))))
  ))

#(define my-settings-2
  '(
    (staccato . ((color . (0 1 0)))))
    (accent . ((font-size . 4)
        (color . (0 1 0))
        (padding . 1.5)))
    (tenuto . ((font-size . 10)))
    (staccatissimo . ((padding . 2)
        (color . (0 1 0)))))
    (coda . ((color . (0 1 0))
        (padding . 1))))

one = \relative c' { 
  f1--
  \customScripts #my-settings-1
  f-. f-! f-- f-!\segno
  \revertCustomScripts
  f-> f-. 
}

two = \relative c' { 
  f1--
  \customScripts #my-settings-2
  f-. f-! f-- f--- f-!
  f-> f-.\coda
Overriding articulations of distinct type

Sometimes you may want to affect a single articulation type. Although it is always possible to use \tweak, it might become tedious to do so for every single sign of a whole score. The following shows how to tweak articulations with a list of custom settings. One use case might be to create a style sheet.

With 2.16.2 it is possible to put the proposed function, \customScripts, into a \layout block.

% Code by David Nalesnik and Thomas Morley

#(define (custom-script-tweaks ls)
  (lambda (grob)
    (let* ((type (ly:prob-property (ly:grob-property grob 'cause)
            'articulation-type))
      (tweaks (assoc-ref ls type)))
      (if tweaks
          (for-each
           (lambda (x) (ly:grob-set-property! grob (car x) (cdr x)))
           tweaks))))

customScripts = #((define-music-function (settings)(list?))
  #{
    \override Script.before-line-breaking =
      #(custom-script-tweaks settings)
  })

revertCustomScripts = { \revert Script.before-line-breaking }

% Predefine a list of desired tweaks.
#(define my-settings-1
  '(
    ("staccato" . ((color . (1 0 0))(padding . 0.5))))
Percent repeat count visibility

Percent repeat counters can be shown at regular intervals by setting the context property `repeatCountVisibility`.

```plaintext
\relative c' {
  set countPercentRepeats = ##t
  set repeatCountVisibility = #(every-nth-repeat-count-visible 5)
  repeat percent 10 { c1 } \break
  set repeatCountVisibility = #(every-nth-repeat-count-visible 2)
}
Tweaks and overrides

{\repeat percent 6 \{ c1 d1 \}}

Positioning arpeggios

If you need to extend or shorten an arpeggio, you can modify the upper and lower start positions independently.

\relative c' \{  
  \<c e g b>1\arpeggio  
  \once \override Arpeggio.positions = #'(-5 . 0)  
  \<c e g b>1\arpeggio  
  \once \override Arpeggio.positions = #'(0 . 5)  
  \<c e g b>1\arpeggio  
  \once \override Arpeggio.positions = #'(-5 . 5)  
  \<c e g b>1\arpeggio  
\}

Positioning multi-measure rests

Unlike ordinary rests, there is no predefined command to change the staff position of a multi-measure rest symbol of either form by attaching it to a note. However, in polyphonic music multi-measure rests in odd-numbered and even-numbered voices are vertically separated.

The positioning of multi-measure rests can be controlled as follows:

\relative c'' \{  
  \% Multi-measure rests by default are set under the fourth line  
  \R1  
  \% They can be moved using an override  
  \override MultiMeasureRest.staff-position = #-2  
  \R1  
  \override MultiMeasureRest.staff-position = #0  
  \R1  
  \override MultiMeasureRest.staff-position = #2  
  \R1  
  \override MultiMeasureRest.staff-position = #3  
  \R1  
  \override MultiMeasureRest.staff-position = #6  
  \R1  
  \revert MultiMeasureRest.staff-position  
  \break

\}
% In two Voices, odd-numbered voices are under the top line
<< { R1 } \ \ { a1 } >>
% Even-numbered voices are under the bottom line
<< { a1 } \ \ { R1 } >>
% Multi-measure rests in both voices remain separate
<< { R1 } \ \ { R1 } >>

% Separating multi-measure rests in more than two voices
% requires an override
<< { R1 } \ \ { R1 } \ \ 
\once \override MultiMeasureRest.staff-position = #0
\{ R1 } 
>>

% Using compressed bars in multiple voices requires another override
% in all voices to avoid multiple instances being printed
\compressMMRests
<< \revert MultiMeasureRest.direction
\{ R1*3 } 
\\ 
\revert MultiMeasureRest.direction
\{ R1*3 } 
>>

Positioning text markups inside slurs
Text markups need to have the outside-staff-priority property set to false in order to be printed inside slurs.
\relative c' { 
  \override TextScript.avoid-slur = #'inside 
  \override TextScript.outside-staff-priority = ##f 
  c2(\markup { \halign #-10 \natural } d4.) c8 
}
Printing bar numbers inside boxes or circles

Bar numbers can also be printed inside boxes or circles.

\relative c' { 
  \override Score.BarNumber.break-visibility = \#end-of-line-invisible 
  \set Score.barNumberVisibility = \#(\every-nth-bar-number-visible 4) 

  \override Score.BarNumber.font-size = \#2 

  \override Score.BarNumber.stencil 
    = \#(\make-stencil-boxer 0.1 0.25 \ly:text-interface::print) 
  \repeat unfold 5 \{ c1 \}

  \override Score.BarNumber.stencil 
    = \#(\make-stencil-circler 0.1 0.25 \ly:text-interface::print) 
  \repeat unfold 4 \{ c1 \} \bar "|." 
}

Printing metronome and rehearsal marks below the staff

By default, metronome and rehearsal marks are printed above the staff. To place them below the staff simply set the direction property of MetronomeMark or RehearsalMark appropriately.

\layout { 
  indent = 0 
  ragged-right = \##f 
}

{ 
  \override Score.MetronomeMark.direction = \#DOWN 
  \tempo 8. = 120 
  c''1 
}

{ 
  \override Score.RehearsalMark.direction = \#DOWN 
  \mark \default 
  c''1 
}


Printing note names with and without an octave marker

The NoteNames context can be used to print the text value of notes. The printOctaveNames property turns on or off the representation of the octave of the note.

```plaintext
c scale = \relative c' {
   a4 b c d
   e4 f g a
}

\new Staff {
   <<
      \context NoteNames {
         \set printOctaveNames = ##f
         \scale
      } >>
   R1 <<
      \context NoteNames {
         \set printOctaveNames = ##t
         \scale
      } >>
}
```

Printing tuplet brackets on the note head side

Whichever option you choose for controlling the tuplet bracket visibility, it will show or hide the tuplet bracket irrespectively of tuplet bracket placement (stem side or note head side). However, when placing the tuplet bracket on the note head side some authors recommend always printing the tuplet bracket. The option visible-over-note-heads can be used to achieve this.

```plaintext
music = \relative c'' {
   \tupletNeutral \tuplet 3/2 { c16[ d e } f8]
   \tupletUp \tuplet 3/2 { c8 d e }
}

\new Voice {
   \relative c' {
      \time 2/4
      \override TupletBracket.visible-over-note-heads = ##t
      \override Score.TextMark.non-musical = ##f
      { \textMark \markup "default" \music }
      \override TupletBracket.bracket-visibility = #'if-no-beam
      { \textMark \markup \typewriter "'if-no-beam" \music }
```
Proportional strict notespacing

If strict-note-spacing is set spacing of notes is not influenced by bars or clefs within a system. Rather, they are placed just before the note that occurs at the same time. This may cause collisions.

```
relative c' <<
override Score.SpacingSpanner.strict-note-spacing = ##t
set Score.proportionalNotationDuration = #(ly:make-moment 1/16)
new Staff {
  c8[ c \clef alto c c \grace { d16 } c8 c] c4
  c2 \grace { c16[ c16] } c2
}
new Staff {
  c2 \tuplet 3/2 { c8 \clef bass cis,, c } c4
  c1
}
>>
```

Removing brace on first line of piano score

This snippet removes the first brace from a PianoStaff or a GrandStaff.

It may be useful when cutting and pasting the engraved image into existing music.

It uses \alterBroken.

```
someMusic = {
  \once \override Staff.Clef.stencil = ##f
  \once \override Staff.TimeSignature.stencil = ##f
  \repeat unfold 3 c1 \break
  \repeat unfold 5 c1 \break
  \repeat unfold 5 c1
}

\score {
  \new PianoStaff
  <<
    \new Staff = "right" \relative c' \someMusic
```
Removing connecting bar lines on StaffGroup, PianoStaff, or GrandStaff

By default, bar lines in StaffGroup, PianoStaff, or GrandStaff groups are connected between the staves, i.e. a SpanBar is printed. This behaviour can be overridden on a staff-by-staff basis.

\new Staff { e1 | e
  \once \override Staff.BarLine.allow-span-bar = ##f
e1 | e | e
}
\new Staff { c1 | c | c
  \once \override Staff.BarLine.allow-span-bar = ##f
c1 | c
}
\new Staff { a1 | a | a | a | a
}
Removing the first empty line

The first empty staff can also be removed from the score by setting the `VerticalAxisGroup` property `remove-first`. This can be done globally inside the `\layout` block, or locally inside the specific staff that should be removed. In the latter case, you have to specify the context (Staff applies only to the current staff) in front of the property.

The lower staff of the second staff group is not removed, because the setting applies only to the specific staff inside of which it is written.

```latex
\layout {
  \context {
    \Staff \RemoveEmptyStaves
    % To use the setting globally, uncomment the following line:
    % \override VerticalAxisGroup.remove-first = ##t
  }
}
\new StaffGroup <<
  \new Staff \relative c' {
    e4 f g a \break
c1
  }
  \new Staff {
    % To use the setting globally, comment this line,
    % uncomment the line in the \layout block above
    \override Staff.VerticalAxisGroup.remove-first = ##t
    R1 \break
    R
  }
}>
\new StaffGroup <<
  \new Staff \relative c' {
    e4 f g a \break
c1
  }
  \new Staff {
    R1 \break
    R
  }
}>
```
Rest styles

Rests may be used in various styles.

\new Staff \relative c { 
  \omit \Score \TimeSignature 
  \cadenzaOn 

  \override \Staff .Rest.style = #'mensural 
  r\maxima \markup \typewriter { mensural } 
  r\longa r\breve r1 r2 r4 r8 r16 s32 s64 s128 s128 
  \bar "" 
  \break 

  \override \Staff .Rest.style = #'neomensural 
  r\maxima \markup \typewriter { neomensural } 
  r\longa r\breve r1 r2 r4 r8 r16 s32 s64 s128 s128 
  \bar "" 
  \break 

  \override \Staff .Rest.style = #'classical 
  r\maxima \markup \typewriter { classical } 
  r\longa r\breve r1 r2 r4 r8 r16 r32 r64 r128 s128 
  \bar "" 
  \break 

  \override \Staff .Rest.style = #'z 
  r\maxima \markup \typewriter { z-style } 
  r\longa r\breve r1 r2 r4 r8 r16 r32 r64 r128 s128 
  \bar "" 
  \break }
Tweaks and overrides

\override Staff.Rest.style = #'default
r\maxima\markup \typewriter { default }
r\longa r\breve r1 r2 r4 r8 r16 r32 r64 r128 s128

\begin{music}

\bar

\mensural

\neomensural

\classical

\z-style

\default

\end{music}

Rhythmic slashes

In “simple” lead-sheets, sometimes no actual notes are written, instead only “rhythmic patterns”
and chords above the measures are notated giving the structure of a song. Such a feature is for
example useful while creating/transcribing the structure of a song and also when sharing lead
sheets with guitarists or jazz musicians.

The standard support for this using \repeat percent is unsuitable here since the first beat
has to be an ordinary note or rest.

This example shows two solutions to this problem, by redefining ordinary rests to be printed
as slashes. (If the duration of each beat is not a quarter note, replace the r4 in the definitions
with a rest of the appropriate duration).

% Macro to print single slash
rs = {
  \once \override Rest.stencil = #ly:percent-repeat-interface::beat-slash
  \once \override Rest.thickness = #0.48
  \once \override Rest.slope = #1.7
  r4
}

% Function to print a specified number of slashes
comp = #(define-music-function (count) (integer?))
  #(\override Rest.stencil = #ly:percent-repeat-interface::beat-slash
    \override Rest.thickness = #0.48
    \override Rest.slope = #1.7

Separating key cancellations from key signature changes

By default, the accidentals used for key cancellations are placed adjacent to those for key signature changes. This behavior can be changed by overriding the 'break-align-orders property of the BreakAlignment grob.

The value of 'break-align-orders is a vector of length 3, with quoted lists of breakable items as elements. This example only modifies the second list, moving key-cancellation before staff-bar; by modifying the second list, break alignment behavior only changes in the middle of a system, not at the beginning or the end.

