

LilyPond

Unofficial MusicXML test suite

The music typesetter

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1 Introduction

Why a MusicXML test suite?

This test suite of sample MusicXML (<http://www.musicxml.org/>) files is supposed to fill a severe gap for all developers implementing MusicXML support in their application: There is no complete test suite of MusicXML files available for testing purposes.

License of the test suite

This collection of MusicXML test files is distributed under the MIT license (<https://www.opensource.org/licenses/mit-license.php>), which means that you can use the files for any purpose, as long as you leave the copyright notice (or the LICENSE file) intact.

Connection with LilyPond (<https://lilypond.org/>)

At the same time as providing a generic test suite for MusicXML document, this test suite also serves as proofs for the `musicxml2ly` script provided with LilyPond dev. The images shown in the Chapter 2 [Test cases], page 3, chapter were generated by running `musicxml2ly` and `lilypond` on the MusicXML files. As `musicxml2ly` does not yet perfectly support every single aspect of MusicXML, the output is not supposed to be used as a definitive reference rendering, but rather as an indication how one particular application supports and interprets each of the test files.

If something does not seem right in the output, it might either be that this feature has not been implemented yet, has been wrongly implemented, or a regression has crept in recently...

In the web version of this document, you can click on the file name or figure for each example to see the corresponding `.ly` intermediary file.

Structure of this test suite

Each test file (typically hand-crafted from the MusicXML "specification") checks one particular aspect of MusicXML. A short description of the particular feature for a file is given element inside the file in a comment element of the form:

```
<identification><miscellaneous>
  <miscellaneous-field name="description"> .... </miscellaneous-field>
</miscellaneous></identification>
```

The files are categorized by their first two digits with the following meaning:

- 01-03 ... Basics: Pitches, Rests, Rhythm
- 11-13 ... Staff attributes: Time signatures, Clefs, Key signatures
- 21-24 ... Note settings: Chorded notes, note heads, tuplets, grace notes
- 31-33 ... Notations and articulations: Dynamics (staff-attached), Notations (note-attached), Spanners
- 41-44 ... Parts: Multiple parts, multi-voice parts, multi-staff parts
- 45-46 ... Measure issues and repeats
- 51-52 ... Page issues: Header fields, page layout
- 55-59 ... Exact positioning of items, offsets, etc.
- 61-69 ... Vocal music
- 71-75 ... Instrument-specific: Guitar (Chord, fretboards), Transposing instruments, Percussion, Figured Bass, Others
- 81-89 ... MIDI generation (all sound-related issues)

- 90-99 ... Various Other: Compressed MusicXML files, compatibility with broken MusicXML files exported by other applications

Some of the categories (in particular the exact item positioning and the MIDI generation don't have any test cases yet.

2 Test cases

01 ... Pitches

All pitches from G to c'' in ascending steps; First without accidentals, then with a sharp and then with a flat accidental. Double alterations and cautionary accidentals are tested at the end.

01a-Pitches-Pitches.xml

Pitches and accidentals

The musical score consists of four staves of music in treble clef, 4/4 time. The first staff (measures 1-7) shows an ascending sequence of eighth notes from G4 to G5. The second staff (measures 8-13) shows an ascending sequence of eighth notes from G4 to G5, each with a sharp accidental. The third staff (measures 14-19) shows an ascending sequence of eighth notes from G4 to G5, each with a flat accidental. The fourth staff (measures 20-26) shows an ascending sequence of eighth notes from G4 to G5, each with a double flat accidental. The final measure (26) contains a double sharp accidental on G5, followed by a double flat accidental on G5, and then a final G5 note.

All pitch intervals in ascending jump size.

01b-Pitches-Intervals.xml

Various pitches and interval sizes

The musical score consists of two staves of music in treble clef, 2/4 time. The first staff (measures 1-10) shows a sequence of eighth notes with various accidentals: G4, A4, B4, C5, D5, E5, F5, G5, A5, B5. The second staff (measures 11-20) shows a sequence of eighth notes with various accidentals: G4, A4, B4, C5, D5, E5, F5, G5, A5, B5.

The `<voice>` element of notes is optional in MusicXML (although Dolet always writes it out). Here, there is one note with lyrics, but without a voice assigned. It should still be correctly converted.

01c-Pitches-NoVoiceElement.xml

1. A

Some microtones: c flat-and-a-half, d half-flat, e half-sharp, f sharp-and-a half. Once in the lower and once in the upper region of the staff.

01d-Pitches-Microtones.xml

Accidentals can be cautionary or editorial. Each measure has a normal accidental, an editorial, a cautionary and an editorial and cautionary accidental.

01e-Pitches-ParenthesizedAccidentals.xml

Microtone accidentals can be cautionary or editorial. Each measure has a normal accidental, an editorial, a cautionary and an editorial and cautionary accidental.

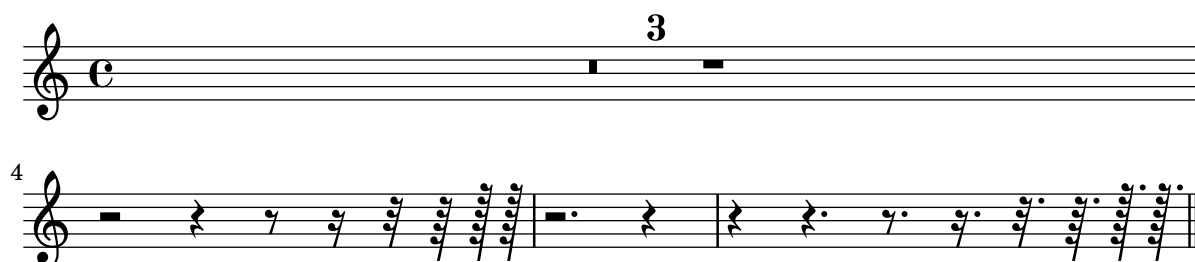
01f-Pitches-ParenthesizedMicrotoneAccidentals.xml

02 ... Rests

All different rest lengths: A two-bar multi-measure rest, a whole rest, a half, etc. until a 128th-rest; Then the same with dotted durations.

02a-Rests-Durations.xml

Rest unit test



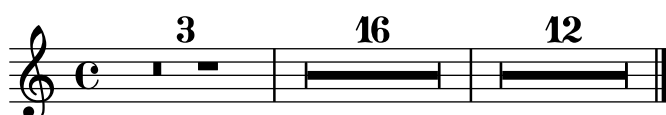
Rests can have explicit pitches, where they are displayed. The first rest uses no explicit position and should use the default position, all others are explicitly positioned somewhere else.

