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A-Play

Ver. 3.0



Instruction Manual



Music Theatre

Record

Powered by LilyPond

Ver. 3.0

2007

**Digital
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A-Play Instruction Manual

A-Play Version 3.0.4

ISBN 9788791995118

3rd Edition, 1st Issue

Spring 2007, Produced in Europe



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www.nordisc-music.com

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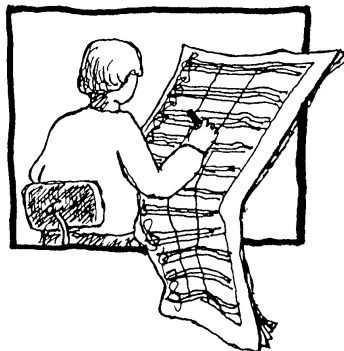
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1. A-Play User Guide

Introduction

Not so many years ago, musicians used to spend most of their time either rehearsing or writing notes in hand. For a classical composer, separate string, woodwind and choir sheets could take more than 60-80% of the working time besides actually writing the music! This has all changed for the good.



After the first simple note writing programs for the Atari and the Amiga in the 1980'ies, we have had two generations of music software. The most comprehensive music software packages are still British Sibelius of the second generation and German Cubase of the first generation. Whereas the first generation concentrated on the studio and sequencer side of music production, the second generation, Sibelius, Finale and Encore – to mention the three most famous note writing programs – specialize in a wide range of advanced note writing features for professional score production.

A-Play has its roots in the very first generation of MIDI based note writing software in the mid 1980-ies, but our primary goal has always been to provide the user with a fast and professional range of note editing and score production facilities. Thus, A-Play is not a sequencer or a digital studio, but a “word processor” for note writing.

Word Processing in Three Dimensions

When writing a normal text, the user concentrates on one continuous line of text, wrapped within the margins of the screen, but still one, single line. Unfortunately, music is much more complicated, as even a small orchestra score has several lines of music (voices) played at the same time, each with individual settings of dynamic phrasing, sound, timbre, effects and other peculiarities. The three dimensional grid of a score is not easy to compose, neither is it easy to write down. And for that reason, one needs to consider the musical tradition of note writing. The history of note writing is long and complicated and even the most advanced digital note writing applications still owe their existence to a bunch of Greek music philosophers 2,500 years ago.

The History of Printed Musical Notation

The first music theorist was the Greek philosopher Pythagoras. Around 530 B.C., he discovered the properties of the scale, i.e. the intervals and lined out a general musical theory, which was to last for almost 2,000 years. The first alphabet for writing music down was also invented by the Greeks, but only 22 examples have survived the Antiquity. The first modern notes were invented in the late 1300-ies evolving into the present system in the 1600-ies. Both the notes and the tablature of our times have their roots in Baroque music. In the 1900-ies, the chord symbols were added to the vocabulary of musical notation and a number of guitar-specific effect signs were designed in the 1980-ies.



Handset Note types (about 1900). Note the holes in the lines and stems!

Printing notes was always a problem. In the old days, monks made beautifully illustrated songbooks with the famous square note heads, often in bright colours. In the renaissance, the notes were printed but looked rather clumsy compared to the handwritten masterpieces. Later came the most elegantly designed notes ever, etched into copperplates, a technique still valid until 30 years ago. Unfortunately but inevitably the price of such exquisite notes was exorbitant, and a cheaper method was developed in the late 1800-ies using note lead types. But a major problem with this method were the note lines, which due to the handset line parts, always had holes in between the parts, making the score hard to read. The last attempt of revolutionizing the printed notes came as late as the early 1970-ies when a Danish inventor produced notes by making gigantic master notes for ultimate sharpness of the print. Only a decade later, two revolutions appeared, making professional note print accessible for everyone, the MIDI format and the PostScript printers.

1986: MIDI and PostScript

1986 saw two major inventions in the printing and music area, the MIDI format and the PostScript vector based typography. Without these two techniques, there would have been no note writing programs today.

MIDI

After decades of synthesizers and drum programming, the instrument makers finally decided in 1986 to make a common standard for communication between the various brands of electronic instruments. The standard MIDI (**M**usical **I**nstrument **D**igital **I**nterface) is a communication protocol not unlike the ones used on the Internet, only much faster – actually MIDI is one of the fastest transfer protocols in the world. The speed is necessary to present the many layers of the music at (almost) the same time, as the protocol uses only one channel for each polyphonic voice. A chord has to be rendered as a sequence of notes played very swiftly to produce a sound of notes seemingly struck at the same time. A normal MIDI system has 16 such channels, allowing for rather impressive orchestra imitations. 32 or more channels can be combined in the professional studios.

PostScript

The typesetting company Adobe in USA invented the PostScript fonts and later the PDF format in 1986-87. The new fonts were vector based, i.e. based on mathematical algorithms instead of physical (analogue) pictures of letters as in the early photo typesetting in the 1960-ies. The PostScript fonts made professional typesetting available for all computer users, reducing the printing cost with as much as 80-90%. A note font was among the first fonts on the market.

Symbolic Notes

Similar to the vector based fonts MIDI notes are descriptions of sounds, not actual sound waves. The MIDI signals control a number of sound generators, which are responsible for the final sound output. The possibility of recording music with a decent quality, compared to the old synthesizers, that is, makes it much easier to compose and test music, especially classical arrangements.

A-Play – 1986 to 2007

A-Play was one of the first note writing programs in Scandinavia back in the 1980-ies. The original versions 1 to 2 were written for DOS; it was long before Windows and graphical interfaces. In spite of its “primitive” looks – white notes on low-resolution black and green screens – it had many of the features now found in Sibelius and Lily Pond. But during the 1990-ies, NORDISC put the innovative software to sleep as we moved further into the musical theatre business.

In 2002, however, we decided to reopen the project. A new feature list was made, and the goal was a web based, free program with a full set of professional functions. In 2006, we discovered the free GNU software language for music, Lily Pond. This amazing programming language had everything a note writing application would ever need, but the user interface was cumbersome hand programming. We took up the challenge, and started building a shell to Lily Pond. It took us three months to produce a decent menu system, combining the proven interface of A-Play and the top notch programming language Lily Pond. The result was a feature rich and stable working environment for note writing and education.



*Gitte Lund working with A-Play ver. 1.0
in NORDISC Music & Text 1987*

Installation

To use A-Play, you must install LilyPond version 2.6.5. We also recommend a number of carefully chosen text editors for Windows and Linux, but any professional text editor will actually do; these programs are just suggestions, except for the LilyPond mother program. If you choose JEdit, you will have access to another great music tool, the **LilyPondTool**, which is the perfect companion to A-Play. See the JEdit plugin for installation instructions.

WINDOWS

Lily Pond Music Programming Language (Windows 98 to XP)

- 1 [Download the Free Lilypond Program](#)



Score Editor

- 2 [Download the Free TED Notepad Text Editor](#) (Windows 98 to XP)

MIDI Player

- 3 [Download the Free Noteworthy MIDI Player](#) (Windows 98 to XP)

File Manager

- 4 [Download the Free FileAnt File Manager](#) (Windows 98 to XP)

GNU/LINUX

The use of the compiler differs from the Windows version, please see the official LilyPond manual.

Lily Pond Music Programming Language

- 1 [Download the Free LilyPond Program](#) (GNU/Linux any x86)



Score Editor (Linux, Windows and Other Systems)

- 2 [Download the Free JEdit Text Editor](#)

Download: [Java-based installer 2.0 MB](#) (For any operating system)

The Menu System



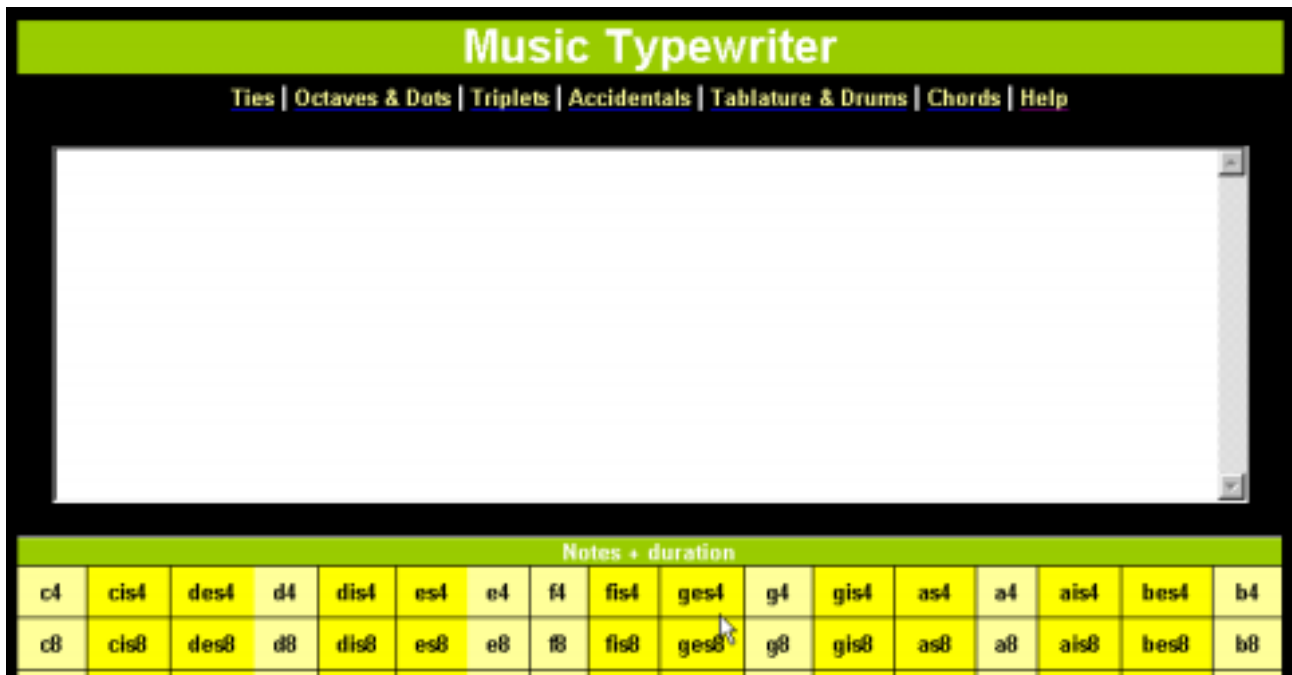
1. The buttons in the *Left Menu* open the instruction manual, the Music Theory and the Basic Piano books.
2. The *Top Menu* contains the menu pallets: Score, Notes, Format, Tools and Help.
3. The *Reading Pan* contains the instruction manual/Help, the Music Theory and the Basic Piano book.

