LilyPond

The music typesetter

Unofficial MusicXML test suite

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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 documents, this test suite also serves as proofs for the `musicxml2ly` script provided with LilyPond. The images shown in this document 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 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.
11–14	Staff attributes: time signatures, clefs, key signatures, staff details.
21–24	Notes: chords, note settings, tuplets, grace notes.
31–34	Notations and articulations: dynamics (staff-attached), notations (note-attached), spanners, print-object, color, and font size issues.
41–43	Parts: multiple parts, multi-voice parts, multi-staff parts.
45–46	Repeat and measure issues.
51–52	Page issues: header fields, page layout.
55–59	Exact positioning of items, offsets, etc.
61	Lyrics.
71–75	Instrument-specific: guitar (chord, fretboards), transposing instruments, percussion, figured bass, other instruments.

81–89   MIDI generation (all sound-related issues).

90–99   Various other: compressed MusicXML files, compatibility with broken Mu-
             sicXML 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, then with explicit natural accidentals. Double alterations and cautionary accidentals are tested at the end.

01a-Pitches-Pitches.xml

Pitches and accidentals

All pitch intervals in ascending jump size.

01b-Pitches-Intervals.xml

Various pitches and interval sizes

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`

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 have the attributes 'cautionary', 'editorial', 'parenthesized', and 'bracketed'. The first two measures each have a cautionary accidental, an editorial, a cautionary with parentheses off, and an editorial and cautionary accidental. The next two measures each have a normal accidental, a bracketed, a parenthesized, and a bracketed and parenthesized accidental.

`01e-Pitches-ParenthesizedAccidentals.xml`

Microtone accidentals can be cautionary or editorial. Each measure has a normal accidental, an editorial, a cautionary and an editioal 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 1024th-rest, then the same with dotted durations.

`02a-Rests-Durations.xml`

Rest unit test
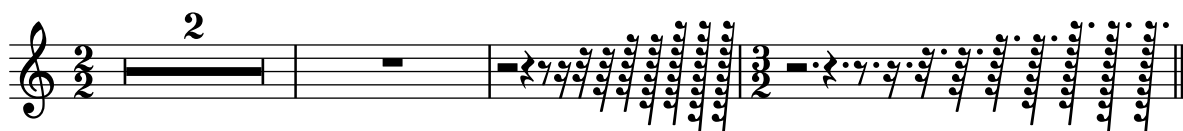
Rests can have explicit pitches to position them vertically. The first rest has no explicit pitch and should use the default position, all others are explicitly positioned somewhere else (E4, F5, A3, C6).

`02b-Rests-PitchedRests.xml`

Five multi-measure rests: 3 measures, 15 measures, 1 measure, 12 measures, and 3 measures with 'use-symbols' set.

`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, etc., until 1024th. First with their plain values, then dotted, and finally double-dotted.

03a-Rhythm-Durations.xml

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

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 multi-measure rests it is also possible to have durations that cannot be expressed with dotted notes (like 5/8).

In bar 15 there is only a 16th note and no rest for the remaining part of the bar.

03d-Rhythm-DottedDurations-Factors.xml
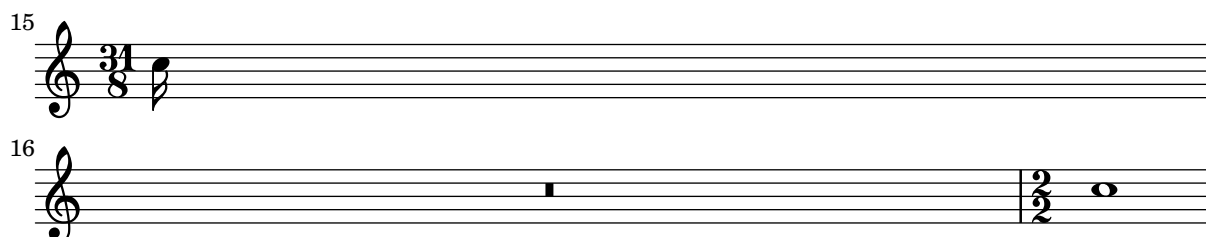
No <divisions> element.