02b-Rests-PitchedRests.xml



Four multi-measure rests: 3 measures, 15 measures, 1 measure, and 12 measures.

02c-Rests-MultiMeasureRests.xml



Multi-Measure rests should always be converted into durations that are a multiple of the time signature.

02d-Rests-Multimeasure-TimeSignatures.xml



In some cases, a rest might not have its type attribute set (this happens, for example, with voices in Finale, where you don't manually insert a rest).

02e-Rests-NoType.xml



03 ... Rhythm

All note durations, from long, brevis, whole until 128th; First with their plain values, then dotted and finally doubly-dotted.

03a-Rhythm-Durations.xml

Two voices with a backup, that does not jump to the beginning for the measure for voice 2, but somewhere in the middle. Voice 2 thus won't have any notes or rests for the first beat of the measures.

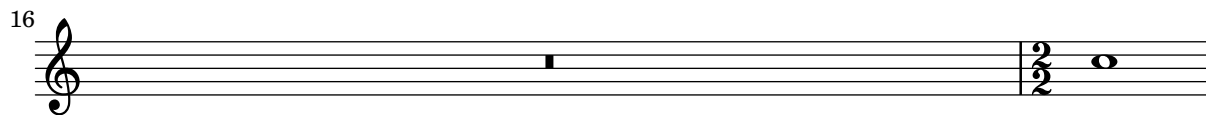
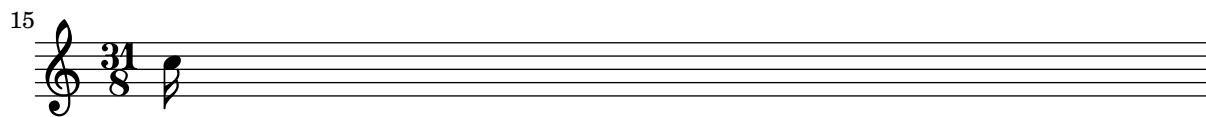
03b-Rhythm-Backup.xml

Although uncommon, the divisions of a quarter note can change somewhere in the middle of a MusicXML file. Here, the first half measure uses a division of 1, which then changes to 8 in the middle of the first measure and to 38 in the middle of the second measure.

03c-Rhythm-DivisionChange.xml

Several durations can be written with dots. For multimeasure rests, we can also have durations that cannot be expressed with dotted notes (like 5/8).

03d-Rhythm-DottedDurations-Factors.xml



No divisions attribute

03e-Rhythm-No-Divisions.xml



11 ... Time signatures

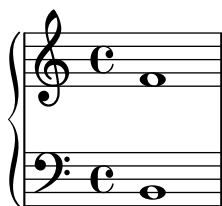
Various time signatures: 2/2 (alla breve), 4/4 (C), 2/2, 3/2, 2/4, 3/4, 4/4, 5/4, 3/8, 6/8, 12/8

11a-TimeSignatures.xml



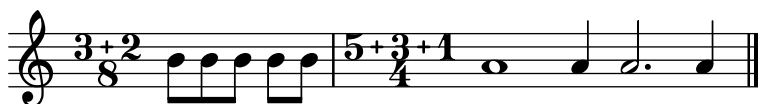
A score without a time signature (but with a key and clefs)

11b-TimeSignatures-NoTime.xml



Compound time signatures with same denominator: $(3+2)/8$ and $(5+3+1)/4$.

11c-TimeSignatures-CompoundSimple.xml



Compound time signatures with separate fractions displayed: $3/8+2/8+3/4$ and $5/2+1/8$.

11d-TimeSignatures-CompoundMultiple.xml



Compound time signatures of mixed type: (3+2)/8+3/4.

11e-TimeSignatures-CompoundMixed.xml



A time signature of 3/8 with the symbol="cut" attribute and two symbol="single-number" attributes with compound time signatures. Shall the symbol be ignored in this case?

11f-TimeSignatures-SymbolMeaning.xml



Time signature displayed as a single number.

11g-TimeSignatures-SingleNumber.xml



Senza-misura time signature

11h-TimeSignatures-SenzaMisura.xml



12 ... Clefs

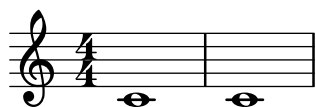
Various clefs: G, C, F, percussion, TAB and none; some are also possible with transposition and on other staff lines than their default (e.g. soprano/alto/tenor/baritone C clefs); Each measure shows a different clef (measure 17 has the "none" clef), only measure 18 has the same treble clef as measure 1.

12a-Clefs.xml

A musical score consisting of two staves. The first staff contains measures 1 through 9, each with a different clef: treble, alto, bass, soprano, tenor, baritone, and none. The second staff, starting at measure 10, contains measures 10 through 18, each with a different clef: alto, bass, soprano, tenor, baritone, and treble. The notation includes various note values and rests.

A score without any key or clef defined. The default (4/4 in treble clef) should be used.

12b-Clefs-NoKeyOrClef.xml



13 ... Key signatures

Various key signature: from 11 flats to 11 sharps (each one first one measure in major, then one measure in minor)