The menus are *Pallets*, i.e. yellow boxes called *Copy Pads*, where you can copy and paste codes into the score. Each menu is arranged according to the traditional workflow of a score. The menus follow the top down principle, where the larger elements lead to smaller and more detailed elements and groups; just like writing a score from the first piano sketches to the final score arrangement.

The workflow is mirrored in the menu pallets like this:

- Score**
- Paper format, titles, global key, meter etc.
 - Number of systems with specific settings of MIDI instruments, clef and lyrics/chords.
 - Import/Export of MIDI to and from LilyPond.

- Notes**
- The workspace for writing the individual systems before pasting the system contents into the score in the editor. All the most common notes, ties, accents, chords etc. are present in the notes menu.
 - Bar lines, ties, octaves, repeats and other elements close to the note level.



- Format**
- Shortcut menus for all common bar and system properties.
 - Transpose.
 - Advanced layout of the score.
- Tools**
- Advanced features: Chord boxes, harmonizing, jazz chords.
 - Advanced rhythms.
 - Education and ancient music.

Quick Guides A-Play



LILYPOND (WINDOWS VERSION)

Once LilyPond has been installed, you can see the LilyPond icon on the desktop. The rest of LilyPond is normally invisible, except when something is wrong with the score code.

You have the following daily routines with LilyPond:

1. Compiling the Score When you are ready for a test print, you navigate with ALT + TAB to the folder of the LilyPond file (filename.ly):

- Double-click on the file. A *DOS window* opens, and the file is converted to MIDI and PDF. You can also right-click on the file and select PDF.

Note Linux and other operating systems used different methods for compilation. Please consult the official LilyPond manual for the LilyPond version, you are using.

- **PDF** Double-click on the PDF to check the contents of the file.
- **MIDI** Open the MIDI file in *Noteworthy MIDI player* or drag the file into the program. The music is played, while the notes are shown on the player's screen in real time. If you don't have access to the Noteworthy player, use Windows Media Player. Linux users have their own players.

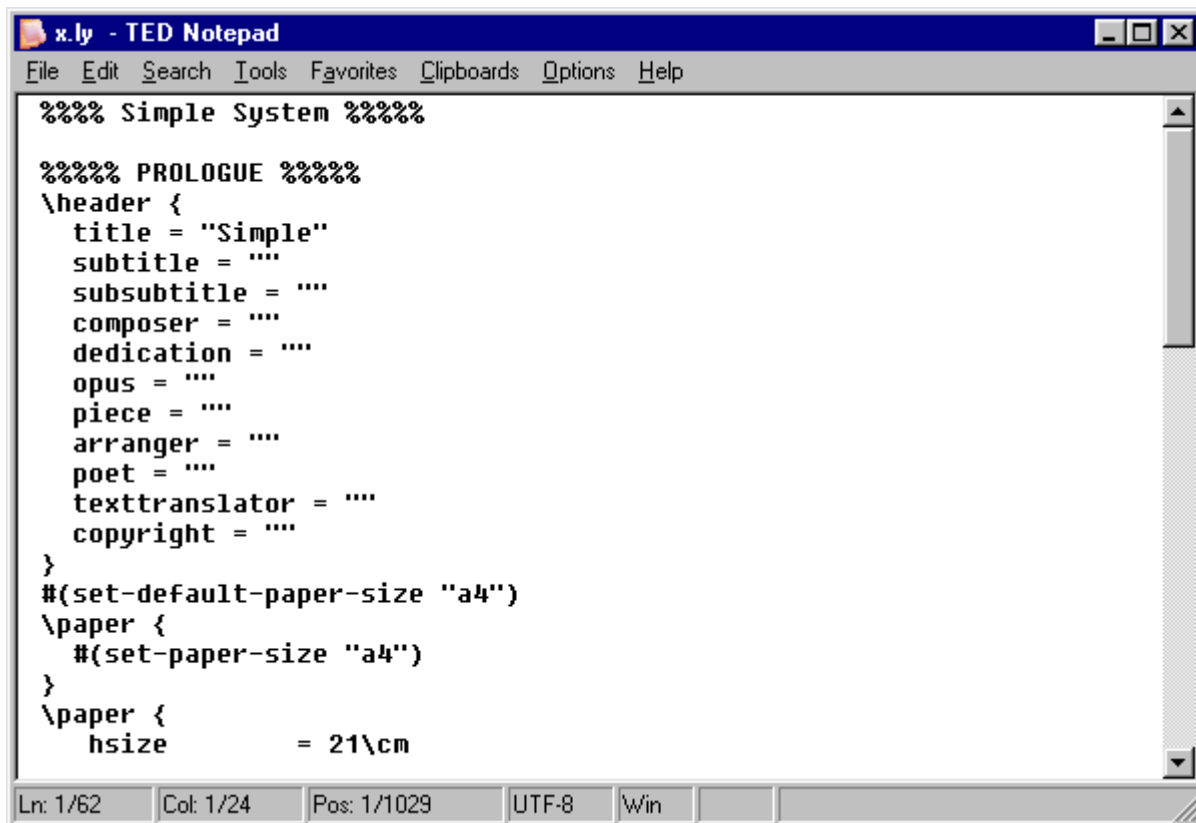
2. Automatic Debugging Each time you compile a score, LilyPond checks your score for errors. The program is pretty persistent: It is case sensitive, for example,, so if you write `\Major`, you will have an error while compiling the file (should be `\major`). If you don't see a popup window with errors, the file is approved, although it can still look ugly on screen – the debugger has no sense of beauty.

3. Conversion to .PNG and other formats: See later in this manual and in the Score menu, Import/Export.

TED NOTEPAD OR JEDIT?

Take a look of the following screenshots; it is really a matter of taste. *JEdit* is a famous Linux and Mac text editor with tons of features and plug-ins. It also runs under Windows. *TED Notepad* is a very small text editor that resembles the Microsoft notepad. But beneath its simple surface, it has a full range of useful editing tools.

TED Notepad



The screenshot shows the TED Notepad application window. The title bar reads "x.ly - TED Notepad". The menu bar includes "File", "Edit", "Search", "Tools", "Favorites", "Clipboards", "Options", and "Help". The main text area contains the following LaTeX header code:

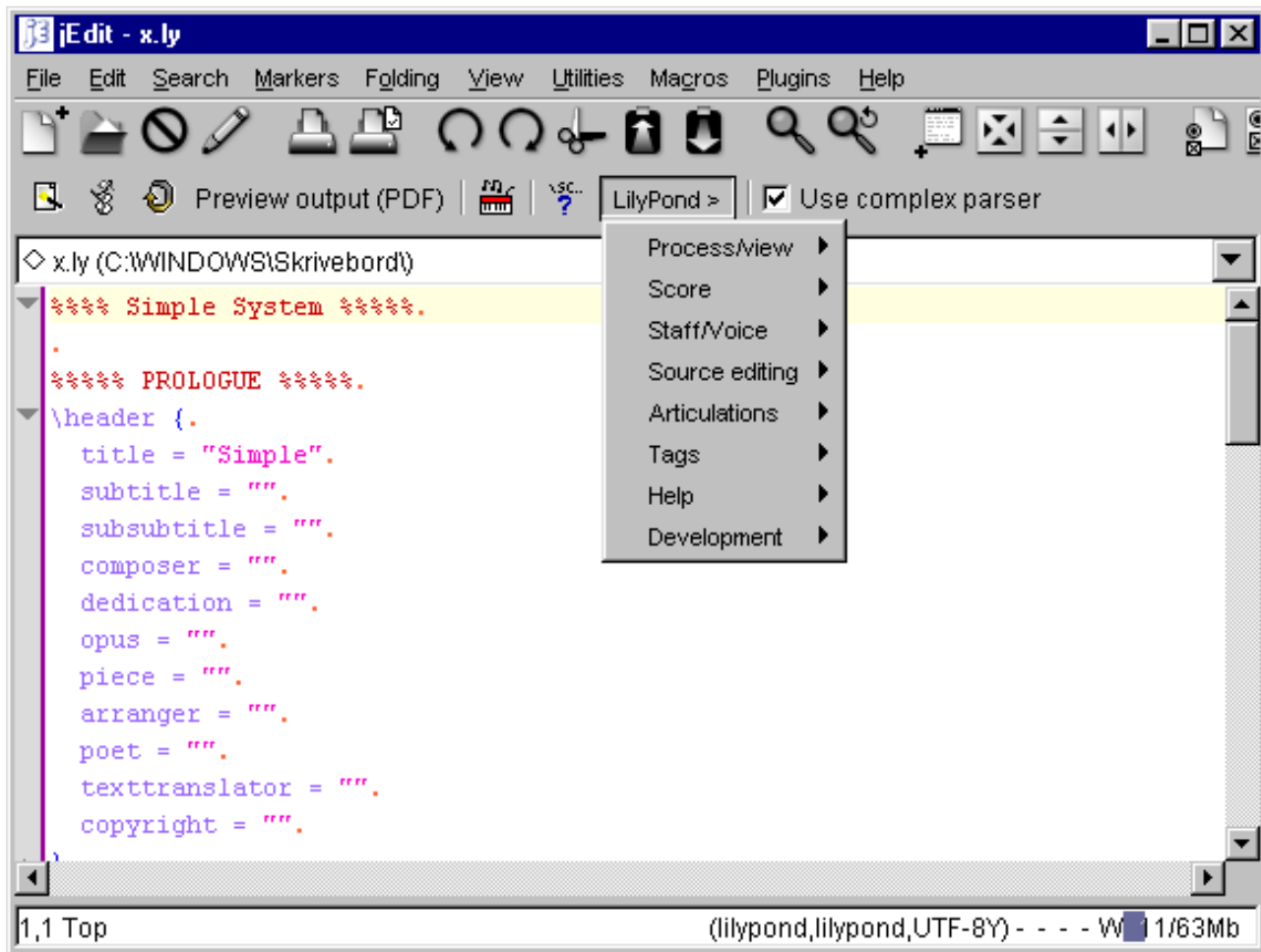
```

%% Simple System %%
%% PROLOGUE %%
\header {
  title = "Simple"
  subtitle = ""
  subsubtitle = ""
  composer = ""
  dedication = ""
  opus = ""
  piece = ""
  arranger = ""
  poet = ""
  texttranslator = ""
  copyright = ""
}
#(set-default-paper-size "a4")
\paper {
  #(set-paper-size "a4")
}
\paper {
  hsize = 21\cm

```

The status bar at the bottom shows "Ln: 1/62", "Col: 1/24", "Pos: 1/1029", "UTF-8", and "Win".

TED Notepad counts lines and rows, which is necessary when finding errors. TED Notepad can be opened in several new instances, which is very practical when writing music in A-Play.

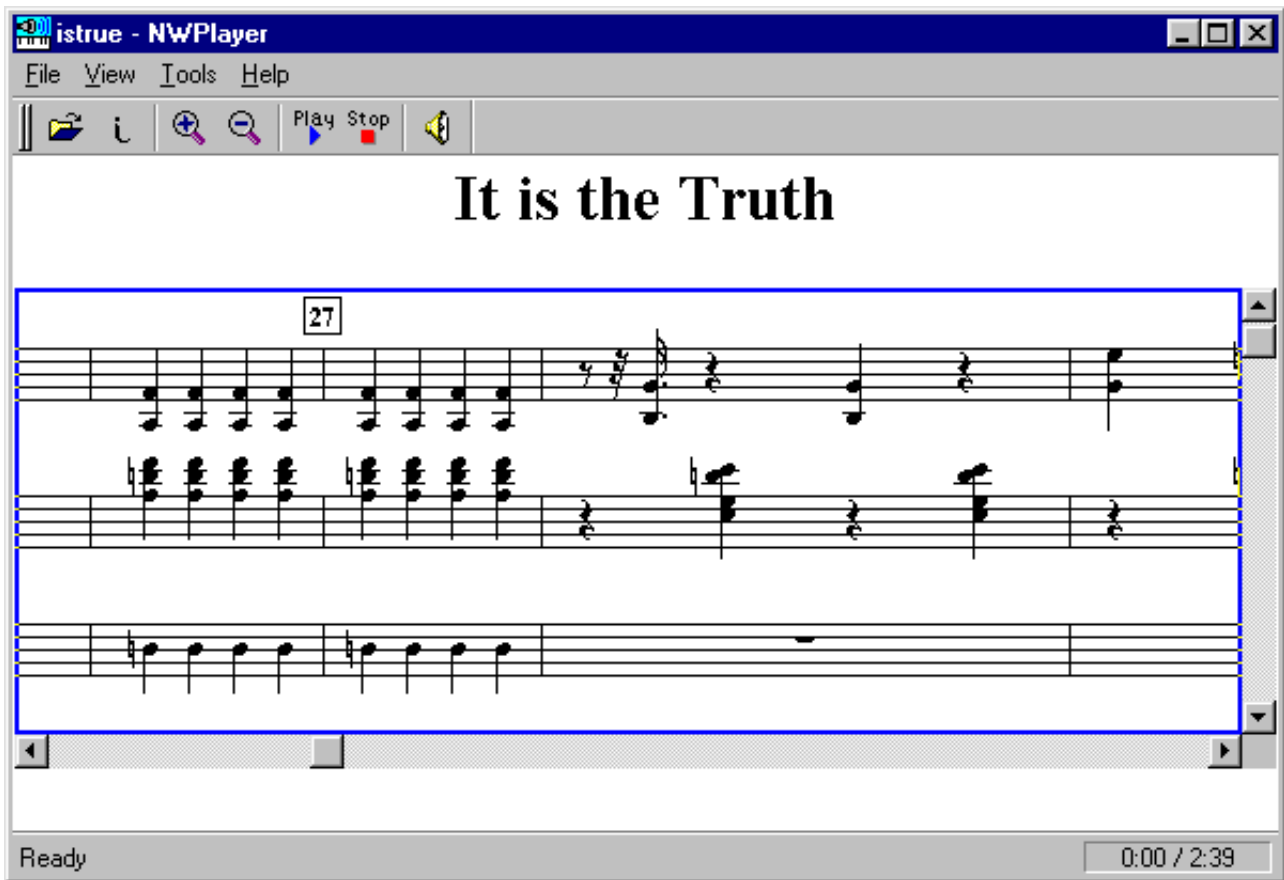
JEdit with the LilyPondTool Plug-in

The *LilyPondTool* is a great toolbox including a piano to insert notes, direct compilation of files and many other features. Combined with *A-Play*'s proven teaching methods and huge numbers of ready-to-use snippets and samples, JEdit and A-Play is a perfect match for note writing.

It is simply a matter of taste. The piano is easy for the newcomer but much too slow for the trained user. If you are already a master in LilyPond, you might not need anything but a Microsoft Notepad. But as most of us certainly are not masters, we appreciate the automatic compilation and the other smart features in the LilyPondTool.

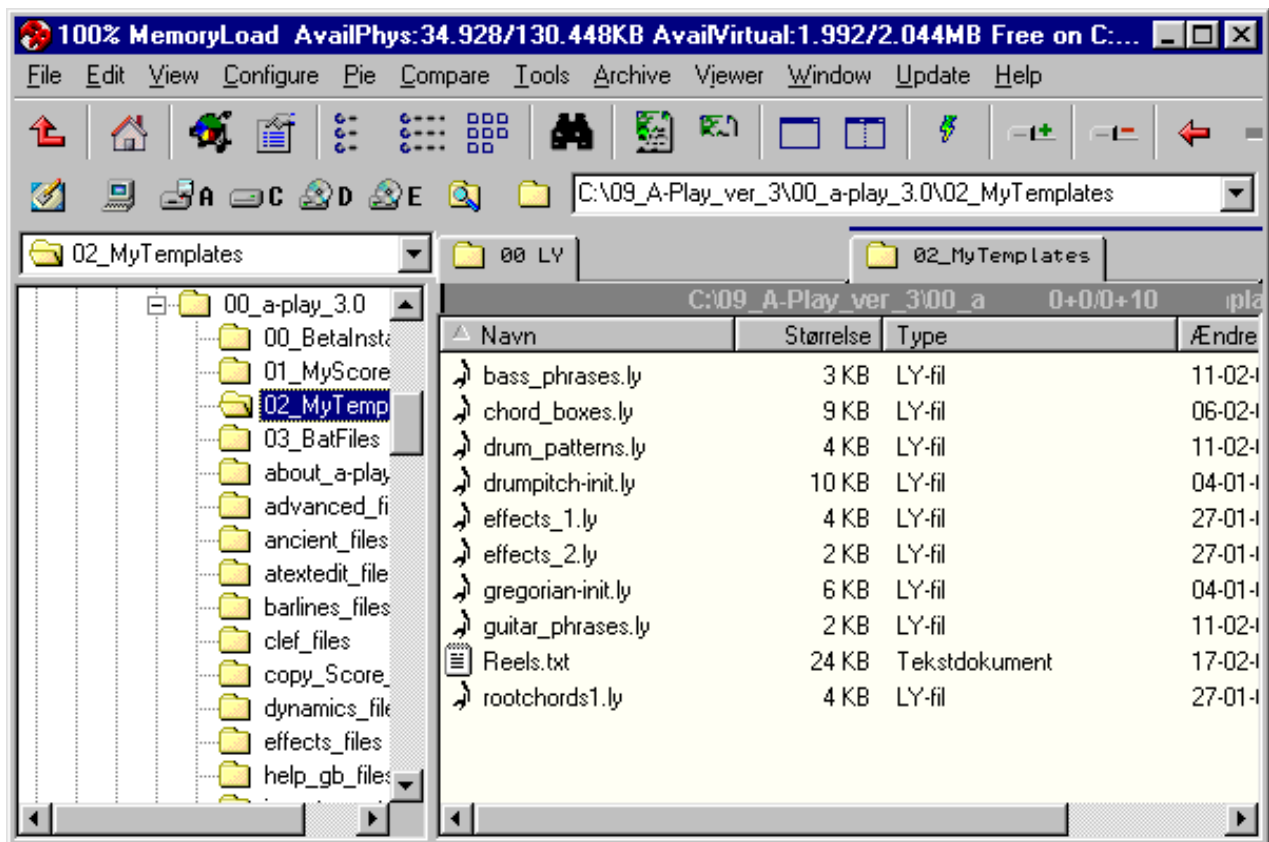
The LilyPondTool is downloaded through the practical plug-in library in JEdit. The program is freeware like A-Play and the other programs mentioned in this manual.

