**jOrgan v3.4 Notes.**
**December 2008  Provisional Edition.**

Version 3 of jOrgan incorporates major changes from previous versions and in addition Version 3.1 allowed a software synthesiser (Fluidsynth) to be included in a jOrgan compilation.. If you discover any errors or omissions in these Notes do please let me know (see footnote). Revision History - See endnote.

Italicised sections are under review and awaiting revision.

**Preliminary.**

**CONTENTS.**

**To find things in these Notes, use the Find or Search facility in your word processor.**

These Notes for Sven Meier's jOrgan are to supplement the information on the Wiki at http://jorgan.sourceforge.net/doku.php/introduction and are more in the nature of a beginner's guide.

They have been compiled with Soundfonts mainly in mind, but jOrgan is designed to be used with a wide range of sound collection formats. The Notes are applicable to the following associated software versions and later: see para -
jOrgan v3.4
Classic Skin v 1.6
Theatre Skin v 1.4
Modern Skin v 0.9
Soundfont corg_w110, corg_c111.
Soundfont eorg104.
Earlier skins are not compatible.

The procedure to install jOrgan on a Windows system and to use the Organ Soundfonts

on my website with a ready-made (pre-configured) organ is covered in paragraphs 1 - 10. The remainder of this file covers amending a pre-configured organ, creating your own and more advanced matters.
**Beginners are advised to concentrate on Paras. 1 to 10 to start with.**

A jOrgan Mailing List is available at https://sourceforge.net/projects/jorgan/

jOrgan and these soundfonts can be used on Mac and Linux systems but I am not able to offer any advice on this. Search the jOrgan Forum and Mailing List Archives.

## GETTING jORGAN WORKING.

1.Go to http://www.java.com/en/download/manual.jsp and download the latest Windows (offline installation) file (15 Mb). Double click this .exe file and it will update the old version of Java which comes with Windows.

2a Go to http://sourceforge.net/projects/jorgan/ - Downloads tab, download the jOrgan.zip file, unzip it and install all the contents (a jorgan.jar file and 3 folders) in a new folder, say, C:/jorgan.

2b. Also from the same source download the latest versions of one or both the Classic Skin and Theatre Organ skin .zip files. Create a Skins folder in your C:\jorgan folder. Unzip the skins files, open the contained folder and place the inner .zip files in your C:\jorgan/skins folder.

3. Go to http://brucemiles1.mysite.wanadoo-members.co.uk/ , Soundfonts page Read the information on the webpage and, if necessary, download and study the beginners file. Download, decompress and install any of the following into your soundcard or synth. The latest versions of  :-
eorg_ into bank 20, for the Village and English (classical) organs.
corg_w into bank 26, for Wurlitzer (theatre) organ.
corg_c into bank 27. for Compton (theatre) organ.
- of your soundcard or synth.
If you have more than one port (eg Synths A & B in the Soundblaster range) load them into both ports.
(if using a software synthesiser - see para 55).

4. Go to http://brucemiles1.mysite.wanadoo-members.co.uk/, Midi Consoles page. Download and unzip one or more of the appropriate disposition files and save them to your C:/jorgan/disposition folder. These files determine the layout and facilities of the virtual console. You can modify them or compile your own later. (existing users see para 11 below).

4a. You should now have the following file structure

C:\jorgan

jorgan.jar
dispostions
      vorg_v104_v--)
      corg_c111_v-- )     (or as required)
docs
      authors.txt
      gpl.txt
      troubles.txt
      instructions.zip
lib
      bias.jar
      core.jar
      creative.dll
      creative JNI.jar
      fluidsynth.jar
      fluidsynthJNI.dll
      libfluidsynth-1.dll
      soundfont.jar
      spin.jar
      swingx.jar
      xstream.jar
skins
      classic.zip
          build.properties
          skin.xml
          several graphics.png files
      theatre.zip          (as required)
          as above

5. Drag a shortcut from the jorgan.jar file onto the desktop, double click it to open jOrgan. It will open with a blank screen.

6. In jOrgan, click File - Open, and open a .disposition (.xml) file. jOrgan will recognise either. The console will appear.

7.a. Click the Construct Organ icon and under Elements - Console - Properties - Input click the entry to reveal a drop-down box. Set the entries to the input and output ports on which to receive and send Midi control messages from and to your midi keyboard or console.
  b. Still under Elements, click View - Messages, then select each Keyboard entry in turn. The numbers in the Message window Status column determine the channels on which Midi Note messages will be accepted from your external keyboard(s). They are for Channel 1, 144, 144 and 128, for Channel 2, 145, 145 and 129 and so on up to, for channel 16, 159, 159 and 143. Amend if necessary.
(To use the jOrgan on-screen keyboard for testing, see para 50)

8. Still under Elements, select each Rank in turn and set your output(s) (ie synth) port(s). These can all be the same or may be divided between different ports and soundcards. jOrgan will normally allocate output channels 'on the fly' as you change the stop selection.
Release the Construct button. Always remember jOrgan will not play in the Construct mode.

9. Click File - Save As and save your now amended disposition file.

10. Set a few stops and play. Check that the Midi In and Out icons (bottom right of screen) respond. This should be sufficient to get jOrgan working. Other entries can be adjusted later as required. To set a combination piston, set the controls, press the SET piston, then press the relevant combination piston.

11.You can open a disposition file in v 3.0 which was configured in a prior version. You should check and if necessary edit the following:-
a. Names of Ranks. These are taken from a stop used by that rank. This may be misleading, particularly for theatre organ and some percussions which use the Percussions rank. Press the Construct button, select the element in the element list to edit the name.
ii. Enter a synth port in the Console - Properties - Output (para 7.a) to suppress the error message.
iii. If using classical (NPRN) tremulants, enter the required Messages.(para 32.ii.and Appendix para 2.)
iv.Add any missing labels. (paras 21 and 37)
v. Enter the default screen ( \Default0 ) in Console  - Properties - Screen.
vi Check the operation of the any Unison Off couplers and that they respond to the relevant combination pisons including General Cancel.. Check the that the references are as for other couplers on the same keyboard,. Check the Captor > General Cancel reference. Reset any incorrect combinations including General Cancel..
vii. Any controls using hidden stops (eg 2 rank Strings, multi-note stops (Acoustic Bass, Carillon, Aero effects etc) should be completely reconfigured. Mail me (see end note). Then save the amended disposition file.

**AMENDING AND COMPILING A DISPOSITION FILE.**

12.You can compile a new Console (a Disposition file) either by amending an existing one or compiling one from scratch.

13.To amend an existing file, open it and save under a new name. Omit paras. 16, 17, and 18 below. To compile a new file click File - New. Refer to the instructions below for adding, removing and configuring the components. For each new element refer to para 21 et seq and create all the references to and from existing elements. You can do this in groups using shift - click and control - click to select.

