SimpleSeq

Rick's Simple MIDI Sequencer

v0.16

MIDI compatibility

This software uses, and is compatible with, the RISC OS MIDI module using the Acorn-defined API.

As this software is intended for use with RISC OS, it is supplied with my USB MIDI module for communicating with MIDI devices using a USB connection.

Please note that cheap USB to serial MIDI interfaces are often deplorable quality and tend to lose track if more than five notes happen at once (that's a simple chord and two notes of melody on *one* channel). It is strongly recommended that you don't use such a device.

Your instrument should have, most likely at the back of the user guide, a standardised "MIDI implementation chart" to say which parts of the MIDI standard are actually supported.

By way of example, on the left is the chart from my Yamaha PSR keyboard. It's a fairly comprehensive MIDI implementation for a consumer level device. The older Roland E-16 on the right has a more restricted MIDI implementation. For starters, it only supports *seven* channels (1, 3, 4, 5, 8, 10, 16) and these appear to be reserved for specific purposes. Fewer controllers are supported, but there is a pitch bender. Note, also, the program change appears to be 1-128 rather than 0-127. I'm guessing it's the same thing given it is a seven bit value...

Limitations

As this is a simple sequencer (clue in the name), let's get a few things out of the way, so you can decide if this software may prove useful to you, or not.
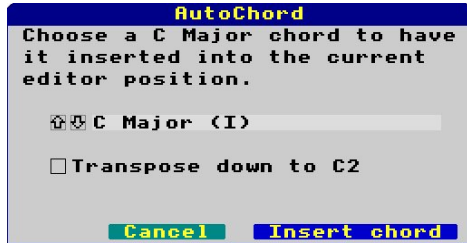
- Only 61 notes/keys will be supported. Companies such as Yamaha feel that this is a perfectly adequate size for many consumer-level keyboards, it is the size of my keyboards (a Yamaha PSR E-333 and a Roland E-16), and ought to be sufficient for creating many types of music. Note that there is an octave shift function that can be applied to a channel, so while the default range is C2 to C7, you can set any channel to span a five octave range between C0 and C9 (see page 19 for details).

- The smallest note supported is a semiquaver. That's a quarter of a beat (if each beat is a crotchet, there are two quavers to a crotchet and two semiquavers to a quaver). At a rate of 120 BPM (kind of normal), each beat happens every half second. Which means you can have eight notes per second, each lasting 0.125 seconds. Granted, it's probably not suitable for epic metal, but then this is a simple sequencer.

- There is a hard limit of 3,840 columns. What this translates to depends upon the BPM, but at $\frac{4}{4}$ with a BPM of 120, it's eight minutes. Therefore, it'll be four minutes at 240 BPM, or about $10^2/_3$ minutes at 90 BPM.

- The saved files are large (and sparse), as is the memory consumed. Speed of access was chosen in preference to clever encoding. It's basically one word per note per channel per column so a full piece would take around 16MB. SimpleSeq, however, only saves to file as much as is necessary. There is also an optional compression if file size is important.

- Available time signatures are $\frac{2}{2}, \frac{2}{4}, \frac{3}{4}, \frac{4}{4}, \frac{4}{4}, \frac{6}{4}, \frac{9}{8}, \frac{6}{8}, \frac{12}{8}$. For most intents and purposes, this simply alters how and where the guide markers are drawn. Time signatures (and BPM) are fixed in a piece and cannot be changed.

- This software runs single-tasking. It is not envisaged that this will ever become a desktop application.

- Two display modes are supported: 1280×720 (HD), or 1280×1024. There are two separate executables for each mode. A little program run at the start will try to pick the most appropriate for your machine, but you can force it by simply choosing to run *!RunImage* (1280×1024) or *!RunIm720* (1280×720).

If you have issue with any of these limitations, I'll remind you again, this software is a SIMPLE sequencer.

Other stuff: AutoChord

AutoChord makes it easy to insert C Major chords. Press **^A** to call up AutoChord and choose which chord you would like to insert.