NOTEWORTHY PLAYER



The classic *Noteworthy Player* is still one of the favourite MIDI players and note viewers on the web. It is indispensable for all musicians working with scores or MIDI based music. You can drag files into the player or open them from within the player. We recommend that you buy the [Noteworthy Composer](#), which is a fast and easy note-writing program (about 30\$). The files can be exported to LilyPond format and edited in A-Play.

FILEANT



The File manager **FileAnt** is a small, yet powerful file manager with the modern Tabs. We recommend FileAnt for Windows, because it means that A-Play is no more dependent on Windows explorer for basic LilyPond operations.

2. Lily Pond User Guide

The Lily Pond Music Language

CRASH COURSE IN PROGRAMMING

Inside Microsoft Word, Excel or a drawing program, there are a lot of codes. A code, also called a *command*, is a short text telling the program *compiler* (more on that later) to perform some predefined task when the user click on a button, for example change a word from normal to bold or change the colour from blue to red. All programs in the world are built that way.

Like spoken languages, the program variants are called programming languages. The most famous example is C++, which was used for writing Microsoft Word and many other well-known applications. All these programming languages are generic, .i.e. they can be used for any kind of tasks from a text editor to the module of a Mars Lander. Programming languages written for one purpose only are rare, the archetypical example being AutoCAD, a technical drawing system. LilyPond is another prominent example.

The History of LilyPond

In 1999, two young musicians met in a youth symphony orchestra. Han-Wen and Jan were worried about the quality of the computer notes produced at the time, believing that the quality was downright unacceptable. Soon they became partners in an attempt to reproduce the “perfect” notes as the old engravers used to make them. It took a while, but eventually the program was ready and introduced as a GNU Open Source freeware. The music programming language was received with enthusiasm among professional musicians and composers, and soon became cult.

If you compare the leading note writing software today, British Sibelius to LilyPond you will find that the freeware LilyPond almost matches Sibelius on all important features, if we remove exotic functions like scanning notes and automatic score production. Sibelius costs a fortune, and LilyPond is free, so what are you waiting for? Eh, a useful interface without having to program the music. That was a tough argument, and the LilyPond society has been waiting for years for a “real” note-writing application to appear. LilyPondTool is the closest attempt until now, but neither A-Play nor LilyPondTool has solved the difficult problem of transferring the special LilyPond codes to a “box program” with the notes on the screen all the times. It is possible but tremendously expensive, especially as LilyPond is free with no income from sales.

So until then, we are all going to become programmers.

Math is Fun (No, it's not)

Many programmers are also musicians. Many musicians fail miserably in mathematics. How come that the two groups of musicians are so different? One obvious reason could be that theoretical math is invisible for a musician that needs to have the physical feeling of an instrument to understand musical math in the form of intervals, pitches and correlations between the notes. This is also math, but related to the physical body instead of abstract equations. Albert Einstein, who was one of the greatest mathematicians in the world, did very badly in school in math. So don't worry, math is relative.

THE LILYPOND PROGRAMMING LANGUAGE

Every programming language has a grammar – that’s why it is called a “language”. The grammar is a number of rules governing the behaviour of the program. Like in a spoken language, the programming language has spelling rules. But unlike the spoken language, you are going to be shot, if you break a spelling rule in a programming language. Let’s take a look at LilyPond and its rules, which were originally based on the C++ language. Codes are always written in a monotype font, normally **courier** (all the letters have the same width).

1. The Backslash Character

Here comes the first rule: All words beginning with a backslash \ is a command. Here are a few examples:

```
\score
\time
\clef
\relative
```

2. Brackets Galore

Here comes the second rule: All scores, systems and coherent elements must be embraced by brackets { }. Examples:

```
{c e g e}
c8 [f a bes]
<c e g>
^\markup { Am7 }
```

Besides the **\xxxcommand** and the brackets, LilyPond uses common computer expressions with suffixes like **\remove "Time_signature_engraver"**.

Let us have a look at some basic codes:

The Prologue Area In the prologue, the general paper format, the title of the music and other settings can be found. Here is an example from A-Play’s template collection:

```
%%%% Piano Solo %%%%
%%%% PROLOGUE %%%%
\header {
  title = "Piano Solo"
  subtitle = ""
  subsubtitle = ""
  composer = ""
  dedication = ""
  opus = ""
  piece = ""
  arranger = ""
  poet = ""
  texttranslator = ""
```

```

copyright = ""
}
#(set-default-paper-size "a4")
\paper {
  #(set-paper-size "a4")
}
\paper {
  hsize          = 21\cm
  vsize          = 28\cm
  topmargin      = 1\cm
  bottommargin   = 0.5\cm
  leftmargin     = 2\cm
  rightmargin    = 2\cm
  linewidth      = 17\cm
}

```

The paper definition works like the page settings of Word. The **linewidth** parameter is the max length of a system.

The System A system is a voice/instrument. In LilyPond, a system is also called a line. There can be almost any number of systems, but if you want to produce a working MIDI file, you must restrict the number of systems to max 14 systems (for some reason, LilyPond doesn't support the normal 16 MIDI tracks (systems)).

A system can be independently designed or ruled by global parameters set in the prologue. In A-Play, we have placed the parameters in every system. The most important parameters are:

```

%%%%% WRITE YOUR NOTES HERE - SKRIV NODERNE HER %%%%%

```

```

❶ upper = \relative c'' {

```

The recommended type of system is the relative system. A relative system contains notes without absolute pitches. You move up and down in the octaves by adding **''** for up and **''** for down. The traditional conception of note pitches with marks 4-5 octaves marked with comma, an octave without a mark and 4-5 high octaves with ' signs is also supported.

```

❷ \set Staff.instrument = "Piano"
\set Staff.midiInstrument = "acoustic grand"

```

The `\set staff.instrument` code allows you to write the name of the instrument. The `\set staff.midiInstrument` code attaches a MIDI instrument sound to the system. You can change the sound arbitrarily, for example changing from violin to pizzicato and back again. The MIDI instrument names can be found in the Score menu, Score Settings. If you introduces a spelling mistake in the MIDI instrument name, you will have a piano sound (default sound). So copy the instrument name, don't "remember" it.

```

❸ \clef treble
\key c \major
\time 4/4
\tempo 4=100

```

Here are the indicator definitions: The `c1ef` (in this example treble G), the `key` is `c` with the `\major` command – LilyPond supports modal scales, so the “c” scale could be many different scales. Finally, we have the `time` signature and the `tempo`.

```
④ a4 b4 c4 d4
```

The notes will be explained soon! ☺

The Score Area The `\score` area is a set of commands for PDF and MIDI layout. The main structure is:

```
\score {
⑤ \new StaffGroup <<
⑥ \new Staff << \upper >>
  \new Staff << \lower >>
>>

⑦ \layout {
  \context{
    \Voice
    \remove "Note_heads_engraver"
    \consists "Completion_heads_engraver"
  }
}
⑧ \midi { }
}

\version "2.6.5"
```

Standard Staff In A-Play, we have decided to use a simple, uniform score syntax. In LilyPond, you can make a lot of specialized score settings, but we believe that simple is beautiful. When you have learned the whereabouts of LilyPond, you can expand and improve the score any way you like.

⑤ is the main staff, the `StaffGroup`. There are other staves, see the Score menu, Settings.

⑥ is the system, in this case the upper part of a piano staff. The systems are printed in the same order as in the `\score` setup.

⑦ is the `\layout`, which is often empty or with a number of general layout commands. The mystical code in the A-play templates is a special command that forces LilyPond to allow notes to “pass over” from one bar to another with a tie in between. This is not standard LilyPond, but necessary to avoid errors in complex scores or when working with manually recorded MIDI files.

⑧ is the MIDI area. In standard LilyPond, you have the tempo, but in A-Play, we prefer to have the tempo statements locally in the systems.

Remember to end each file with the version number, which is used when updating to the score to a new LilyPond version.

Caution The prologue and score areas are normally not touched except for changing titles, whereas the systems are the creative area.

NOTES

The notes of LilyPond are peculiar compared to traditional notes, as they have absolute note names and don't use **#** and **b**. For example C# D# E are written **cis dis e** and Ab Gb F are written **as ges f**.