`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). The first bar misses a <time> element altogether, the second bar sets a 2/2 time with 'print-object="no"' for both staves, and the third bar sets a 4/4 time with 'print-object="no"' only for the lower staff.

`11b-TimeSignatures-NoTime.xml`
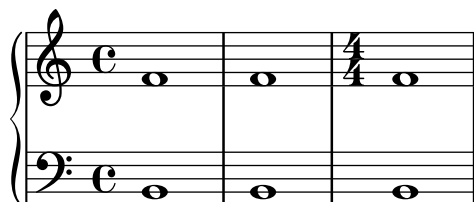
Compound time signatures with same denominator: (3+2)/8 and (5+3+1)/4.

`11c-TimeSignatures-CompoundSimple.xml`
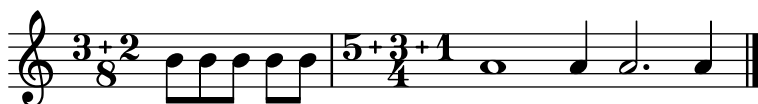
Compound time signatures with separate fractions displayed: 3/8+2/8+3/4 and 5/2+1/8.

`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. The first bar has three eighth notes, the second bar contains a full-measure rest (indicated by setting 'measure="yes"' for the <rest> element) with a length of a dotted half note, and the third bar contains four eighth notes.

`11h-TimeSignatures-SenzaMisura.xml`
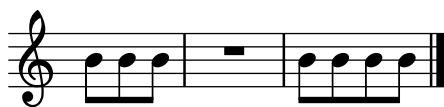
12 ... Clefs

Various clefs: G, C, F, percussion, TAB, and 'none' (in measure 17). Some clefs are also shown with transposition and on other staff lines than their default.

Each measure shows a different clef; only measure 18 has the same treble clef as the first measure.

`12a-Clefs.xml`

A score without a <key> or <clef> element (but with <time>). The default (4/4 in treble clef) should be used.

`12b-Clefs-NoKeyOrClef.xml`

13 ... Key signatures

Various key signatures: from 11 flats to 11 sharps. Each signature is shown twice, with one measure in major and the other measure in minor.

`13a-KeySignatures.xml`

Different Key signatures

All different modes: 'major', 'minor', 'ionian', 'dorian', 'phrygian', 'lydian', 'mixolydian', 'aeolian', 'locrian', and 'none'. All modes are given with two sharps.

`13b-KeySignatures-ChurchModes.xml`

Non-traditional key signatures, where each alteration is separately given. The first signature is [f sharp, a flat, b flat]. The second one is [c flatflat, g sharp sharp, d flat, b sharp, f natural], with explicitly selected octaves 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`

Tests of key signature cancellation: at default location, at right, and before barline, then cancelling a key signature that does not exist.

`13e-KeySignatures-Cancel.xml`

Test the 'print-object' attribute of key signatures. The signature at the beginning of the second bar is a flat major and should be invisible; the following notes d flat, e flat, a flat, and b flat shouldn't have a flat accidental.

`13f-KeySignatures-Visible.xml`
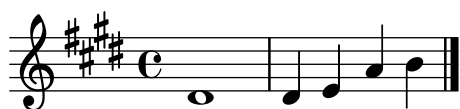
14 ... Staff attributes

Testing staff line configurations and pitched notes. 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). The fourth measure in the lower staff has five lines again but uses 'print-object="no"' in the 'line-detail' element to suppress the second and fourth staff line.

`14a-StaffDetails-LineChanges.xml`
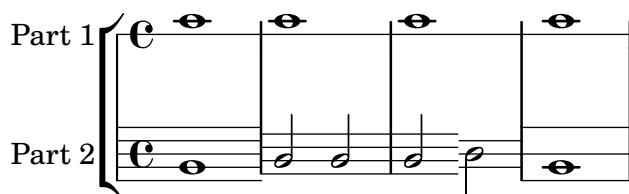
21 ... Chorded notes

One simple chord consisting of two notes.

`21a-Chord-Basic.xml`

Some subsequent (identical) two-note chords. In the second bar, the chords are tied (top note, bottom note, both notes).

`21b-Chords-TwoNotes.xml`

Some three-note chords, with various durations.