14.jOrgan is totally configureable - you can have as many stops and manuals as you wish

and you can control it on screen or from external equipment using Midi messages- or both. jOrgan can also control external equipment which can respond to Midi messages. The messages jOrgan responds to and generates can be set to suit your Midi source and Midi destination. Controls can be positioned to make any screen layout.

15.jOrgan - Principles.
Components (Elements) of the jOrgan console are first created. The main basic elements are the Console itself, Keyboards, Couplers, Ranks, Stops, Combinations, Continuous Filters (Swells), Switch Filters (Tremulants) and Sound (Output) elements. Each element is linked (Referenced) within jOrgan to the elements it controls or is associated with. The appearance and behaviour of each element is determined by its property settings. A set of Midi messages can be associated with each element to control or be controlled by external equipment. All element creation, property, reference and message setting is done in the Construct mode - press the Construct Organ button. Release the button to play. Save the organ (Disposition file) at intervals while constructing.

16.References are normally made as below. There are special cases and exceptions covered in later paragraphs.

 (\/ - Referenced to, /\ - Referenced from.)

| | |
|---|---|
| Console | \/ All elements which appear on the screen console. |
| Labels | /\ Console |
| Keyboards (manuals & pedals) | \/ Couplers <br> \/ Stops |
| Couplers | /\ Console <br> /\ Keyboard <br> /\ Combinations <br> /\ Activators <br> \/ Stops <br> \/ Couplers |
| Stops | /\ Console <br> /\ Keyboard <br> /\ Couplers <br> /\ Combinations <br> /\ Activators <br> \/ Ranks |
| Ranks | /\ Stops <br> /\ Filters <br> \/ Sounds (Outputs) |

| Sounds | /\ Ranks |
|---|---|

| Switch | /\ Console |
|---|---|
| Filters | /\ Ranks |
| (Tremulants) | |

| Continuous | /\ Console |
|---|---|
| Filters | /\ Ranks |
| (Swells) | |

| Combinations | /\ Console |
|---|---|
| | /\ Sequence |
| | \/ Coupler |
| | \/ Stop |
| | \/ Switch Filters (Tremulants) |

| Sequence | /\ Console |
|---|---|
| | \/ Combination |

| Regulator | /\ Console |
|---|---|
| (Crescendo) | \/ Activator |

| Activator | /\ Console (Only when used singly for Sforzando) |
|---|---|
| | /\ Regulator (Crescendo) |
| | \/ Couplers |
| | \/ Stops |
| | \/ Keyer |

| Keyer | /\ Console |
|---|---|
| | /\ Activator |
| | \/ Stops |

| Memory | /\ Console |
|---|---|
| | \/ Combinations |

| Captor | /\ Console |
|---|---|
| (Setter) | \/ Combinations |

| *Incrementer* | *\/ Continuous Filter (Swell)* |
|---|---|
| | *\/ Memory* |
| | *\/ Sequence* |

17. Planning a new Organ..
Before compiling a new console it is strongly recommended that you plan it on paper.
List the stops and all other controls on each manual and all general controls. For theatre

organ, note which swell and tremulant each stop or control is associated with. Include a note of the available output (Synth) ports.

18. Creating the basic Console.
Open jOrgan and click File - New. A blank screen appears. Click the 'Construct Organ' icon. The basic Console is automatically created and appears as the first entry in the Elements pane.

19.Console Properties.
Select the Console entry, and under Properties, set the required skin from the drop-down box. Set Style to Console. Zoom can initially be left at 100%. Set Input and Output to the respective ports on which to receive and send Midi control messages. Set Screen to \Display0. The console background will appear on screen.

20. Console References.
Console references are to all visible elements. These are created automatically when the elements are created and dragged on screen - see below.

21.Creating Elements.
Every component of the organ must be created - see the list above and consult your plan. Create the elements in groups, say all the stops on a manual, all the combinations on a manual and so on.
Press the 'Add Element' button, enter a name, select the type of element. The name you type will be the on-screen name for the element - a double space gives a line feed. Click Finish. If a blank element is needed enter a No-break space (Alt-Num0160) to suppress the element type which otherwise appears.
Drag each element which is to appear on screen from the Elements section to an approximate position on the console background - it will appear in outline.
Elements may be displayed in the list either alphabetically (the a-z button) or in element type order.
Elements can also be created by copying - see para 39.

22. To delete an element, select it and press the red X Delete button.

23.Element Properties - General.
To set the properties select each element either in the list or on the screen console and, under Properties follow these general instructions and also those for each type below. Settings not mentioned can be left at default.
For visible elements the Style entry determines the appearance of the element. Select Style and click the appropriate entry - you cannot select a Style until the outline element is on screen. For stops, couplers and  tremulants in the Classical skin, Style - Stop gives a stop knob with black lettering, Style - Coupler gives a stop knob with red lettering. In the theatre skin Style - "colour" gives a stop-tab of that colour (conventionally white but yellow for strings, red for reeds, black for couplers). The control appears on-screen - drag it into approximate position. Repeat paras 21 and 23 for each group of elements before going further. Finally, when all visible elements are on-screen, adjust the layout. You can

'lassoo' on screen, or Shift-Click or Ctrl-Click on screen or in the list to select a group of stops.  You can right click a group and align and spread them as a group. You can hide visible elements or order them front to back where one element overlays another. All visible elements have a Zoom property which sets the on-screen size - between 50% and 150%.  The jOrgan screen expands towards the bottom right, so it is usually best to start adjusting final positions from the top left.

Elements may be easier to identify and select on-screen. In View -  Description  enter some distinguishing text (eg the associated keyboard) to allow allow elements with identical names to be distinguished in the element and reference lists. To create or edit, click View - Description. The element type is automatically shown to aid identification. To hide an element right right-click it on-screen and click Arrange-Hide, or don't drag it on screen initially.  The 'Active' or 'Value' property can be be used to set the position of a hidden control.

24. Element References - General.

These are the communications between elements ie. within jOrgan.

Create all the Elements before you reference any of them.

To set the references for each Element select the entry (or entries) on-screen or under Elements, and click the "Add References" button. From the list of elements available 'to reference' (the 'down' arrow references) see para 16 and select those required. To create references 'to be referenced by' (the 'up' arrow references), click Next, then select those required. Click Finish. To create identical references for groups of elements (eg combinations) you can select all the elements and create the references together.

To distinguish between similarly named elements on different manuals you can make the first selection on screen to uniquely identify them, and use this last method. Also see para. 23 re 'Description'.

To go to an element listed in the References display, double-click the entry.

Properties, References and Messages for the different types of Element are as below.

25. Element Messages - General.

These Messages determine the Midi messages which the various elements send to and receive from midi sources external to jOrgan and how they are dealt with. To access, select the element and click View - Messages.

Each entry consists of

a.. Name - the type of message which determines the action or condition which initiates sending or accepting the message

b.  Status - the Midi code which identifies the Midi channel and the type of action.

c.  data 1 - the Midi code which further  identifies the action.

d.  data 2 - the Midi code which describes the detail or amplitude of the action. (may be unused).

b., c., and d also include a Command which determines how the Midi code will be dealt with in jOrgan.