Here is the full spectrum of notes:

Sharp

c cis d dis e f fis g gis a ais b
(enharmonic: **eisis bisis**)

Flat

c des d es e f ges g as a bes b
(enharmonic: **ceses fesese**)

Rests

r

Please note that all note names and the other LilyPond codes are case sensitive. If you write in capital letters, when not appropriate, the code simply doesn't work and you will get an error message when trying to compile the score.

Duration is stated with a number after the note name, e.g. **gis8** or **a16**. The following duration values are valid:

1 (1/1) **2** (1/2) **4** (1/4) **8** (1/8) **16** (1/16) **32** (1/32) **64** (1/64)

Beams are written by adding [] around the beamed notes: Examples **d [e fis g]** **b [cis dis fis]**

Don't place a beam over a rest (bad) example: **c [e f r]**

The first note in a group, e.g. a beamed group is placed *before* the bracket.

Chords are written within sharp brackets **<c e g>4**. The duration is placed *after* the bracket.

Ties are written with a tilde ~, for example **c2 ~ c4**.

Besides the notes mentioned in this section, there are several effect signs, text, dynamic signs etc. See the reference section or in the menu pallets.

Fundamentals

Double-click on the A-play.htm file or on a shortcut to the program. The start up screen with the blue musicians appears. This is the Instruction Manual, you are reading right now.

CREATE A NEW FILE

- Open the text editor and click on *New*.
- Open the Score menu and click on Templates. Choose a template and click three times in the yellow copy pad to mark all the codes. Use ctrl + c or right-click and select copy.
- Copy the template into the new text file and save it with a name.

Very important The file extension (the last part of the file name) must be **.ly**, for example **myfirstfile.ly**.

- The template contains one or more predefined systems. You can now change the system(s) according to your needs.

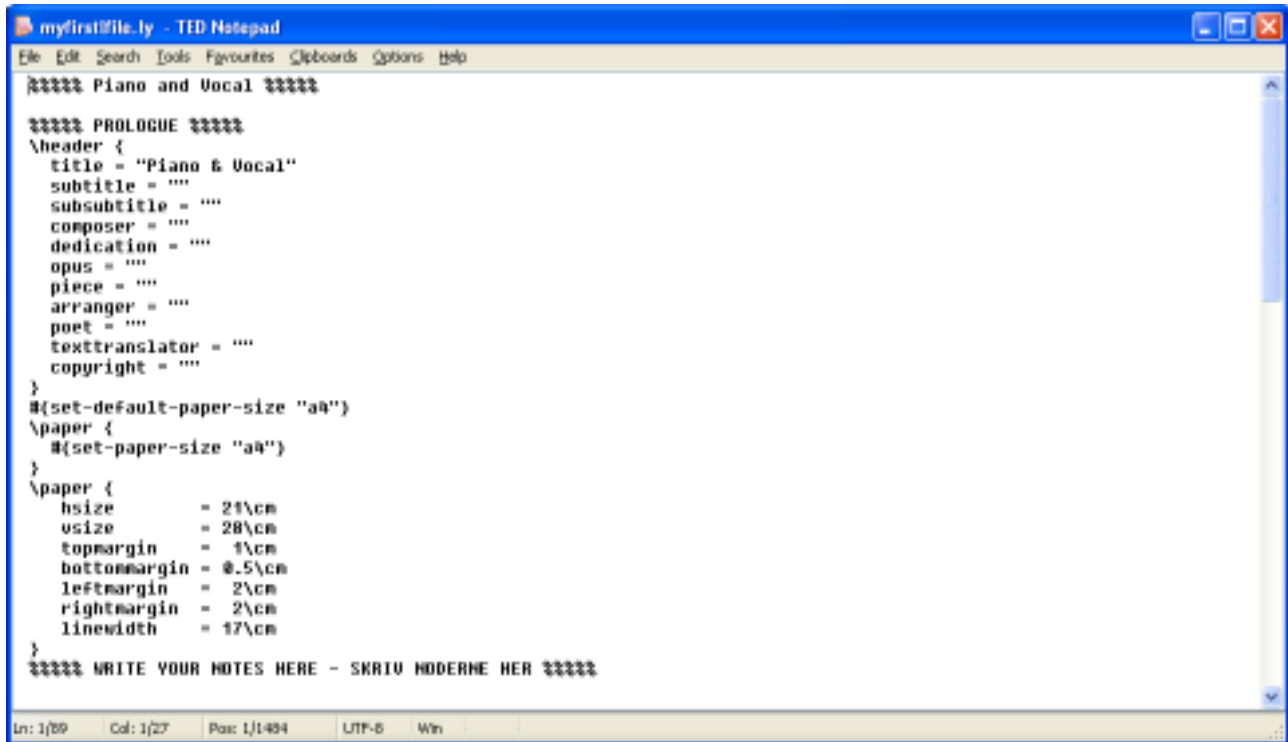
CREATE SYSTEM (INSTRUMENTS)

You may proceed with the single system to produce a vocal score with chord boxes, as rock and jazz musicians often do. Or you may create a number of extra systems, if you are writing an orchestra score. See the Format menu, MIDI to select a MIDI instrument for the system.

- Click Save to save the changes in the Score.