```
\new Staff {
  \override Score.BreakAlignment.break-align-orders =
  ##((left-edge ambitus breathing-sign clef staff-bar
    key-cancellation key-signature time-signature custos)

  (left-edge ambitus breathing-sign clef key-cancellation
    staff-bar key-signature time-signature custos)

  (left-edge ambitus breathing-sign clef key-cancellation
    key-signature staff-bar time-signature custos))

  \key des \major
c'1
  \bar "||"
  \key bes \major
c'1
}
```

Setting hairpin behavior at bar lines

If the note which ends a hairpin falls on a downbeat, the hairpin stops at the bar line immediately preceding. This behavior can be controlled by overriding the 'to-barline property.
Setting system separators

System separators can be inserted between systems. Any markup can be used, but \slashSeparator has been provided as a sensible default.

\paper {
    system-separator-markup = \slashSeparator
    line-width = 120
}

notes = \relative c' {
    c1 | c \break
    c1 | c \break
    c1 | c
}

\book {
    \score {
        \new GrandStaff <<
        \new Staff notes
        \new Staff notes
        >>
    }
}

\relative c' {
    e4\< e2.
    e1!\!
    \override Hairpin.to-barline = ##f
    e4\< e2.
    e1!\!
}
Showing the same articulation above and below a note or chord

By default, LilyPond does not allow the same articulation (e.g., an accent, a fermata, a flageolet, etc.) to be displayed above and below a note. For example, \c4._\fermata^\fermata only shows a fermata below. The fermata above gets simply ignored.

However, one can stick scripts (just like fingerings) inside a chord, which means it is possible to have as many articulations as desired. This approach has the advantage that it ignores the stem and positions the articulation relative to the note head. This can be seen in the case of the flageolets in the snippet. To mimic the behaviour of scripts outside a chord, 'add-stem-support would be required.

The solution is thus to write the note as a chord and add the articulations inside of <...>, using the direction modifiers ^ and _ as appropriate.

\relative c' { 
<>^"Wrong"
%c2._\fermata^\fermata \% The second fermata is ignored!
<e d'>2^\flageolet^\flageolet

\stopStaff s1 \startStaff

<>"Works if written inside a chord"
<e\flageolet d'\flageolet>2
<e\flageolet d'\flageolet>2
<e\flageolet\flageolet>2
<e\fermata\fermata>2
}

Wrong \quad Works if written inside a chord

String number extender lines

Make an extender line for string number indications, showing that a series of notes is supposed to be played all on the same string.

\stringNumberSpanner = 
#((define-music-function (StringNumber) (string))
#
\override TextSpanner.style = #'solid
\override TextSpanner.font-size = #-5
\override TextSpanner.bound-details.left.stencil-align-dir-y = #CENTER
\override TextSpanner.bound-details.left.text =
   \markup { \circle \number $StringNumber }
#)}

\relative c { 
\clef "treble_8"
\stringNumberSpanner "5"
\textSpannerDown
a8\startTextSpan
Suppressing warnings for clashing note columns

If notes from two voices with stems in the same direction are placed at the same position, and both voices have no shift or the same shift specified, the error message ‘warning: ignoring too many clashing note columns’ will appear when compiling the LilyPond file. This message can be suppressed by setting the ‘ignore-collision’ property of the NoteColumn object to #t. Please note that this does not just suppress warnings but stops LilyPond trying to resolve collisions at all and so may have unintended results unless used with care.

```
ignore = \override NoteColumn.ignore-collision = #t
```

Time signature in parentheses

The time signature can be enclosed within parentheses.

```
\relative c' { 
  \new Staff << 
    \new Voice { \ignore \stemDown f2 g } 
    \new Voice { c2 \stemDown c, } 
>> }
```

Time signature in parentheses - method 3

Another way to put the time signature in parenthesis

```
\relative c''' { 
  \override Staff.TimeSignature.stencil = #(lambda (grob) 
    (bracketify-stencil (ly:time-signature::print grob) Y 0.1 0.2 0.1)) 
  \time 2/4 
  a4 b8 c }
```
Time signature printing only the numerator as a number (instead of the fraction)

Sometimes, a time signature should not print the whole fraction (for example, 7/4), but only the numerator (digit 7 in this case). This can be easily done by using \override Staff.TimeSignature.style = #'single-digit to change the style permanently. By using \revert Staff.TimeSignature.style, this setting can be reversed. To apply the single-digit style to only one time signature, use the \override command and prefix it with a \once.

\relative c'' { 
  \time 3/4
  c4 c c
  \percent Change the style permanently
  \override Staff.TimeSignature.style = #'single-digit
  \time 2/4
  c4 c
  \time 3/4
  c4 c c
  \percent Revert to default style:
  \revert Staff.TimeSignature.style
  \time 2/4
  c4 c
  \percent single-digit style only for the next time signature
  \once \override Staff.TimeSignature.style = #'single-digit
  \time 5/4
  c4 c c c c
  \time 2/4
  c4 c
}

Tuplet bracket and change staff

This snippet shows how to set a tuplet starting in a lower staff and finishing in the upper one.

\aigues = \relative c' { 
  \time 6/8
  s4.
  \stemDown
  c16[ bes' e]
  \stemUp
  g c e
Tweaking clef properties

Changing the Clef glyph, its position, or the ottavation does not change the position of subsequent notes on the staff. To get key signatures on their correct staff lines middleCClefPosition must also be specified, with positive or negative values moving middle C up or down respectively, relative to the staff’s center line.

For example, \clef "treble_8" is equivalent to setting the clefGlyph, clefPosition (the vertical position of the clef itself on the staff), middleCPosition and clefTransposition. Note that when any of these properties (except middleCPosition) are changed a new clef symbol is printed.

The following examples show the possibilities when setting these properties manually. On the first line, the manual changes preserve the standard relative positioning of clefs and notes, whereas on the second line, they do not.

{ % The default treble clef
  \key f \major
  c'1
  % The standard bass clef
}
Tweaks and overrides

\set Staff.clefGlyph = #'clefs.F"
\set Staff.clefPosition = #2
\set Staff.middleCPosition = #6
\set Staff.middleCClefPosition = #6
\key g \major

c'1
\% The baritone clef
\set Staff.clefGlyph = #'clefs.C"
\set Staff.clefPosition = #4
\set Staff.middleCPosition = #4
\set Staff.middleCClefPosition = #4
\key f \major

c'1
\% The standard choral tenor clef
\set Staff.clefGlyph = #'clefs.G"
\set Staff.clefPosition = #-2
\set Staff.clefTransposition = #-7
\set Staff.middleCPosition = #1
\set Staff.middleCClefPosition = #1
\key f \major

c'1
\% A non-standard clef
\set Staff.clefPosition = #0
\set Staff.clefTransposition = #0
\set Staff.middleCPosition = #-4
\set Staff.middleCClefPosition = #-4
\key g \major

c'1 \break

\% The following clef changes do not preserve
\% the normal relationship between notes, key signatures
\% and clefs:

\set Staff.clefGlyph = #'clefs.F"
\set Staff.clefPosition = #2
\set Staff.clefGlyph = #'clefs.G"
\set Staff.clefPosition = #0
\set Staff.clefGlyph = #'clefs.C"
\set Staff.clefTransposition = #7
\set Staff.clefTransposition = #0
\set Staff.clefPosition = #0
\set Staff.middleCPosition = #0

c'1

\% Return to the normal clef:

\set Staff.middleCPosition = #0

c'1
}
}
Tweaks and overrides

Tweaking grace layout within music

The layout of grace expressions can be changed throughout the music using the functions add-grace-property and remove-grace-property.

The following example undefines the Stem direction for this grace, so that stems do not always point up, and changes the default note heads to crosses.

```latex
\relative c' {
\new Staff {
 $(\text{remove-grace-property}\ '\text{Voice}\ '\text{Stem}\ '\text{direction})
 $(\text{add-grace-property}\ '\text{Voice}\ '\text{NoteHead}\ '\text{style}\ '\text{cross})
 \new Voice {
 \acciaccatura\ { f16 } g4
 \grace\ { d16 e } f4
 \appoggiatura\ { f,32 g a } e2
 }
}
}
```

Using alternative flag styles

Alternative styles of flag on eighth and shorter notes can be displayed by overriding the stencil property of Flag. Valid values are modern-straight-flag, old-straight-flag and flat-flag.

```latex
testnotes = {
 \autoBeamOff
 c8 d16 c32 d64 \acciaccatura\ { c8 } d64 r4
}

\score {
 \relative c' {
 \time 2/4
 \testnotes

 \override Flag.stencil = #modern-straight-flag
 \testnotes

 \override Flag.stencil = #old-straight-flag
 \testnotes
```
Using \texttt{ly:grob-object} to access grobs with \texttt{\tweak}

Some grobs can be accessed “laterally” from within another grob’s callback. These are usually listed as “layout objects” in the “Internal properties” section of a grob-interface. The function \texttt{ly:grob-object} is used to access these grobs.

Demonstrated below are some ways of accessing grobs from within a NoteHead callback, but the technique is not limited to NoteHeads. However, the NoteHead callback is particularly important, since it is the implicit callback used by the \texttt{\tweak} command.

The example function defined below (“display-grobs”) is probably not that useful, but it demonstrates that the grobs are indeed being accessed.

Example console output:

```scheme
#Grob Accidental () #Grob Stem
#Grob Flag.stencil = #flat-flag
#Grob testnotes

#(define (notehead-get-accidental notehead) ;; notehead is grob (ly:grob-object notehead 'accidental-grob))

#(define (notehead-get-arpeggio notehead) ;; notehead is grob (let ((notecolumn (notehead-get-notecolumn notehead)))) (ly:grob-object notecolumn 'arpeggio)))

#(define (notehead-get-notecolumn notehead) ;; notehead is grob (ly:grob-parent notehead X))

#(define (notehead-get-stem notehead) ;; notehead is grob (let ((notecolumn (notehead-get-notecolumn notehead))) (ly:grob-object notecolumn 'stem)))

#(define (display-grobs notehead) ;; notehead is grob
```
(let ((accidental (notehead-get-accidental notehead))
    (arpeggio (notehead-get-arpeggio notehead))
    (stem (notehead-get-stem notehead)))
  (format (current-error-port) "-2\&-a\n" (make-string 20 #\-))
  (for-each
    (lambda (x) (format (current-error-port) "-a\n" x))
    (list accidental arpeggio stem))))

\relative c' {
  \% display grobs for each note head:
  \override NoteHead.before-line-breaking = \#display-grobs
  <c
  \% or just for one:
  \tweak before-line-breaking \#display-grobs
  es
g>1\arpeggio
}

\begin{music}
\includegraphics[width=0.2\textwidth]{music.png}
\end{music}

Using PostScript to generate special note head shapes

When a note head with a special shape cannot easily be generated with graphic markup, PostScript code can be used to generate the shape. This example shows how a parallelogram-shaped note head is generated.

```
parallelogram =
#(ly:make-stencil (list 'embedded-ps
  "gsave
  currentpoint translate
  newpath
  0 0.25 moveto
  1.3125 0.75 lineto
  1.3125 -0.25 lineto
  0 -0.75 lineto
  closepath
  fill
  grestore"
  )
  (cons 0 1.3125)
  (cons -.75 .75))

myNoteHeads = \override NoteHead.stencil = \parallelogram
normalNoteHeads = \revert NoteHead.stencil
```

```
\relative c'' {
  \myNoteHeads
g4 d'
  \normalNoteHeads
  <f, \tweak stencil \parallelogram b e>4 d
}
```
Using the `\tweak` command to tweak individual grobs

With the `\tweak` command, every grob can be tuned directly. Here are some examples of available tweaks.

\[
\texttt{\relative c' { \\
   \time 2/4 \\
   \set fingeringOrientations = #'(right) \\
   < \\
   \tweak font-size #3 c \\
   \tweak color #red d-\tweak font-size #8 -4 \\
   \tweak style #'cross g \\
   \tweak duration-log #2 a \\
   >2 
}}
\]

Vertically aligned dynamics and textscripts

All DynamicLineSpanner objects (hairpins and dynamic texts) are placed with their reference line at least 'staff-padding from the staff, unless other notation forces them to be farther. Setting 'staff-padding to a sufficiently large value aligns the dynamics.

The same idea, together with `\textLengthOn`, is used to align the text scripts along their baseline.

\[
\texttt{music = \relative c' { \\
   a'2\p b\f \\
   e4\p f\f> g, b\p \\
   c2-\markup { \huge gorgeous } c-\markup { \huge fantastic } 
}}
\]

\{
   \music \\
   \break \\
   \override DynamicLineSpanner.staff-padding = #3 \\
   \textLengthOn \\
   \override TextScript.staff-padding = #1 \\
   \music 
\}
Vertically aligning ossias and lyrics

This snippet demonstrates the use of the context properties `alignBelowContext` and `alignAboveContext` to control the positioning of lyrics and ossias.

```latex
\paper {
  \ragged-right = ##t
}

\relative c' << 
  \new Staff = "1" { c4 c s2 }
  \new Staff = "2" { c4 c s2 }
  \new Staff = "3" { c4 c s2 }
  { \skip 2 
    \lyrics {
      \set alignBelowContext = "1"
      lyrics4 below 
    }
    \new Staff \with {
      alignAboveContext = "3"
      fontSize = #-2
      \override StaffSymbol.staff-space = #(magstep -2)
      \remove "Time_signature_engraver"
    }
    \tuplet 6/4 {
      \override TextScript.padding = #3
      c8[^"ossia above" d e d e f]
    }
  }
  >> 
}
```

 Vertically aligning ossias and lyrics

This snippet demonstrates the use of the context properties `alignBelowContext` and `alignAboveContext` to control the positioning of lyrics and ossias.
Vertically centering paired figured bass extenders

Where figured bass extender lines are being used by setting `useBassFigureExtenders` to true, pairs of congruent figured bass extender lines are vertically centered if `figuredBassCenterContinuations` is set to true.