To add a message click the 'Add Message' icon, the permissible messages types for that particular element are shown. Select the message type, enter the required status and data information, click Finish. The Status and data entries can be entered later or edited in the usual way. To add a further message, click Next.

Most on-screen elements can, if required, include the following Message types for communicating with equipment or synth external to jOrgan:-

Activate - the received Message which will activate the element.

Activated - the Message which the element will send when activated.

Deactivate - the received Message which will deactivate the element.

Deactivated - the Message which the element will send when deactivated.

Toggle - The received Midi message which will successively activate and deactivate the element.

Distinguish carefully between Activate and Activated and Deactivate and Deactivated. For Switch

For Combination elements, use:-

Initiate - the received Message which will activate the element.

Other Messages for particular elements are described in following paragraphs.

jOrgan may allocate serial numbers to some on-screen controls, and these are used to suggest control messages for Activate and Deactivate messages. Change these if required. The Record icon (extreme right) automatically enters a message sent from an external midi source.  If your console is using the same received message for on and off, the Message type must be 'Toggle'. In the Message window, select the exisitng Activate, Deactivate, Toggle or

Initiate message (which may intially be an example or place-holder).  Click the Record icon (Message window extreme right), then operate the control on your console. The message will

appear, and jOrgan should then respond to your console control.

For more detailed information on Messages, see Appendix A, para 2.


25a. Switch.

The Switch element is used to communicate with external Midi equipment. It can use any of the 5 external messages refered to above (Activate, Activated, Deactivate. Deactivated, Toggle) and can be referenced from (ie operated by) combination, activator and regulator elements or by clicking on screen. It can also be used to create a Crescendo Warning light, see paras


26.Keyboards.

Set Input to the Midi input Port on which to receive messages from your  Midi keyboard or Console. The Port entries may be the same as in Console properties. References are to all Stops and Couplers for that Keyboard (but see para 29 re unison-off couplers). The Keyboard Note range is set in the Press message. For keyboards there are some special cases - see para 48.

Messages are:-

Press          equal 144      greaterEqual 36 | lessEqual 96 | get pitch      greater 0 | get
                                                velocity

        on key press, detects note on message on ch 1, if pitch is in range, velocity is greater than 0.

§Release        equal 144      get pitch        equal 0

        on key release, detects note on message on ch. 1, pitch and if velocity is 0 (off)

§Release        equal 128      get pitch

on key release, detects  note off message on ch.1 and pitch.

The Midi Channel to which the keyboard responds is set in the Status entry, 144 or 128 for ch. 1, 145 or 129 for ch. 2, up to 159 or 143 for ch. 16.

§Midi sources may use either of these messages for Note Off.

27.Stops.

*(For Percussions and some others the Soundfont setting is centre and Pan is set in the Stop properties, between 0 - hard left, and 127 - hard right. Where the stop has been panned across the full width of the organ in the soundfont it can be positioned in a left or right chamber by panning the stop to 0 or 127 in jOrgan but the original pipe arrangement will be lost. )*

The Transpose setting transposes the stop up or down in semitone steps. The setting is normally 0 in a classical Console. For a theatre console set transpose to 0 for the 8 ft stops, -12 for the 16', 12 for the 4' and so on.  The Action setting is normally Straight but for effects stops set to Constant and Transpose to the required note relative to middle c. For fine tuning see para 31 (i). The remaining settings are as described in para 29 for couplers

References are to the Rank(s) used by that stop.

References are from Keyboards, Combinations, Couplers, Activators and Keyers. Stops operated by (referenced from) a Keyer must be hidden. Set the Active property to False as the stop will be activated by the keyer. Do not reference it from any other element.

Typical Messages are as described in para 25.

28. Ranks.

A rank element is required for each rank of pipes for both theatre (unified) and classical ('straight') organs.

If the Channel Property is left blank jOrgan will ('on the fly' whilst playing) choose the first available (disengaged) output channel without restriction. If you enter a number, for example 'equal 0', this will fix the choice at channel 1. For Soundfont compatible cards and synths, you must enter 'notEqual 9' to prevent channel 10 being selected. Note that the channel designation in Midi is 1 less than the conventional channel number.For the Output property enter the output port. In a classical organ - all Great and Pedal ranks may, for example, use one output (synth) port and all Swell and Choir ranks may use another. For theatre organ, the output port is usually determined by the relevant chambers eg Main chamber ranks to Synth A, Solo chamber ranks to Synth B. For multiple ports and soundcards you can further divide the ranks to equalise the polyphony load and suit your amplifier/loudspeaker arrangement. Ranks are hidden and the Style and Zoom properties are not used.

References are to the Tremulant (Switch Filter) and Swell (Continuous Filter) affecting the rank - ie for classical organ as determined by the stop's division and for theatre organ by the stop's chamber. Omit the reference to a Swell for unenclosed ranks and to a Tremulant for non-trem ranks.

References are from Stops using the Rank.

Typical Messages are :-

Engaged                    set 176                    set 0            set bb

When rank is engaged, set Controller for Bank change, set Bank number bb.

Engaged             set 192         set pp

      When rank is engaged set Program number pp.

Engaged             set 176         set 7         set uu

      When rank is engaged, set controller for volume, set volume uu (default100)

Engaged             set 176         set 10   set 64

      When rank is engaged, set controller for pan, set pan (64 is centre), 0 (full left), 127 (full right)

Note played          set 144         set Pitch       set vv

      When note is played, sound pipe and set Pitch and velocity vv.(default 100)

Note Muted          set 144         set Pitch      Set 0

      When note is muted, mute pipe, set Pitch and set Velocity to 0 (off)

Disengaged          set 176         set 121

      When rank is disengaged, reset all controllers

Disengaged          set 176         set 123

      When rank is disengaged mute all pipes

A Rank is Engaged when a Stop referenced to that Rank is activated.

For theatre organ the no-trem (NT) program should be used. For non-tremmed ranks and percussions there is only one program number. Volume and Velocity  settings may be adjusted (especially for the Piano) to regulate the organ. A setting of 0 allows the Velocity as sent by the Midi keyboard to be passed to the synth, so a Piano can be made touch responsive.

29.Couplers.

Set Transposition Properties to 12 for octave couplers, -12 for suboctave, 7 for quint and so on. The Action setting is normally 'straight'. The 'highest' or 'lowest' settings respectively provide a monophonic (single note) coupler which will follow the melody or bass lines, harmonium fashion. The 'constant' setting provides a fixed note coupler, relative to middle C, for use with monophonic percussion and effects stops. Sustain and Sostenuto can be provided by setting the Action property accordingly and interposing the Coupler between the keyboard and the stops to be affected.(see para 48). (for Piano Sustain see para 32 iii.). For similar effects for individual stops see para 27. A Unison Off coupler is provided by using the Straight - Action setting with  the 'couplerinverse' or 'blackinverse' Style and referencing the stops from the coupler instead of from the keyboard (see para 48).

