



Lilypond

... music notation for everyone!

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What can Lilypond do for me?

Classic Notation



BWV 610

Largo

a

2 Clav.

e

Pedale.

The image displays a musical score for BWV 610, a piece for a 2-Clav instrument with a Pedale. The score is in G major (one sharp) and 3/4 time, marked Largo. It consists of two systems of music. The first system has three measures, and the second system has three measures, ending with a double bar line. The notation includes treble and bass staves for both hands, with a pedal line below the bass staff. The score is written in a classic notation style with various musical symbols such as clefs, notes, rests, and accidentals.

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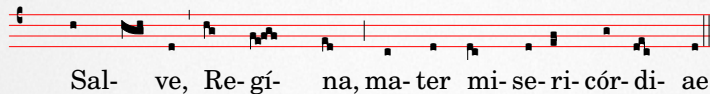
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Exercise 3: Write 8th notes against the given bass line.

A musical score for Exercise 3. It consists of two staves: a treble staff and a bass staff. The time signature is 4/4. The bass staff contains a sequence of notes: G2, A2, B2, C3, D3, E3, F3, G3, A3, B3, C4, D4, E4, F4, G4, A4, B4, C5. The treble staff is empty. Below the bass staff, there are three sets of numbers: '6', '6', and '7', each positioned under a specific note in the bass line. The first '6' is under the G4 note, the second '6' is under the A4 note, and the '7' is under the B4 note.

Gregorian Chant



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Popular Music



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G



C



My eyes are dim, I can - not see, I

Am



D



have not brought my specs with me!

Contemporary Notation



Parlando by Georges Aperghis

The image displays three staves of musical notation for the piece 'Parlando' by Georges Aperghis. The notation is written in bass clef with a key signature of one sharp (F#) and a 2/4 time signature. The first staff contains two measures of music, each marked with *sfz p* and an accent (>). The second staff contains three measures, also marked with *sfz p* and an accent. The third staff contains six measures, each marked with *sfz p* and an accent. The notes are primarily eighth and sixteenth notes, often beamed together.

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Analysis



G-Major: I V₅⁶ vii^o₃⁴/IV IV⁶ ii^o₃⁴ Fr⁺⁶

3



I₄⁶

V⁷

I



T S D T

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Modern transcriptions of old notation



Chanson "Vince con lena" übertragen im Verhältnis 1:4

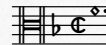
Bartholomeus de Bononia

Übertragung: M.Maierhofer-Lischka

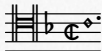
Cantus



Tenor



Contratenor



A modern transcription of the Chanson "Vince con lena" in 3/8 time. It features three staves: Cantus (top), Tenor (middle), and Contratenor (bottom). The Cantus part has the melody: F4 (quarter), G4 (quarter), A4 (quarter), Bb4 (quarter), A4 (quarter), G4 (quarter), F4 (quarter). The Tenor part has a whole note: F4. The Contratenor part has a whole note: F4. The lyrics "Vin-" are written below each staff. A large bracket on the left side groups the three staves together.

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Lilypond has been used for...



- ▶ Mutoxia Project
- ▶ Adoro Music Publishing
- ▶ Shady Lane Publishing
- ▶ Critical edition of Tommaso Traetta's *Enea nel Lazio* from 1760 (Luca Rossetto Casel)
- ▶ Modern edition of Scarlatti's *Serenata Erminia* (Thomas Griffin)
- ▶ *Affaire étrangère*, opera by Valentin Villenave, premiered 2009 at L'Opéra National de Montpellier

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How does Lilypond compare to
Finale/Sibelius?

Typesetting Quality



Finale 2008

A musical score for Finale 2008, measures 28-30. The score is in 2/4 time and features a treble and bass staff. The treble staff contains a melody with eighth and sixteenth notes, while the bass staff provides a rhythmic accompaniment with eighth notes and rests.

A musical score for Finale 2008, measures 31-34. The score is in 2/4 time and features a treble and bass staff. The treble staff contains a melody with eighth and sixteenth notes, while the bass staff provides a rhythmic accompaniment with eighth notes and rests.

Lilypond 2.14.2

A musical score for Lilypond 2.14.2, measures 28-30. The score is in 2/4 time and features a treble and bass staff. The treble staff contains a melody with eighth and sixteenth notes, while the bass staff provides a rhythmic accompaniment with eighth notes and rests.