By default the chords are played in the C3 octave. You can optionally shift them down to the C2 octave using the option provided.

```
          AutoChord
Choose a C Major chord to have
it inserted into the current
editor position.

 ⇧⇩ C Major (I)

 ☐ Transpose down to C2


       Cancel   Insert chord
```

The following chords, all in C Major, are available:

Triad	7th chord
C Major (I)	C Major 7 (I)
D minor (ii)	D minor 7 (ii)
E minor (iii)	E minor 7 (iii)
F Major (IV)	F Major 7 (IV)
G Major (V)	G Major 7 (V)
A minor (vi)	A minor 7 (vi)
B diminished (vii)	B minor 7/b5 (vii)

Suspended 2nd	Suspended 4th
C sus2	C sus4
D sus2	D sus4
F sus2	E sus 4
G sus2	G sus4
A sus2	A sus4

Common chord progressions in C Major:

I - V - vi - IV	Pop songs: *With or Without You* (U2), *Let It Be* (Beatles), etc.
I - IV - I - V	More songs: *Brown Eyed Girl* (Van Morrison), etc.
ii^7 - V^7 - I^7	A *lot* of jazz...
I - vi - IV - V	50's style (doo-wop)
I - vi - iii - IV	Start here for power metal
I - iii - IV - vi	If you like your metal just a bit heavier
ii - vi - ii - III - vi	For the more symphonic amongst you
I - ii - iii - ii - I - V	Prog rock, just like *Come Sail Away* (Styx).

The main area of the screen is the editor grid. This is where music is created.
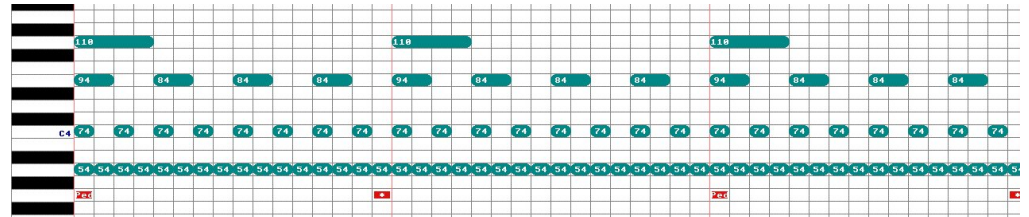
For those who read music, the above is something sort of like this.
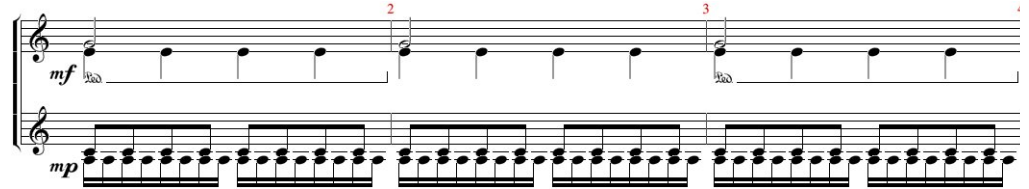
Except, in the sequencer, it's possible to give each note an individual velocity/intensity which could be tricky to notate. For instance, I have marked *mf* (moderately loud) and *mp* (moderately quiet), but in the sequencer there are four different note intensities. I'm sorry, but my understanding of notation isn't good enough to know how to actually notate that. Suffice to say, it's only an example to show the correlation between the two methods of writing music.

You'll notice that the lower left box is highlighted in yellow (note that this may appear elsewhere if you have loaded a file). This is the marker for the current editor position. You can use the **Cursors** to move it around the screen.

Making music!

Move the highlight **Up** until is is beside the key marked "C4" (this is Middle C).

Now press **Space**.