```
\relative c' {
  c8 c b b a a c16 c b b
  c8 c b b a a c16 c b b
  c8 c b b a a c c b b
}
\figures {
  \set useBassFigureExtenders = ##t
  <6+ 4 3>4 <6 4 3>8 r
  <6+ 4 3>4 <6 4 3>8 <4 3>16 r
  \set figuredBassCenterContinuations = ##t
  <6+ 4 3>4 <6 4 3>8 r
  <6+ 4 3>4 <6 4 3>8 <4 3>16 r
  \set figuredBassCenterContinuations = ##f
  <6+ 4 3>4 <6 4 3>8 r
  <6+ 4 3>4 <6 4 3>8 <4 3>8
}
```
Paper and layout

Section “Spacing issues” in Notation Reference

Aligning and centering instrument names

The horizontal alignment of instrument names is tweaked by changing the Staff.InstrumentName.self-alignment-X property. The \layout variables indent and short-indent define the space in which the instrument names are aligned before the first and the following systems, respectively.

\paper { left-margin = 3\cm }

\score {
  \new StaffGroup <<

  \new Staff \with {
    \override InstrumentName.self-alignment-X = #LEFT
    instrumentName = \markup \left-column {
      "Left aligned"
      "instrument name"
    }
    shortInstrumentName = "Left"
  }
  { c''1 \break c''1 }

  \new Staff \with {
    \override InstrumentName.self-alignment-X = #CENTER
    instrumentName = \markup \center-column {
      Centered
      "instrument name"
    }
    shortInstrumentName = "Centered"
  }
  { g'1 g'1}

  \new Staff \with {
    \override InstrumentName.self-alignment-X = #RIGHT
    instrumentName = \markup \right-column {
      "Right aligned"
      "instrument name"
    }
    shortInstrumentName = "Right"
  }
  { e'1 e'1 }

  >>

  \layout {
    ragged-right = ##t
Arranging separate lyrics on a single line

Sometimes you may want to put lyrics for different performers on a single line: where there is rapidly alternating text, for example. This snippet shows how this can be done with `\override VerticalAxisGroup.nonstaff-nonstaff-spacing.minimum-distance = ##f`.

```
\layout {
\context {  
  \Lyrics
    \override VerticalAxisGroup.nonstaff-nonstaff-spacing.minimum-distance = ##f 
}
}

aliceSings = \markup { \smallCaps "Alice" }
eveSings = \markup { \smallCaps "Eve" }
<<
\new Staff <<
\new Voice = "alice" {
  f'4\AliceSings g' r2 | 
  s1 | 
  f'4\AliceSings g' r2 | 
  s1 | \break 
  \%
  ...  
  \voiceOne
```

```
\new Voice = "eve" {
  s1 |
  a'2\eveSings g' |
  s1 |
  a'2\eveSings g' |
  \voiceTwo
  f'4\eveSings a'8 g' f'4 e' |
  \oneVoice
  s1
}

>>
\new Lyrics \lyricsto "alice" {
  may -- be
  sec -- ond
  % ...
  Shut up, you fool!
}

\new Lyrics \lyricsto "eve" {
  that the
  words are
  % ...
  ...and then I was like--
}

>>

\bookpart

\book

  %% book paper, which is inherited by all children bookparts
\paper {
  \ragged-last-bottom = \#t
  \%
  Page footer: add a different part-tagline at part last page
  oddFooterMarkup = \markup {\column {
    \fill-line {
      \%
      Copyright header field only on book first page.
      \if \on-first-page \fromproperty \#header:copyright
    }
    \fill-line {
      \%
      Part tagline header field only on each part last page.
      \if \on-last-page-of-part \fromproperty \#header:parttagline
    }
    \fill-line {
      \%
      Tagline header field only on book last page.
      \if \on-last-page \fromproperty \#header:tagline
    }
  }
}
  \%
  book header, which is inherited by the first bookpart
  \header {
    \title = "Book title"
    \copyright = "Copyright line on book first page"
    \parttagline = "Part tagline"
    \tagline = "Book tagline"
  }
  \%
  a different page breaking function may be used on each part
  \paper { page-breaking = \ly:minimal-breaking }
  \header { subtitle = "First part" }
  \markup { The first book part }
  \markup { a page break }
  \pageBreak
  \markup { first part last page }
  \markup \wordwrap { with \ragged-last-bottom (see the space below this text) }
}

\bookpart {
  \header { subtitle = "Second part" }
  { c'4 }
}
}

}
Book title
First part

The first book part
a page break

Copyright line on book first page
2
first part last page
with ragged-last-bottom (see the space below this text)

Part tagline
Changing the staff size

Though the simplest way to resize staves is to use \(\texttt{(set-global-staff-size xx)}\), an individual staff’s size can be changed by scaling the properties ‘staff-space and fontSize.

\[
\begin{align*}
\texttt{\new Staff} & \{ \\
\texttt{relative c''} & \{ \\
\texttt{dynamicDown} & \begin{align*}
\texttt{c8}\texttt{ff c c c c c c c} \\
\end{align*}
\}
\}
\end{align*}
\]
\[
\begin{align*}
\texttt{\new Staff with} & \{ \\
\texttt{fontSize} & = \#-3 \\
\texttt{override StaffSymbol.staff-space} & = \#(\texttt{magstep -3})
\}
\end{align*}
\]
\[
\texttt{\clef bass} \\
\texttt{c8 c c c c\textbackslash f c c c}
\]
\]
>>
Clip systems

This code shows how to clip (extract) snippets from a full score.

This file needs to be run separately with -dclip-systems; the snippets page may not adequately show the results. The result will be files named 'base-from-start-to-end[-count].eps'.

If system starts and ends are included, they include extents of the System grob, e.g., instrument names.

Grace notes at the end point of the region are not included.

Regions can span multiple systems. In this case, multiple EPS files are generated.

```latex
#(ly:set-option 'clip-systems)
#(define output-suffix "1")

origScore = \score {
  \relative c' {
    \new Staff \with { instrumentName = "Instrument" } \\
    c1 \\
    d1 \\
    \grace c16 e1 \\
    \key d \major \\
    f1 \break \\
    \clef bass \\
    g,1 \\
    fis1
  }
}

\book {
  \score {
    \origScore
    \layout {
      \clip-regions = #(list
        (make-rhythmic-location 2 0 1)
        (make-rhythmic-location 4 0 1))
    }
  }
```
(make-rhythmic-location 0 0 1)
(make-rhythmic-location 4 0 1)

(cons
 (make-rhythmic-location 0 0 1)
 (make-rhythmic-location 6 0 1))
)
}
}

#(ly:set-option 'clip-systems #f)
#(define output-suffix #f)

\book {
 \score { \origScore }
 \markup { \bold \fontsize #6 clips }
 \score {
 \lyrics {
 \markup { from-2.0.1-to-4.0.1-clip.eps }
 \markup {
 \epsfile #X #30.0 #(format #f "-a-1-from-2.0.1-to-4.0.1-clip.eps"
 (ly:parser-output-name)))

   }}

   }

   }

   }
clips

from-2.0.1-to-4.0.1-clip.eps
Creating blank staves

To create blank staves, generate empty measures then remove the Bar_number_engraver from the Score context, and the Time_signature_engraver, Clef_engraver and Bar_engraver from the Staff context.

```latex
\score {
  \repeat unfold 12 { s1 \break }
}
\layout {
  indent = 0\in
  \context {
    \Staff
    \remove "Time_signature_engraver"
    \remove "Clef_engraver"
    \remove "Bar_engraver"
  }
  \context {
    \Score
    \remove "Bar_number_engraver"
  }
}

% uncomment these lines for "letter" size
%
\paper {
  #(set-paper-size "letter")
  ragged-last-bottom = ##f
  line-width = 7.5\in
  left-margin = 0.5\in
  bottom-margin = 0.25\in
  top-margin = 0.25\in
}
%

% uncomment these lines for "A4" size
%
\paper {
  #(set-paper-size "a4")
  ragged-last-bottom = ##f
  line-width = 180
  left-margin = 15
  bottom-margin = 10
  top-margin = 10
}
%}
Demonstrating all headers

All header fields with special meanings.

\header {
  copyright = "copyright"
  title = "title"
  subtitle = "subtitle"
  composer = "composer"
  arranger = "arranger"
  instrument = "instrument"
  meter = "meter"
  opus = "opus"
  piece = "piece"
  poet = "poet"
  texidoc = "All header fields with special meanings."
  copyright = "public domain"
  enteredby = "jcn"
  source = "urtext"
}

\layout {
ragged-right = ###f
}

\score {
  \relative c'' { c1 | c | c | c }
}

\score {
  \relative c'' { c1 | c | c | c }
  \header {
    title = "localtitle"
    subtitle = "localsubtitle"
    composer = "localcomposer"
    arranger = "localarranger"
    instrument = "localinstrument"
    metre = "localmetre"
    opus = "localopus"
    piece = "localpiece"
    poet = "localpoet"
    copyright = "localcopyright"
  }
}

\begin{music}
\begin{notes}
\relative c' {
  \times \times \times \times \times \times \times
}
\end{notes}
\end{music}

\begin{music}
\begin{notes}
\relative c' {
  \times \times \times \times \times \times \times
}
\end{notes}
\end{music}

Setting system separators

System separators can be inserted between systems. Any markup can be used, but \slashSeparator has been provided as a sensible default.

\paper {
  system-separator-markup = \slashSeparator
  line-width = 120
}

notes = \relative c' {

\book {
    \score {
        \new GrandStaff <<
        \new Staff \notes
        \new Staff \notes
        >>
    }
}

\break
\break
\break
Table of contents

A table of contents is included using \markuptlist \table-of-contents. The TOC items are added with the \tocItem command.

#(set-default-paper-size "a6")

\book {
  \markuptlist \table-of-contents
  \pageBreak
  \tocItem \markup { The first score }
  \score {
    { c'1 \pageBreak
      \mark \default \tocItem \markup { Mark A }
      d'1
    }
  }
  \pageBreak
  \tocItem \markup { The second score }
  \score {
    { e'1 }
    \header { piece = "Second score" }
  }
}

Table of Contents

The first score 2
Mark A 3
The second score 4

2
\timesig.C44/noteheads.s0/clefs.G

3
\timesig.C44/noteheads.s0/clefs.G/A
Vertical aligned StaffGroups without connecting SystemStartBar

This snippet shows how to achieve vertically aligned StaffGroups with a SystemStartBar for each StaffGroup, but without connecting them.

```lilypond
#(set-global-staff-size 18)