13a-KeySignatures.xml

Different Key signatures

The image displays seven musical staves, each containing a sequence of notes with different key signatures. The staves are numbered 5, 10, 16, 24, 32, 37, and 42. The key signatures range from 11 flats to 11 sharps. The notes are arranged in a sequence that demonstrates various modes: major, minor, ionian, dorian, phrygian, lydian, mixolydian, aeolian, and locrian. The notes are written in a treble clef and a 4/4 time signature. The key signatures are: 11 flats (B-flat, E-flat, A-flat, D-flat, G-flat, C-flat, F-flat, B-double-flat, E-double-flat, A-double-flat, D-double-flat), 10 flats (B-flat, E-flat, A-flat, D-flat, G-flat, C-flat, F-flat, B-flat, E-flat, A-flat), 9 flats (B-flat, E-flat, A-flat, D-flat, G-flat, C-flat, F-flat, B-flat, E-flat), 8 flats (B-flat, E-flat, A-flat, D-flat, G-flat, C-flat, F-flat, B-flat), 7 flats (B-flat, E-flat, A-flat, D-flat, G-flat, C-flat, F-flat), 6 flats (B-flat, E-flat, A-flat, D-flat, G-flat, C-flat), 5 flats (B-flat, E-flat, A-flat, D-flat, G-flat), 4 flats (B-flat, E-flat, A-flat, D-flat), 3 flats (B-flat, E-flat, A-flat), 2 flats (B-flat, E-flat), 1 flat (B-flat), 1 sharp (F-sharp), 2 sharps (F-sharp, C-sharp), 3 sharps (F-sharp, C-sharp, G-sharp), 4 sharps (F-sharp, C-sharp, G-sharp, D-sharp), 5 sharps (F-sharp, C-sharp, G-sharp, D-sharp, A-sharp), 6 sharps (F-sharp, C-sharp, G-sharp, D-sharp, A-sharp, E-sharp), 7 sharps (F-sharp, C-sharp, G-sharp, D-sharp, A-sharp, E-sharp, B-sharp), 8 sharps (F-sharp, C-sharp, G-sharp, D-sharp, A-sharp, E-sharp, B-sharp, F-double-sharp), 9 sharps (F-sharp, C-sharp, G-sharp, D-sharp, A-sharp, E-sharp, B-sharp, F-double-sharp, C-double-sharp), 10 sharps (F-sharp, C-sharp, G-sharp, D-sharp, A-sharp, E-sharp, B-sharp, F-double-sharp, C-double-sharp, G-double-sharp), and 11 sharps (F-sharp, C-sharp, G-sharp, D-sharp, A-sharp, E-sharp, B-sharp, F-double-sharp, C-double-sharp, G-double-sharp, D-double-sharp).

All different modes: major, minor, ionian, dorian, phrygian, lydian, mixolydian, aeolian, and locrian; All modes are given with 2 sharps.

13b-KeySignatures-ChurchModes.xml



1. major minor ionian dorian phrygian lydian mixolydian aeolian locrian

Non-traditional key signatures, where each alteration is separately given. Here we have (f sharp, a flat, b flat) and (c flatflat, g sharp sharp, d flat, b sharp, f natural), where in the second case an explicit octave is given for each alteration.

13c-KeySignatures-NonTraditional.xml



Non-traditional key signatures with microtone alterations: (g flat-and-a-half, a flat, b half-flat, c natural, d half-sharp, e sharp, f sharp-and-a-half).

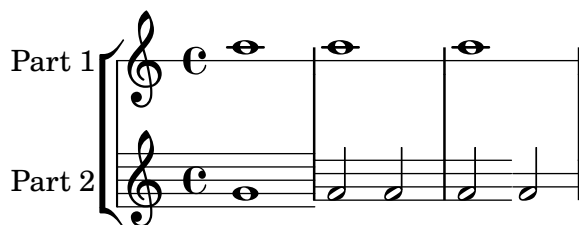
13d-KeySignatures-Microtones.xml



14 ... Staff attributes

The number of staff lines can be modified by using the staff-lines child of the staff-details attribute. This can happen globally (the first staff has one line globally) or during the part at the beginning of a measure and even inside a measure (the second part has 5 lines initially, 4 at the beginning of the second measure, and 3 starting in the middle of the third measure).

14a-StaffDetails-LineChanges.xml



21 ... Chorded notes

One simple chord consisting of two notes.

21a-Chord-Basic.xml



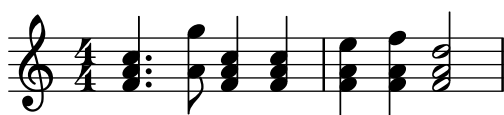
Some subsequent (identical) two-note chords.

21b-Chords-TwoNotes.xml



Some three-note chords, with various durations.

21c-Chords-ThreeNotesDuration.xml



Chords in the second measure, after several ornaments in the first measure and a *p* at the beginning of the second measure.

21d-Chords-SchubertStabatMater.xml



Check for proper chord detection after a pickup measure (i.e. the first beat of the measure is not aligned with multiples of the time signature)!

21e-Chords-PickupMeasures.xml



Between the individual notes of a chord there can be direction or harmony elements, which should be properly assigned to the chord (or the position of the chord).

21f-Chord-ElementInBetween.xml



22 ... Note settings, heads, etc.

Different note styles, using the <notehead> element. First, each note head style is printed with four quarter notes, two with filled heads, two with unfilled heads, where first the stem is up and then the stem is down. After that, each note head style is printed with a half note (should have an unfilled head by default). Finally, the Aiken note head styles are tested, once with stem up and once with stem down.

22a-Noteheads.xml

1. slash triangle diamond square cross

6
x circle-x inverted triangle arrow down arrow up slashed

12
back slashed normal cluster none slash triangle diamond square

18
cross x circle-x inverted triangle arrow down arrow up slashed back slashed

22
normal cluster do re mi fa so

28
la ti do re mi fa so la ti do do re mi fa so la ti do

Staff-connected note styles: slash notation, hidden notes (with and without hidden staff lines)
22b-Staff-Notestyles.xml

1. slash, no stem slash, with stem normal settings restored

Different note styles for individual notes inside a chord, using the <notehead> element.
22c-Noteheads-Chords.xml

1. normal cross
2. triangle
3. slash

Parenthesized note heads. First, a single parenthesized note is tested, once with a normal and then with a non-standard notehead, then two chords with some/all parenthesized noteheads and finally a parenthesized rest.

22d-Parenthesized-Noteheads.xml



23 ... Triplets, Tuplets

Some tuplets (3:2, 3:2, 3:2, 4:2, 4:1, 7:3, 6:2) with the default tuplet bracket displaying the number of actual notes played. The second tuplet does not have a number attribute set.

23a-Tuplets.xml



Different tuplet styles: default, none, x:y, x:y-note; Each with bracket, slur and none. Finally, non-standard 4:3 and 17:2 tuplets are given.

23b-Tuplets-Styles.xml



Displaying tuplet note types, that might not coincide with the displayed note. The first two tuplets take the type from the note, the second two from the <time-modification> element, the remaining pair of tuplets from the <tuplet> notation element. The tuplets in measure 3 specify both a number of notes and a type inside the <tuplet-actual> and <tuplet-normal> elements, the ones in measure 4 specify only a note type (but no number), and the ones in measure 5 specify only a number of tuplet-notes (but no type, which is deduced from the note's type). The first tuplet of measures 3-5 uses 'display-type="actual"', the second one 'display-type="both"'. FIXME: The tuplet-normal should coincide with the real notes!

