

ConT_EXt

The background of the page is a dense, overlapping pattern of stylized document icons. Each icon is a rectangle with a white border and a gray fill, containing several horizontal lines representing text. The icons are arranged in a way that they appear to be floating or overlapping each other, creating a textured, layered effect.

title : ConT_EXt User Modules
subtitle : LilyPond Connections (Music Typesetting)
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This module serves to include LilyPond music directly in the ConT_EXt source, just as METAPOST code can be.

It is supposed to work only with LilyPond's stable version 2.12.

Complete list of options:

option	default	comment
staffsize	20	in pt
indent	0pt	first line indent
time	yes	count time? (i.e. show time signature, set bars, split line)
clef	yes	show clef?
linewidth	localhsize	
betweensystemspace	54pt	space between systems
height	textheight	
align	?	default depends on fragment=...
fragment	no	whole staff line or only snippet?
barnumbers	no	show numbers of measures?
showempty	no	drop empty staves?
seriffont	"TeX Gyre Schola"	font for e.g. lyrics
sansfont	"LMSans10"	font for e.g. chords
monofont	"LMTypewriter10"	normally not used

TODO: Proper support for multipage results.

TODO: LilyPond → ConT_EXt.

Commented Source

As usual, we use a prefix for buffers, `\getparameters` etc.:

```

1 \writestatus{loading}{LilyPond module}
2 \startmodule[lilypond]
3 \unprotect
  \def\??lily{lilypond-}

```

Define the text snippets to be placed around fragments. Since LilyPond uses similar syntax to TeX, we must do some catcode fiddling.

```

4 \def\lily!slash{/}
5 \bgroup
  \catcode`\/=\\@escape
  /catcode`\/=\\@other
  /catcode`/#=\\@other
  /catcode`/<=\\@begingroup
  /catcode`/>=\\@endgroup
  /catcode`/{=\\@other
  /catcode`/}=\\@other
  /catcode`/%=\\@other
  /catcode`/-=\\@letter
  /gdef/lily!fragmentprefix<
  /string^^J
  /string^^J

```

```

{/string^^J
>

6 /gdef/lily!fragmentsuffix</string^^J
}/string^^J
>

7 /gdef/lily!prefix</string^^J
/string^^J
/string^^J
\version "2.12.0"/string^^J
\layout {/string^^J
/iftlily!showempty/else
\context { \RemoveEmptyStaffContext } % MUST come first/string^^J
\context { \Score \override VerticalAxisGroup #'remove-first = ##t }/string^^J
/ft
/string^^J
/iftlily!time/else
ragged-last = ##t/string^^J
\context { \Score timing = ##f }/string^^J
\context { \Staff \remove "Time_signature_engraver" }/string^^J
/string^^J/ft
/iftlily!barnumbers/else
\context { \Score \remove "Bar_number_engraver" }/string^^J
/ft
/string^^J
/iftlily!clef/else
\context { \Staff \remove "Clef_engraver" }/string^^J
/ft
/string^^J
#(define fonts
  (make-pango-font-tree
    /lilypond-seriffont/space
    /lilypond-sansfont/space
    /lilypond-monofont/space
    (/lily!slash/space/lilypond-staffsize/space 20)))string^^J
/string^^J
}/string^^J
\paper {/string^^J
#(define dump-extents #t)/string^^J
ragged-right = /iftlily!align ##f/else ##t/ft/string^^J
indent = /withoutpt/the/lily!indent\pt/string^^J
line-width = /withoutpt/the/lily!linewidth\pt/string^^J
vsize = /withoutpt/the/lily!vsize\pt/string^^J
printpagenumber = ##f/string^^J
oddFooterMarkup=##f/string^^J
oddHeaderMarkup=##f/string^^J
bookTitleMarkup = ##f/string^^J
scoreTitleMarkup = ##f/string^^J
ragged-bottom=##t/string^^J
ragged-last-bottom=##t/string^^J
between-system-padding = #0/string^^J
between-system-space = /withoutpt/the/lily!betweensystemspace\pt/string^^J