`21c-Chords-ThreeNotesDuration.xml`
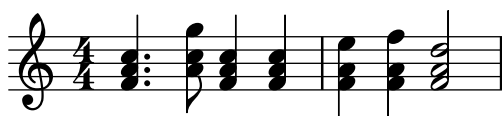
Chords in the second measure, after several ornaments in the first measure and a 'p' at the beginning of the second measure.

`21d-Chords-SchubertStabatMater.xml`
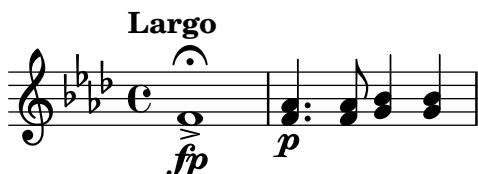
Check for proper chord detection after a pickup measure (i.e., the first beat of the measure is not aligned with a multiple of the time signature)!

`21e-Chords-PickupMeasures.xml`

Between the individual notes of a chord there can be <direction> elements, which already belong to the next <note> element after the current one. The segno and the piano sign should be attached to the rest after the chord.

`21f-Chord-ElementInBetween.xml`

Different tremolos on different chord notes. The tremolo on the last chord is of type 'unmeasured'.

21g-Chords-Tremolos.xml

Tremolos on chords

A chord with normal, cautionary, and editorial accidentals.

21h-Chord-Accidentals.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

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

`22b-Staff-Notestyles.xml`

Different note styles for individual notes inside a chord, using the <notehead> element.

`22c-Noteheads-Chords.xml`

Parenthesized note heads. A normal parenthesized note, a parenthesized note with an 'x' note head, a three-note chord with the middle note parenthesized, a three-note chord with all notes parenthesized, a normal quarter rest in parentheses, and a pitched quarter rest in parentheses.

`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, and x-note:y-note; each with bracket, slur, and without bracket. 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 to 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. The first bar contains a 5:2 tuplet (with 16th notes) in the middle of a 3:2 tuple (with eighth notes). The second bar has a 5:2 tuplet at the beginning and at the end (with the tuplet number forced below) of a 3:2 tuple (with the bracket forced above).

`23d-Tuplets-Nested.xml`

Tremolo tuplets. The first bar contains normal eighth triplets with staccato points, the second bar holds three tremolo tuplets, the third bar holds a sextuple followed by a triplet, the third bar contains a sextuple (starting on the second beat) with a 'fp' sign, and the fifth bar is identical to the third bar.

23e-Tuplets-Tremolo.xml

Tuplets without brackets, using only <time-modification>. The upper staff contains two quarters followed by a quarter triplet. The lower staff holds two eighths, an eighths triplet, four 16th notes, and a 16th sextuplet.

23f-Tuplets-DurationButNoBracket.xml

24 ... Grace notes

Different kinds of grace notes. First bar: single 1/16 grace note, beamed 1/16 grace notes, 1/16 appoggiatura, 1/8 appoggiatura. Second bar: slashed single 1/16 grace note, beamed 1/16 grace notes (with both notes marked as slashed), 1/16 acciaccatura, 1/16 grace note (without slash) right before the measure bar. Third bar: no grace note before chord, 1/4 grace note with sharp, two 1/4 grace notes with flats, 1/16 slashed grace note before rest.

24a-GraceNotes.xml

Chords as grace notes. The last (unslashed and beamed) grace group consists of two chords with one tie between the two grace chords and another tie between the last grace chord and the main chord.

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' (for the first grace note) and 'steal-time-following' (for the second one). The remaining grace notes have no such attribute.

`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. The `<grace>` element has no 'slash' attribute; since MusicXML does not provide a default value it is up to the application to interpret the grace note as an acciaccatura or an appoggiatura.

`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. Not marked with lyrics is a `<scordatura>` element at the very beginning.