23c-Tuplet-Display-NonStandard.xml



Tuplets can be nested. Here there is a 5:2 tuplet inside a 3:2 tuple (all consisting of written eighth notes).

23d-Tuplets-Nested.xml



Tremolo triplets are triplets on single notes with a tremolo ornament. The application shall correctly import these notes with 2/3 or their time...

23e-Tuplets-Tremolo.xml



Some " triplets" on the end of the first and in the second staff, using only <time-modification>, but not explicit tuplet bracket. Thus, the duration of the notes in the second staff should be scaled properly in comparison to staff 1, but no visual indication about the triplets is given.

23f-Tuplets-DurationButNoBracket.xml



24 ... Grace notes

Different kinds of grace notes: acciaccatura, appoggiatura; beamed grace notes; grace notes with accidentals; different durations of the grace notes.

24a-GraceNotes.xml



Chords as grace notes.

24b-ChordAsGraceNote.xml



A grace note that appears at the measure end (without any steal-from-* attribute set). Some applications need to convert this into an after-grace.

24c-GraceNote-MeasureEnd.xml



Some grace notes and after-graces (indicated by steal-time-previous and steal-time-following).

24d-AfterGrace.xml



A grace note on a different staff than the actual note.

24e-GraceNote-StaffChange.xml



A grace note with a slur to the actual note. This can be interpreted as acciaccatura or appoggiatura, depending on the existence of a slash.

24f-GraceNote-Slur.xml



31 ... Dynamics and other single symbols

All <direction> elements defined in MusicXML. The lyrics for each note describes the direction element assigned to that note.

31a-Directions.xml

MusicXML directions (attached to staff)

A musical staff in common time with four measures. Above the staff are labels: A, B, Test, and Crc. Below the staff are the corresponding direction symbols: reh.A (def=sq.), reh.B (none), reh.Test (sq.), and reh.Crc (crc.).

2. Musical staff with various dynamic and articulation symbols: Segno, Coda, Words, Eyegl., p, pp, ppp, pppp, ppppp, pppppp, ppppppp, pppppppp, f, ff.

5. Musical staff with various dynamic and articulation symbols: fff, ffff, fffff, ffffff, mp, mf, sf, sfp, sfpp, fp, rf, rfz, sfz, sffz, fz, abc-ffz.

fff fff ffff fffff mp mf sf sfp sfpp fp rf rfz sfz sffz fz abc-ffz
fff fff ffff fffff mp mf sf sfp sfpp fp rf rfz sfz sffz fz abc-ffz (oth.)

9 *frum*

hairpin cresc dash - es bra - cket oct.-shift ped.alchange - mark

12 ♩ = 60

p subito ppp < fff

Metr. Harp ped. Damp Damp all Scord. Accordion reg. sub ppp crescto fff

Tempo Markings: note=bpm, text (note=bpm), note=note, (note=note), (note=bpm)

31c-MetronomeMarks.xml

♩ = 100 **Adagio** (♩ = 100) (♩ = 77)

32 ... Notations and Articulations

All <notation> elements defined in MusicXML. The lyrics show the notation assigned to each note.

32a-Notations.xml

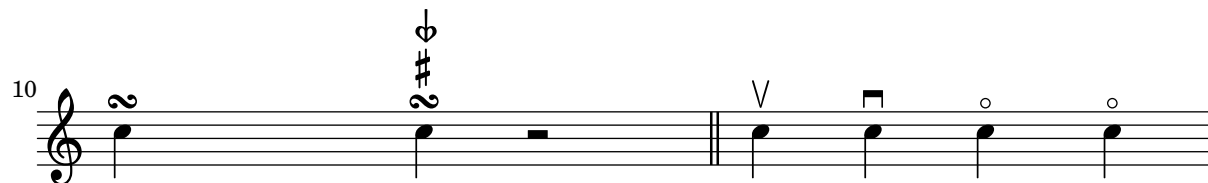
MusicXML notations (attached to note)

1. ferm. normal ferm. angled ferm. square ferm.

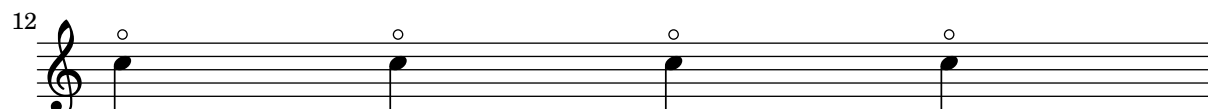
inv.ferm. arp. non-arp. acc.mark acc. str.-acc. stacc. ten.

det.-leg. stacc.ss spicc. scoop plop doit falloff breath caes. stress unstr.

tr. turn del.turn inv.turn shake wavywavyline mord. inv.mord. schl. trem.

10 

turn+acc. turn+acc.(ab.+bel./rel to turn) up-b. down-b. harm. nat.harm.

12 


art.harm. nat.h./base nat.h./touching nat.h./sounding

13 


open-str. thumb-pos. empty fing. fing.1 fing.2 fing.3 fing.4 fing.5

15 

something
fing.sth. mult.fing. empty pluck pluck a dbl.tng. trpl.tng. stopped snp.pizz.

17 

empty fret fret0 empty str. str. 5 hammer - on pull - off

19 

bend b.3 with-bar pre-b. -0.5 b. release 3.5 tap tap T heel toe


21 

fingern. *f* *ppp* *sfp* *sffz*
f ppp sfp Oth.dyn. both above ab./bel./bel.

Text markup: different font sizes, weights and colors.

32b-Articulations-Texts.xml

Normal, Small
Normal, Large
Normal, Medium



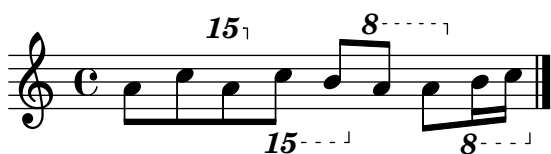
Bold, Medium **Bold, Small**
Bold, Large
Normal, Small, Colored, Below

33c-Spanners-Slurs.xml



All types of octave shifts (15ma, 15mb, 8va, 8vb)

33d-Spanners-OctaveShifts.xml



Invalid octave-shifts: 27 down, 11 up.

33e-Spanners-OctaveShifts-InvalidSize.xml



A trill spanner that spans a grace note and ends on an after-grace note at the end of the measure.