\paper {
  indent = 0
  ragged-right = ##f
  print-all-headers = ##t
}

\layout {
  \context {
    \StaffGroup
    \consists Text_mark_engraver
    \consists Staff_collecting_engraver
    systemStartDelimiterHierarchy =
  }
```
#'(SystemStartBrace (SystemStartBracket a b))

\context {
  \Score
  \remove Text_mark_engraver
  \remove Staff_collecting_engraver
  \override SystemStartBrace.style = #'bar-line
  \omit SystemStartBar
  \override SystemStartBrace.padding = #-0.1
  \override SystemStartBrace.thickness = #1.6
  \override StaffGrouper.staffgroup-staff-spacing.basic-distance = #15
}

%%% EXAMPLE

txt = \lyricmode {
  Wer4 nur den lie -- ben Gott läßt wal2 -- ten4
  und4 hof -- fet auf ihn al -- le Zeit2.
}

% First StaffGroup "exercise"

eI = \relative c' {
  \textMark \markup {
    \bold Teacher:
    This is a simple setting of the choral. Please improve it.
  }
  \key a \minor
  \time 4/4
  \voiceOne

  \partial 4
  e4
  a b c b
  a b gis2
  e4 \fermata g! g f
e a a gis
  a2. \fermata
  \bar "::|.
}

eII = \relative c' {
  \key a \minor
  \time 4/4
  \voiceTwo
  \partial 4
c4
e e e gis
a f e2
b4 b d d
c c d d
c2.
\bar ":|."}

eIII =
\relative c' {
  \key a \minor
  \time 4/4
  \clef bass
  \voiceOne

  \partial 4
  a4
  c b a b
c d b2
gis4 g g b
c a f e
e2.
}

eIV =
\relative c' {
  \key a \minor
  \time 4/4
  \clef bass
  \voiceTwo

  \partial 4
  a,4
  a' gis a e
a, d e2
e,4\fermata e' b g
c f d e
a,2.\fermata
\bar ":|."}

exercise =
\new StaffGroup = "exercise"
<<

\new Staff
<<
  \new Voice \eI
  \new Voice \eII
>>

\new Lyrics \txt
\new Staff
<<
\new Voice \eIII
\new Voice \eIV
>>
>>

% Second StaffGroup "simple Bach"

sbI = \relative c' {
  \textMark \markup { \textbf{Pupil:} Here's my version! }
  \key a \minor
  \time 4/4
  \voiceOne
  \part 4
  e4
  a b c b
  a b gis2
  e4\fermata g! g f
  e a a gis
  a2.\fermata
  \bar ".:|." }

sbII = \relative c' {
  \key a \minor
  \time 4/4
  \voiceTwo
  \part 4
  c8 d
  e4 e e8 f g4
  f f e2
  b4 b8 c d4 d
  e8 d c4 b8 c d4
  c2.
  \bar ".:|." }

sbIII = \relative c' {
  \key a \minor
  \time 4/4
  \clef bass
  \voiceOne
  \part 4
  a8 b
  c4 b a b8 c
  ..."}
\[ \begin{align*}
&\text{d4 d8 c b2} \\
&\text{gis4 g g8 a b4} \\
&\text{b a8 g f4 e} \\
&\text{e2.} \\
\end{align*} \]

\textbf{sbIV} = \texttt{relative c'} \{
\texttt{key a minor} \\
\texttt{time 4/4} \\
\texttt{clef bass} \\
\texttt{voiceTwo} \\
\texttt{partial 4} \\
\texttt{a,4} \\
\texttt{a' gis a e} \\
\texttt{f8 e d4 e2} \\
\texttt{e,4 fermata e' b a8 g} \\
\texttt{c4 f8 e d4 e} \\
\texttt{a,2 fermata} \\
\texttt{bar ":|."} \\
\}

\textbf{simpleBach} = \\
\texttt{new StaffGroup = "simple Bach"} \\
\texttt{<<} \\
\texttt{new Staff} \\
\texttt{<<} \\
\texttt{new Voice \texttt{sbI}} \\
\texttt{new Voice \texttt{sbII}} \\
\texttt{>>} \\
\texttt{new Lyrics \texttt{txt}} \\
\texttt{new Staff} \\
\texttt{<<} \\
\texttt{new Voice \texttt{sbIII}} \\
\texttt{new Voice \texttt{sbIV}} \\
\texttt{>>} \\
\texttt{>>} \\
\% Third StaffGroup "chromatic Bach" \\
\textbf{cbI} = \texttt{relative c'} \{ \\
\texttt{textMark \ markup \{} \\
\texttt{\bold "Teacher:"} \\
\texttt{\column \{} \\
\texttt{"Well, you simply copied and transposed a version of J.S.Bach."} \\
\texttt{"Do you know this one?"} \\
\texttt{\}}
\}
\key a \minor
\time 4/4
\voiceOne
\partial 4
e4
a b c b
a b gis4. fis8
e4\fermata g! g f
e a a8 b gis4
a2.\fermata
\bar ".:|.
\}

\relative c' {
  \key a \minor
  \time 4/4
  \voiceTwo
  \partial 4
c8 d
e4 e e8 fis gis4
a8 g! f!4 e2
b4 e e d
d8[ cis] d dis e fis e4
e2.
  \bar ".:|.
}\}

\relative c' {
  \key a \minor
  \time 4/4
  \clef bass
  \voiceOne
  \partial 4
  a8 b
c[ b] a gis8 a4 d,
e8[ e'] d c b4. a8
gis4 b c d8 c
b[ a] a b c b c16 d
c2.
}\}

\relative c' {
  \key a \minor
  \time 4/4
  \clef bass
  \voiceTwo
Exercise: Improve the given choral

Teacher: This is a simple setting of the choral. Please improve it.

Pupil: Here's my version!

Teacher: Well, you simply copied and transposed a version of J.S.Bach. Do you know this one?
ten und hoffet auf ihn alle Zeit


**Titles**

Section “Titles and headers” in *Notation Reference*

**Adding the current date to a score**

With a little Scheme code, the current date can easily be added to a score.

\% first, define a variable to hold the formatted date:
\%
date = #(strftime "%d-%m-%Y" (localtime (current-time)))

\% use it in the title block:
\%
header {
  title = "Including the date!"
  subtitle = \date
}

\score {
  \relative c' {
    c4 c c c
  }
}

\%
and use it in a markup block:
\%
\markup {
  \date
}

**Including the date!**

13-12-2022

13-12-2022

**Aligning and centering instrument names**

The horizontal alignment of instrument names is tweaked by changing the Staff.InstrumentName.self-alignment-X property. The \layout variables indent and short-indent define the space in which the instrument names are aligned before the first and the following systems, respectively.

\%
paper { left-margin = 3cm }

\score {
  \new StaffGroup <<
    \new Staff \with {
      \override InstrumentName.self-alignment-X = #LEFT
      instrumentName = \markup \left-column {
        "Left aligned"
        "instrument name"
{ c''1 \break c''1 }

\new Staff \with {
  \override InstrumentName.self-alignment-X = #CENTER
  instrumentName = \markup \center-column {
    Centered
    "instrument name"
  }
  shortInstrumentName = "Centered"
}

{ g'1 g'1}

\new Staff \with {
  \override InstrumentName.self-alignment-X = #RIGHT
  instrumentName = \markup \right-column {
    "Right aligned"
    "instrument name"
  }
  shortInstrumentName = "Right"
}

{ e'1 e'1 }

>>

\layout {
  ragged-right = ##t
  indent = 4\cm
  short-indent = 2\cm
}

Left aligned instrument name

Centered instrument name

Right aligned instrument name
Demonstrating all headers

All header fields with special meanings.

\header {  
  \copyright = "copyright"
  \title = "title"
  \subtitle = "subtitle"
  \composer = "composer"
  \arranger = "arranger"
  \instrument = "instrument"
  \meter = "meter"
  \opus = "opus"
  \piece = "piece"
  \poet = "poet"
  \texidoc = "All header fields with special meanings."
  \copyright = "public domain"
  \enteredby = "jcn"
  \source = "urtext"
}

\layout {  
  \ragged-right = ##f
}

\score {  
  \relative c'' { c1 | c | c | c }
}

\score {  
  \relative c'' { c1 | c | c | c }
  \header {  
    \title = "localtitle"
    \subtitle = "localsubtitle"
    \composer = "localcomposer"
    \arranger = "localarranger"
    \instrument = "localinstrument"
    \metre = "localmetre"
    \opus = "localopus"
    \piece = "localpiece"
    \poet = "localpoet"
  }
}
Outputting the version number

It is possible to print the version number of LilyPond in markup.

\markup { Processed with LilyPond version \( #(lilypond-version) \)}

Processed with LilyPond version 2.24.0
Spacing

Section “Spacing issues” in Notation Reference

Adjusting lyrics vertical spacing

This snippet shows how to bring the lyrics line closer to the staff.

% Default layout:
<<
\new Staff \new Voice = melody \relative c' {
  c4 d e f
g4 f e d
c1
}
\new Lyrics \lyricsto melody { aa aa aa aa aa aa aa aa aa }
\new Staff {
  \new Voice = melody \relative c' {
    c4 d e f
g4 f e d
c1
  }
}
% Reducing the minimum space below the staff and above the lyrics:
\new Lyrics \with {
  \override VerticalAxisGroup.nonstaff-relatedstaff-spacing = #'((basic-distance . 1))
}
\lyricsto melody { aa aa aa aa aa aa aa aa }
>>

Allowing fingerings to be printed inside the staff

By default, vertically oriented fingerings are positioned outside the staff; that behavior, however, may be disabled. Attention needs to be paid to situations where fingerings and stems are in the same direction: by default, fingerings will avoid only beamed stems. That setting can be changed to avoid no stems or all stems; the following example demonstrates these two options, as well as how to go back to the default behavior.

\relative c' {
  <c-1 e-2 g-3 b-5>2
  \override Fingering.staff-padding = #'()
  <c-1 e-2 g-3 b-5>4 g'-0
  a8[-1 b]-2 g-0 r
  \override Fingering.add-stem-support = ##f
override Fingering.add-stem-support = ##t
a[-1 b]-2 g-0 r

override Fingering.add-stem-support = only-if-beamed
a[-1 b]-2 g-0 r

Page label
Page labels may be placed inside music or at top-level, and referred to in markups.

\label license
\markup "This snippet is available under the Creative Commons Public Domain Dedication license."

{ \repeat volta 2 { \label startRepeat
\repeat unfold 20 { c'2 2 }
\pageBreak 2 2
}
\textEndMark \markup {
  \with-link #'startRepeat \line {
    To page \page-ref #'startRepeat "0" "?"
  }
}
}
\markup {
  See page \page-ref #'license "0" "?" for licensing information.
}

This snippet is available under the Creative Commons Public Domain Dedication license.
Proportional strict notespacing

If strict-note-spacing is set spacing of notes is not influenced by bars or clefs within a system. Rather, they are placed just before the note that occurs at the same time. This may cause collisions.

```latex
relative c' <<
override Score.SpacingSpanner.strict-note-spacing = ##t
set Score.proportionalNotationDuration = #(ly:make-moment 1/16)
new Staff {
  c8 [ c \clef alto c c \grace { d16 } c8 c] c4
  c2 \grace { c16[ c16] } c2
}
new Staff {
  c2 \tuplet 3/2 { c8 \clef bass cis,, c } c4
  c1
}
>>
```

Vertically aligned dynamics and textscripts

All DynamicLineSpanner objects (hairpins and dynamic texts) are placed with their reference line at least 'staff-padding from the staff, unless other notation forces them to be farther. Setting 'staff-padding to a sufficiently large value aligns the dynamics.

The same idea, together with \textLengthOn, is used to align the text scripts along their baseline.

```latex
music = \relative c' {
a'2\p b\f
e4\p f\f> g, b\p
```
Vertically aligning ossias and lyrics

This snippet demonstrates the use of the context properties \alignBelowContext and \alignAboveContext to control the positioning of lyrics and ossias.

\begin{verbatim}
\paper {
  \ragged-right = ##t
}

\relative c' <<
  \new Staff = "1" { c4 c s2 }
  \new Staff = "2" { c4 c s2 }
  \new Staff = "3" { c4 c s2 }
{ \skip 2 }
  <<
    \lyrics {
      \set \alignBelowContext = "1"
      lyrics4 below
    }
  \new Staff \with {
    \alignAboveContext = "3"
    fontSize = #-2
    \override \StaffSymbol.staff-space = #(magstep -2)
    \remove "Time_signature_engraver"
  }
  \tuplet 6/4 {
    \override \TextScript.padding = #3
    c8["ossia above" d e d e f]
  }
\end{verbatim}
MIDI

Section “Creating MIDI output” in Notation Reference

Changing MIDI output to one channel per voice

When outputting MIDI, the default behavior is for each staff to represent one MIDI channel, with all the voices on a staff amalgamated. This minimizes the risk of running out of MIDI channels, since there are only 16 available per track.

However, by moving the Staff_performer to the Voice context, each voice on a staff can have its own MIDI channel, as is demonstrated by the following example: despite being on the same staff, two MIDI channels are created, each with a different midiInstrument.

```
\score { 
  \new Staff << 
    \new Voice \relative c' \{ 
      \set midiInstrument = #"flute" 
      \voiceOne 
      \key g \major 
      \time 2/2 
      r2 g="Flute" ~ 
      g fis ~ 
      fis4 g8 fis e2 ~ 
      e4 d8 cis d2 
    } 
  \new Voice \relative c' \{ 
    \set midiInstrument = #"clarinet" 
    \voiceTwo 
    b1="Clarinet" 
    a2. b8 a 
    g2. fis8 e 
    fis2 r 
  } 
  >> 
  \layout { } 
  \midi { 
    \context { 
      \Staff 
      \remove "Staff_performer" 
    } 
    \context { 
      \Voice 
      \consists "Staff_performer" 
    } 
    \tempo 2 = 72 
  } 
}
```
Changing the tempo without a metronome mark

To change the tempo in MIDI output without printing anything, make the metronome mark invisible.

\score{
\new Staff \relative c' {
\tempo 4 = 160
\note{c4}{e}{g}{b}
\note{c4}{b}{d}{c}
\set Score.tempoHideNote = ##t
\tempo 4 = 96
\note{d,4}{fis}{a}{cis}
\note{d4}{cis}{e}{d}
}
\layout{}
\midi{}
}

Creating custom dynamics in MIDI output

The following example shows how to create a dynamic marking, not included in the default list, and assign it a specific value so that it can be used to affect MIDI output.

The dynamic mark \rfz is assigned a value of 0.9.

#(define (myDynamics dynamic)
  (if (equal? dynamic "rfz")
    0.9
    (default-dynamic-absolute-volume dynamic)))

\score{
\new Staff {
\set Staff.midiInstrument = "cello"
\set Score.dynamicAbsoluteVolumeFunction = #myDynamics
\new Voice {
  \relative {\note{a'4}{pp}{b}{c-}\rfz}
}
}
\layout{}
\midi{}
}
Customized drum notation in printed and MIDI output

Customized drum “pitch” names (suitable for a custom drum style, for example) may be used both in printed and MIDI output by defining such variables as \texttt{drumPitchNames}, \texttt{drumStyleTable} and \texttt{midiDrumPitches}, as demonstrated here. In short, this snippet:

- defines some "pitch" names,
- defines how they will be rendered,
- tells LilyPond to use them for layout,
- assigns pitches to the names,
- tells LilyPond to use them for MIDI output.

This snippet tries to amend

%% NR 2.5.1 Common notation for percussion - Custom percussion staves
%% http://lilypond.org/doc/v2.18/Documentation/notation/common-notation-for-percussion#custom-percussion-staves

This snippet tries to amend

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%% NR 2.5.1 Common notation for percussion - Custom percussion staves
%% http://lilypond.org/doc/v2.18/Documentation/notation/common-notation-for-percussion#custom-percussion-staves

%%
%% To use custom drum pitch names for your score and midi you need to follow
%% this route:
%%
%% LAYOUT:
%%
%% (1) Define a name and put it in \texttt{drumPitchNames}'
%% This can be done at toplevel with
%%\texttt{drumPitchNames.my-name = #'my-name}
%% It's possible to add an alias as well.
%% (2) Define how it should be printed
%% Therefore put them into a top-level list, where each entry should
%% be of the form:
%%\texttt{(my-name}
%% \texttt{ note-head-style-or-default}
%% \texttt{ articulation-type-or-#f}
%% \texttt{ staff-position)}
%% Example:
%%\texttt{(define my-style}
%%\texttt{ '(}
%%\texttt{ (my-name default tenuto -1)}
%%\texttt{ ; ...}
%%\texttt{ )})
%% (3) Tell LilyPond to use these custom definitions, with
%%\texttt{drumStyleTable = #(alist->hash-table my-style)}
%% in a \texttt{|layout} or \texttt{|with block}
%% Now we're done for layout. Here is a short but complete example:
%% \texttt{new DrumStaff}
%% \texttt{|with { drumStyleTable = #(alist->hash-table my-style) }}
%% \texttt{|drummode { my-name }}
%% (1) Again at top-level, assign a pitch to your custom note name
%% midiDrumPitches.my-name = ges
%% Note that you have to use the name, which is in drumPitchNames, no alias
%% (2) Tell LilyPond to use this pitch(es), with
%% drumPitchTable = #(alist->hash-table midiDrumPitches)
%%
%% Example:
%% \score {
%%   \new DrumStaff
%%   \with {
%%       drumStyleTable = #(alist->hash-table my-style)
%%       drumPitchTable = #(alist->hash-table midiDrumPitches)
%%   }
%%   \drummode { my-name4 }
%%   \layout {}
%%   \midi {}
%% }
%%

%%% TESTING

%% To test whether all is fine, run the following sequence in terminal:
%% lilypond my-file.ly
%% midi2ly my-file.midi
%% gedit my-file-midi.ly
%%
%% This will do the following:
%% 1. create pdf and midi
%% 2. transform the midi back to a .ly-file
%% (note: midi2ly is not always good in correctly identifying enharmonic pitches)
%% 3. open this file in gedit (or use another editor)
%% Now watch what you’ve got.

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

%% FULL EXAMPLE

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

\begin{verbatim}

\textbf{drumPitchNames}.
\begin{verbatim}
dbass = #'dbass
dbass = #'dbass  % 'db is in use already
dbassmute = #'dbassmute
dm = #'dbassmute
dbass = #'dbass

\end{verbatim}

\end{verbatim}
Demo MidiInstruments

Problem: How to know which midiInstrument would be best for your composition?

Solution: A LilyPond demo file.