`31a-Directions.xml`

MusicXML directions (attached to staff)

mp   mf   sf   sfp   sfpp   fp   rf   rfz   sfz   sffz   fz other dyn.
                                                                    ('ffz')

hair - pin   dash - es↓   bra - cket↓   oct. - shift
(cre - scendo)   (8   up)

pedal - change   -   mark   metro-   harp   damp   damp
                                nome   pedal   all

accordion string   string   eye-   perc.   staff- principal - voice
register mute on mute off   glasses   (timpani) divide (Haupt-stimme)

image

Tempo Markings: 'quarter.=100', 'quarter..=half.', '(quarter.=half..)', '(quarter.=77)'.

`31c-MetronomeMarks.xml`

This tests various combinations of `<direction>` children. The lyrics for each note describe the compound elements assigned to that note.

`31d-Directions-Compounds.xml`

MusicXML compound directions

Adagio   molto↓   p↓   molto f↑   ppp↓   -   to
long=100   f   subito   (rectangle)   cresc.   -   fff↓

cresc. - meno **f**

12*bis*

cresc. ↑ - to   reh. 12+bis   bold+   segno   coda
dashes - meno f↑   (square)   **bold***italic*   ×2

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)

fermata normal angled square   inverted arpeggio non- accidental
fermata fermata fermata   fermata   arpeggio mark

accent   strong staccato tenuto   detached stacca- spiccato scoop
accent   legato tissimo

plop doit falloff breath caesura stress un-   trill turn delayed inverted
mark   stress   mark   turn   turn

shake   wa - vy - line   mordent inverted schleifer tremolo
mordent

turn + acc. turn + acc. turn + acc. trill + acc.   up- down- harmonic natural
mark ↑   marks ↑↓ marks ↑[↑] mark ↑   bow   bow   harmonic

artificial   natural   natural   natural
harmonic   harmonic   harmonic   harmonic
(base+touch)   (touch)   (touch+sound)

nat. harm. | artificial | art. harm. | open | thumb- | fingering | fingering | fingering
(base+touch | harmonic | (base+touch | string | position | 1 | 2,3,4,5 | 0,1,2↑
+sound) | (base+touch) | +sound) | | | | | 3,4,5↓

fingering | fingering | pluck | pluck | double | triple | stopped | snap-
2, subst. 3 | 2, alt. 3 | a | a,m,i↓ | tongue | tongue | | pizz.

fret | string | hammeron | pull-off | bend 4 | bend 3 | bend -0.5 | bend 3.5 | tap | tap
0 | 5 | | | | with bar | pre-bend | release | | T

heel | toe | finger-nails | | f | ppp | sfp | other dynamics | strong stacc. | ↑ acc. ↓ ten. ↓ stacc. ↑

Text markup with different font sizes, weights, colors, horizontal positions, and vertical positions.

`32b-Articulations-Texts.xml`

It should not make any difference whether two articulations are given inside two different notation elements, inside two different articulations children of the same notation element or inside the same articulations element. Thus, all three notes should have a staccato and an accent.

`32c-MultipleNotationChildren.xml`

Different arpeggio kinds and directions.

`32d-Arpeggio.xml`

normal up   normal down   normal   arpeggio   normal   partial   partial
                            bracket   arpeggio   arpeggio
                                                                       bracket

33 ... Spanners

Several spanners defined in MusicXML: tuplet, slur (solid, dashed), wedge (cresc, dim), trill with accidental mark and wavy-line (with another accidental mark on the second beat), single-note trill spanner, octave-shift (8va,15mb), bracket (solid down/down, dashed down/down, solid none/down, dashed none/up, solid none/none), dashes, glissando (wavy), slide (solid), grouping, two-note tremolo, hammer-on, pull-off, pedal line (down, change, up), pedal text (down, up).

33a-Spanners.xml

Two simple tied whole notes

33b-Spanners-Tie.xml

A note can be the end of one slur and the start of a new slur. Also, in MusicXML, nested slurs are possible like in the second measure where one slur goes over all four notes, and another slur goes from the second to the third note.

33c-Spanners-Slurs.xml

All types of octave shifts (15ma on the third eighth note, 15mb on the fourth and fifth, 8va on the sixth and seventh, and 8vb on the last two 16th notes). This test file positions <octave-shift type="stop"/>> before the associated note, as expected in MusicXML import of Finale and Sibelius, for example. Consequently, it contains 'Sibelius' as the <software> tag.

Note that the end of the last octave shift is anchored at the following bar line.