33f-Trill-EndingOnGraceNote.xml



Slurs on chorded notes: Only the first note of the chord should get the slur notation. Some applications print out the slur for all notes – these should be ignored.

33g-Slur-ChordedNotes.xml

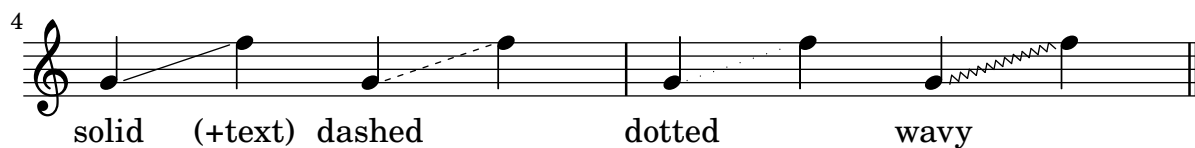


All different types of glissando defined in MusicXML

33h-Spanners-Glissando.xml

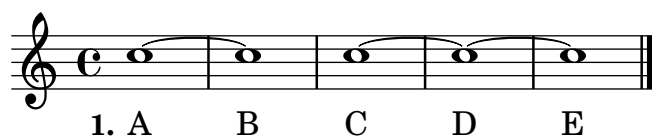


1. normal glissando solid (+text) dashed dotted wavy normal slide



Several ties that have their end tag missing.

33i-Ties-NotEnded.xml



41 ... Multiple parts (staves)

A piece with four parts (P0, P1, P2, P3; different from what Finale creates!). Are they converted in the correct order?

41a-MultiParts-Partorder.xml

Four musical staves stacked vertically, labeled 'Part 1', 'Part 2', 'Part 3', and 'Part 4' on the left. Each staff has a treble clef, a key signature of one sharp (F#), and a 4/4 time signature. Each staff contains a single note followed by a rest.

A piece with 20 parts to check whether an application supports that many parts and whether they are correctly sorted.

41b-MultiParts-MoreThan10.xml

P0
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
P12
P13
P14
P15
P16
P17
P18
P19

A huge orchestra score with 28 parts and different kinds of nested bracketed groups. Each part/group is assigned a name and an abbreviation to be shown before the staff. Also, most of the groups show unbroken barlines, while the barlines are broken between the groups.

The image shows a musical score for a symphony orchestra. The instruments are listed on the left, and their corresponding staves are on the right. The score is divided into two main sections by a large curly bracket on the left side. The first section, enclosed in a curly bracket, includes the Piccolo, Flute 1, Flute 2, Oboe, Oboe through English Horn, Clarinet in Eb, Clarinet in Bb 1, Clarinet in Bb 2, Bass Clarinet, Bassoon 1, Bassoon 2, Contrabassoon, Horn in F 1, Horn in F 2, Trumpet in C 1, Trumpet in C 2, Trombone 1, Trombone 2, Tuba, Timpani, Percussion, Harp, Piano, Violin I, Violin II, Viola, Cello, and Contrabass. The second section, enclosed in a square bracket, includes the Oboe through English Horn, Clarinet in Eb, Clarinet in Bb 1, Clarinet in Bb 2, Bass Clarinet, Bassoon 1, Bassoon 2, Contrabassoon, Horn in F 1, Horn in F 2, Trumpet in C 1, Trumpet in C 2, Trombone 1, Trombone 2, Tuba, Timpani, Percussion, Harp, Piano, Violin I, Violin II, Viola, Cello, and Contrabass. The score is written in a standard musical notation with a common time signature (C) and a key signature of one sharp (F#).

Two properly nested part groups: One group (with a square bracket) goes from staff 2 to 4) and another group (with a curly bracket) goes from staff 3 to 4.

Part names and abbreviations can contain line breaks.

41e-StaffGroups-InstrumentNames-Linebroken.xml

Long
Staff
Name

⁶
St.
Nm.

¹⁵
St.
Nm.

MusicXML allows for overlapping part-groups, while many applications do not allow overlapping groups, but require them to be properly nested. In this case, one group (within parenthesis) goes from staff 1 to 4 and another group (also within parenthesis) goes from staff 3 to 5.

41f-StaffGroups-Overlapping.xml

A part with no id attribute. Since this piece has only one part, it is clear which part is described by the one part element.

41g-PartNoId.xml

This piece has more part elements than the part-list section gives. One can either convert all the parts present, but not listed in the part-list, or simply not import / ignore them.

41h-TooManyParts.xml

MusicXML allows part-name and part-name-display in the score-part element. If part-name-display is given, it overrides the part-name for display.

The first staff uses only part-name, while the second one (same part-name) overrides it with a custom text. Similar for the part-abbreviation used in subsequent staves.

41i-PartNameDisplay-Override.xml

This score has multiple display-text elements in its part-name-display block. This is handled without crashing.

41j-PartNameDisplay-Multiple-DisplayText-Children.xml

Player One

42 ... Multiple voices per staff

Two voices share one staff. Each voice is assigned some lyrics.

42a-MultiVoice-TwoVoicesOnStaff-Lyrics.xml

1. This is the lyrics of Voice1
1. This is the lyrics of Voice2

A multi-voice / multi-staff part with a clef change in the middle of a measure and a <backward> for voice 2 jumping back beyond that clef change.

42b-MultiVoice-MidMeasureClefChange.xml

43 ... One part on multiple staves

A simple piano staff

43a-PianoStaff.xml

A piano staff with different keys and clefs for each of its staves. The keys and clefs for both staves are given at the very beginning of the measure.

43b-MultiStaff-DifferentKeys.xml



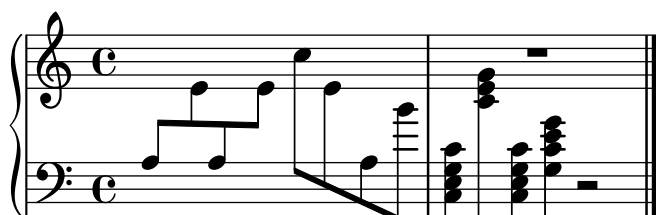
A piano staff with different keys and clefs for each of its staves. The key and clef for the second staff is given only after a backward, just before the first note of the second staff is given, but after the whole measure for staff 1 has been given.

43c-MultiStaff-DifferentKeysAfterBackup.xml



Staff changes in a piano staff. The voice from the second staff has some notes/chords on the first staff. The final two chords have some notes on the first, some on the second staff.