References are normally to stops and tremulants on the keyboard being coupled to. Intra-manual couplers (eg normal Sub- and Octave couplers) are referenced to the controls on the same keyboard. For Unison-Off couplers reference as an intra-manual coupler, set the Style to Inverse, Action to Straight, Tranpose to 0, and omit the keyboard to stop references. One coupler can be referenced to another, for example, an inter-manual coupler can be referenced to an intra-manual coupler ('Tandem' couplers). This can allow a Swell Octave coupler to function via a Swell to Great coupler. Couplers can be referenced to stops on other keyboards to provide, for example, a pedal combination (a 'suitable bass') for a manual combination. For explanatory diagrams of these, and other advanced coupler configurations see Para 48.

30. Filters - General.. These Elements use Midi control messages to affect the behaviour

of the ranks from which they are referenced.  jOrgan will automatically set the filter to use the Midi channels and Ports the ranks affected are using, Therefore  the Engaged message Status entries can be for Channel 1 throughout.

31. Continuous (Variable) Filters. These elements can be continuously varied. and are mainly used for Swells.

i. Swells. Typical Property settings are Style - swell, Locking - true, Threshold - 0.05 Threshold limits the response to changes greater than the specified figure to avoid the danger of 'Midi-choke' due to chatty swell controls. Threshold is in the range 0 - 1, a setting of 0.05 giving 20 steps is suggested. Value is used to set a hidden swell control. Messages are :-

| Change | | equal 176 | equal 7 | div 127 \| get value |
|---|---|---|---|---|

Detect any change in volume controller level, convert numerical range and store value.

| Engaging | set 176 | set 7 | set value \| div 2 \| add 0.5 \| mult volume 127 |
|---|---|---|---|

On change, set volume controller, set range and lower limit and convert numerical range.

The range and minimum volume is set by the 'div' and 'add' figures respectively. Useful 'add' values are between 0.1 and 0.8 with lower values giving most effect. The 'div' value must be adjusted to equal 1/(1 - 'add') obtain control over the full range of the swell pedal. The Change Status and Data 1 numbers are determined by the requirements of the external swell control, the Engaging Status number, see para. 30.
The realistic effect of the swell can be greatly improved by brightening the sound as the swell is opened. This can be done (for fully Soundfont compatible synths only) by adding the following NPRN messages to the above :-

| Engaging | set 176 | set 99 | set 127 | Soundfont NPRN identifier. |
|---|---|---|---|---|
| Engaging | set 176 | set 98 | set 21 | Select filter cut-off frequency controller. |
| Engaging | set 176 | set 38 | set value \| div 4 \| add 0.75 \| mult volume 127 set range, set lower limit, convert numerical | |

range.

Lower values enhance the effect. The 'div' value must be adjusted as above.

32. Switch Filters. This element has two states, on and off. These filters are used for:-

i. Tremulants using the program change method, using separate samples - usually theatre tremulants. Property settings will typically be Locking - True, Style - Stop or Colour (a tab).  These stops use, in effect, either of two ranks and two program numbers, trem and no-trem (NT). The ranks are normally set to use the NT program, and the program number shift to change from no-trem to trem program is applied by the filter.
Typical messages are:-

| Intercept | equal 192 | get program | Intercept program change message and     store number |
|---|---|---|---|
| Engaged | set 192 | set program 50 \| sub 50 | When rank is engaged set stored program number |

| | | | | (default 50) minus Program shift. |
|---|---|---|---|---|
| Disengaged | set 192 | set program 0 | | When rank is disengaged reset original      number. |

ii. Tremulants using the NPRN method (usually classical tremulants). Property settings will typically be Locking - True, Style - Stop or Colour (a tab). This method uses a sequence of control messages unique to a particular sound collection format to control tremulant frequency, pitch depth and amplitude depth. The typical messages below are for Creative Labs Soundfonts. These messages will only work with fully compatible synths, which includes the Soundblaster soundcards, but not sfz and Fluidsynth.

| Engaged | Set 176 | Set 99 | Set 127 | Soundfont NPRN identifier. |
|---|---|---|---|---|
| Engaged | Set 176 | Set 98 | Set 20 | Select trem amplitude depth controller. |
| Engaged | Set 176 | Set 38 | Set 12 | Set trem amplitude depth. |
| Engaged | Set 176 | Set 99 | Set 127 | Soundfont NPRN identifier. |
| Engaged | Set 176 | Set 98 | Set 17 | Select LFO (trem) frequency controller. |
| Engaged | Set 176 | Set 38 | Set 2 | Set trem pitch depth. |
| Engaged | Set 176 | Set 99 | Set 127 | Soundfont NPRN identifier. |
| Engaged | Set 176 | Set 98 | Set 1 | Select trem pitch depth controller. |
| Engaged | Set 176 | Set 38 | Set 50 | Set trem frequency. |
| Disengaged | Set 176 | Entries as above, except all Data 1) | | Reset NPRN controllers to 0.(off) |

Set 38 messages have Data 2 Set 0)
!! Make maximum use of Copy and Paste when entering these messages !!

iiiTremulants using the Modulation controller.
This method is applicable to organs not using the programme change method and using sfz *or fluidsynth softsynths*. A tremulant (LFO) frequency must be set in the soundfont - this is set by default at 5 hz.
Messages are :-

| Engaged | set 176 | set 1 | set 50 (typical) |
|---|---|---|---|
| when trem control is 'on' | set Midi Control - | Modulation controller | set depth |
| Disengaged | set 176 | set 1 | set 0 |
| when trem control is 'off' | set midi Control - | Modulation controller | set off |

iii Sustain and Sostenuto. This simply sends the appropriate Midi control message to the synth on the relevant channels to produce the required effect. Property settings will typically be Style Piston, Locking - False. References are - for Sustain, usually only from Piano, for Sostenuto from the Ranks to be affected. Messages for Sustain are :

| Engaged | set 176 | set 64 | set 127 |
|---|---|---|---|
| when piston is pressed | set Midi Control, | sustain, | on |
| Disengaged | set 176 | set 64 | set 0 |
| when piston is released | set Midi Control, | sustain, | off |

For Sostenuto the set 64 entries are set 66, but use of a Coupler is more appropriate as this affects keys rather than ranks, see para 29

iv. Stops using a second rank and program to give a modified sound. Eg Chrysoglott damper. This is done in exactly the same way as i above.
Typical messages are:-

| Intercept | equal 192 | get program | Intercept program change message and store number |
|---|---|---|---|
| Engaged | set 192 | set program 13 \| add 13 | When rank is engaged set stored program number (default 13) plus program shift. |
| Disengaged | set 192 | set program 0 | When rank is disengaged reset original number. |

v. A Tuning control can be constructed using RPN messages. See Appendix.