A musical score for Lilypond 2.14.2, measures 31-34. The score is in 2/4 time and features a treble and bass staff. The treble staff contains a melody with eighth and sixteenth notes, while the bass staff provides a rhythmic accompaniment with eighth notes and rests.

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Editing Paradigm



In Lilypond, we write music *as text!*

Code

```
{  
  \time 2/4  
  \clef bass  
  c4 c g g a a g2  
}
```

Commands start with \
Letters are notes
Numbers are durations

Output



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Lilypond is not a GUI-Program!

- ▶ You can write Lilypond code in *any* text editor
- ▶ For this workshop, we'll use *Frescobaldi*



Let's Get Started!

Workshop Files



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Workshop examples and slides

- ▶ http://lac.linuxaudio.org/2013/download/lilypond_lac2013.tgz
- ▶ Slides you are looking at: `lilypond_lac2013.pdf`
- ▶ PDF contains many hyperlinks to web resources and local example files!

Software Installation



Installing Lilypond 2.16.2-1

- ▶ Linux
- ▶ Mac
- ▶ Windows

Installing Frescobaldi 2.0.9

- ▶ Windows (might require MS Visual C++ 2008 runtime)
- ▶ Linux: `sudo apt-get install frescobaldi`
- ▶ Mac: No binaries available!

Alternative (if things don't work): <http://lilybin.com/>

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Getting Help and Support



Before you get started

- ▶ Get an overview
- ▶ Read the manual

As you are working

- ▶ Lilypond cheatsheet
- ▶ Notation reference
- ▶ Mailing list (`lilypond-user@gnu.org`)
- ▶ IRC chat (`#lilypond` on `irc.freenode.net`)

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Basic Syntax

Example №1



```
{  
  \time 2/4  
  \clef bass  
  c8 d e f g4 g    % letters = notes  
  a8 a a a g2     % numbers = durations  
}
```



See also

- ▶ Simple notation
- ▶ Time signature
- ▶ Clef
- ▶ Comments

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Example №2



```
\relative c' { % Reference = middle C
  c2 g' |          % G one octave up
  \times 2/3 {f8 e d} c'2 g4 |
}
```



See also

- ▶ [Relative octave entry](#)
- ▶ [Bar checks](#)

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Example №3



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```
\language "english"  
\relative c'' {  
  b b b b  
}
```



```
\language "deutsch"  
\relative c'' {  
  h h h h  
}
```



See also

- ▶ [Note names in other languages](#)

Example №4



{

```
\compressFullBarRests
```

```
r16 r r8 r4 r2 |
```

```
R1*4 | R1*24 |
```

```
r2. r16 s s r |
```

}

The image displays two staves of musical notation in treble clef with a common time signature. The top staff shows a sequence of notes: a quarter note, an eighth note, another eighth note, a quarter note, and a half note. The bottom staff shows a sequence of notes: a half note, a quarter note, a quarter note, a quarter note, and a quarter note. The number '4' is written above the second measure of the top staff, and the number '24' is written above the first measure of the bottom staff. The notation illustrates the effect of the \compressFullBarRests command, which compresses full bar rests into a single note.

See also

► [Writing rests](#)

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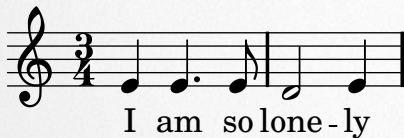
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Example №5



```
{  
  \relative c' { \time 3/4 e4 e4. e8 d2 e4 }  
  \addlyrics { I am so lone -- ly }  
}
```



See also

- ▶ [Entering lyrics](#)

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Example №6



```
\relative c'' {  
  c2 \times 4/5 { f8 e f \times 2/3 { e[ f g] } } \  
}
```



See also

- ▶ [Tuplets](#)
- ▶ [Manual beams](#)

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Example №7



```
\relative c'' {  
  \key g \major  
  g8 a b c d e fis g  
  \key d \minor  
  g, as b c d e fis g  
}
```



See also

- ▶ [Accidentals and key signatures](#)

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Example №8



```
\relative c'' {  
  g4~ g c2~ | c4~ c8 a~ a2 |  
  d4( c16) cis( d e c cis d) e( d4) |  
  g,4\ ( g8( a) b( c) b4\  
}
```

See also

- [Ties and slurs](#)

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Example №9