WRITING THE NOTES

Simple is beautiful, an old saying goes. This goes for A-Play 3.0 as well. In NORDISC, we (sometimes) like simple designs, so let's start with an empty system in the text editor. Add A-Play and a few menu pallets, and we have the working area of A-Play.



```

myfirstfile.ly - TED Notepad
File Edit Search Tools Favourites Clipboards Options Help
~~~~~ Piano and Vocal ~~~~~

~~~~~ PROLOGUE ~~~~~
\header {
  title = "Piano & Vocal"
  subtitle = ""
  subsubtitle = ""
  composer = ""
  dedication = ""
  opus = ""
  piece = ""
  arranger = ""
  poet = ""
  texttranslator = ""
  copyright = ""
}
#{set-default-paper-size "a4"}
\paper {
  #{set-paper-size "a4"}
}
\paper {
  hsize      = 21\cm
  vsize      = 28\cm
  topmargin  = 1\cm
  bottommargin = 0.5\cm
  leftmargin = 2\cm
  rightmargin = 2\cm
  linewidth  = 17\cm
}
~~~~~ WRITE YOUR NOTES HERE - SKRIV MODERNE HER ~~~~~
Ln: 1/89 Col: 1/27 Pos: 1/1484 UTF-8 Win

```

FAST NOTE TYPING

The basic principle of A-Play is speed. The number of notes in a score can be overwhelming. A typical symphony score consists of about 1200 bars. Each bar has an average of two notes. With 16 systems (many real-life scores have 24 systems!) the total adds up to an astonishing 38400 notes. Consider the difference between using the mouse to insert the note – which is also possible in A-Play of course – and keyboard based note typing. Here is an example:

Keyboard 1. Type c4 for example. Copy the note, including a space after the duration and copy the necessary number of notes. Edit the duration and pitch afterwards.

Mouse 1. If the Notes menu is open, copy the desired notes, one by one. For faster action, we have added durations to the notes.
2. Copy the note in the copy pad of the notes menu or directly in the score (within the system brackets {}).

Both processes are simple and relatively fast. But the keyboard method is about double as fast as the mouse method. Don't think twice!

For mouse enthusiasts, the notes menu will be home most of the time when using A-Play. From here, you can create notes and rest, controlling beams and dots.

Pitch

If you use the JEdit editor with the free LilyPondTool, you can play the virtual piano to select pitch.

If you cannot play the piano yet, learn it the easy way! A-Play includes Basic Piano, where you can learn to play simple piano pieces.

Duration

Insert 1, 2, 4, 8, 16, 32 or 64 after the note (no spaces!).

Flag / Rest

Use `c [d e g]` (example) to force beams. If you don't force the beams, LilyPond will insert beams automatically, but not always the way you want it.

Insert a rest: `r4` (example).

Dots

Select 1 or 2 dots or remove the dot(s) `c . e . .` (example).

Chords

To create a chord, place the notes inside sharp brackets. Place the duration *after* the brackets. Example `<c e g b>2`.

Bar Line

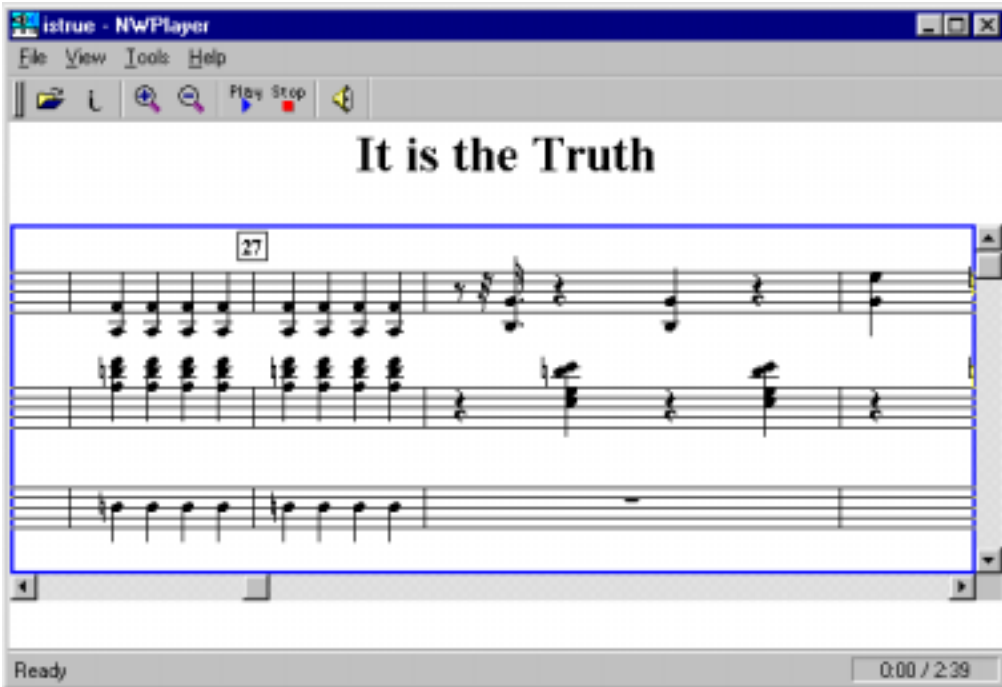
Insert a bar line `|` after each bar. LilyPond automatically inserts bar lines, but by forcing a bar line it is easier to read the score and a wrong number of durations (5 x 1/4 for example) will cause an error message.

Create and Proceed

Create the notes. Click Save every five minutes to make sure that you don't waste 1 hours of work by mistake.

Control the Score by Playback of the Music

When you have compiled the score, open the Noteworthy Player (windows) or a MIDI Player and play the music. Check the notes for errors. Correct the errors and re-compile the score.



Beginnings

This is an instruction manual for a professional note-writing program. But is it possible to use a computer aided note-writing program without a relatively high level of knowledge in music theory and orchestra arrangement? The answer is both yes and no. An experienced musician who has never learned to read notes could still be a “yes”, although he/she would have to learn the notes the hard way. The background of modern musicians varies from the rock guitarists who have played for 30 years and the amateur composer with her upright piano and her blank note sheets. We know that many of the LilyPond users are professional classical teachers and musicians, and they have raised the quality demands sky-high. But we still need to catch the imagination of the multit talented youngsters of today. They do read books and study scores, but they play rock, funk and jazz. We want to include the modern music in the exciting world of the LilyPond musical language.

HANDWRITTEN NOTES

Learning the Basic Notation Skills

Today we have music everywhere from the iPods and the laptops. The world seems far away from the meagre times of the 19th century, where music meant live music and only that. If you wanted music, you had to play it yourself, and to play the music you needed to learn to read the notes. Generations of women grew up playing the piano and gave the love of music to their kids, who learned to play themselves. But in the 1930-ies, the record industries had taken over the music in the homes and replaced it with radios and gramophones. It took 30 years, two generations, and the ability to play notes had almost disappeared.

This is the musical year zero, we start from scratch: Notation is difficult, full of conservative opinions of what is allowed and what is not – and worst of all – it is **b o r i n g**. In A-Play we have included basic music primers for music theory and piano. They are small but they cover the basic elements of note writing and piano playing. That’s at least a beginning.

And the kids need teachers, too. Who volunteers????

Writing Tunes

If a modern rock musician has attended a serious musical school, he/she is probably able to write down notes. He or she will no doubt be writing songs searching for the first questions in a songwriters mind: Who am I? Why do I sit here? Where does this guitar come from? And: “I wish I could remember that incredible song, I made last night”. With LilyPond, the rock musician – and the jazz musician too – can fulfil a dream of note writing and sight-reading. But it is a demanding task. You have to do it alone behind the piano writing down notes in hand and entering the music in a LilyPond score. That’s the magic of music – so simple and so complicated.

Arrangements

After 3-4 years, the talented young rock musician has learned how to write songs, and it is time to record the first album. The producer wants a great horn section, a string quartet and two opera singers. “Right, you need what? A score with the voices? Eh, just wait a minute!” Two hours and 150€ in studio time later – “here you are.” The opera singers: “We want them in A minor, not in D Minor.” The songwriter returns to LilyPond and places the \transpose command. He/she waits for 5 minutes, prints the scores and returns with the final sheets. Long live the note-writing programs.

A fictive story but close to the real world. Not to mention the guitar tablature voice we had promised the guitarist. Just forgot to write it down yesterday, but we have the laptop here. 15 minutes later, the guitar player has emptied his coffee latte and begins rehearsing the guitar part.

Modern life with modern tools.

WORKFLOW

A young musical composer has received his first assignment from the local music centre. He has been asked for a 45 minutes work for full symphony orchestra. He has 6 months to finish the work and only 2 weeks to rehearse it with the singers and the orchestra. He is paid less than the girls who sell tickets behind the counter earn in a month, but he is the happiest composer this side of Antarctica.

What Do You Want to Express?

First problem: The story is a classical plot taking place during the Balkan wars. It’s a very political libretto with a breathtaking female character who wants to make peace in the world and stop the plundering of the Indians, but cannot take care of her own child. A modern, believable story.

But is the story relevant to the audience? Should they cry? Should they volunteer for Green Peace? Or should they regard the whole thing as a cabaret with ambitions?

Our young composer decides that they should cry. If he is going to cry over the reviews so should the audience.

What Style?

The songs are already written, but they are hard to place stylistically, so the producer demands that they should be in Balkan style. The composer is not very happy, but he finds some examples on the web and locks himself into a rehearsal studio.

When he comes back three days later, the score is in John Williams style, and the producer, who has forgotten all about the Balkan stuff, thanks the composer for listening to his advice. “I knew that John Williams style was the right thing for your musical”.

What Kind of Orchestra

John Williams is a fantastic arranger with a tremendous orchestra sound. Our composer, sad to say, lacks 20 strings, all the percussion instruments and most of the brass players, so he will have to remake his original score into a glorified string quartet with choir – interesting.

PREPARING A SCORE

The orchestra is not very big, but it also has a lot of interesting possibilities. The woodwinds are good, and the cellos and basses are tight and never out of tune. So let's base our orchestra on woodwinds and deep strings. Terrific. Oh, and the choir, too. They will kill me, if I forget them.

Sound and Texture

A quick look at the instrumental voices: Woodwinds are good at moving fast, playing in harmonies, and long gliding tones over the rest of the orchestra. The sound of clarinet, oboe and English horn? Very renaissance-like including the cellos. This kind of texture is like the holes in the Swiss cheese. The pauses are equally important as the fat sound of the brass. A nice carpet of holes and vibrant, light woodwinds. And below the birdies, we have the brutal force of the Balkan music, the stampeding cellos and basses, the fiery violins and the muffled trumpets. Hey, where is my pen and paper!

Choice of Instrument