43d-MultiStaff-StaffChange.xml



A piano staff with dynamics and clef changes, where each element (fff, wedge and clef changes) applies only to one voice or one staff, respectively.

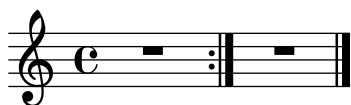
43e-Multistaff-ClefDynamics.xml



45 ... Repeats

A simple, repeated measure (repeated 5 times)

45a-SimpleRepeat.xml



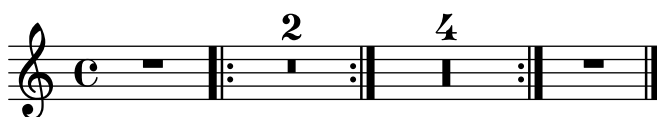
A simple repeat with two alternative endings (volta brackets).

45b-RepeatWithAlternatives.xml



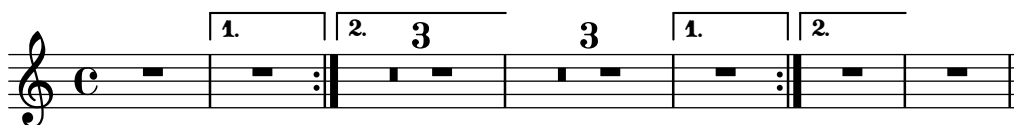
Repeats can also be nested.

45c-RepeatMultipleTimes.xml



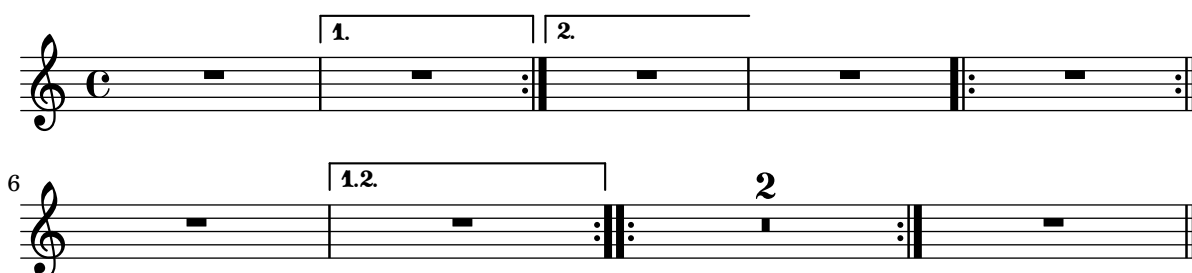
Nested repeats, each with alternative endings.

45d-Repeats-Nested-Alternatives.xml



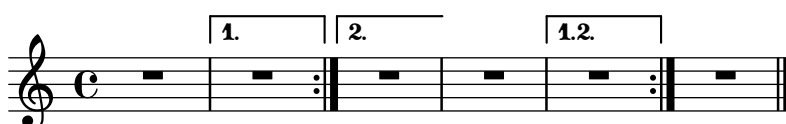
Some more nested repeats with alternatives. The barline between measure 7 and 8 will probably be messed up! (Should be a repeat on both sides!)

45e-Repeats-Nested-Alternatives.xml



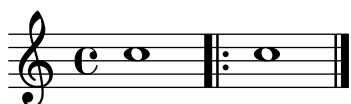
Some more nested repeats with alternatives, where the MusicXML file does not make sense in the first place. How well are applications able to cope with improper repeats and alternatives?

45f-Repeats-InvalidEndings.xml



A forward-repeating bar line without an ending repeat bar.

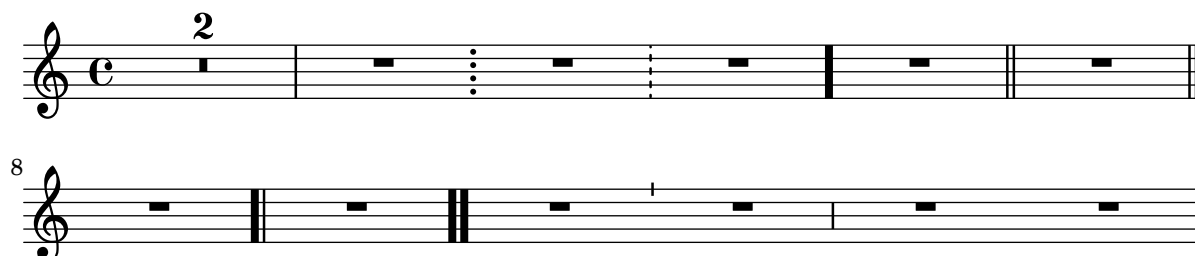
45g-Repeats-NotEnded.xml



46 ... Barlines, Measures

Different types of (non-repeat) barlines: default (no setting), regular, dotted, dashed, heavy, light-light, light-heavy, heavy-light, heavy-heavy, tick, short, none.

46a-Barlines.xml



Barlines can appear at mid-measure positions, without using an implicit measure!

46b-MidmeasureBarline.xml



A clef change in the middle of a measure, using either an implicit measure or simply placing the attributes in the middle of the measure.

46c-Midmeasure-Clef.xml



A 3/8 pickup measure, a measure that is split into one (incomplete, only 2/4) measure and an implicit measure, and an incomplete measure (containing 3/4).

46d-PickupMeasure-ImplicitMeasures.xml



Voice 2 should start at 2nd beat of first full measure.

46e-PickupMeasure-SecondVoiceStartsLater.xml



Measures can contain less notes than the time signature says. Here, the first and third measures contain only two quarters instead of four.

46f-IncompleteMeasures.xml



Pickup measure with chord names and figured bass.

46g-PickupMeasure-Chordnames-FiguredBass.xml



51 ... Header information

Several header fields and part names can contain quotes (" "). This test checks whether they are converted/imported without problems (i.e. whether they are correctly escaped when converting).

51b-Header-Quotes.xml

" Quotes" in header fields

Some " Tester" Name



There can be multiple <rights> tags in the identification element of the score. The conversion shall still work, ideally using both of them.

51c-MultipleRights.xml

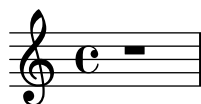


A piece with an empty (but existing) work-title, but a non-empty movement-title. In this case the movement-title should be chosen, even though the work-title exists.

51d-EmptyTitle.xml

Empty work-title, non-empty movement-title

Empty work-title, non-empty movement-title



52 ... Page layout

Several page layout settings: paper size, margins, system margins and distances, different fonts, etc.