33da-Spanners-OctaveShifts-before.xml
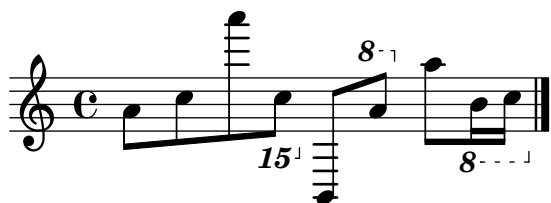
All types of octave shifts (15ma on the third eighth note, 15mb on the fourth and fifth, 8va on the sixth and seventh, and 8vb on the last two 16th notes). This test file positions <octave-shift type="stop"/>> after the associated note, as expected in MusicXML import of MuseScore, for example. Consequently, it contains 'MuseScore' as the <software> tag.

Note that the end of the last octave shift is anchored at the following bar line.

`33db-Spanners-OctaveShifts-after.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`

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

solid   (+text) dashed   dotted   wavy
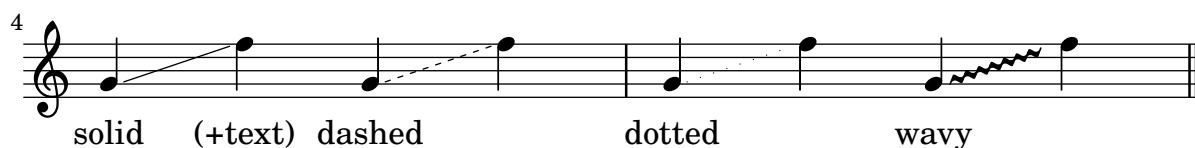
Several ties that have their end tag missing.

`33i-Ties-NotEnded.xml`

A   B   C   D   E
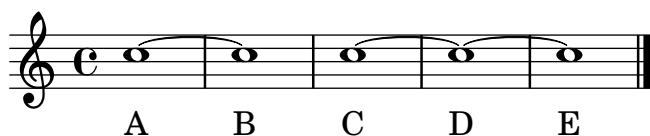
Tests for double-note tremolo beams. The first bar shows a half-note tremolo (one beam, two strokes) followed by a dotted quarter-note tremolo with chords (three strokes). The second bar shows a half-note triplet with three tremolos (no beams, three strokes) followed by three beamed eighths-note chords with a tremolo (two strokes) between the second and third chord.

`33j-Beams-Tremolos.xml`

34 ... Attribute issues

Test various spanner elements (mostly from `<notations>`) starting from a `<note>` object with 'print-object' set to 'no', then test spanners ending with such a note object: beam, tuplet, slur, trill + wavy-line, glissando (wavy), slide (solid), two-note tremolo, hammer-on, pull-off. Spanners starting from an invisible object should be suppressed.

`34a-Print-Object-Spanners.xml`

Colors. The elements in the first bar have the 'color' attribute set to red for `<note>`, `<note-head>`, `<stem>`, `<dot>`, and `<accidental>`, respectively.

The elements in the second bar have the 'color' attribute set to red for `<down-bow>`, `<tremolo>`, `<accent>`, and `<note>` again (for the rest), respectively, followed by a red unpitched note.

The third and fourth bar consists of a red two-bar rest.

The fifth bar has a red rehearsal mark on its starting bar line. The first note has three fingerings, with the middle one in red; also attached is a red 'ff' sign. The second note has three plucks, with the first one in red. A red 'Adagio' tempo indication is on top of the third beat, which consists of a quadruplet with a red number. The fourth beat holds a red arpeggio, and the fifth beat demonstrates lyrics in red.

The sixth bar holds a red beamlet, a red beam, a red slur, a red pedal marker that gets continued with a blue one, and a red octave shift.

Measure seven contains a red trill with a black wavy line, a black trill with a red wavy line, a red bracket, a red glissando, and a red wedge.

Bar eight starts with a red and black tie connecting two chords, followed by 'cresc.' and dashes in red, followed by 'dim.' in black with red dashes.

The ninth measure demonstrates a red 6/8 time signature, followed by a red two-stem tremolo, a red breath mark.

Bar ten begins with a red, non-traditional key change, followed by a red, traditional one.