```plaintext

\header {
  title = "Demo of all midi sounds"
  arranger = "Myself"
}

baseMelody = \relative c' {
  c4.\mf g c16 b' c d
e16 d e f g4 g'4 r
  R1
}

melody = {

```
\tempo 4 = 150
\baseMelody
}

\score{\
\new Staff <<\
\new Voice \melody>>\layout{}}

\score{\
\new Staff <<\
\new Voice {\r\mf\set Staff.midiInstrument = "acoustic grand" \melody\set Staff.midiInstrument = "bright acoustic" \melody\set Staff.midiInstrument = "electric grand" \melody\set Staff.midiInstrument = "honky-tonk" \melody\set Staff.midiInstrument = "electric piano 1" \melody\set Staff.midiInstrument = "electric piano 2" \melody\set Staff.midiInstrument = "harpsichord" \melody\set Staff.midiInstrument = "clav" \melody\set Staff.midiInstrument = "celesta" \melody\set Staff.midiInstrument = "glockenspiel" \melody\set Staff.midiInstrument = "music box" \melody\set Staff.midiInstrument = "vibraphone" \melody\set Staff.midiInstrument = "marimba" \melody\set Staff.midiInstrument = "xylophone" \melody\set Staff.midiInstrument = "tubular bells" \melody\set Staff.midiInstrument = "dulcimer" \melody\set Staff.midiInstrument = "drawbar organ" \melody\set Staff.midiInstrument = "percussive organ" \melody\set Staff.midiInstrument = "rock organ" \melody\set Staff.midiInstrument = "church organ" \melody\set Staff.midiInstrument = "reed organ" \melody\set Staff.midiInstrument = "accordion" \melody\set Staff.midiInstrument = "harmonica" \melody\set Staff.midiInstrument = "concertina" \melody\set Staff.midiInstrument = "acoustic guitar (nylon)" \melody\set Staff.midiInstrument = "acoustic guitar (steel)" \melody\set Staff.midiInstrument = "electric guitar (jazz)" \melody\set Staff.midiInstrument = "electric guitar (clean)" \melody\set Staff.midiInstrument = "electric guitar (muted)" \melody\set Staff.midiInstrument = "overdriven guitar" \melody\set Staff.midiInstrument = "distorted guitar" \melody\set Staff.midiInstrument = "acoustic bass" \melody\set Staff.midiInstrument = "electric bass (finger)" \melody\set Staff.midiInstrument = "electric bass (pick)" \melody\set Staff.midiInstrument = "fretless bass" \melody\set Staff.midiInstrument = "slap bass 1" \melody\set Staff.midiInstrument = "slap bass 2" \melody}}
\set Staff.midiInstrument = #'synth bass 1" \melody
\set Staff.midiInstrument = #'synth bass 2" \melody
\set Staff.midiInstrument = #"violin" \melody
\set Staff.midiInstrument = #"viola" \melody
\set Staff.midiInstrument = #"cello" \melody
\set Staff.midiInstrument = #"contrabass" \melody
\set Staff.midiInstrument = #"tremolo strings" \melody
\set Staff.midiInstrument = #"pizzicato strings" \melody
\set Staff.midiInstrument = #"orchestral harp" \melody
\set Staff.midiInstrument = #"timpani" \melody
\set Staff.midiInstrument = #"string ensemble 1" \melody
\set Staff.midiInstrument = #"string ensemble 2" \melody
\set Staff.midiInstrument = #"synthstrings 1" \melody
\set Staff.midiInstrument = #"synthstrings 2" \melody
\set Staff.midiInstrument = #"choir aahs" \melody
\set Staff.midiInstrument = #"voice oohs" \melody
\set Staff.midiInstrument = #"synth voice" \melody
\set Staff.midiInstrument = #"orchestra hit" \melody
\set Staff.midiInstrument = #"trumpet" \melody
\set Staff.midiInstrument = #"trombone" \melody
\set Staff.midiInstrument = #"tuba" \melody
\set Staff.midiInstrument = #"muted trumpet" \melody
\set Staff.midiInstrument = #"french horn" \melody
\set Staff.midiInstrument = #"brass section" \melody
\set Staff.midiInstrument = #"synthbrass 1" \melody
\set Staff.midiInstrument = #"synthbrass 2" \melody
\set Staff.midiInstrument = #"soprano sax" \melody
\set Staff.midiInstrument = #"alto sax" \melody
\set Staff.midiInstrument = #"tenor sax" \melody
\set Staff.midiInstrument = #"baritone sax" \melody
\set Staff.midiInstrument = #"baritone sax" \melody
\set Staff.midiInstrument = #"soprano sax" \melody
\set Staff.midiInstrument = #"alto sax" \melody
\set Staff.midiInstrument = #"tenor sax" \melody
\set Staff.midiInstrument = #"baritone sax" \melody
\set Staff.midiInstrument = #"bassoon" \melody
\set Staff.midiInstrument = #"clarinet" \melody
\set Staff.midiInstrument = #"piccolo" \melody
\set Staff.midiInstrument = #"flute" \melody
\set Staff.midiInstrument = #"recorder" \melody
\set Staff.midiInstrument = #"pan flute" \melody
\set Staff.midiInstrument = #"blown bottle" \melody
\set Staff.midiInstrument = #"shakuhachi" \melody
\set Staff.midiInstrument = #"whistle" \melody
\set Staff.midiInstrument = #"ocarina" \melody
\set Staff.midiInstrument = #"lead 1 (square)" \melody
\set Staff.midiInstrument = #"lead 2 (sawtooth)" \melody
\set Staff.midiInstrument = #"lead 3 (calliope)" \melody
\set Staff.midiInstrument = #"lead 4 (chiff)" \melody
\set Staff.midiInstrument = #"lead 5 (charang)" \melody
\set Staff.midiInstrument = #"lead 6 (voice)" \melody
\set Staff.midiInstrument = #"lead 7 (fifths)" \melody
\set Staff.midiInstrument = #"lead 8 (bass+lead)" \melody
\set Staff.midiInstrument = #"pad 1 (new age)" \melody
\set Staff.midiInstrument = #"pad 2 (warm)" \melody
\set Staff.midiInstrument = #"pad 3 (polysynth)" \melody
\set Staff.midiInstrument = #"pad 4 (choir)" \melody
\set Staff.midiInstrument = #"pad 5 (bowed)" \melody
\set Staff.midiInstrument = #"pad 6 (metallic)" \melody
\set Staff.midiInstrument = #"pad 7 (halo)" \melody
\set Staff.midiInstrument = #"pad 8 (sweep)" \melody
\set Staff.midiInstrument = #"fx 1 (rain)" \melody
\set Staff.midiInstrument = #"fx 2 (soundtrack)" \melody
\set Staff.midiInstrument = #"fx 3 (crystal)" \melody
\set Staff.midiInstrument = #"fx 4 (atmosphere)" \melody
\set Staff.midiInstrument = #"fx 5 (brightness)" \melody
\set Staff.midiInstrument = #"fx 6 (goblins)" \melody
\set Staff.midiInstrument = #"fx 7 (echoes)" \melody
\set Staff.midiInstrument = #"fx 8 (sci-fi)" \melody
\set Staff.midiInstrument = #"sitar" \melody
\set Staff.midiInstrument = #"banjo" \melody
\set Staff.midiInstrument = #"shamisen" \melody
\set Staff.midiInstrument = #"koto" \melody
\set Staff.midiInstrument = #"kalimba" \melody
\set Staff.midiInstrument = #"bagpipe" \melody
\set Staff.midiInstrument = #"fiddle" \melody
\set Staff.midiInstrument = #"shana" \melody
\set Staff.midiInstrument = #"tinkle bell" \melody
\set Staff.midiInstrument = #"agogo" \melody
\set Staff.midiInstrument = #"steel drums" \melody
\set Staff.midiInstrument = #"woodblock" \melody
\set Staff.midiInstrument = #"taiko drum" \melody
\set Staff.midiInstrument = #"melodic tom" \melody
\set Staff.midiInstrument = #"synth drum" \melody
\set Staff.midiInstrument = #"reverse cymbal" \melody
\set Staff.midiInstrument = #"guitar fret noise" \melody
\set Staff.midiInstrument = #"breath noise" \melody
\set Staff.midiInstrument = #"seashore" \melody
\set Staff.midiInstrument = #"bird tweet" \melody
\set Staff.midiInstrument = #"telephone ring" \melody
\set Staff.midiInstrument = #"helicopter" \melody
\set Staff.midiInstrument = #"applause" \melody
\set Staff.midiInstrument = #"gunshot" \melody

Demo of all midi sounds

Myself
Replacing default MIDI instrument equalization

The default MIDI instrument equalizer can be replaced by setting the instrument equalizer property in the Score context to a user-defined Scheme procedure that uses a MIDI instrument name as its argument along with a pair of fractions indicating the minimum and maximum volumes respectively to be applied to that specific instrument.

The following example sets the minimum and maximum volumes for flute and clarinet respectively:

```scheme
define my-instrument-equalizer-alist '()
(set! my-instrument-equalizer-alist
  (append
   '(
     ("flute" . (0.7 . 0.9))
     ("clarinet" . (0.3 . 0.6)))
   my-instrument-equalizer-alist))

(define (my-instrument-equalizer s)
  (let ((entry (assoc s my-instrument-equalizer-alist)))
    (if entry
      (cdr entry)))))

\score {
  \new Staff {
    \key g \major
    \time 2/2
    \set Score.instrumentEqualizer = #my-instrument-equalizer
    \set Staff.midiInstrument = "flute"
    \new Voice \relative {
      r2 g'\mp g fis-
      4 g8 fis e2-
      4 d8 cis d2
    }
  }

  \new Staff {
    \key g \major
    \set Staff.midiInstrument = "clarinet"
    \new Voice \relative {
      b'1\p a2. b8 a
      g2. fis8 e
      fis2 r
    }
  }
}

\layout { }
\midi { }
}
Templates

Ancient notation template – modern transcription of Gregorian music

This example demonstrates how to do modern transcription of Gregorian music. Gregorian music has no measure, no stems; it uses only half and quarter note heads, and special marks, indicating rests of different length.

\include "gregorian.ly"

\begin{lyxcode}
\begin{verbatim}
\begin{chord}
\everymath 2
\set Score.timing = ##f
\new ChordVoice = "melody" \\
\new LyricVoice = "lyrics" \\
\end{chord}
\begin{lyxcode}
\new DivisioMinima
\new DivisioMaior
\new Finalis
\end{lyxcode}
\end{verbatim}
\end{lyxcode}

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\begin{lyxcode}
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\begin{chord}
\everymath 2
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\new ChordVoice = "melody" \\
\new LyricVoice = "lyrics" \\
\end{chord}
\begin{lyxcode}
\new DivisioMinima
\new DivisioMaior
\new Finalis
\end{lyxcode}
\end{verbatim}
\end{lyxcode}

Lorem ipsum dolor sit amet

Anglican psalm template

This template shows one way of setting out an Anglican psalm chant. It also shows how the verses may be added as stand-alone text under the music. The two verses are coded in different styles to demonstrate more possibilities.