52a-PageLayout.xml

Layout options



How to treat lyrics and slurred notes. Normally, a slurred group of notes is assigned only one lyrics syllable.

61d-Lyrics-Melisma.xml



1. Me - lis - ma. _

The image shows a musical staff in treble clef with a common time signature (C). It contains four measures of music. The first measure has a quarter note G4. The second measure has a quarter note A4. The third measure has a quarter note B4. The fourth measure has a quarter note C5. A slur is placed over the last three notes (A4, B4, C5). The lyrics '1. Me - lis - ma. _' are written below the staff, with 'Me' under the first note, 'lis' under the second, and 'ma.' under the third. There is a trailing underscore under 'ma.'.

Assigning lyrics to chorded notes.

61e-Lyrics-Chords.xml



1. Lyrics on chords

The image shows a musical staff in treble clef with a common time signature (C). It contains four measures of music. The first measure has a quarter note G4. The second measure has a quarter note A4. The third measure has a quarter note B4. The fourth measure has a quarter note C5. Each note is part of a chord, represented by a vertical line connecting the note to a chord symbol (G, A, B, C). The lyrics '1. Lyrics on chords' are written below the staff, with 'Lyrics' under the first note, 'on' under the second, and 'chords' under the third.

Grace notes shall not mess up the lyrics, and they shall not be assigned a syllable.

61f-Lyrics-GracedNotes.xml



1. Ly - rics on notes _

The image shows a musical staff in treble clef with a common time signature (C). It contains four measures of music. The first measure has a quarter note G4. The second measure has a quarter note A4. The third measure has a quarter note B4. The fourth measure has a quarter note C5. Each note is part of a chord, represented by a vertical line connecting the note to a chord symbol (G, A, B, C). The lyrics '1. Ly - rics on notes _' are written below the staff, with 'Ly' under the first note, 'rics' under the second, and 'on notes _' under the third.

A lyrics syllable can have both a number and a name attribute. The question is: What should be used to put syllables of the same voice together. This example uses different number/name combinations to check how different applications handle this unspecified case (The advice on the MusicXML mailing list was "there is no correct way, each application can do what it thinks is best").

61g-Lyrics-NameNumber.xml



1. Verse1AChorus1AAnotherChorus1A1BVerse1CChorus1D
2. Chorus1A - 2B - Chorus2C

The image shows a musical staff in treble clef with a 4/4 time signature. It contains four measures of music, each with a quarter note G4. The lyrics '1. Verse1AChorus1AAnotherChorus1A1BVerse1CChorus1D' are written below the staff, with 'Verse1A' under the first note, 'Chorus1A' under the second, 'AnotherChorus1A1B' under the third, and 'Verse1CChorus1D' under the fourth. The lyrics '2. Chorus1A - 2B - Chorus2C' are written below the staff, with 'Chorus1A' under the first note, '2B' under the second, and 'Chorus2C' under the third.

Beaming or slurs can indicate melismata for lyrics. Also make sure that notes without an explicit syllable are treated as if they were part of a melisma.

61h-Lyrics-BeamsMelismata.xml



1. Me - lisma _ Me - lisma _ Me - lisma _ Me - lisma _

The image shows a musical staff in treble clef with a common time signature (C). It contains four measures of music. The first measure has a quarter note G4. The second measure has a quarter note A4. The third measure has a quarter note B4. The fourth measure has a quarter note C5. Each note is part of a chord, represented by a vertical line connecting the note to a chord symbol (G, A, B, C). The lyrics '1. Me - lisma _ Me - lisma _ Me - lisma _ Me - lisma _' are written below the staff, with 'Me - lisma _' under each note.

Each note of a chord can have some lyrics attached. In this case, each note of the chord has lyrics of the form "Lyrics [123]" attached, where each lyrics has a different number attribute to distinguish them. These syllables should be imported into three different stanzas and the timing should be correct.

61i-Lyrics-Chords.xml



1. Lyrics 1
- 2.
- 3.

Multiple lyrics syllables assigned to a single note are implemented either using a space in the lyrics or by using the <elision> lyrics element. This testcase checks both of them. First, a note with one syllable is given, then a note with two syllables separated by a space and finally a note with two and one with three syllables implemented using <elision> is given.

61j-Lyrics-Elisions.xml



1. a b c d e f g h

Lyrics spanners: continued syllables and extenders, possibly spanning multiple notes. The intermediate notes do not have any <lyric> element.

61k-Lyrics-SpannersExtenders.xml

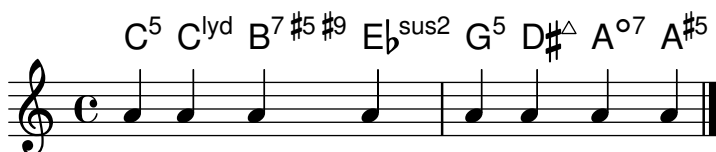


1. A _ b - CC _ e _

71 ... Guitar notation

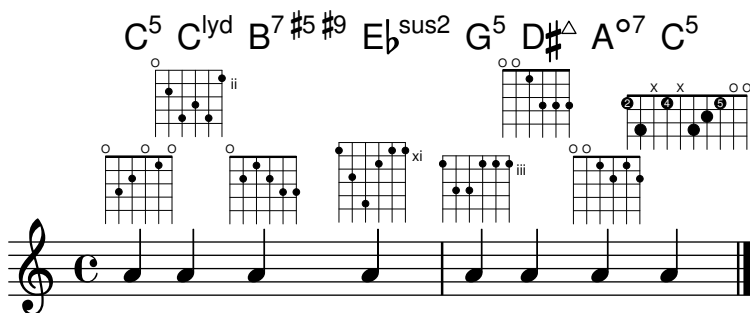
A normal staff with several (complex) chord names displayed.

71a-Chordnames.xml



A staff with chord names and some fretboards shown. The fretboards can have an arbitrary number of frets/strings, can start at an arbitrary fret and can even contain fingering information.

71c-ChordsFrets.xml



Chords and fretboards assigned to the voices in a multi-voice, multi-staff part. There should be fret diagrams above each of the two staves.