You will see a note appear, with "80" written in it. The eighty is the note's *velocity*, which means how hard it is to be played.
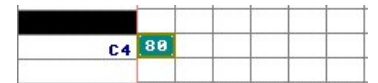
Now press **C** to make it be a crotchet (four squares).
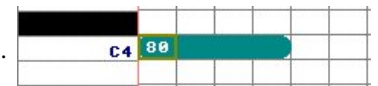
Now... simply move the highlight and repeat the process. You can just press **Space** to create semiquavers, then press the first letter of the desired note length: **Q**uaver, **C**rotchet, **M**inim, **S**emibreve, or **B**reve. If you make a mistake, don't worry, just press **Delete**.

Advanced input: Transcribing from piano

SimpleSeq can transcribe music directly from your piano as you play it.

To begin transcribing, ensure that the highlight box is aligned with the start of a bar, and then press ^T.

The transcribe dialogue will appear, and you'll hear your piano ticking as *SimpleSeq* plays beat and bar markers to give you the rhythm. At this point, nothing is being recorded.

From the very first moment that you press a key, recording will begin. The ticking will reset itself to the beginning of a bar – you always start from the beginning of a bar.

```
       Transcribing (120 bpm)
            Beat in bar : 4.3
      Bars transcribed : 11
        Notes received : 73
        Current column : 191
     Columns remaining : 3649

     Press Escape to finish.
```

As recording progresses, the dialogue will provide you with information on which beat in the bar is current, how many bars have been recorded, how many notes were received, and the current/remaining column (this is to let you know when you're about to run out of space).

Just keep playing, and when you're done press **Escape**.

Transcribing tries to match the notes as played to places on the grid. If you are playing quickly, there may be some glitches that will need to be manually resolved;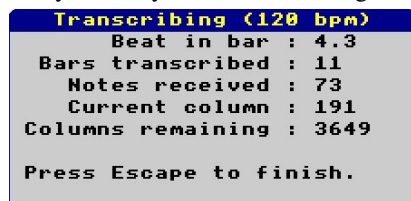 for instance you could play an even *five* notes in a half second beat, but when the interval is *eight* semiquavers, clearly it won't fit evenly.
With practice you'll understand how music is transcribed into *SimpleSeq.*

If you are playing a slower piece, you may find the *Beatify filter* to be of assistance to automatically try to line everything up.

Transcribe will faithfully record all note velocities and the use of the sustain pedal.
Note that pressing the sustain pedal will also start the input, so you should do this at the *same* time as the first note if necessary.

In each case, you'll see there is a *blue* button at the lower right of the screen. In most cases, pressing **Enter** will do the same thing as clicking on that button.
Some dialogues also have a second *greeny-blue* button that is typically used to cancel the action. In *all* cases, pressing **Escape** will behave as if this button had been pressed, *even if the button isn't visible on the screen.*

Where there is a dialogue that you can interact with, there are four types of object that you may encounter, which are demonstrated in this example:

```
              Object types
   Check :☒Yes!
   Radio :◉This   ○That   ○The Other
   String :Some text
   Choice :⇧⇩Choose one of these

        Nah, forget it.    Do it!
```

In these sorts of dialogues, you can press **Tab** to bring up a highlight that is a dashed line around one of the editable objects. Here you can see the second one down is highlighted. This means that you can use keypresses to alter the object's state. Press **Tab** to go to the next object.

```
              Object types
   Check :☒Yes!
   Radio :◉This   ○That   ○The Other
   String :Some text
   Choice :⇧⇩Choose one of these

        Nah, forget it.    Do it!
```

The first object is a *check box*. This is a simple yes or no choice. Click the check, or press **Space** when highlighted, to toggle its state between checked and unchecked.

The second object is a *radio choice*. Like an old-fashioned radio, you can choose *one* option of those presented. Click the little circle to the left of the descriptive text to select that option (the others will be automatically deselected). When the object is highlighted, you can press **Left** and **Right** to choose.

The third object is *string entry*. This is where you can enter some text, and press **Enter** when you are finished (which will go to the next string if there is one), or press **Tab** to go to the next object. You can click to move the insertion point (the red caret) or move it using **Left** and **Right**. Press **Delete** to delete the character to the left of the caret, or **^U** (that's **Ctrl** and **U** together) to delete everything.
Note that in some cases you may be constrained. File input, for example, won't permit characters such as $ or # that have special meanings, and some inputs only accept numbers.