SopranoMusic = \relative g' {
    g1 | c2 b | a1 | \bar "||"
    a1 | d2 c | c b | c1 | \bar "||"
}

AltoMusic = \relative c' {
    e1 | g2 g | f1 |
    f1 | f2 e | d d | e1 |
}

TenorMusic = \relative a {
    c1 | c2 c | c1 |
    d1 | g,2 g | g g | g1 |
}
BassMusic = \relative c { 
c1 | e2 e | f1 |
d1 | b2 c | g' g | c,1 |
}
global = { 
\time 2/2 
}

dot = \markup { 
  \raise #0.7 \musicglyph "dots.dot"
}
tick = \markup { 
  \raise #1 \fontsize #5 \musicglyph "scripts.rvarcomma"
}

% Use markup to center the chant on the page
\markup { 
  \fill-line { 
    \score { % centered 
      << 
        \new ChoirStaff << 
        \new Staff << 
        \global 
        \clef "treble"
        \new Voice = "Soprano" << 
        \voiceOne 
        \SopranoMusic 
      >> 
      \new Voice = "Alto" << 
      \voiceTwo 
      \AltoMusic 
    >> 
    >> 
    \new Staff << 
    \clef "bass"
    \global 
    \new Voice = "Tenor" << 
    \voiceOne 
    \TenorMusic 
    >> 
    \new Voice = "Bass" << 
    \voiceTwo 
    \BassMusic 
    >> 
    >> 
    >> 
    \layout { 
      @align = "center" 
      @align = "center" 
    
      % other layout options...
    } 
  } 
}
\context {  
  \Score  
  \override SpacingSpanner.base-shortest-duration = #(ly:make-moment 1/2) 
}  
\context {  
  \Staff  
  \remove "Time_signature_engraver"  
}  
}  
\% End score  
\}  
\% End markup

\markup {  
\fill-line {  
\column {  
\left-align {  
\null \null \null  
\line {  
  \fontsize #5 0  
  \fontsize #3 come  
  let us \textbf{sing} \textbf{unto \textbullet{the}} \textbf{Lord} : \textbf{let}  
}  
\line {  
  us \textit{heartily}  
  \concat \{ \textbf{re \textbf{joyce}} \}  
  in \textit{the} \textit{strength of} \textit{our}  
}  
\line {  
  \textit{salvation}.  
}  
\null  
\line {  
  \hspace #2.5 8. \textit{Today if ye will hear his voice} \*  
}  
\line {  
  \concat \{ \textbf{hard en} \}  
  \textbf{not your \textbf{hearts}} : \textit{as in the pro-}  
}  
\line {  
  \textit{vocation} \* and as in the \textbf{day of tempt-} \textbf{ick}  
}  
\line {  
  \textbf{ick} \textit{in the} \textbf{ick} \textit{wilderness}.  
}  
}  
}  
}
O come let us sing | unto the | Lord : let us heartily rejoice in the | strength of | our salvation.

8. Today if ye will hear his voice *

harden’ not your’ hearts : as in the provocation * and as in the day of temptation’ -ation’ in the ‘wilderness.

Hymn template

This code shows one way of setting out a hymn tune when each line starts and ends with a partial measure. It also shows how to add the verses as stand-alone text under the music.

Timeline = {
    \time 4/4
    \tempo 4=96
    \partial 2
    s2 | s1 | s2 \breathe s2 | s1 | s2 \caesura \break
    s2 | s1 | s2 \breathe s2 | s1 | s2 \fine
}

SopranoMusic = \relative g' {
    g4 g | g g g g | g g g g | g g g g | g2
    g4 g | g g g g | g g g g | g g g g | g2
}

AltoMusic = \relative c' {
    d4 d | d d d d | d d d d | d d d d | d2
    d4 d | d d d d | d d d d | d d d d | d2
}

TenorMusic = \relative a {
    b4 b | b b b b | b b b b | b b b b | b2
    b4 b | b b b b | b b b b | b b b b | b2
}

BassMusic = \relative g {
    g4 g | g g g g | g g g g | g g g g | g2
    g4 g | g g g g | g g g g | g g g g | g2
}
global = {
    \key g \major
}

\score {  % Start score
    <<
        \new PianoStaff << % Start pianostaff
        \new Staff << % Start Staff = RH
        \global
        \clef "treble"
        \new Voice = "Soprano" << % Start Voice = "Soprano"
            \Timeline
            \voiceOne
            \SopranoMusic
        >> % End Voice = "Soprano"
        \new Voice = "Alto" << % Start Voice = "Alto"
            \Timeline
            \voiceTwo
            \AltoMusic
        >> % End Voice = "Alto"
    >> % End Staff = RH

    \new Staff << % Start Staff = LH
    \global
    \clef "bass"
    \new Voice = "Tenor" << % Start Voice = "Tenor"
        \Timeline
        \voiceOne
        \TenorMusic
    >> % End Voice = "Tenor"
    \new Voice = "Bass" << % Start Voice = "Bass"
        \Timeline
        \voiceTwo
        \BassMusic
    >> % End Voice = "Bass"
    >> % End Staff = LH
    >> % End pianostaff
    >>
} % End score

\markup {
    \fill-line {
        ""
        {
            \column {
                \left-align {
                    "This is line one of the first verse"
                    "This is line two of the same"
                    "And here's line three of the first verse"
                    "And the last line of the same"
                }
            }
        }
    }
}
This is line one of the first verse
This is line two of the same
And here's line three of the first verse
And the last line of the same

Jazz combo template

This is quite an advanced template, for a jazz ensemble. Note that all instruments are notated in \key c \major. This refers to the key in concert pitch; the key will be automatically transposed if the music is within a \transpose section.

\header {
  title = "Song"
  subtitle = "(tune)"
  composer = "Me"
  meter = "moderato"
  piece = "Swing"
  tagline = \markup {
    \column {
      "LilyPond example file by Amelie Zapf,"}
"Berlin 07/07/2003"

% To make the example display in the documentation
\paper {
  paper-width = 130
}
% #(set-global-staff-size 16)
\include "english.ly"

%%%%%%%%%%%%%%%% Some macros %%%%%%%%%%%%%%%%%%%%%%%

sl = {
  \override NoteHead.style = #'slash
  \hide Stem
}
nsl = {
  \revert NoteHead.style
  \undo \hide Stem
}
crOn = \override NoteHead.style = '#'cross
crOff = \revert NoteHead.style

%% insert chord name style stuff here.
jazzChords = { }

%%%%%%%%%%%%%%%% Keys'n'thangs %%%%%%%%%%%%%%%%%%%%%

global = { \time 4/4 }
Key = { \key c \major }

% ####################### Horns ####################

% ------ Trumpet ------
trpt = \transpose c d \relative c'' { 
  \Key
  c | c | c |
}
trpHarmony = \transpose c' d {
  \jazzChords
}
trumpet = {
  \global
  \clef treble
  <<
  \trpt
  >>
}
\% ------ Alto Saxophone ------
\begin{verbatim}
alto = \transpose c a \relative c' \{ 
  \Key 
  c1 | c | c | 
}\)
altoHarmony = \transpose c' a \{ 
  \jazzChords 
}\)
altoSax = { 
  \global 
  \clef treble 
  << 
    \alto 
  >> 
}\)
\end{verbatim}
\% ------ Baritone Saxophone ------
\begin{verbatim}
bari = \transpose c a' \relative c \{ 
  \Key 
  c1 
  c1 
  \sl 
  d4-"Solo" d d d 
  \nsl 
}\)
bariHarmony = \transpose c' a \chordmode \{ 
  \jazzChords s1 s d2:maj e:m7 
}\)
bariSax = { 
  \global 
  \clef treble 
  << 
    \bari 
  >> 
}\)
\end{verbatim}
\% ------ Trombone ------
\begin{verbatim}
tbone = \relative c \{ 
  \Key 
  c1 | c | c | c 
}\)
tboneHarmony = \chordmode \{ 
  \jazzChords 
}\)
trombone = { 
  \global 
  \clef bass 
  << 
    \tbone 
  >> 
}\)
\end{verbatim}
% ####### Rhythm Section #######

% ------ Guitar ------
gtr = \relative c'\' {  
\Key c1  
\sl  
b4 b b b  
\nsl  
c1  
}
gtrHarmony = \chordmode {  
\jazzChords  
s1 c2:min7+ d2:maj9  
}
guitar = {  
\global  
\clef treble  
<<  
\gtr  
>>  
}

% ------ Piano ------

rhUpper = \relative c'\' {  
\voiceOne  
\Key  
c1 | c | c  
}
rhLower = \relative c' {  
\voiceTwo  
\Key  
e1 | e | e  
}

lhUpper = \relative c' {  
\voiceOne  
\Key  
g1 | g | g  
}
lhLower = \relative c {  
\voiceTwo  
\Key  
c1 | c | c  
}

PianoRH = {  
\clef treble  
\global  
<<  
\new Voice = "one" \rhUpper  
\new Voice = "two" \rhLower
PianoLH = {
    \clef bass
    \global
    \new Voice = "one" \lhUpper
    \new Voice = "two" \lhLower
}

piano = {
    \new Staff = "upper" \PianoRH
    \new Staff = "lower" \PianoLH
}

% ------ Bass Guitar ------
Bass = \relative c {
    \Key c | c | c
} bass = {
    \global
    \clef bass
    \Bass
}

% ------ Drums ------
up = \drummode {
    \voiceOne
    hh4 <hh sn> hh <hh sn>
    hh4 <hh sn> hh <hh sn>
    hh4 <hh sn> hh <hh sn>
} down = \drummode {
    \voiceTwo
    bd4 s bd s
    bd4 s bd s
    bd4 s bd s
}

drumContents = {
    \global
    \new DrumVoice \up
    \new DrumVoice \down
}
\score { <<
\new StaffGroup = "horas" <<
\new Staff = "trumpet" \with { instrumentName = "Trumpet" }
\new Staff = "altosax" \with { instrumentName = "Alto Sax" }
\new ChordNames = "barichords" \with { instrumentName = "Trumpet" }
\new Staff = "barisax" \with { instrumentName = "Bari Sax" }
\new Staff = "trombone" \with { instrumentName = "Trombone" }
>>
\new StaffGroup = "rhythm" <<
\new ChordNames = "chords" \gtrHarmony
\new Staff = "guitar" \with { instrumentName = "Guitar" }
\new PianoStaff = "piano" \with {
 instrumentName = "Piano"
 midiInstrument = "acoustic grand"
}
\new Staff = "bass" \with { instrumentName = "Bass" }
\new DrumStaff \with { instrumentName = "Drums" }
>>
>>
\layout {
\context { \Staff \RemoveEmptyStaves }
\context {
 \Score
 \override BarNumber.padding = #3
 \override RehearsalMark.padding = #2
 skipBars = ##t
}
}\midi { }
}

Song
(tune)

Me

moderato

Swing
Orchestra, choir and piano template

This template demonstrates the use of nested StaffGroup and GrandStaff contexts to subgroup instruments of the same type together, and a way to use \transpose so that variables hold music for transposing instruments at concert pitch.

\#(set-global-staff-size 17)
\paper {
  indent = 3.0\cm \% add space for instrumentName
  short-indent = 1.5\cm \% add less space for shortInstrumentName
}

\heterophony

fluteMusic = \relative c' { \key g \major g'1 b }

\%
Pitches as written on a manuscript for Clarinet in A
\% are transposed to concert pitch.

clarinetMusic = \transpose c' a
\relative c'' { \key bes \major bes1 d }
trumpetMusic = \relative c { \key g \major g''1 b }

% Key signature is often omitted for horns

hornMusic = \transpose c' f
     \relative c { d'1 fis }

percussionMusic = \relative c { \key g \major g1 b }

sopranoMusic = \relative c'' { \key g \major g'1 b }

sopranoLyrics = \lyricmode { Lyr -- ics }

altoIMusic = \relative c' { \key g \major g'1 b }

altoIIIMusic = \relative c' { \key g \major g'1 b }

altoIIILyrics = \sopranoLyrics

tenorMusic = \relative c' { \clef "treble_8" \key g \major g1 b }

tenorLyrics = \sopranoLyrics

pianoRHMusic = \relative c { \key g \major g''1 b }

pianoLHMusic = \relative c { \clef bass \key g \major g1 b }

violinIMusic = \relative c' { \key g \major g'1 b }

violinIIIMusic = \relative c' { \key g \major g'1 b }

violaMusic = \relative c { \clef alto \key g \major g'1 b }

celloMusic = \relative c { \clef bass \key g \major g1 b }

bassMusic = \relative c { \clef "bass_8" \key g \major g,1 b }

\score {
  <<
    \new StaffGroup = "StaffGroup_woodwinds" <<
    \new Staff = "Staff_flute" \with { instrumentName = "Flute" }
    fluteMusic
    \new Staff = "Staffclarinet" \with {
      instrumentName = \markup { \concat { "Clarinet in B" \flat } }
    }
  }% Declare that written Middle C in the music
% to follow sounds a concert B flat, for
% output using sounded pitches such as MIDI.
%\transpose bes
%
% Print music for a B-flat clarinet
\transpose bes c' \clariMusic

\staffGroup = "StaffGroup_brass" <<
\staff = "Staff_hornI" \with { \instrumentName = "Horn in F" }
% \transpose f
\transpose f c' \hornMusic

\staff = "Staff_trumpet" \with { \instrumentName = "Trumpet in C" }
\trumpetMusic