The eleventh bar starts with a red bass clef (actually, still in bar seven), followed by a blue percussion clef on a red two-line staff (where the middle line is omitted).

Measures 12 to 14 holds a repeat structure with two endings, with red bar lines at the beginning of measures 12 and 14, a blue bar line at the beginning of measure 13, and a red prima-volta bracket and number.

34b-Colors.xml

Font sizes. The elements in the first bar have the 'font-size' attribute set to a larger value for <note>, <notehead>, <trill-mark>, <dot>, and <accidental>, respectively.

The elements in the second bar have the 'font-size' attribute set to a larger value for <down-bow>, <accidental-mark>, <accent>, and <note> again (for the rest), respectively, followed by a larger percussion clef and a larger unpitched note.

The third and fourth bar consists of an oversized two-bar rest.

The fifth bar has an oversized rehearsal mark on its starting bar line. The first note has three fingerings, with the middle one oversized; also attached is an oversized 'ff' sign. The second note has three plucks, with the first one oversized. An oversized 'Adagio' tempo indication is on top of the third and fourth beats, which consist of a quadruplet with an oversized number. The fifth beat demonstrates oversized lyrics.

The sixth bar holds an oversized pedal marker with an oversized octave shift, an oversized trill with a wavy line, and an oversized 'cresc.' with dashes.

The seventh measure demonstrates an oversized, non-traditional key change, followed by an oversized 6/8 time signature, an oversized breath mark, an oversized bass clef, and an oversized, traditional key change.

`34c-Font-Size.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`

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

`41b-MultiParts-MoreThan10.xml`

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.

41c-StaffGroups.xml

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.

41d-StaffGroups-Nested.xml

Part names and abbreviations can contain line breaks.

`41e-StaffGroups-InstrumentNames-Linebroken.xml`

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`

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`

42 ... Multiple voices per staff

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

42a-MultiVoice-TwoVoicesOnStaff-Lyrics.xml

This   is   the   lyrics of Voice1
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`
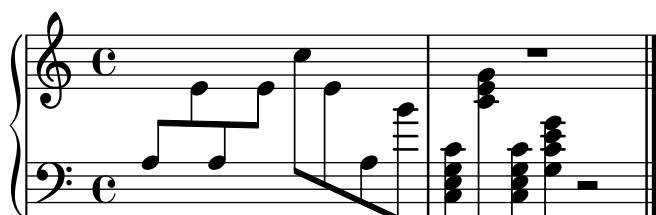
A piano staff with dynamics and clef changes, where each element (ffff, wedge and clef changes) applies only to one voice or one staff, respectively.

`43e-Multistaff-ClefDynamics.xml`

45 ... Repeats

A simple, repeated measure (repeated 5 times)

`45a-SimpleRepeat.xml`
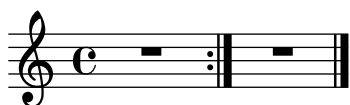
A simple repeat with two alternative endings (volta brackets).

`45b-RepeatWithAlternatives.xml`

Repeats can also be nested.

`45c-RepeatMultipleTimes.xml`
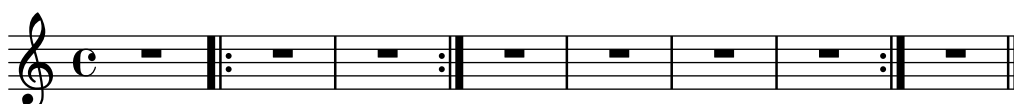
Nested repeats, each with alternative endings.

45d-Repeats-Nested-Alternatives.xml
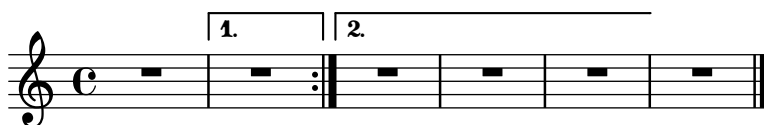
Some more nested repeats with alternatives. The barline between measure 7 and 8 will probably be messed up! (Should be a repeat on both sides!)