The final object is the *choice selection*. This will list provide potentially numerous options and you can choose one by clicking the up and down arrows, or by pressing **Up** and **Down**.
Hold down **Shift** at the same time to skip ten options at a time, or hold down **Ctrl** to go to the first or last option in the list.

Advanced editing: Copying bars

Simply press **^C** to copy the current bar in the current channel.

Then go to another bar (potentially in another channel) and press **^V** to paste a copy of that bar's contents there. It will overwrite what was there before.

Advanced editing: Replicating bars

A limitation of copy-paste is that it only works for one bar at a time in the current channel. The answer to this is *replication*.

```
              Replicate
      Starting from bar :1
      Copy this many bars :1
           This many times :1
      Offset (0=follows on) :0
      Copy which channels :◉All   ○Only #1

                        Cancel    Replicate
```

Replicate will copy a number of bars from an initial bar, to begin from another bar, repeating a number of times if desired. It can do this for the current channel, or for *all* channels.
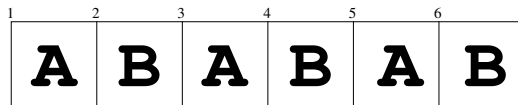
It will perform some checks, and warn you if you are going to overwrite existing music.

By way of example, we'll start with this:

```
1      2      3      4      5      6
 A    B                          
```
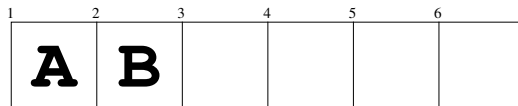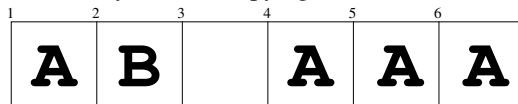
Two bars of music, labelled here A and B.

If we replicate starting from bar *one*, for *two* bars, to be repeated *twice*, with an offset of *zero*, then we will be copying A and B twice following on from the selection end (or as of bar 3):

```
1      2      3      4      5      6
 A    B    A    B    A    B
```

Now if we start at bar *one* for only *one* bar, copying it *three* times, to be placed at offset *four*...

```
1      2      3      4      5      6
 A    B          A    A    A
```

- *Snippet play* chooses how much music is played when you are playing a "snippet". There are two methods of playing, either "everything" or "the currently selected bar" (which is referred to as a snippet). However in order to give context, you can also choose to play up to three bars before the current bar as well.

- *Play more expressively* will add a tiny (+/- 2 centisecond) adjustment to each column of music as it is played in order to make it just slightly less regimented and robotic sounding.

- *Show in dark mode* will display the screen with a black background. This is the default and it is easier on the eyes. You can toggle this in the editor by pressing **F10**.

- *Show in Quaver mode* will display the screen with two notes per column to fit more music on-screen. You can toggle this in the editor by pressing **F11**.
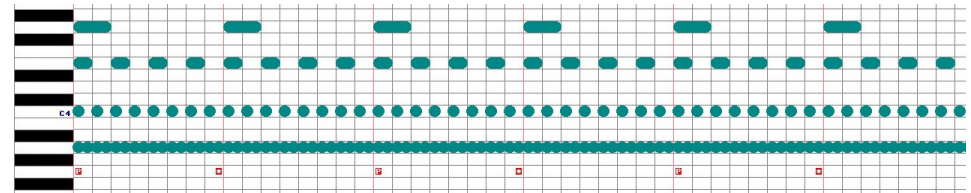
Note that in Quaver mode, when you press **Space** to add a note, you will be adding quavers, not semiquavers. The normal editing mode is semiquaver mode...