\rhythmicStaff = "RhythmicStaff_percussion"
\with { \instrumentName = "Percussion" }
\percussionMusic

\pianoStaff \with { \instrumentName = "Piano" }
\pianoRHMusic
\pianoLHMusic

\choirStaff = "ChoirStaff_choir" <<
\staff = "Staff_soprano" \with { \instrumentName = "Soprano" }
\voice = "soprano"
\sopranoMusic

\lyricsto "soprano" { \sopranoLyrics }

\grandStaff = "GrandStaff_altos"
\with { \acceptsLyrics } <<
\staff = "Staff_altoI" \with { \instrumentName = "Alto I" }
\voice = "altoI"
\altoIMusic

\lyricsto "altoI" { \altoILyrics }
\staff = "Staff_altoII" \with { \instrumentName = "Alto II" }
\voice = "altoII"
\altoIIMusic

\lyricsto "altoII" { \altoIILyrics }

\staff = "Staff_tenor" \with { \instrumentName = "Tenor" }
\voice = "tenor"
\tenorMusic

\lyricsto "tenor" { \tenorLyrics }

>>
\new StaffGroup = "StaffGroup_strings" <<
  \new GrandStaff = "GrandStaff_violins" <<
    \new Staff = "Staff_violinI" \with { instrumentName = "Violin I" }
    \violinIMusic

    \new Staff = "Staff_violinII" \with { instrumentName = "Violin II" }
    \violinIIMusic

  >>

  \new Staff = "Staff_viola" \with { instrumentName = "Viola" }
  \violaMusic

  \new Staff = "Staff_cello" \with { instrumentName = "Cello" }
  \celloMusic

  \new Staff = "Staff_bass" \with { instrumentName = "Double Bass" }
  \bassMusic

  >>

  \layout { }
}
Piano template (simple)
Here is a simple piano staff with some notes.

```latex
upper = \relative c'' { \\
  \clef treble \\
  \key c \major \\
  \time 4/4 \\
  a_4 b c d \\
}

lower = \relative c { \\
  \clef bass \\
  \key c \major \\
  \time 4/4 \\
  a_2 c
```
Piano template with centered lyrics

Instead of having a full staff for the melody and lyrics, lyrics can be centered between the staves of a piano staff.

\begin{Verbatim}
upper = \relative c'' { \\
    \clef treble \\
    \key c \major \\
    \time 4/4 \\
    a4 b c d 
}
\end{Verbatim}

\begin{Verbatim}
lower = \relative c { \\
    \clef bass \\
    \key c \major \\
    \time 4/4 \\
    a2 c 
}
\end{Verbatim}

\begin{Verbatim}
text = \lyricmode { \\
    Aaa Bee Cee Dee 
}
\end{Verbatim}

\begin{Verbatim}
\score { \\
    \new PianoStaff \with { instrumentName = "Piano" } \\
    \new Staff = "upper" \upper \\
    \new Staff = "lower" \lower \\
    \lyricsto "singer" \text \\
    \new Staff = lower \lower 
}
\end{Verbatim}
Piano template with melody and lyrics

Here is a typical song format: one staff with the melody and lyrics, with piano accompaniment underneath.

```plaintext
melody = \relative c' { 
  \clef treble
  \key c \major
  \time 4/4

  a b c d
}

text = \lyricmode { 
  Aaa Bee Cee Dee
}

upper = \relative c' { 
  \clef treble
  \key c \major
  \time 4/4

  a4 b c d
}

lower = \relative c { 
  \clef bass
  \key c \major
  \time 4/4

  a2 c
}

\score { 
  \new Voice = "mel" { \autoBeamOff \melody }
  \new Lyrics \lyricsto \text { \melody }
  \new PianoStaff << 
    \new Staff = "upper" \upper 
    \new Staff = "lower" \lower 
  >>
}
```
SATB Choir template - four staves

SATB choir template (four staves)

global = {
key c \major
\time 4/4
\dynamicUp
}
sopranonotes = \relative c' {
c2 \p \< d c d \f
}
sopranowords = \lyricmode { do do do do }
altonotes = \relative c' {
c2\p d c d
}
altonords = \lyricmode { re re re re }
tenornotes = {
\clef "G_8"
c2\mf d c d
}
tenorwords = \lyricmode { mi mi mi }
bassnotes = {
\clef bass
c2\mp d c d
}
basswords = \lyricmode { mi mi mi }

\score {
\new ChoirStaff <<
\new Staff <<
\new Voice = "soprano" <<
\global
\sopranonotes
>>
\new Lyrics \lyricsto "soprano" \sopranowords
>>
\new Staff <<
\new Voice = "alto" <<
Score for diatonic accordion

A template to write a score for a diatonic accordion.

- There is a horizontal staff indicating if the accordion must be pushed (thick line) or pulled (thin line)
- There is a small rhythmic staff with lyrics that describes the bass buttons to press. The bar lines are made from gridlines
- The tabulator staff for diatonic accordions shows the geographic position of the buttons and not (as for every other instrument) the pitch of the notes; the keys on the melody-side of the accordion are placed in three columns and about 12 rows
In the tabulator staff notation the outermost column is described with notes between lines, the innermost column is described with notes between lines and a cross as accidental, and the middle column is described with notes on a line, whereby the row in the middle is represented on the middle line in the staff.

Some words to transpose piano notes to the diatonic accordion:

1. Every diatonic accordion is built for some keys only (for example, for the keys of C major and F major), so it is important to transpose a piano melody to match one of these keys. Transpose the source code, not only the output because this code is required later on to translate it once more to the tabulator staff. This can be done with the command \displayLilyMusic.

2. You have to alternate the push- and pull-direction of the accordion regularly. If the player has a too long part to pull the accordion gets broken. On the other hand, some harmonies are only available in one direction. Considering this, decide which parts of the melody are the push-parts and which the pull-parts.

3. For each pull- or push-part translate the piano notes to the according tabulature representation.

\verse = \lyricmode { Wie gross bist du! Wie gross bist du! }

\harmonies = \new ChordNames \chordmode {
  \germanChords
  \set chordChanges = ##t
  bes8 bes8 bes8
  es2 f
  bes1
}

\NoStem = \{ \hide Stem \}
\NoNoteHead = \hide NoteHead
\ZeroBeam = \override Beam.positions = #'(0 . 0)

\staffTabLine = \new Staff \with {
  \remove "Time_signature_engraver"
  \remove "Clef_engraver"
}{
  \override Staff.StaffSymbol.line-positions = #'(0)
  % Shows one horizontal line. The vertical line
  % (simulating a bar-line) is simulated with a gridline
  \set Staff.midiInstrument = #"choir aahs"
  \key c \major
  \relative c'
  {
    % disable the following line to see the noteheads while writing the song
    \NoNoteHead
    \override NoteHead.no-ledgers = ##t
    % The beam between 8th-notes is used to draw the push-line
    % How to fast write the push-lines:
    % 1. write repeatedly 'c c c c c c c |' for the whole length of the song
    % 2. uncomment the line \NoNoteHead
    % 3. compile
    % 4. Mark the positions on which push/pull changes.
    % In the score-picture click on the position
the push- or pull-part starts
(on the noteHead, the cursor will change to a hand-icon).
The cursor in the source code will jump just at this position.
a) If a push-part starts there, replace the 'c' by an 'e['
b) If a pull-part starts there, replace the 'c' by an 's'
5. Switch into 'overwrite-mode' by pressing the 'ins' key.
6. For the pull-parts overwrite the 'c' with 's'
7. For every push-part replace the last 'c' with 'e]'
8. Switch into 'insert-mode' again
9. At last it should look like e.g.
   \(s \ s \ e[ \ c \ c \ c \ c \ c \ c \ c \ c \ c \ s \ s\)
10. re-enable the line \NoNoteHead

\autoBeamOff
\ZeroBeam
s8 s s e[ c c c c c c e] | s s s s s

% Accordion melody in tabulator score
1. Place a copy of the piano melody below
2. Separate piano melody into pull- and push-parts
   according to the \staffTabLine you've already made
3. For each line: Double the line. Remark the 1st one
   (Keeps unchanged as reference) and then change the second
   line using the transformation paper
   or the macros \conv2diaton push.bsh and \conv2diaton pull1.bsh
% Tips:
- In jEdit Search & Replace mark the Option 'Keep Dialog'

AccordionTabTwoCBesDur = {
  % pull 1
  %<f' bes'>8 <f' a'>8 <d' bes'>8 |
  %<g' a''>8 <g' b''>8 <e'' a''>8 |
  % push 2
  %<g' c''>4 <f' d''> <g' ees''> <f' a'> |
  %<g'' a''>4 <d'' eisis''> <g'' bisis''> <d'' f''> |
  % pull 3
  % <f' bes'>2 r8 }
  %<g'' a''>2 r8 }

AccordionTab = { \dynamicUp
  % 1. Place a copy of the piano melody above
  % 2. Separate piano melody into pull- and push-parts
  % according to the \staffTabLine you've already made
  % 3. For each line: Double the line. Remark the 1st one
  % (Keeps unchanged as reference) and then
  % change the second line using the transformation paper
  % Tips:
  % - In jEdit Search & Replace mark the Option 'Keep Dialog'
  % -
  \AccordionTabTwoCBesDur
}
\layout { 
\context { 
  \Score 
  % The vertical line (simulating a bar-line) in 
  % the staffBassRhythm is a gridline 
  \consists "Grid_line_span_engraver"
}
\context { 
  \Staff 
  \consists "Grid_point_engraver"
  gridInterval = #(ly:make-moment 4/4) % 4/4 - tact. How many beats per bar 
  % The following line has to be adjusted O-F-T-E-N. 
  \override GridPoint.Y-extent = #'(−2 . −21)
}
\context { 
  \ChoirStaff 
  \remove "System_start_delimiter_engraver"
}
}

\new Staff = \staffvoice { 
  \time 4/4 
  \set Staff.instrumentName = "Voice" 
  \set Staff.midiInstrument = "voice oohs"  
  \key bes \major 
  \partial 8*3 
  \clef treble 
  { 
    \context Voice = "melodyVoi"
    { 
      <f' bes'>8 <f' a'>8 <d' bes'>8 |  
      <g' c''>4 <f' d''> <g' es''> <f' a'> |  
      <f' bes'>2 r8
    }
    \bar "|." 
  }
}

\new Staff \with { \remove "Clef_engraver" } { 
  \accidentalStyle forget %Set the accidentals (Vorzeichen) for each note, 
  %do not remember them for the rest of the measure. 
  \time 4/4 
  \set Staff.instrumentName="Accordion"  
  \set Staff.midiInstrument="voice oohs"
  \key c \major 
  \clef treble 
  { \AccordionTab \bar "|." }
}
\begin{verbatim}

AltOn = 
#(define-music-function (mag) (number?)) 
#(\override Stem.length = #(* 7.0 mag) 
 \override NoteHead.font-size = 
#(inexact->exact (* (/ 6.0 (log 2.0)) (log mag))) #})

AltOff = { 
   \revert Stem.length 
   \revert NoteHead.font-size 
}

BassRhythm = {s4 s8 | c2 c2 | c2 s8 }
LyricBassRhythmI = \lyricmode { c b | c }

staffBassRhythm = 
   \new Staff = staffbass \with { \remove "Clef_engraver" } { 
      % This is not a RhythmicStaff because it must be possible to append lyrics.
      \override Score.GridLine.extra-offset = '#( 13.0 , 0.0 ) % x.y 
      \override Staff.StaffSymbol.line-positions = '#( 0 )
      % Shows one horizontal line. The vertical line
      % (simulating a bar-line) is simulated by a grid
      % Search for 'grid' in this page to find all related functions
      \time 4/4
   { 
      \context Voice = "VoiceBassRhythm"
      \stemDown \AltOn #0.6
      \relative c''
      { 
         \BassRhythm
      }
      \AltOff
      \bar "|.
   }
}

\score { 
   \new ChoirStaff <<
      \harmonies
      \staffVoice
      \context Lyrics = "lmelodyVoi"
      \with { \alignBelowContext = astaffvoice }
       \lyricsto melodyVoi \verse
      \staffAccordionMel
      \staffTabLine
      \staffBassRhythm
      \context Lyrics = "lBassRhythmAboveI"
      \with { \alignAboveContext = staffbass }
       \lyricsto VoiceBassRhythm \LyricBassRhythmI 
   >>
}
\end{verbatim}
Single staff template with notes, lyrics, and chords

This template allows the preparation of a song with melody, words, and chords.

\begin{verbatim}
\melody = \relative c' { \\
    \clef treble \key c \major \time 4/4 \\
    a4 b c d 
}

\text = \lyricmode { \\
    Aaa Bee Cee Dee 
}

\harmonies = \chordmode { \\
    a2 c 
}

\score { 
<< \\
    \new ChordNames { \\
        \set chordChanges = ##t \\
        \harmonies \\
    } \\
    \new Voice = "one" { \autoBeamOff \melody } \\
    \new Lyrics \lyricsto "one" \text 
>> \\
    \layout { } \\
    \midi { } 
}
\end{verbatim}
Single staff template with notes, lyrics, chords and frets

Here is a simple lead sheet template with melody, lyrics, chords and fret diagrams.