45e-Repeats-Nested-Alternatives.xml
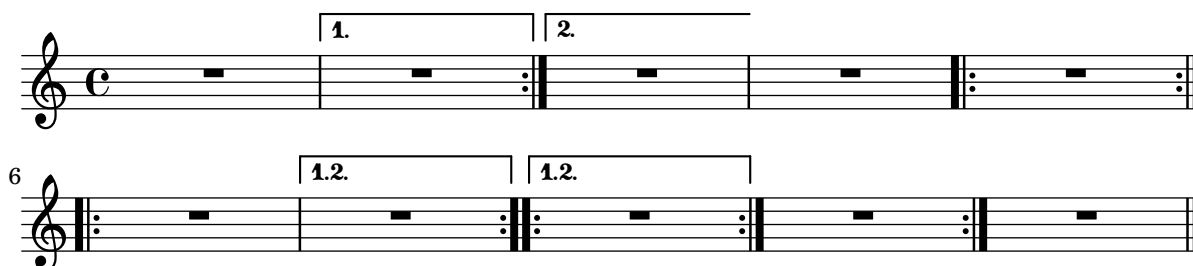
Some more nested repeats with alternatives, where the MusicXML file does not make sense in the first place. How well are applications able to cope with improper repeats and alternatives?

45f-Repeats-InvalidEndings.xml
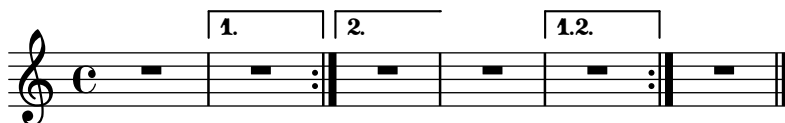
A forward-repeating bar line without an ending repeat bar.

45g-Repeats-NotEnded.xml
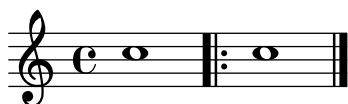
46 ... Barlines, Measures

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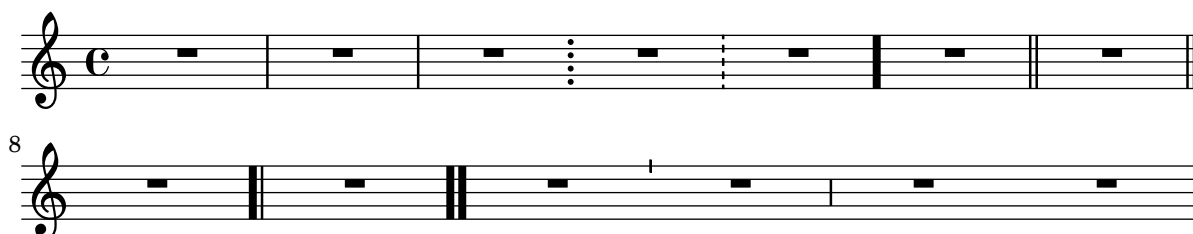
Barlines can appear at mid-measure positions, without using an implicit measure!

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 (containg 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

Staff "Test"

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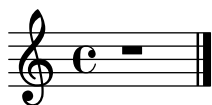
A piece with an empty (but existing) work-title, but a non-empty movement-title. In this case the movement-title should be chosen, even though the work-title exists.

`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

Medium size

Large size
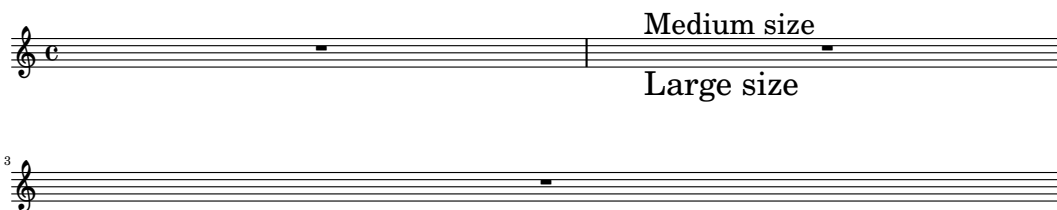
System and page breaks, given in a `<print>` element

`52b-Breaks.xml`

61 ... Lyrics

Some notes with simple lyrics: Syllables, notes without a syllable, syllable spanners.