```

```

    }/string^^J
  >

8  /gdef/lily!hash<#>
   /egroup

9  \newdimen\lily!linewidth
   \newdimen\lily!vsize
   \newdimen\lily!indent
   \newdimen\lily!betweensystemspace
   \newif\iflily!showempty
   \newif\iflily!align
   \newif\iflily!clef
   \newif\iflily!time
   \newif\iflily!barnumbers

10 \newcounter\lily!figures

```

Again, as usual, there is a `\setuplilypond` command that accepts the same parameters as `\lilypond` and `\startlilypond` do in their optional argument.

```

11 \def\setuplilypond{%
    \start\catcode`\#=\@other%
    \dosingleempty\dosetuplilypond%
  }

12 \def\dosetuplilypond[#1]{%
    \stop% \restore \catcode`\#
    \getparameters[\??lily] [#1]%
  }

```

We set the following defaults:

```

13 \setuplilypond
   [staffsize=20,
    indent=0pt,
    betweensystemspace=54pt,
    time=\v!yes,
    clef=\v!yes,
    align=?, % default depends on fragment=...
    fragment=\v!no,
    barnumbers=\v!no,
    showshowemptyempty=\v!no,
    seriffont="TeX Gyre Schola", % LilyPond default font
    sansfont="LMSans10",
    monofont="LMTypewriter10",
  ]

```

If you want to know which fonts of your system LilyPond can see with which names, try `lilypond -dshow-available-fonts any`. (The 3rd parameter is necessary, but can be anything.) There are a lot of restrictions, e.g. no fonts from the T_EX tree (don't know why), only one face per font file etc.

`\startlilypond` is a multistage implementation, because end-of-line characters must be treated specially in the `\startlilypond... \stoplilypond` range.

LilyPond Connections (Music Typesetting)

```

14 \def\startlilypond{%
    \bgroup%
    \catcode`\#=\@other%
    \dosingleempty\dostartlilypond%
}

15 \def\dostartlilypond[#1]{%
    \obeylines%
    \dodostartlilypond[{#1}]%
}

16 \long\def\dodostartlilypond[#1]#2\stoplilypond{%
    \egroup% from \startlilypond
    \bgroup%

```

The default of the `linewidth` parameter is the local `\hspace`.

```

17 \setlocalhspace
    \getparameters[\??lily] [linewidth=\the\localhspace,height=\the\textheight,#1]%
    \lily!linewidth\dimexpr\getvalue{\??lily linewidth}\relax
    \lily!vsize\dimexpr\getvalue{\??lily height}\relax
    \lily!indent\dimexpr\getvalue{\??lily indent}\relax
    \lily!betweensystemspace\dimexpr\getvalue{\??lily betweensystemspace}\relax

```

The default of `align` depends on whether we typeset a fragment:

```

18 \@EAEAEA\doifelse\getvalue{\??lily align}{\v!yes}%
    \lily!aligntrue\lily!alignfalse
    \@EAEAEA\doif\getvalue{\??lily fragment}{\v!no}{%
        \@EAEAEA\doif\getvalue{\??lily align}?
        \lily!aligntrue
    }%
    \@EAEAEA\doifelse\getvalue{\??lily time}{\v!yes}
    \lily!timetrue\lily!timefalse
    \@EAEAEA\doifelse\getvalue{\??lily barnumbers}{\v!yes}
    \lily!barnumberstrue\lily!barnumbersfalse
    \@EAEAEA\doifelse\getvalue{\??lily showempty}{\v!yes}
    \lily!showemptytrue\lily!showemptyfalse
    \@EAEAEA\doifelse\getvalue{\??lily clef}{\v!yes}
    \lily!cleftrue\lily!cleffalse

```

We are using a counter to keep the different LilyPond pieces separate. This allows to typeset them only once, during the first run.