Click on **Set** to accept your changes (or press **Enter)**, and next to set up the instrument assignments. You do this by pressing **F7**.

```
                  MIDI setup
Channel   1 :⇧⇩ Acoustic Grand Piano
Channel   2 :⇧⇩ Acoustic Guitar (nylon)
Channel   3 :⇧⇩ Acoustic Bass
Channel   4 :⇧⇩ Violin
Channel   5 :⇧⇩ Cello
Channel   6 :⇧⇩ String Ensemble 1
Channel   7 :⇧⇩ Trombone
Channel   8 :⇧⇩ Tenor Sax
Channel   9 :⇧⇩ Flute
Channel  10 :    Standard drum kit
Channel  11 :⇧⇩ Clarinet
Channel  12 :⇧⇩ Church Organ
Channel  13 :⇧⇩ Clavinet
Channel  14 :⇧⇩ Accordion
Channel  15 :⇧⇩ Orchestral Harp
Channel  16 :⇧⇩ Glockenspiel

                        Cancel    Set
```

The instruments presented are those defined in the *General MIDI 1* specification. Extra voices (patches) such as Yamaha XG / XG-Lite or Roland GS are not supported at this time.

Loading music

Music is stored within *SimpleSeq* in the directory *Music*. At this time, this behaviour is fixed.

Press **^L** to open the dialogue for loading music.

```
                       Load file
Available files ('*' means there's a backup):
  lamedemo (*)              lamedemo/mid (MIDI)
  TwinkleBend

Filename :|

                                   Cancel    Load
```

The available files will be scanned, and up to 32 will be listed. Backups are not shown, but the presence of a "(*)" after the file implies that a backup exists.
MIDI files are also listed, but *SimpleSeq* is not capable of loading those.

Simply enter the name of the file (suffix "/bak" if you want to load the backup instead) and then click on **Load**.
If the file was saved compressed, it will be automatically decompressed upon loading.

Saving music

Music is always saved to that same location. Press **^S** to open the save dialogue.

```
                  Save file
Filename :lamedemo
         ☒Save file compressed

                       Cancel    Save
```

Enter the filename that you wish to save the file as (it will default to the name it was given when loaded), and then choose whether or not you would like the file to be compressed.
Then click on **Save**.
Prior to the file being saved, the copy that is already on disc (if there is one) is renamed with "/bak" suffixed, so it is possible to revert to the previous version should you need to do so.

Compression is performed using the built in Squash module, so it is quick. Every note (sixty one of them) in every channel (sixteen of them) in every used column of music is a word in length (or four bytes). It was done like this for speed, making it very simple to know exactly where each part of the music is in memory.
When a file is normally saved, the entire music array is written out. It can be large. The "lamedemo" example, if not compressed, is 394,016 bytes. However, since music simply doesn't sound every note in every channel every semiquaver, much of the array is empty. This makes it an ideal candidate for being compressed. The compressed file? A tiny 2,724 bytes.

Manually entering music

Move the highlight box with the **Cursors**, or place it by clicking the mouse.

Shift-Left and **Shift-Right** will hop from bar to bar.
^Left and **^Right** will change which bars are visible on-screen.

Shift-Up and **Shift-Down** will move up or down ten notes at a time.

Home will go to the beginning (the first bar), and **End** will go to the last bar used.

Once the highlight is in place, pressing **Space** will set a note at that location, with the default velocity.

Automatically entering music

Set the highlight in the column that you want to place the music in, and play the notes on your piano. They will appear in the editor.

Press **Enter** to move to the next column to the right.

If you hold down the notes on your piano as you press **Enter**, the notes will be extended into the new column. This makes it easier to enter longer notes.

Editing music

If you add a note by accident, simply press **Delete** to remove it.

If you want to try out some melodies before entering them into the sequencer, simply move to an empty column and play whatever you like. Don't worry that all these notes will be recorded. When you're done, simply press **^Delete** to wipe the entire column.

If you are entering manually, you can press various keys to alter the length of the current note:
- **Q** Quaver (two columns)
- **C** Crotchet (four columns, usually a beat)
- **M** Minim (eight columns)
- **S** Semibreve (sixteen columns, a bar at $\frac{4}{4}$)
- **B** Breve (thirty two columns, two bars at $\frac{4}{4}$)