33. Combinations. Set the Style property to Piston.
References are to the controls ie Stops, Couplers and Tremulants (Switch Filters) on the relevant keyboard(s). Omit references to controls you wish to be always unaffected eg to leave theatre organ tremulants 'in neutral'. General pistons, including General Cancel, are referenced across the console to all controls to be affected. All Combinations must be referenced from the Captor ('Set') element.
Messages are:-
Initiate          as required by external equipment (use the Record facility).
Operates the combination piston via Midi message received on Console Input port.
Combinations are actually set in the Play mode (Construct off). Set the controls to the required combination, press the SET button (see para 34), then press the relevant combination piston. Note that the General Cancel combination must be set like any other. Remember that in the Construct mode jOrgan will not play.

34. Captor. This element implements the Combination  piston setting facility; the Setter. Only one Captor is required for the whole organ. Create the element, set Style to Piston, Name to SET (or use a label), and Locking to True. Reference the element to the combinations you wish to control - usually all of them including any General Cancel Combination. To actually set the required combinations, see para 33.

35. *The Incrementer element can vary a continuous control (a regulator, sequence or memory) in predetermined steps. Create two incrementer elements, set style to piston and reference both to the element to be controlled. Set one element to a positive Delta (step size) value (increment), the other to the same negative value (decrement). Values of 10 to control a swell and 1 for sequence and memory are suggested. Control is on-screen, If the continuous control (or a duplicate of it) property is set to Counter, an on-screen read-out of the position is given.*

36. Memory. This element implements the multi-level memory so that players'

combination settings can be set and later recalled. Create the Memory element, drag onto the console and set to the corresponding Style. Reference the element to all the combinations (except the 'fixed' combinations eg General Cancel).
To set the combinations for a particular memory level, click View - Memory, select the level required then set the combinations as in para 33. A name can be entered in the memory table if desired. A memory level can also be selected on-screen or by using Incrementer elements referenced to the memory. (para 35). When a level is selected the combinations as set are available.

37. Labels. Use this element to create an on-screen label which is independent of any other element. Set Style to Label. The Zoom property may be found useful to set the size of the label and text. The label will also adjust its size to accommodate the text (name) you enter. A double-space acts a a line-feed. The only reference is from the Console and there are no associated Messages.

38. Checking the Setup and Problems. A great deal of the checking for errors can be done by selecting a group of related elements in turn and seeing that the properties, references and messages correspond. Also click View - Problems and see the list at the bottom of the Console window.

39. To copy an Element, select it in the Elements list and click Ctrl-D. To avoid confusion amend the duplicate name immediately. Copy, cut and paste is implemented throughout jOrgan.

40. Finally save the file, then re-open it. Check that everything works. You can set jOrgan to always open with a  previously loaded disposition file under View - Configuration - Options - jOrgan.

## MORE ADVANCED MATTERS.

41. Shortcut Properties entries for all the on-screen controls (except swells and regulators) allow the computer keyboard to control the organ. Any key or any of the usual key combinations (eg. Ctrl - A, Alt - 7) may be used. The shortcut characters optionally appear on the console - (set the options under View - Configuration - Options - Appearance - Configuration - Elements). To delete a shortcut, select the entry in the element - properties - shortcut drop-down box and click Ctrl.

42. Regulator. This element can used as a Crescendo, Sforzando or Effects control. It activates and de-activates the Activators (para 43) (crescendo stages) in their order in the elements list and they should be named accordingly - eg Act0 - 9. For a multistage crescendo, set Style to Swell and threshold to, say, 0.05 . For a two or single stage control using a piano type pedal, set style to Sforzando and the Locking property to False.
For multi-stage Effects pedal see para 45.
Typical messages are:-
Change                     Equal 176                     Equal 7                     div 127 | get value
Check Status and Data 1 messages for match with external control, get Data 2 value when

it changes and reset to jOrgan internal value range.

For a red warning light, create a Switch element and reference it from all Activators except 'off'. - see i below.

i. Crescendo pedal with Warning Light.

>Regulator (Crescendo)  (Style - Locking - True).

 >Activator 0 (off)

 >Activator 1

  >Stops

=  >Switch ( locking - true, style warning)

 >Activator 2

  >Stops

=  >Switch (locking - true, style warning)

  - - etc for multi-stages.

 =  same instance.

ii. Two stage Sforzando control.

Regulator  (Style - Sforzando (Piano pedal), Locking - False).

 >Activator 0 (off) (see para 43)

 >Activator 1

  >Stops

 >Activators 2

  >Stops


43. Activators. These elements activate the controls to which they are referenced without actually moving them on-screen. They can be used in conjunction with a Regulator to provide a Crescendo, Tutti or Sforzando pedal. They may also be used to activate multiple hidden controls from one on-screen control.

Crescendo Activators differ from Combinations in the way they are set, also the stop controls do not move and the stops return to their previous state when the Activator is deactivated. It is suggested that the required settings for each stage (ie the crescendo combinations) are determined by temporarily creating a group of combination elements, then adjusting the settings in the usual way (para. 33) to give a smooth crescendo. Note the settings, then delete these combinations. To minimise polyphony problems only include stops which have a significant effect on the sound. Create the Activators and name them in alphanumeric order. Reference them, usually on Great and Pedal keyboards only, as follows. Select each stop on-screen, click the 'add references' icon then 'Next' then  multi-select the Activators from the one where the stop first sounds to the last stage. The first Activator stage must always be 'off' ie not referenced to any controls. Crescendo Activators are hidden and have no styles.

They are referenced from the Regulator and to the stops and couplers used by the crescendo or sforzando stage as above, for Crescendo usually only on the Great and Pedal keyboards. They may also be referenced to a switch element styled as warning light (see previous para.).  For an Effects (eg Crash) pedal they are referenced to keyers and thence to hidden stops.

Activators used to operate multiple hidden controls (eg. the components of an Acoustic Bass or Chrysoglott Carillon) are configured like on-screen stops or a colour (stop tabs) and referenced to the controls. Also see para 48 x. This method is appropriate where the

components of the sound use the same rank at different pitches. Where different ranks are used see para 48 ix.

44. Sequences. This element activates and deactivates the combinations to which it is referenced in turn as the control is varied. *The Sequence control can be varied by using a pair of  + and - Incrementer elements in which case the Sequence element can be Hidden (see para 32) or, if the Style is set to Counter, the setting can be monitored*. The only references are from the Incrementers and to the Combinations. Alternatively the Sequence element  can be used  same way as a swell - set style to Swell and reference to the combinations.