verseI = \lyricmode {
  \set stanza = "1."
  This is the first verse
}

verseII = \lyricmode {
  \set stanza = "2."
  This is the second verse.
}

theChords = \chordmode {
  \% insert chords for chordnames and fretboards here
c2 g4 c
}

staffMelody = \relative c' {
  \key c \major
  \clef treble
  \% Type notes for melody here
c4 d8 e f4 g
  \bar "| ."
}

\score {
  \context ChordNames { \theChords }
  \context FretBoards { \theChords }
  \new Staff {
    \context Voice = "voiceMelody" { \staffMelody }
  }
  \new Lyrics = "lyricsI" {
    \lyricsto "voiceMelody" \verseI
  }
  \new Lyrics = "lyricsII" {
    \lyricsto "voiceMelody" \verseII
  }
  \layout { }
  \midi { }
}
Single staff template with notes and chords

Want to prepare a lead sheet with a melody and chords? Look no further!

```plaintext
melody = \relative c' {
    \clef treble
    \key c \major
    \time 4/4
    f4 e8 [ c] d4 g
    a2 - a
}
harmonies = \chordmode {
    c4:m f:min7 g:maj c:aug
d2:dim b4:5 e:sus
}
\score {
    <<
        \new ChordNames {
            \set chordChanges = ##t
            \harmonies
        }
        \new Staff \melody
    >>
    \layout{ }
    \midi{ }
}
```

Single staff template with notes and lyrics

This small template demonstrates a simple melody with lyrics. Cut and paste, add notes, then words for the lyrics. This example turns off automatic beaming, which is common for vocal parts. To use automatic beaming, change or comment out the relevant line.

```plaintext
melody = \relative c' {
    \clef treble
    \key c \major
    \time 4/4
    Cm Fm7 G\(^\flat\) C+ D\(^\flat\) B\(^5\) E\(^{sus4}\)
}
```
Single staff template with only notes

This very simple template gives you a staff with notes, suitable for a solo instrument or a melodic fragment. Cut and paste this into a file, add notes, and you’re finished!

```
\score{
  <<
    \new Voice = "one" {
      \autoBeamOff
      \melody
    }
    \new Lyrics \lyricsto "one" \text
  >>
  \layout { }
  \midi { }
}
```

![Single staff template with notes](image)

Aaa Bee Cee Dee

**String quartet template (simple)**

This template demonstrates a simple string quartet. It also uses a `\global` section for time and key signatures.

```
global = {
  \defaultStaffSymbol { \clef treble } { \key c \major } { \time 4/4 }
}
```

```
\score {
  \new Staff \melody
  \layout { }
  \midi { }
}
```

![String quartet template](image)
\time 4/4
\key c \major
}

violinOne = \new Voice \relative c'' {
c2 d
e1
\bar "|."}
}

violinTwo = \new Voice \relative c'' {
g2 f
e1
\bar "|."}
}

viola = \new Voice \relative c' {
\clef alto
e2 d
c1
\bar "|."}
}

cello = \new Voice \relative c' {
\clef bass
c2 b
a1
\bar "|."}
}

\score {
\new StaffGroup <<
  \new Staff \with { instrumentName = "Violin 1" } << \global \violinOne >>
  \new Staff \with { instrumentName = "Violin 2" } << \global \violinTwo >>
  \new Staff \with { instrumentName = "Viola" } << \global \viola >>
  \new Staff \with { instrumentName = "Cello" } << \global \cello >>
>>
\layout { }
\midi { }
String quartet template with separate parts

The “String quartet template” snippet produces a nice string quartet, but what if you needed to print parts? This new template demonstrates how to use the \tag feature to easily split a piece into individual parts.

You need to split this template into separate files; the filenames are contained in comments at the beginning of each file. piece.ly contains all the music definitions. The other files – score.ly, vn1.ly, vn2.ly, vla.ly, and vlc.ly – produce the appropriate part.

Do not forget to remove specified comments when using separate files!

%%% piece.ly
%%% (This is the global definitions file)

global = {
  \time 4/4
  \key c \major
}

Violinone = \new Voice {
  \relative c'' {
    c2 d e1
    \bar "|.
  }
}

Violintwo = \new Voice {
  \relative c'' {
    g2 f e1
    \bar "|.
  }
}

Viola = \new Voice {
  \relative c' {
    \clef alto
  }
}
\e2 \d \c1

\bar "|:.

}\}

Cello = \new Voice {
(relative c' {
  \clef bass
  \c2 b a1
  \bar "|:.
  }
})

music = {
  \score <<
    \tag #'score \tag #'vn1
    \new Staff \with { instrumentName = "Violin 1" }
    \global \Violinone >>

    \tag #'score \tag #'vn2
    \new Staff \with { instrumentName = "Violin 2" }
    \global \Violintwo >>

    \tag #'score \tag #'vla
    \new Staff \with { instrumentName = "Viola" }
    \global \Viola >>

    \tag #'score \tag #'vlc
    \new Staff \with { instrumentName = "Cello" }
    \global \Cello >>

>>}

% These are the other files you need to save on your computer
\score {\new StaffGroup \keepWithTag #'score \music
  \layout { }
  \midi { }
}
{% Uncomment this block when using separate files

% vn1.ly
% (This is the Violin 1 part file)
\include "piece.ly"
\score {
  \keepWithTag #'vn1 \music
  \layout { }
}

% vn2.ly
% (This is the Violin 2 part file)
\include "piece.ly"
\score {
  \keepWithTag #'vn2 \music
  \layout { }
}

% vla.ly
% (This is the Viola part file)
\include "piece.ly"
\score {
  \keepWithTag #'vla \music
  \layout { }
}

% vlc.ly
% (This is the Cello part file)
\include "piece.ly"
\score {
  \keepWithTag #'vlc \music
  \layout { }
}
%
%}
Vocal ensemble template

Here is a standard four-part SATB vocal score. With larger ensembles, it is often useful to include a section which is included in all parts. For example, the time signature and key signature are almost always the same for all parts. Like in the “Hymn” template, the four voices are regrouped on only two staves.

\paper{
  top-system-spacing.basic-distance = #10
  score-system-spacing.basic-distance = #20
  system-system-spacing.basic-distance = #20
  last-bottom-spacing.basic-distance = #10
}

global = {
  \key c \major
  \time 4/4
}

sopMusic = \relative {
  c''4 c c8[(b)] c4
}

sopWords = \lyricmode {
  hi hi hi hi
}

altoMusic = \relative {
  e'4 f d e
}

altoWords = \lyricmode {
  ha ha ha ha
}

tenorMusic = \relative {
  g4 a f g
}

tenorWords = \lyricmode {
  hu hu hu hu
}

bassMusic = \relative {
  c4 c g c
}
bassWords = \lyricmode 
   ho ho ho ho
}

\score {
\new ChoirStaff <<
\new Lyrics = "sopranos" with {
   % this is needed for lyrics above a staff
   \override VerticalAxisGroup.staff-affinity = #DOWN
}
\new Staff = "women" <<
\new Voice = "sopranos" {
   \voiceOne
   << \global \sopMusic >>
}
\new Voice = "altos" {
   \voiceTwo
   << \global \altoMusic >>
}
>>
\new Lyrics = "altos"
\new Lyrics = "tenors" with {
   % this is needed for lyrics above a staff
   \override VerticalAxisGroup.staff-affinity = #DOWN
}
\new Staff = "men" <<
clef bass
\new Voice = "tenors" {
   \voiceOne
   << \global \tenorMusic >>
}
\new Voice = "basses" {
   \voiceTwo << \global \bassMusic >>
}
>>
\new Lyrics = "basses"
\context Lyrics = "sopranos" \lyricsto "sopranos" \sopWords
\context Lyrics = "altos" \lyricsto "altos" \altoWords
\context Lyrics = "tenors" \lyricsto "tenors" \tenorWords
\context Lyrics = "basses" \lyricsto "basses" \bassWords
>>
}
Vocal ensemble template with automatic piano reduction

This template adds an automatic piano reduction to the standard SATB vocal score demonstrated in “Vocal ensemble template”. This demonstrates one of the strengths of LilyPond – you can use a music definition more than once. If any changes are made to the vocal notes (say, `tenorMusic`), then the changes will also apply to the piano reduction.

```lilypond
\paper {
  top-system-spacing.basic-distance = #10
  score-system-spacing.basic-distance = #20
  system-system-spacing.basic-distance = #20
  last-bottom-spacing.basic-distance = #10
}
global = {
  \key c \major
  \time 4/4
}
sopMusic = \relative {
  c''4 c c8[( b)] c4
}
sopWords = \lyricmode {
  hi hi hi hi
}

altoMusic = \relative {
  e'4 f d e
}
altoWords = \lyricmode {
  ha ha ha ha
}

tenorMusic = \relative {
  g4 a f g
}
tenorWords = \lyricmode {
  hu hu hu hu
}
bassMusic = \relative {
```
\new PianoStaff << 
\new Staff << 
\set Staff\!\.printPartCombineTexts = \##f 
partCombine << \global \sopMusic >> << \global \altoMusic >> >> 
\new Staff << 
\clef bass 
\set Staff\!\.printPartCombineTexts = \##f 
partCombine << \global \tenorMusic >> << \global \bassMusic >> >> 
}
Vocal ensemble template with lyrics aligned below and above the staves

This template is basically the same as the simple “Vocal ensemble” template, with the exception that here all the lyrics lines are placed using alignAboveContext and alignBelowContext.

```
global = {
  \key c \major
  \time 4/4
}

sopMusic = \relative c' { c4 c c8[[b]] c4 }
sopWords = \lyricmode { hi hi hi hi }

altoMusic = \relative c' { e4 f d e }
altoWords = \lyricmode { ha ha ha ha }

tenorMusic = \relative c' { g4 a f g }
tenorWords = \lyricmode { hu hu hu hu }

bassMusic = \relative c {
```
Vocal ensemble template with verse and refrain

This template creates a score which starts with a solo verse and continues into a refrain for two voices. It also demonstrates the use of spacer rests within the \texttt{global} variable to define meter changes (and other elements common to all parts) throughout the entire score.

\texttt{global} = {

```latex
\score {
    \new ChoirStaff <<
    \new Staff = "women" <<
    \new Voice = "sopranos" { \voiceOne << \global \sopMusic >> }
    \new Voice = "altos" { \voiceTwo << \global \altoMusic >> }
    \new Lyrics \with { alignAboveContext = "women" }
    lyricsto "sopranos" \sopWords
    \new Lyrics \with { alignBelowContext = "women" }
    lyricsto "altos" \altoWords
    \% we could remove the line about this with the line below, since
    \% we want the alto lyrics to be below the alto Voice anyway.
    \% \new Lyrics \lyricsto "altos" \altoWords

    \new Staff = "men" <<
    \clef bass
    \new Voice = "tenors" { \voiceOne << \global \tenorMusic >> }
    \new Voice = "basses" { \voiceTwo << \global \bassMusic >> }
    \new Lyrics \with { alignAboveContext = "men" }
    lyricsto "tenors" \tenorWords
    \new Lyrics \with { alignBelowContext = "men" }
    lyricsto "basses" \bassWords
    \% again, we could replace the line above this with the line below.
    \% \new Lyrics \lyricsto "basses" \bassWords
    >>
}
```

![Music notation image](https://example.com/music_notation.png)
\key g \major

% verse
\time 3/4
s2.*2
\break

% refrain
\time 2/4
s2*2
\bar "|."
}

SoloNotes = \relative g' {
  \clef "treble"

  % verse
g4 g g |
b4 b b |

  % refrain
R2*2 |
}

SoloLyrics = \lyricmode {
  One two three |
  four five six |
}

SopranoNotes = \relative c'' {
  \clef "treble"

  % verse
R2.*2 |

  % refrain
c4 c |
g4 g |
}

SopranoLyrics = \lyricmode {
  la la |
  la la |
}

BassNotes = \relative c {
  \clef "bass"

  % verse
R2.*2 |

  % refrain
\score {
  <<
    \new Voice = "SoloVoice" << \global \SoloNotes >>
    \new Lyrics \lyricsto "SoloVoice" \SoloLyrics
    \new ChoirStaff <<
      \new Voice = "SopranoVoice" << \global \SopranoNotes >>
      \new Lyrics \lyricsto "SopranoVoice" \SopranoLyrics
      \new Voice = "BassVoice" << \global \BassNotes >>
      \new Lyrics \lyricsto "BassVoice" \BassLyrics
    >>
  >>
  \layout {
    \ragged-right = ##t
    \context { \Staff
        \RemoveEmptyStaves
        \override VerticalAxisGroup.remove-first = ##t
    }
  }
}

\begin{music}
\new Staff \\
\new Staff \\
\new Staff \\
\begin{notation}
    \begin{equation}
        \begin{pmatrix}
            c4 & e & | \\
            d4 & d & |
        \end{pmatrix}
    \end{equation}
\end{notation}

BassLyrics = \lyricmode {
    dum dum | \\
    dum dum |
}

\begin{notation}
    \begin{equation}
        \begin{pmatrix}
            \text{One two three four five six} \\
        \end{pmatrix}
    \end{equation}
\end{notation}

\begin{notation}
    \begin{equation}
        \begin{pmatrix}
            \text{la la la la la} \\
        \end{pmatrix}
    \end{equation}
\end{notation}

\begin{notation}
    \begin{equation}
        \begin{pmatrix}
            \text{dum dum dum dum dum} \\
        \end{pmatrix}
    \end{equation}
\end{notation}
\end{music}