```
\relative c'' {  
  c4-^ c-+ c-- c-|  
  c-> c-. c-_ c\sffz  
  c-3\< e-5\ff\> b-2 a-1\!  
}
```

A musical staff in treble clef with a common time signature. The notes are G4, A4, B4, and A4. The first note has an accent (^), the second has an accent (+), the third has a tenuto mark (=), and the fourth has a tenuto mark (·). The fifth note has an accent (>), the sixth has a tenuto mark (·), and the seventh has a tenuto mark (·). The eighth note has a tenuto mark (·). The ninth note has a tenuto mark (·). The tenth note has a tenuto mark (·). The eleventh note has a tenuto mark (·). The twelfth note has a tenuto mark (·). The thirteenth note has a tenuto mark (·). The fourteenth note has a tenuto mark (·). The fifteenth note has a tenuto mark (·). The sixteenth note has a tenuto mark (·). The seventeenth note has a tenuto mark (·). The eighteenth note has a tenuto mark (·). The nineteenth note has a tenuto mark (·). The twentieth note has a tenuto mark (·). The dynamics *sfz* and *ff* are indicated below the staff, with a less-than sign (<) before *ff* and a greater-than sign (>) after *ff*. The fingering numbers 3, 5, 2, and 1 are written above the notes.

See also

- Articulation and dynamics

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Example №10



```
\relative c'' {  
  r4 <c e g> <c f a>2  
}
```



See also

- [Combining notes into chords](#)

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Example №11



```
\relative c'' {  
  c2 <<c e>> |  
  << { e2 f } { c2 <<b d>> } >> |  
}
```



See also

- [Multiple notes at once](#)

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Example №12



```
\relative c'' {  
  \key g \major  
  %   Voice "1"                Voice "2"  
  << { g4 fis8( g) a4 g } \\ { d4 d d d } >>  
}
```



See also

- [Single-staff polyphony](#)

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Other Useful Stuff

Lilypond Snippet Repository



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Don't reinvent the wheel!

- ▶ Cool thing about text: You achieve something once, . . . and have already documented it forever! 😊
- ▶ Even better: Works across multiple users!
- ▶ Lilypond Snippet Repository (LSR)
- ▶ Selected set also in Lilypond documentation

Preparing Scores and Parts



Frescobaldi score setup wizard

Tools → Setup New Score. . .

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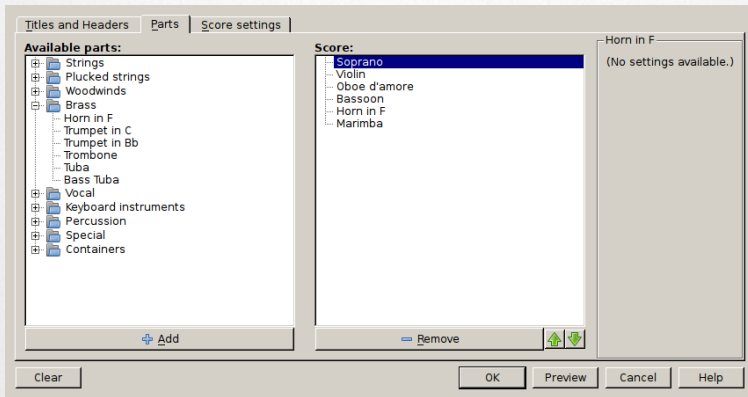
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How to create larger projects

- ▶ Split into smaller files
- ▶ Master file for `\score` block
- ▶ Notes for individual parts in extra files via `\include`

Alternative Editors



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Making Lilypond editing easier

- ▶ **Denemo** (Linux, Win)
- ▶ **LilyPondTool** plugin for jEdit (Linux, Mac, Win)
- ▶ **Elysium** Lilypond IDE for Eclipse (Linux, Mac, Win)
- ▶ Misc. Lilypond modes for **Emacs** (Linux, Mac, Win)
- ▶ Filetype plugin, indent and syntax-highlighting modes for **Vim** (Linux, Mac, Win)
- ▶ Lilypond extensions for **TexShop** (Mac)

Output formats



File formats that Lilypond can write

- ▶ PDF: Portable document format
- ▶ PS: Postscript
- ▶ SVG: Scalable vector graphics
- ▶ EPS: Encapsulated postscript
- ▶ PNG: Portable network graphics

MIDI output

- ▶ Via `\midi` command
- ▶ Better results with `articulate.ly` script

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Input formats



File formats that Lilypond can read via built-in tools

- ▶ Finale: `etf2ly` command line program (deprecated!)
- ▶ MIDI: `midi2ly`
- ▶ MusicXML: `musicxml2ly`
- ▶ ABC: `abc2ly`

File formats that Lilypond can read via external tools

- ▶ Sibelius: <http://sidorefa.com/sib2ly/>

Programs that export Lilypond code (selection)

- ▶ MuseScore
- ▶ Rosegarden
- ▶ Canorus

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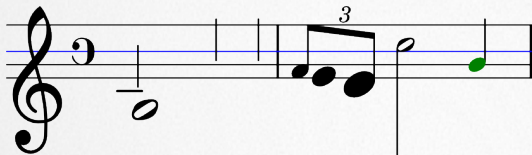
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Post-Export Editing with Inkscape



Inkscape

- ▶ Open Source vector graphics editor (.svg file format)
- ▶ Free alternative to Adobe Illustrator
- ▶ Available for Linux, Mac, Win

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Why would I use it for music?

- ▶ Giving scores their final touch
- ▶ Advanced graphic notation

How to do it

1. Export `.ly` to `.svg` rather than `.pdf`
Frescobaldi: LilyPond → Engrave (custom)... →
Output Format: SVG → Run LilyPond
2. Open `.svg` file in Inkscape to edit

OOoLilypond plugin for LibreOffice



File Edit View Insert Format

Ly Output Invisibile

1 2

Randstimme

M

Mit Glissando di
üben. Auf Vokal
tragendes „a“ fo

Lockerung

Ver - lieben, ver - lo - ben, ver - lieben, ver - lo - ben, ver - lieben, ver - lo - ben, ver - lieben, ver - lo - ben.
Wir sin - gen, wir san --gen, wir sin -- gen, wir san --gen, wir sin -- gen, wir san --gen,
w s w s w s w s w s w s w s w s

Von „wir singen, wir sangen“ nur „w“ und „s“ singen, stimmhaft

Page 1 / 2 Default NSRT STD * 0.00 / -0.47 6.49 x 0.94 141%