45. Keyer. This element sounds notes or effects from a control independently of a keyboard and is mainly used for sounding crashes and other effects. To implement, create a hidden stop (ie don't drag it onto the console), set properties as for a corresponding keyboard stop and reference the keyer to it. The Stop Active property must be set to False. The keyer will automatically activate and deactivate the stop when operated. XXXXKeyer properties are usually Style - Piston, Locking - False. For a two note effect (eg aero or thunder) create two stops. Create the Keyer, and reference to the hidden stop(s). Set Style to Piston, Sforzando (piano pedal) or to a colour (stop tab) as required. Locking will usually be set to False, but for continuous effects like Surf, may be set to True. Pitch will usually be default (64) and the note played will be determined by the Stop - Action - Constant and Transpose -Note rel middle C settings.
A two-stage effects control (eg Grand Crash, ie Drum or Cymbal Roll followed by Bass Drum plus Crash Cymbal) can be configured by using a Regulator and 3 Activator elements as in paras 42 and 43, referencing the two active activators to Keyers, and the Keyers in turn to the required hidden stops (see below).

i. Two stage effects control.

       Regulator (Grand Crash) (Style Sforzando (Piano pedal), Locking False).
        >Activator 0 (off)
        >Activator  1
          >Keyer 1
             Stop (Drum or Cymbal Roll) (active  - false)
         >Activator 2
          >Keyer 2
             >Stop (Crash Cymbal) (active - false)
             >Stop (Bass Drum) (active - false)

       (all elements except Regulator are hidden)

46. If you get 'stuck notes' clicking the Construct button On and Off will act as a 'Panic' button.

47. To use Second Touch in jOrgan create a new keyboard set to use the same input port and channel as the 'parent' first touch keyboard. Create the second touch stops and

couplers and reference the second touch keyboard to them. Reference the parent keyboard combinations also to the second touch stops. You can drive the second touch facility in one of three ways:-

i. using a velocity sensitive Midi keyboard (make sure the Midi keyboard is not set to send a fixed velocity).

In the jOrgan second touch keyboard use the following messages -

Press key                equal 144     get pitch       greater tt | get velocity

detects key press,     note-on message on Ch 1, get and store pitch and velocity only if velocity is more than threshold (tt)

Release key             equal 144     get pitch       less tt

detects key release,    note-on message on Ch. 1, get and store pitch, only if velocity is less than tt

Release key             equal 128     get pitch

(Velocity information sent by jOrgan is normally fixed (default 100) in the Stop properties.) You may have to fiddle with the threshold setting and your midi keyboard velocity curve to get the best second touch response.

b. using  poly-pressure messages from a midi keyboard. As above but add the follwing messages:-

Press          equal 160     get pitch       get pressure

       on key press, detects note on message on ch. 1, pitch and pressure

§Release      equal 160     get pitch       equal 0

       on key release, detects note on message on ch. 1, pitch and if pressure is 0 (off)

§Release      equal 128     get pitch

       on key release, detects  note off message on ch.1 and pitch.

c. if your midi keyboard or console has a second touch contact set, set the jOrgan second touch keyboard as a normal keyboard, but set the status/channel number to match the channel being used by the extra contact set.

48. Various Configurations, some of which may not be obvious, are shown below

i. Octave and Sub-Octave Couplers.

Keyboard
 --> Stops
 --> Stops
 --> Stops
 --> Octave Coupler (Transpose + 12)
    --> Stops
    --> Stops
    --> Stops
 --> Sub-Octave Coupler (Transpose - 12)
    --> Stops
    --> Stops
    --> Stops

ii. Unison-Off, Octave and Sub-Octave Couplers.

Keyboard
 (omit Keyboard --> Stops references)
  --> Unison-Off Coupler (Transpose + 0, Style Inverse)
      --> Stops
      --> Stops
      --> Stops
  --> Octave Coupler (Transpose + 12)
      --> Stops
      --> Stops
      --> Stops
  --> Sub-Octave Coupler (Transpose - 12)
      --> Stops
      --> Stops
      --> Stops
  --> Inter-Manual Couplers

iii. Tandem Couplers. (eg Swell - Great  coupling through to Swell Octave).
  Keyboard Great
        --> Kbd Great Stops
        --> Coupler Swell - Great
              Kbd Swell Stops
     =        Coupler Swell Octave
  Keyboard Swell
        --> Kbd Swell Stops
     = --> Coupler Swell Octave
              --> Kbd Swell Stops

iv. Transferable (or Floating) Keyboard (F).
 Keyboard A
        -->Stops etc
        -->Coupler Keyboard F- Keyboard A
Keyboard B
        -->Stops etc
        -->Coupler Keyboard F- Keyboard B
Keyboard F
        --> Stops etc

v. Sostenuto, Unison-Off, Octave and Sub-Octave Couplers.

Keyboard
  --> Sostenuto Coupler
        --> Unison-Off Coupler (Transpose + 0, Style - Inverse)
        --> Stops
        --> Stops
        --> Octave Coupler (Transpose + 12)

--> Stops
--> Stops
--> Sub-Octave Coupler (Transpose - 12)
--> Stops
--> Stops

viii.  Traps to 1st or 2nd Touch with one control.

  1stTouch Keyboard
    -->1st Touch Stops
    -->1st Touch Stops
    -->Traps to 2nd Coupler (Style - Inverse)
  =     -->Traps
  =     -->Traps

  2nd Touch Keyboard
    -->2nd Touch Stops
    -->2nd Touch Stops
 =  -->Traps
 =  -->Traps
              = - same instances.

ix.  Two or More Stops (eg Viol + Celeste -- Strings) on one Control with Octave Coupler.

  Keyboard
    -->Stops
    -->Stops
 =  -->Stop 'Strings'
      -->Rank Viol.
      -->Rank Celeste.
    -->Coupler Octave (transpose +12)
      -->Stops
      -->Stops
  =  -->Stop Strings
              = indicates same instance.

x. Two or more Pitches from one Rank on one Control. (eg. Acoustic Bass).

  Keyboard,
      -->Stops
      -->Stops
      -->Activator -Acoustic Bass. (On-screen, Style Stop or Colour (tab))
              -->Stop (Hidden, Transpose -12, Active, False)
      =           --> Rank
              -->Stop (Hidden, Transpose -5, Active False)

=                    -->Rank
         Note:- ,  Keyboards and Couplers are referenced to the hidden Stops.
Combinations must be referenced to the Activator.
                 = indicates same instance

49. The overall Zoom factor is set in Console Properties, and the zoom factor for
individual elements in the element properties. Range is 50% to 150% - default 100%.
For Full Screen view click View-Full Screen.   The console will then scroll automatically.
Press Escape to revert, or use F11 to toggle. You can set jOrgan to open in Full Screen
mode under View - Configuration - Appearance.

50.To use the jOrgan on-screen keyboard, click View - Keyboard and, in jOrgan, set the
Keyboard element Input properties to jOrgan Keyboard. Right click the on-screen
keyboard to set the channel on which to send into jOrgan.

51.To activate the inbuilt Midi Monitor, in the Play mode (Construct Off), click View -
Midi Monitor. Click the Select Device button and select the input or output device to
monitor. You can switch between Hex (0F) and Decimal (15) notation, and Lock or Clear
the display. The maximum number of messages displayed can be set under View -
Configuration - Options - Midi - Midi Monitor. To close, right click the Midi Monitor
window title.
The Midi Monitor is not available with Fluidsynth.