`61a-Lyrics.xml`

Multiple (simple) lyrics. The order of the exported stanzas is relevant (identified by the number attribute in this test case)

`61b-MultipleLyrics.xml`

Lyrics assigned to the voices of a piano staff containing two simple staves. Each staff is assigned exactly one lyrics line.

`61c-Lyrics-Pianostaff.xml`

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

`61d-Lyrics-Melisma.xml`

Assigning lyrics to chorded notes.

`61e-Lyrics-Chords.xml`

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

`61f-Lyrics-GracedNotes.xml`

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`

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.

In the second bar, 'start', 'continue', and 'stop' types are used for `<extend>`, together with a red color for the extender line.

`61h-Lyrics-BeamsMelismata.xml`

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`
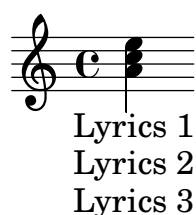
Multiple lyrics syllables assigned to a single note are implemented either using a space in the lyrics' `<text>` element or by using `<elision>`.

The first note has a single syllable, the second note has two syllables separated by a space, the third has two syllables with `<elision>` set to an undertie, and the fourth has three syllables (the first and third one in red, and the second one being in italic and overriding the color with blue), with a green undertie between the first and second syllable and an empty `<elision>` element between the second and third syllable, causing an application-specific elision glyph.

`61j-Lyrics-Elisions.xml`
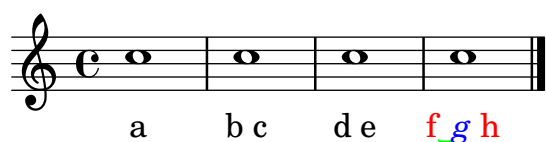
Lyrics spanners: continued syllables and extenders, possibly spanning multiple notes. The intermediate notes do not have any <lyric> element.

61k-Lyrics-SpannersExtenders.xml

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

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

`71e-TabStaves.xml`

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\>

Cm⁶   C⁹   C△9   Cm⁹

minor-sixth   dominant-ninth   major-ninth   minor-ninth

C¹¹   C△11   Cm¹¹   C¹³

dominant-11th   major-11th   minor-11th   dominant-13th

C△13   Cm¹³   Cˢᵘˢ²   Cˢᵘˢ⁴

major-13th   minor-13th   suspended-second suspended-fourth

C⁵   C

Neapolitan Italians French German   pedal   power Tristan other

F♯   F♭♭/C G♯/D♯ C   C♭⁵   E♭⁴ ˢᵘˢ♭⁴ ♭³

Inversion   Fbb/C G#/D#   C-3+5b   C-1+6b

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

`71g-MultipleChordnames.xml`

C   F♯m⁶ Dm⁷ G⁷

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

Horn in Eb

Piano

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

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
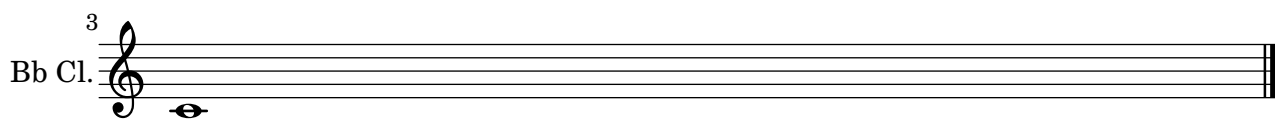
73 ... Percussion

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 alterated figures, bracketed figures and slashed figures.

Note that this file does not contain any extenders!

`74a-FiguredBass.xml`

75 ... Other instrumental notation

All possible accordion registrations.

`75a-AccordionRegistrations.xml`

90 ... Compressed MusicXML files

A compressed MusicXML file, containing a simple MusicXML score and the corresponding .pdf output for reference.
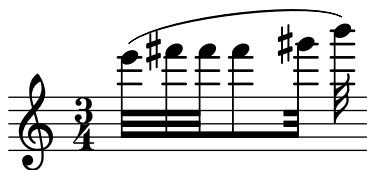
`90a-Compressed-MusicXML.mxl`

Compressed MusicXML file

Voice

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`

Me - lisma___   Me - lisma___   Me - lisma___   Me - lisma___