71d-ChordsFrets-Multistaff.xml

The image shows a musical score for a multi-staff part. It consists of two staves, a treble clef staff and a bass clef staff, both in common time (C). The score is enclosed in a large brace on the left. Above the treble staff, there are four fret diagrams. The first diagram is for a C⁵ chord (open strings). The second diagram is for a D⁷ chord (open strings). The third diagram is for an E_bm⁹ chord, with a circled 'iv' below it. The fourth diagram is for a Cm⁷ 11 chord, with a circled 'iv' below it. The bass staff contains four chords, each with a circled 'o' above it, indicating open strings. The treble staff contains four chords, each with a circled 'o' above it, indicating open strings.

Some tablature staves, with explicit fingering information and different string tunings given in the MusicXML file.

71e-TabStaves.xml

The image shows a musical score for five instruments: four guitars and one bass guitar. Each instrument has two staves, labeled T (Treble clef) and B (Bass clef). The score consists of two measures. The first measure has fret numbers 17 and 1, and the second measure has fret number 0. The instruments and their fret numbers are:

- Guitar 1: T (17, 1), A (5, 2), B (4, 5)
- Guitar 2: T (4, 1), A (1, 3), B (4, 5)
- Guitar 3: T (1, 2), A (2, 0), B (4, 5)
- Guitar 4: T (4), A (5, 0), B (0, 0)
- Bass Guitar: T (0, 8), A (0, 0, 0, 0), B (0, 0, 0, 0)
- Banjo: T (3, 0), A (0, 0, 0, 0), B (0, 0, 0, 0)
- Lute: T (2, 0), A (4, 7), B (1, 0)
- Ukulele: T (4), A (24, 0, 0), B (0, 0, 0, 0)

All chord types defined in MusicXML. The staff will only contain one c' note (NO chord) for all of them, but the chord names should be properly printed.

71f-AllChordTypes.xml

All MusicXML chord names/types with <root>

The image shows a musical score with three staves, each containing four different chord names/types and their corresponding notes on a staff. The notes are all on the same pitch (C').

- Staff 1: C^5 (1. major), C^5 (minor), $C^{\#5}$ (augmented), C^{b5} (diminished)
- Staff 2: C^7 (dominant), C^Δ (major-seventh), Cm^7 (minor-seventh), C^{o7} (diminished-seventh)
- Staff 3: $C^7\#5$ (augmented-seventh), C^7b5 (half-diminished), Cm^Δ (major-minor), C^6 (major-sixth)

4 Cm^6 C^9 $C^{\Delta 9}$ Cm^9
 minor-sixth dominant-ninth major-ninth minor-ninth

5 C^{11} $C^{\Delta 11}$ Cm^{11} C^{13}
 dominant-11th major-11th minor-11th dominant-13th

6 $C^{\Delta 13}$ Cm^{13} C^{sus2} C^{sus4}
 major-13th minor-13th suspended-second suspended-fourth

7 C^5 C
 Neapolitan Italians French German pedal power Tristan other

9 $F^{\#5}$ Fb^5/C $G^{\#5}/D^{\#}$ C^5 C^{b5} G^{susb2}
 Inversion Fb/C $G^{\#}/D^{\#}$ C $C-3+5b$

There can be multiple subsequent harmony elements, indicating a harmony change during a note

71g-MultipleChordnames.xml

C^5 $F^{\#m6}$ Dm^7 G^7

72 ... Transposing instruments

Transposing instruments: Trumpet in Bb, Horn in Eb, Piano; All of them show the C major scale (the trumpet with 2 sharp, the horn with 3 sharp).

72a-TransposingInstruments.xml

Trumpet in Bb C D E F G A B C

Horn in Eb C D E F G A B C

Piano C D E F G A B C

Various transposition. Each part plays a c'', just displayed in different display pitches. The second-to-last staff uses a transposition where the displayed c' is an actual f''' concert pitch. The final staff is an untransposed instrument.

72b-TransposingInstruments-Full.xml

The image shows a musical score for ten different instruments, all playing a single note (c''). The instruments and their transpositions are:

- Clarinet in Eb
- Clarinet in Bb
- Clarinet in A
- Horn in F
- Horn in Eb
- Piccolo Trumpet in A
- Trumpet in Bb
- Trumpet in C
- Trumpet in D
- displayed c'=fis''' (with an 8 below the staff)
- (Untransposed instrument)

The score is written in treble clef for all instruments except the last one, which is in bass clef. The key signature is Bb major (one flat). The note is a whole note.

An instrument change from one transposition (Clarinet in Eb) to another transposing instrument (Clarinet in Bb). The displayed instrument name should also be updated.

The whole piece is in Bb major (sounding), so first the key signature should be one flat, after the change it should have no accidentals.

72c-TransposingInstruments-Change.xml

73 ... Percussion

Three types of percussion staves: A five-line staff with bass clef for Timpani, a five-line staff with percussion clef, and a one-line percussion staff with only unpitched notes.

73a-Percussion.xml

74 ... Figured bass

Some figured bass containing altered figures, bracketed figures and slashed figures. The last note contains an empty <figured-bass> element, which is invalid MusicXML, to check how well applications cope with malformed files.

Note that this file does not contain any extenders!

74a-FiguredBass.xml

75 ... Other instrumental notation

All possible accordion registrations.

75a-AccordionRegistrations.xml

1. 0/0/1 0/1/0 0/1/1 0/2/0 0/2/1 0/3/0 0/3/1 1/0/1 1/0/0 1/1/0 1/1/1 1/2/0

1/2/1 1/3/0 1/3/1 empty empty M inval.M M=0 M=5

90 ... Compressed MusicXML files

A compressed MusicXML file, containing a simple MusicXML score and the corresponding .pdf output for reference.

90a-Compressed-MusicXML.mxl

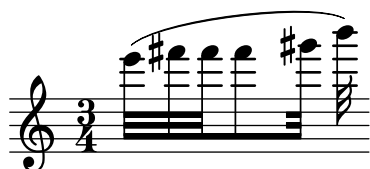
Compressed MusicXML file



99 ... Compatibility with broken MusicXML

Dolet 3 for Sibelius (5.1) did not print out any closing beam tags, only starting and continuing beam tags. For such files, one either needs to ignore all beaming information or close all beams

99a-Sibelius5-IgnoreBeaming.xml



If we properly ignore all beaming information from the Dolet 3 for Sibelius export file, make sure that the lyrics syllables are still assigned to the correct notes.

99b-Lyrics-BeamsMelismata-IgnoreBeams.xml

1. Me - lisma ___ Me - lisma ___ Me - lisma ___ Me - lisma ___