TODO: This won't work any longer once we pass the remaining vertical space to LilyPond.

```

19 %\global\advance\lily!figures\plusone
    \doglobal\increment\lily!figures
    \edef\lily!filename{\bufferprefix lilypond-\lily!figures}%\the
    %\writestatus{buffering}{\lily!filename}
    %\startmode[*\v!first]%
    \def\obeyedlines{\string^^J}%
    \convertargument#2\to\ascii
    \expanded{%
        \setbuffer[lilypond-\lily!figures]%\the
    }

```

```

\lily!prefix
\lily!hash(set-global-staff-size \getvalue{\??lily staffsize})\string^^J%
\ifundefined{\??lily fragment}\else\lily!fragmentprefix\fi
%% TODO: Option "packed"
\ascii%
\ifundefined{\??lily fragment}\else\lily!fragmentsuffix\fi
}% expanded
\endbuffer%

```

Generating a PDF directly always creates a whole page, so we generate EPS first.

```

20 \def\LP{texmfstart --ifchanged=\lily!filename.tmp --exec bin:lilypond -dbackend=eps
-dno-gs-load-fonts -dinclue-eps-fonts -ddelete-intermediate-files \lily!file-
name.tmp}

```

It would be nice, if `-ddelete-intermediate-files` would delete all useless intermediate files. More possible options in `lily.scm`.

```

21 \def\PDF{texmfstart --ifchanged=\lily!filename.eps pstopdf \lily!filename.eps}

```

The following line is needed for Lua_T_E_X, where buffers are kept in memory in contrast to other (older) flavours of _T_E_X where they're written to a file automatically. We have to require writing to a file explicitly with `\savebuffer`.

```

22 \ifx\directlua\undefined \else \savebuffer[lilypond-\lily!figures]\fi
23 \executesystemcommand{\LP}%
\doif\jobsuffix{pdf}{%
\executesystemcommand{\PDF}%
}%
\doifelse\jobsuffix{pdf}
{\def\lily!img{\lily!filename .pdf}}%
{\def\lily!img{\lily!filename .eps}}%

```

TODO: Get the relevant dimension directly from LilyPond, to place the instrument name into the left margin for short snippets as well.

If we are not in the middle of some text, we have to check whether LilyPond created an image that is wider than requested: It places the instrument names in the left margin.

```

24 \ifvmode
\getfiguredimensions[\lily!filename.pdf]%
\leavevmode%
\newdimen\FigWidth
\FigWidth=\figurewidth
\ifdim\FigWidth>\localhsize
\!!dimena=\localhsize
\advance\!!dimena by-\FigWidth
\noindent\hskip\!!dimena
\fi
\fi
\externalfigure[\lily!img]%
\egroup%
}%

```

For short snippets, we define an inline alternative to our start/stop pair:

```

25 \def\lilypond{\dosingleempty\dolilypond}
26 \def\dolilypond[#1]#2{\startlilypond[#1]#2\stoplilypond}
27 \stopmodule
28 \protect \doifnotmode{demo}{\endinput}

End of file

29 \starttext

30 \startbuffer[sample]
\subject{Telemann, TWV 40:11}
\startlilypond
\relative c' {
\set Staff.instrumentName = flute
\key fis \minor
\time 3/4
\partial 4
r8 fis'8 | fis4. cis8 a cis | fis, a cis fis a fis |
b, d fis b d b | eis,, gis cis eis gis b, |
a fis' gis, fis' cis eis | fis,4 r8
a' gis fis | e gis, a e' fis cis |
d fis, gis b e d | cis4 \trill r8
cis b a | b dis e gis cis, b |
a e' dis fis b, a | gis4 \trill r8
}
\stoplilypond
\stopbuffer

31 The input
\typebuffer[sample]
is typeset as
\getbuffer[sample]

32 \type{\startlilypond} accepts options, as in\crlf
\type{\startlilypond[staffsize=24, linewidth=14cm, indent=5cm, time=no, clef=no]}:
\nobreak
\startlilypond[staffsize=18,linewidth=14cm,indent=5cm,time=no,clef=no]
\relative c' {
\key fis \minor
\time 3/4
\partial 4
r8 fis'8 | fis4. cis8 a cis | fis, a cis fis a fis |
b, d fis b d b | eis,, gis cis eis gis b, |
a fis' gis, fis' cis eis | fis,4 r8
a' gis fis | e gis, a e' fis cis |
d fis, gis b e d | cis4 \trill r8
cis b a | b dis e gis cis, b |
a e' dis fis b, a | gis4 \trill r8
}
\stoplilypond

```



```
33 It is also possible to mix text and music:  
   \lower 8.2pt\hbox{\lilypond[fragment=true,staffsize=16,time=no,clef=no]{g'}} is a g.  
34 TODO: The \type{\lower} in the example above should not be necessary.  
35 \stoptext
```