52. The built-in Midi Merger will merge inputs to jOrgan from two or more Midi sources,
for example where two sources are connected to the Midi input ports of two soundcards.
(Where the computer has only one Midi input port then you must use an external Midi
Merger unit). Click Construct and in one or more keyboard Properties set the jOrgan Midi
Merger as the input Device. Click View - Configuration - Midi - Midi Merger, check each
input source you are using and set the channel to map to if required.

53. Snap-to-Grid. The spacing of the invisible on-screen 'snap-to' grid can be set under
View - Configuration - Appearance - Console - Grid. A setting of 2 is suggested.

54. The specimen disposition file for the English and Village Organs use MIDI input
channels 1-5 for Great, Swell, Choir, Solo and Pedal respectively. The Wurlitzer and
Compton organ files use channels 1-4 for Accompaniment, Great, Solo and Pedal
similarly - except the Style 216 organ where Accompaniment, Great and Pedal are
channels 2, 1 and 3 respectively.You can easily change these channel settings (para 26). If
you are using Midi control messages to or from external equipment you must also change
these to match - the messages in some specimen Disposition files are merely suggestions.
(para 25)

55.Using a Software Synthesiser.
Instead of a Soundfont compatible soundcard you can use a  soundfont compatible
software synthesiser (softsynth). Only a standard soundcard to provide the audio output is
needed and greatly increased, practically unlimited, polyphony is available. There are

many softsynths of varying ability and cost. You need a reasonably capable computer for this.

a.  Fluidsynth is a very capable softsynth and is (from v3.1) available within jOrgan if desired. To use Fluidsynth proceed as follows:-

i. Make sure you have (from the jOrgan website) the files  fluidsynth.jar , fluidsynthJNI.dll , and libfluidsynth-1.dll in the jOrgan lib folder.

ii. Create one or more  Fluidsynth Sound (FS) elements. One or two such elements will normally be sufficient. Other Sound elements must be deleted.

iii. Under the FS Sound element Properties - Soundfont, click the browse button and navigate to and load the required soundfont. Only one soundfont can be installed in each element but additional elements can be created if needed.

iv. For all Rank elements change the Engaged - Set 0 - Set nn message to Engaged  - Set 0 - Set 0.

v. Reference all Rank elements  to an appropriate FS Sound element.

vi. Under the Console element Properties set the Output to Java Sound Synthesiser.
Under View - Fluidsynth, there is access to Gain, Chorus and Reverb settings. These affect all instances of Fluidsynth.

b.   A simple  freeware Softsynth is Sfz. This requires ASIO drivers (ASIO4all) and a Midi connection utility (Midi Yoke). There are some limitations and NPRN messages will not work. Multiple instances of Sfz can be used to increase the number of Midi channels, allow more than one soundfont be available and multiple audio outputs  to be used.
Download points are :-

Sfz -  http://www.rgcaudio.com/sfz.htm

ASIO drivers - http://www.asio4all.com/

Midi Yoke -  http://www.midiox.com/index.htm?http://www.midiox.com/myoke.htm

Install all three, for Sfz and ASIO4all simply double click the .exe  file and follow the instructions. For Midi Yoke choose the correct  version for your operating system and follow the instructions on the  website with some care.

In jOrgan click Construct, change the Sound element Output entries to the Midi Yoke port(s) to connect to the relevant sfz instance(s).

Open Sfz and under MIDI select the correct Midi Yoke port number, under ASIO select ASIO4ALL, under Outputs select your soundcard wave input,  Click the File arrow and load  the soundfont you intend to use. The Sfz Reverb effect is not very satisfactory - if possible use an alternative.

Sfz must be restarted and the Soundfont(s) reloaded for each use.


*56. Editing Skin files. The on-screen appearance of the various elements  can be edited in a .png format capable photo-graphics programme. Unzip the  relevant 'skin'.zip file and extract the .png file(s) to edit. Fixed elements (eg labels) have only a single file, two-position controls (eg  drawknobs) have two files and variable controls (eg swells) have multiple files.*

*To add a new style (eg for different coloured stop-tabs), first create the new graphics file(s) by editing existing ones or from  scratch. Next extract the skin.xml file from the 'skin'.zip file and  open it in a text editor (eg Notepad). Copy and paste (ie duplicate) a section of the file between successive <style></style> tags. In the  duplicate section amend the name (inside the <name></name> tags) to  that of the new style. Similarly*

*amend the graphics file names to match the new files (in the <image></image> tags).*
*Some further limited editing is possible of text size, typeface and colour, mouse actions*
*(button for click, slider for drag), etc.*
*If a new skin is being created the name at the head of the file immediately following the*
*<skin> tag must be changed.*
*Following any changes the whole skin file contents must be re-zipped, under a new name*
*if required.*


57. Issues and proposed amendments.
  The following changes are pending.
    1. Delays to be added for Pizzicato Coupler and Stop Action Magnet
operation.
    2. Insert and re-order facilities to be added for messages and references.

58. Uninstalling. Simply delete your C:/jOrgan folder, all its contents and any other
relevant files and shortcuts. That's all there is to it.

## **Appendix A.**

## 1. Messages.

a. Messages in jOrgan are structured similarly to standard Midi messages but include
extra features which detail how they are treated in jOrgan. Each jOrgan message
comprises a Name (the Message Type) and three numbers which correspond to the
standard Midi message ie., the Status byte and two Data bytes. Status and Data bytes are
each accompanied by a Command and the Data bytes also by an Operator.(see below).

b. Message Types.
i. to control the state of the element from external Midi messages via the Console input
port.. Applicable to on/off organ controls - ie.couplers, stops, keyers, captors, switch
filters (tremulants).
  Activate.  Activates the element in response to the specified Midi message
  Deactivate.  Deactivates the element in response to the specified Midi message.
  Toggle.  Toggles the element in response to the specified Midi message.
  Use the 'Record' button (top right of message window) to record the Midi message
from external equipment.

ii. to control the state of external equipment.controls by means of Midi messages via the
Console Output port. Applicable as above.
  Activated  When element is activated, sends the specified Midi message.
  Deactivated.  When element is deactivated, sends the specified Midi message.

iii  to send and receive Midi messages to and from external variable controls. Applicable
to continuous filters (swells), regulators (crescendo), sequences, memory.
  Change    If incoming status and data 1 (ie. channel and control ID)

correspond,                 changes data 2. (the control setting).

     Changed       If data 2 changes, sends complete Midi message to external equipment.

     Use the 'Record' button as in 1 above but amend the recorded data 2 entry

iv. to receive Midi messages from external 'one-shot'controls. Applicable to combinations, incrementer.

     Initiate       Initiates the control in response to specified Midi message from external                equipment.

v.to trigger the element. Applicable to keyboards only

     Press key     If  Midi status (ie channel) corresponds, accept note-on message from an                        external Midi keyboard.

     Release key    As above, for note-off messages.

vi. to control sounds. Applicable to ranks only.