```
\time 12/8
{
  partial 4.
  g4. | c'8 e' c' h h h a a a g g g | f f f e e e d d d e e r |
}
\addlyrics {
  Ver -- lie -- ben, ver -- lo -- ben, ver -- lie -- ben, ver -- lo -- ben, ver -- lie -- ben,
  ver -- lo -- ben, ver -- lie -- ben, ver -- lo -- ben.
}
\addlyrics {
  Mir sin -- gen, wir san --gen, wir sin -- gen, wir san --gen, wir sin -- gen, wir san --gen,
  wir sin -- gen, wir san --gen.
}
 Default Code
Template: Deutsch Edit
Anchor
 As Character
 To Paragraph
 To Page
Wrap
 No Wrap
 Optimal Page Wrap
 Wrap Through
LineWidth: 17.5cm
Staff Size: 15
Custom 1: c c'
Custom 2:
 Default
 Default
 Default
 Default
Ly Output Config LilyPond
```

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lilypond-book and L^AT_EX



L^AT_EX code

```
\documentclass[a4paper]{article}
```

```
\begin{document}
```

```
\section{Introduction}
```

```
Mix music and text with \texttt{lilypond-book}.
```

```
\footnote{And it looks great, too!}
```

```
\begin{lilypond}[fragment,relative=1]
```

```
  c2 e2 \times 2/3 { f8 a b } a2 e4
```

```
\end{lilypond}
```

```
\end{document}
```

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lilypond-book and L^AT_EX



How to run it

```
$ lilypond-book --output=out --pdf lilybook.\
  lytex
$ cd out
$ pdflatex lilybook.tex
```

Result

```
☞ examples/out/lilybook.pdf
```

Larger examples

Can be included in L^AT_EX source as a separate .ly file:

```
\lilypondfile[quote,noindent]{/path/to/my_example.ly}
```

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Other examples

- ▶ http://dSPACE.ucalgary.ca/bitstream/1880/47815/1/Dalton_2010.pdf
- ▶ Margarethe's own edition

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Extending Lilypond through other Programming Languages

- ▶ *Abjad*: Python API for formalized score control
- ▶ *Strasheela*: Constraint-based composition
- ▶ *LilyCollider*: Score control via SuperCollider
- ▶ *FireLily*: Score control via Pd

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