The orchestra now consists of strings: 8 violins, 4 violas, 4 cellos and 2 basses, woodwind: 2 clarinets, 1 oboe, 2 English horns and 1 French horn. The brass group has 1 trombone, 2 tubas (great, more bass) and 1 bass saxophone (not so great, he's always out of tune). The choir consists of 6 sopranos, 5 altos and 4 basses – no tenors for our Beethoven. Great – let's weld this lot together with dynamics, movements and surprises. Never forget the surprises; would be like a superb diner without a dessert. A complete dinner for 43 musicians and a composer.

How Many Bars?

Back at the piano, the composer starts working out the music from hundreds of sketches from the last 5 months. He knows it should last about 45 minutes and be a funny and romantic musical over a dark background of war and war crimes. But how long does 1 minute actually take in bars in, say, 3/4? Counting, guessing. Then calculating the total number of bars.

Let's give it a try: Tempo = 110, meter 4/4, around 1,000 bars. Just copy and paste 1,000 times 4 1/4 notes per bar – a huge file. Compile the giant thing, open the MIDI file in the media player. Great! This was almost 45 minutes.

Contrast

Halfway through the arrangement, Beethoven junior has learned how to contrast the various instrumental groups, one sort against another sort, or mixed groups in many coloured attacks, hide and seek between the high, thin woodwinds and the thick, monstrous cellos and basses. Contrast – life.

Overlapping Voices

The strings are not static anymore. They soar high above the common instruments, but never follow the basic rhythms of the ordinary voices. Freedom – like mysterious clouds and soft shades of light. Then following the rhythm of the full orchestra, triumphant, ecstatic.

Level of Polyphony

And the best thing, when you learn the trade: Polyphonic movements across the fast clusters of the strings. The trombone and the French horn stand out with their own melodies, complex triplet figures in 5 to 4, sounds natural to the audience and costs the composer a round in the pub after the first night. It just feels right, it moves. The orchestra is ready, the time has come. The curtain rises...

INSTRUMENTATION

We will leave young Beethoven to his great night and get down to the instrumentation of various other orchestra formats.

Rock Band

A rock band will need 1 or 2 guitars, a bass, a drummer and maybe a piano. This makes 2 x 5 systems per page. You write the arrangement down together with the band and later you write the notes down in LilyPond. You don't have to be very precise – the band is not going to play your notes anyway, but something vaguely reminding of the original score.

Jazz Band

A jazz band needs piano, bass, drums and 3-4 horns. This makes 2 x 6 systems per page. A little pressed, but possible. Just write a skeleton arrangement, unless you are writing for a big band, which over the time has developed into a sort of symphony orchestra. If you play old jazz, you should only make some sketches of the intro, the interlude and the end. The rest is out of your control.

Classical

A classical orchestra depends on the number of actual players. If you arrange for a symphony orchestra, you will need an A3 printer for the BIG score. Later you will transpose and print out the necessary voices to the musicians and singers.

LAYOUT TIPS

Customizing the Score

You can use the A-Play templates as they are, or you can add your own layout. This takes time to learn, and you will need the LilyPond forum and other notation expert groups to guide you into the best practice of score layout.

Paper Format

The paper size depends on your local paper types, US letter or International A4. You also need margins and titles. Look at old scores and get inspired.

Placement of Small Elements

Change the format, size and position of the elements, preferably the small ones. This can be very useful when it comes to high notes towering over the system or texts being hidden by 1/16 notes.

Copy Existing Music

Counting bars

If you are transferring old music to LilyPond format, there are some basic tricks to learn. To make sure, you don't miss a bar you will have to count all bars in the original score. Use a spreadsheet, if you need to recalculate the bars at some point.

Insert Empty Bars

When you have counted the bars, you should make a mock-up similar to young Beethoven's test file. Make only one system – you will copy the other systems later. Copy and paste the desired number of bars.

Double check the Number of Bars

Compile and print the PDF file. The bars are numbered in the score, so you can use the print to check the number of bars with the original score.

Copy Contents to All Systems

When you have checked the number of bars, you must check for new time signatures in the score, new keys and other common bar indicators.

Last step: Copy the necessary number of systems, and add the correct clefs. Now you are ready to type in the notes.

OPTIMISING YOUR INSTRUMENT NOTATION

Piano

- Always place correct pedal marks and phrase slurs to ease the life of the piano player. Make the layout as simple as possible and try to avoid too many rests.
- Use octave signs when necessary, but consider a clef change, if the treble notes dive too deep into the bass area, in order not to confuse the bass and the treble notes – a system with two bass clefs are acceptable for a while.
- If you are writing simple piano arrangements, remember to add chord symbols or even guitar boxes to enable other musicians to join you or to play the piece on their own. If you are writing music for children or difficult runs, please consider adding fingering numbers over the notes. Please see the Notes menu, Effect Signs.

Guitar

- Remember to use the treble clef with a deep 8va to allow for correct MIDI pitch. See the Format menu, Clefs.
- If possible, use both traditional notes and tablature, as the guitar cannot be rendered faithfully in traditional notes (the “B string pos. 5 = open E string” problem). It also makes life easier for the many guitar players who only use tablature.
- Always add the new guitar effect signs, hammer on, bend etc. Please see the Notes menu, Effect Signs.

Bass

- Remember to use the bass clef with a deep 8va to allow for correct MIDI pitch. See the Format menu, Clefs. The acoustic bass is an exception, as it sounds right in MIDI when written in standard bass clef.
- Some bass players (in the US mostly) use bass tablature. LilyPond supports bass tablature, see the Score Settings menu, Tablature.
- Modern bass players often use overtones, harmonics. Remember to use the harmonics symbols although the notes do no sound in MIDI. See the Notes menu, Effect signs.

Drums and Percussion

- Most drummers today, prefer the percussion clef notation, but there are still some arrangers, that use the bass clef (bass drum deep c, hi-hat f# and snare drum d or e). LilyPond does not support the popular alternative drum tablature at the moment (see how to use it in All Aspects of ROCK & Jazz/volume 4 Drums).

- In A-Play, we use chord-like drum notation, as it is easier to read than polyphonic lines. Remember to have a minimum duration running all the time, typically in 1/16 beats. See the drum examples in the templates in the Score menu.
- Use the correct boogie notation – see the Drum patterns in the Tools menu, Phrases. Do read the polyrhythm section in the same menu for inspiration to work with advanced triplets.

Strings

- Use the effect signs, e.g. harmonics and tremolo; see the Notes menu, Effect signs.
- When necessary, collect some or all the violins in one system. Not always acceptable, but it saves 1 to 2 “expensive” systems, that will come in handy for a bassoon or a French horn.

Organ

- Base the organ layout on the piano examples in the piano templates (e.g. no. 2). Add an extra bass system for example called organPedals for the pedals.
- Use the extremely flexible sounds in LilyPond to manipulate the sound of the organ. For example: Give the pedals a powerful organ sound (in the MIDI settings string) and a “normal” organ sound for the two manuals (keyboards).
- To use the MIDI sound possibilities in LilyPond to its full potential, change organ sound every time, the original score asks for a new setting. You don’t have all the many colours of a real organ, but it sounds much more like a genuine organ with all its wonderful details.

Vocal

- When writing vocal lines for many verses, please keep in mind to insert two notes with a tie in places where the verses sometimes use one, sometime two syllables. Always mark a melisma (a syllable sung over more than one note) with a phrase slur. See the Notes menu, Ties.
- Do not use the dated tradition of writing vocal notes without beams. We do not use wigs anymore, for that matter.
- Lyrics should be legible. If needed, insert a `\break` before the automatic line break to make more space in the bars. If there are many notes, use a smaller font. See the Notes menu, Text. If you want the text to follow a specific note, use `\markup text`. See the Text menu.
- For vocal SATB arrangements – see the LilyPond templates on <http://.lilypond.org>.

Standard Templates

NEUTRAL

- See the Score menu, Templates.
 - 01 Simple (One System)
 - 02 Piano Solo
 - 03 Piano and Vocal
 - 11 Blank Simple (One System)
 - 12 Blank Piano and Vocal (Piano and Vocal)

ROCK

- See the Score menu, Templates.
 - 06 Rock Trio (Vocal, Guitar, Bass and Drums)
 - 07 Rock Tablature (Voc, Piano, Guitar, Bass and Drums)
 - 08 Rock String (Band and Strings)

JAZZ

- See the Score menu, Templates.
 - 04 Jazz Trio (Piano, Vocal, Bass, Drums)
 - 05 Jazz Quartet (Piano, Vocal, Bass, Drums and Sax)

CLASSICAL

- See the Score menu, Templates.
 - 09 Symphony Orchestra (Basic)
 - 14 Blank Symphony (Basic Symphony Orchestra)

Formatting Tips

NOTES

- See the Notes menu, Notes.

BAR

- See the Notes menu, Bar lines.

TEXT

- See the Notes menu, Text.

EDUCATION

- See the Tools menu, Teachers.

SCORE LAYOUT

- See the Score menu, Settings.

TROUBLE SHOOTING

- When you compile the score, there will according to Murphy's law always be errors half of the times. A LilyPond warning appears pointing to the error(s) found in the score. Correct the error(s) and compile again. You cannot compile a score with errors.

Here are some typical sources of errors:

- A bracket is missing. All brackets are pairs and without the end (or begin) bracket, LilyPond won't compile your master piece. Missing brackets also happens with chords, markup text and in other "mini" bracket situations.
- A missing \ or no space between two notes are common error causes. Remember that LilyPond is case sensitive; you cannot write the notes with capital letters for example. But when using LilyPond special codes, you must use capital first letters as indicated in the menu pallets.
- A more tricky error could be using a wrong version of LilyPond. And of course there are sometimes bugs in the program.

If you find a bug, please write to LilyPond on <http://lilypond.org>.

Advanced Tips

ADVANCED METERS

- See the Score menu, Settings and the Tools menu, Rhythm.

ADVANCED SCALES

- See the Score menu, Settings and the Format menu, Scales.

ADVANCED CHORDS

- See the Score menu, Settings and the Tools menu, Chords.

ANCIENT MUSIC

- See the Tools menu, Ancient and the LilyPond manual on <http://lilypond.org>.

MOVE ELEMENTS

- See the Format menu, Layout.

PROGRAMMING THE SCORE

- See the LilyPond manual on <http://lilypond.org>.

IMPORT / EXPORT FILES

- See the Score menu, Import/Export.

Reference

SCORE

The Score Menus contain the basic settings of a score file.

- There are readymade templates for rock, jazz and classical music and the templates make it easy to change paper size from International A4 to US letter format.
- The Settings menu contains all necessary formatting tools for a score: Page settings, Brackets and staves, Titles, MIDI instrument assignment, Meters, Keys (including modal scales), clefs, drum notation, tablature and tempo.
- The advanced section covers polyphonic voices, tablature and drum notes, reorganizing the system layout of the instruments and transposing.
- The Import/Export menu offers conversion from MIDI to LilyPond format (sometime works) and conversion from Finale (works fine) and the NoteWorthy Composer (very experimental). You can also export scores to PNG pictures (works fine), and you are taught how to copy and paste from PDF scores (always works).

Templates

- 01 Simple (One System)
- 02 Piano Solo
- 03 Piano and Vocal
- 04 Jazz Trio (Piano, Vocal, Bass, Drums)
- 05 Jazz Quartet (Piano, Vocal, Bass, Drums and Sax)
- 06 Rock Trio (Vocal, Guitar, Bass and Drums)
- 07 Rock Tablature (Voc, Piano, Guitar, Bass and Drums)
- 08 Rock String (Band and Strings)
- 09 Symphony Orchestra (Basic)
- 10 Absolute Pitch (Vocal)
- 11 Blank Simple (One System)
- 12 Blank Piano and Vocal (Piano and Vocal)
- 13 Blank Rock Quartet
- 14 Blank Symphony (Basic Symphony Orchestra)

Score Settings

- Paper Format
- Page Format
- Brackets / Staves
- Heading
- Instrument Names
- MIDI Instruments
- MIDI Volume

A-Play Instruction Manual

Meter
Clefs
Drum Notation
Tablature
Key
Tempo

Advanced

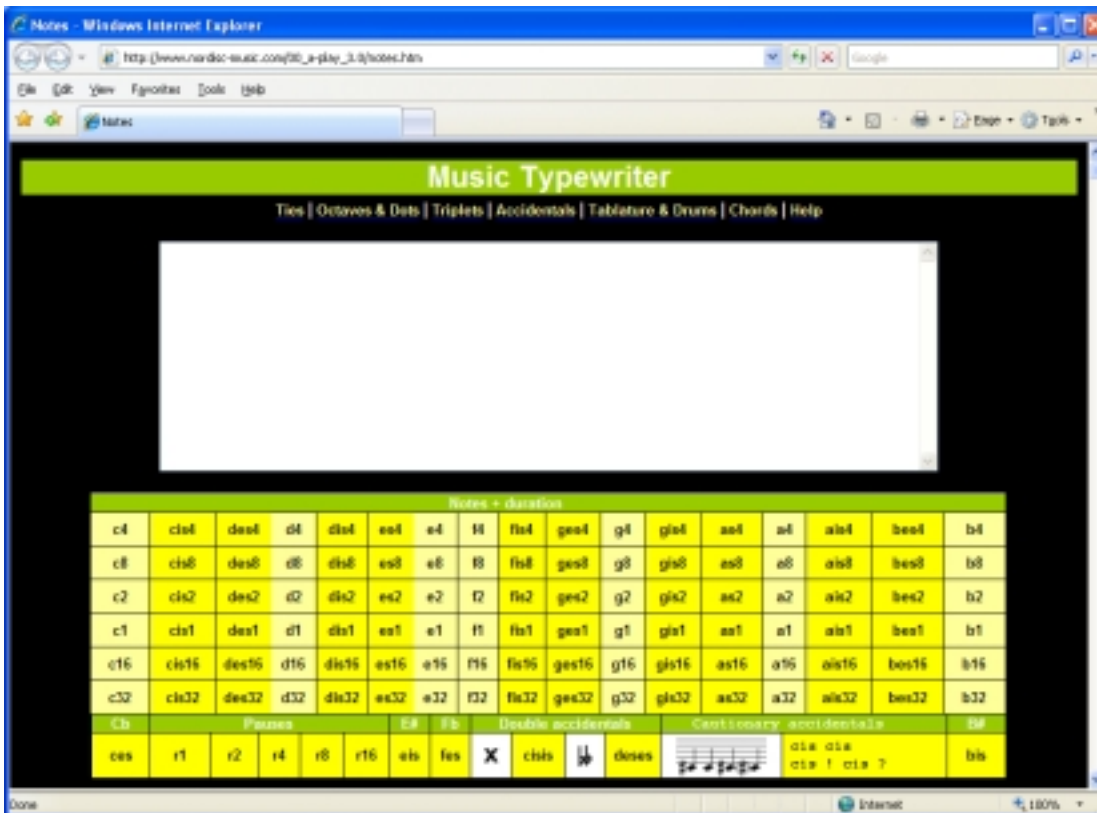
Polyphonic Music
Tablature
Guitar Tabs
Bass Tabs
Drums
Drum Names
Groups
Transpose

Import/Export

Import
 Import MIDI to LilyPond
 Import Finale to LilyPond
 Import NoteWorthy to LilyPond
Export
 Primitive Export to Word
 Export LilyPond to PNG

NOTES

The Notes Menus are the heart of A-Play. You will probably be working in the Notes menu most of the time, as you have all the necessary tools at hand all the time. A good workflow would be creating the systems, one at a time, and copying them from the working area of Notes to the text editor. Don't wait hours for copying the system, as you cannot save the text from the text area.



- The notes can be copied and pasted including duration. It is easy to copy, but it's much faster if you learn the note names by heart and type them instead of using the mouse. The Notes Menu also contains duration, octaves, beams, ties, triplets, tablature and percussion notes, manual chords in all keys and automatic chords.
- The Bar Lines Menu contains all available bar line types, including the special Fine and Fade endings.
- The important Text Menu contains a lot of tricks on how to optimise the use of text and lyrics in the score. You are also taught how to change fonts and write intelligent lyrics for opera and musicals. A small musical expressions dictionary is included in the menu, and text spanners, i.e. how to mark a number of bars for example when using the crescendo sign.
- The Ties menu shows how to use ties and slurs.
- The Effects Menu is a catalogue of effects for various instruments. It also covers trills and harmonics, both natural and artificial. Finger settings for piano are also covered.
- The Octaves Menu explains how to use the traditional octave signs and the new octave clefs..

- The Repeat Sign Menu covers the classical repeat signs and the rock/jazz system of / repeat signs. A programming example on how to “unfold” repeats is quoted. This is not for beginners.

Bar Lines

Text

Markup Text
\addlyrics
\lyricmode and \lyricsto
Available Fonts
Musical and Opera
Text Spanners
Language Support
Music Expressions
Metronome
Tempi
Changes
Character
Dynamics

Ties

Standard Ties
Legato Slurs
Phrase and Legato Slurs
Vocal Slurs

Effects

Trills
Signs
Guitar and Bass Effects
String Effects
Piano Effects
Vocal Effects
Harmonics
Fingering

Octave Signs

Repeats

Traditional Repeat Signs
Guitar Repeat Signs (Percent Style)
The MIDI Unfold Repeats Trick

FORMAT

The format menus are simply excerpts from the Score Settings menu plus a menu for advanced score layout. The small Format menus are meant for changing time signature, key and other changes in an existing system/voice.

- The Tempo menu is a piece of minimalist art with only one subject, tempo.
- The Meter Menu covers the whole range of meters, including the compound/odd meters.
- The Key Menu contains a complete list of keys, including major, minor, modal scales, blues, whole tone scales, chromatic and diminished jazz scales. The Key Menu also explains about the fantastic micro tone feature of LilyPond and introduces the use of absolute pitch, i.e. the traditional octave system. The last point in the menu is transposing examples.
- The Clef Menu shows the whole spectrum of clefs including percussion and tablature. The tablature explanation is a must for users of guitar tablature.
- The MIDI Menu contains volume control through Dynamic signs (strange idea, but it works). The menu also explains about instrument names and MIDI sounds, including the complete list of LilyPond MIDI sounds. And remember: **Copy**, don't guess the MIDI sound name or your score will be piano only.
- The Layout Menu teaches you how to create forced beams, early (partial) bars, rest for symphony orchestra scores, changing width and space between systems and the whole range of staff possibilities in LilyPond. The Layout Menu also shows you how to move elements and to remove notes/rest from a bar.

Tempo

Meter

Straight Meters
 5- and 7-part Meters
 9-Part Meters
 10-Part Meters
 1-Part Meters
 13-Part Meters

Key

Keys
 Microtones
 Absolute Pitch
 Transpose

Clef

Treble Clefs

Bass Clefs
C Clefs
Drum Notation
Tablature

MIDI

MIDI Volume
Instrument Names
MIDI Instruments

Layout

Bar
System
Score
Moving Elements

TOOLS

The Tools menus cover some of the advanced parts of the LilyPond language. Especially the Special Chords menu has a wealth of chord techniques and ready made chord boxes for guitar.

- The Special Chords menu contains a valuable list of guitar chord boxes ready to use in your score. The boxes are carefully designed for easy fingering on the guitar. There is a section on how to create chord boxes (fret diagrams) yourself in three different ways. The advanced sections cover stack and cluster chords and a mini course in harmonizing voices, inversion of chords and parallelism, loved by metal rockers and hated by the conservatories.
- The Triplet (Polyrhythm) menu shows some very advanced triplet forms in straight and odd meters. Nested triplets are some of the most difficult rhythms to play. Read the Music Theory book for more on triplets and polyrhythms.
- The Phrases Menu contains a number of useful guitar, bass and drum phrases/patterns. You can copy the boogie rhythms and other drum patterns to your own scores to create effective modern drumming, jazz or bass styles.
- The Advanced Rhythm Menu is small but really advanced. Lear how to compose without firm meters or checkout the French composer Messian's rhythm transposition techniques.
- The Dynamic Signs Menu is a complete list of dynamic signs.
- The Teachers Menu is dedicated to music teachers who work with very young students. It is basically a tutor on how to remove elements like note lines, clefs, time signature etc. This is very important when teaching rhythm values. The example in the menu is also a project for the kid to learn the names of the elements that are removed from the score. You will also learn to make a rhythm bar and note heads with the letter of the pitch.

- The Ancient Menu is only a fragment with an example of a Gregorian chant and a mensural example. Use the [LilyPond manual](#) to discover the world of the medieval music.

Special Chords

Major and Minor Chord Boxes
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Creating a Chord Box
Combining Chord Boxes and Chord Symbols
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Stacks of Quarters and Fifths
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Polyrhythms in One Meter (Triplets)
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Phrases

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Dynamics

Teachers

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HELP

Help

All menu pallets are equipped with [Help](#). Learn about the properties and functions of A-Play and LilyPond.

Music Theory

An excerpt from the All Aspects of ROCK & JAZZ series, volume 1, Music Theory.

Basic Piano

An excerpt from the All Aspects of ROCK & JAZZ series, volume 5, Basic Piano.

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3. Appendix

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Version 2, June 1991

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A-Play Version 3.0
ISBN 9788791995118



Digital Books™ c/o NORDISC Music & Text, Hoertoftvej 9, 2700 Broenshoej, Denmark