     Note played.    Sends Midi note-on message on a channel specified, or, if not, as chosen by                  jOrgan.

     Note muted.    As above, note-off message.

     Engaged.       When rank is engaged (ie. stop referenced to the rank is activated) generate                      specified Midi message.

     Disengaged.    as above, disengaged/deactivated.

vii. Applicable to Filters.

     Intercept      Intercept every message with corresponding type, status and data 1.Status Byte.

     *Engaging*

c. The Status Byte.

This incorporates the type of message and the midi channel number. These are two digits in hexadecimal (scale of 16) notation. In decimal notation for Channel 1 these convert as shown. For Channel 2 add 1, for channel 2 add 3, and so on up to for channel 16 add 15.

d. Data Bytes.(two)

These, in decimal notation, have values from 0 - 127, and are used as shown:-

| Status (type). | Data 1 | Data 2 |
|---|---|---|
| 128 (Note Off) | Midi Note No (mid c = 60) | Release velocity |
| 144(Note On). | Midi Note No (mid c = 60) | Attack velocity |
| 160(Key Pressure) | Midi Note No (mid c = 60) | Pressure value |
| 176(Control Change) | Controller ID | Controller Value (see below) |
| 192(Program Change) | Program No | - or 0 |
| 208(Channel Pressure) | Midi Note No (mid c = 60) | Pressure value |
| 224(Pitch Bend) | Bend Value (very fine) | Bend Value (fine) |

e. Midi Controllers.

(All numbers prefixed by the 'Set' command.)

| Status | Data 1 | | Data 2 | |
|---|---|---|---|---|
| | | function. | range. | function |
| 176 (Control change) | 0 | Bank Change | 0-127 | (Bank number) |
| (in each case) | 7 | Volume | 0-127 | (zero-max volume) |
| | 10 | Pan | 0-64-127 | (full left-centre-full right) |
| | 11 | Expression | 0-127 | (zero-max) |
| | 64 | Sustain | 0, 127 | (off, on) |
| | 66 | Sostenuto | 0, 127 | (off, on) |
| | 121 | Reset Controllers | - | |
| | 123 | All Notes Off | - | |

RPN Controllers.
These are part of the official Midi specification and should be recognised by all synthesisers. This message sequence (referenced from all tuneable ranks) enables a whole organ to be tuned in steps of 1.5 c (100 cents = 1 semitone) by changing the Data 2 values.
They are not real-time.

| Status. | Data 1 | Data 2. | function. |
|---|---|---|---|
| 176 | 101 | 0 | PRN identifier. |
| 176 | 100 | 2 | PRN controller number for coarse tune (semitones) |
| 176 | 6 | 40 - 64 - 88 | minus 2 octaves - in tune - plus 2 octaves |
| 176 | 100 | 1 | PRN controller number for fine tune. (1.5 c steps) |
| 176 | 6 | 0 -64 - 127 | minus 2 semitones - in tune - plus 2 semitones. |

NPRN Controllers.    (for Creative Labs Soundfonts)
Some of these are real-time controllers.

| 176 | 99 | | 127 | (NPRN identifier for Soundfonts) |
|---|---|---|---|---|
| 176 | 98 | | 0-127 | (NPRN controller number) |
| 176 | 6Ø | parametervalue(coarse) | 0-64-127 | (min - 0 (default) - max) |
| 176 | 38 | parameter value(fine) | 0-127 | |

for fuller details see -
http://www.geocities.com/SiliconValley/Campus/8645/tips.html
Ø        rarely used/
There are different NPRN controllers for other manufacturers.

NPRN LFO Parameter Values for Soundfont tremulants.

Units are integers only.

| Frequency. Ctrl. 1 | | Pitch Depth. Ctrl. 17 | | Amplitude Depth. Ctrl. 20. | |
|---|---|---|---|---|---|
| Units. | Hz. | Units. | cents. | Units | db. |
| 1 | 0.084 | 1 | 9.4 | 1 | (0.5625) |
| 50 | 4.2 | 2 | 18.8 | 10 | 3 |
| 60 | 5.04 | 3 | 28 | 15 | 4 |
| 70 | 5.9 | 4 | 38 | 20 | 7 |
| 80 | 6.7 | 5 | 47 | 70 | 12 |
| 90 | 7.6 | | | | |
| 100 | 8.4 | | | | |

These figures are all very approximate.


f. Commands.
There are 3 groups of Commands
1. For changing the current midi data:
   set - setting a value
   add - adding a value
   sub - subtract a value*
   div - divide by a value*
   mult - multiply by a value*
Example:
Setting midi data to ...
   ... 12:
     set 12
   ... value of variable 'pitch':
     set pitch
   ... value of variable 'program' or the value 0 if variable 'program' is not known:
     set program 0 (a default value)
2.For testing and accepting midi data:
   equal - test if equal
   greater - test if greater
   greaterEqual - test if greater or equal
   less - test if less*
   lessEqual - test if lower or equal*
   notEqual - test if not equal
Example:
Accept a midi message only if midi data ..
   ... is 10:
     equal 10
   ... is not 10
     notEqual 10
   ... is less than 10:
     less 10
   ... is 10 or greater:
     greaterEqual 10
       Remember for Channel 1 the Midi data number is 0, for 2 is 1, etc.
3. For storing midi data:
   get - get the value

Example:
On a received midi message get and store midi data for the variable, 'pitch':
   get pitch.

g. Operators.

These are simple mathematical functions which can be used to limit or recalculate the Data
values. They can be chained together and separated by the 'pipe' character ( shift - \ )
Example:-
 set value | div 2 | add 0.5 | mult volume 127

Operators available are
to limit values. The message is only implemented if the limit is true.
greater
less
greaterEqual
lessEqual

to recalculate values
mult
div
add
sub

2. Editing Messages.

After amending entries in the message window, you must click elesewhere in the window
or press Enter to make each change stick.
Single or multiple messages can be selected then cut or copied and pasted.
New or pasted messages are always added at the end of the list, but when pasting you
must click in the target in the list first. There is no insert or re-order facility at present but
you can do this by cutting the messages following the desired insertion point, adding the
new message(s), then pasting.

Revision History.   -  Significant alterations only are shown.

29 Jan 2008.
Para.   11 vi.   Migration of Unison Off couplers.
        11.vii.  Migration of Two-rank stops and effects.
        25.      More detail on Record facility and Toggle message.
        31.i.    Swells -  information on incoming control messages completely rewritten.
        39.      Copying Elements - completely rewritten.

7, 26 Feb 2008
Para    31       Setting Swell opening minimum and range. Adding a 'brightening'effect to
improve              Swell realism.
        48 ix,x.      Info on configuring multi-rank (eg Celeste) and multi-pitch sounds

(eg Acoustic    Bass)                added.
            43        More detail on Activators.

27 Oct 2008
Para    55        Fluidsynth details including settings added.

To mail me - see http://brucemiles1.mysite.wanadoo-members.co.uk/mail.html