

The NDLR Library

Linux version 1.0

Intro: I would like to start with a big 'thank you' to the crew of Conductive Labs for such a fun instrument as well as their patience with me while I was writing this library program.

When I started writing the program Steve had already designed what he rightly thought was needed and this gave me a great place to start.

After coding it up and using it for a while I noticed that I couldn't remember what was in the various presets, patterns, rhythms and sequences. I had added a name to each element, but that wasn't enough information. As Steve's design has the lists of the various sections all on one page there wasn't space for more info to be typed in, so I just extended the name using '/' to display the extra information at the top of the page.

Perhaps I should have stopped there.....

I would spend ages setting up all the elements inside the NDLR. So after fetching and then saving all the data (called a 'Session'), if I hadn't typed a name/description for each of the elements in the Session, I'd be in trouble trying to remember it all. So I split up the Session into its sections and each element can now be displayed either graphically or in a table. Now I could see what was going on in a Session I saved in a mad rush ages ago without having to load them back into NDLR first.

Sometimes when grabbing a Pattern or Rhythm to include into a session I was building, it would be close to what I wanted, but I just needed to change one or two things. Easy to fix in the NDLR, of course, but thought as the element was displayed anyway I would make the data display editable. I hoped it would be about as fast on the computer as it was on the NDLR. So now there are two ways to do the same thing and you have a choice.

Definitely time to stop.

Well perhaps not. Here in Melbourne, Australia in July 2020 I was in COVID-19 lock down. What else was there to do but expand the program.

The NDLR stores all its data in flash memory which is still there after you remove power. To easily change things with the encoders it loads the data from the flash into a RAM buffer. I noticed that saving the data from my program was a two step process. Send it to the NDLR's to ram buffer and *then* save it to flash memory.

So... if I just sent the data to the buffer on the NDLR would it play using that new data ?
Absolutely it does!

Better than that. I can send the new data WHILE THE NDLR IS PLAYING. The NDLR overwrites the buffer and seems to use that data for it's next note.

Start the NDLR playing and test your new changes in real time. That is same as you can on the NDLR itself. Now I could create all sorts of rhythms and patterns and send them to the NDLR in real time. So not 20 user rhythms to choose from, but an infinite (no, sorry, just a very large number) of Rhythms and note Patterns.

Many of the Preset parameters are covered in NDLR's Midi CC control table, so that is already sorted.

What a machine !

Program Structure:

ALL the user programmed data inside the NDLR is called a 'Session'

There are four types of elements in a Session – Preset, Pattern, Rhythm and Sequence (Chords)

A Session has 8 Presets + 20 (User) Patterns + 20 (User) Rhythms + 5 Sequences

The main Session inside the NDLR Library is the 'NDLR Session'. It is the one that receives the data from the NDLR and sends the data to the NDLR. It can be saved and loaded to a computer file. Finally, it can be edited.

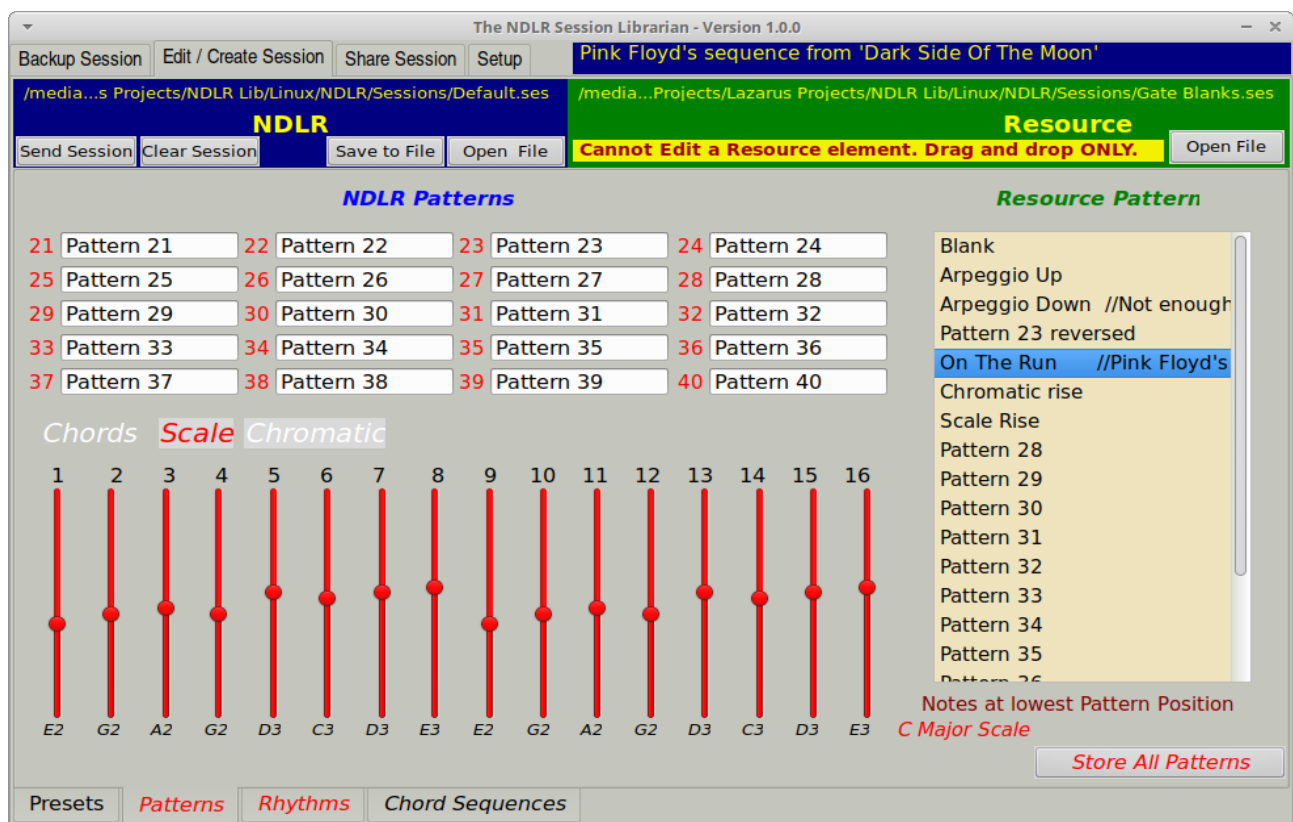
There is another Session in the program and that is called the Resource Session. It can be read from a computer file, but CANNOT be saved (except in a non-standard way in the 'Share Session' area). It CANNOT be sent to the NDLR or be loaded from the NDLR and it CANNOT be edited.

So why have the Resource Session? It is primarily there to drag and drop an elements, overwriting an existing elements from a computer file into the current NDLR Session. Got an idea in the NDLR but want some variations? Fetch it → save it → load it as a resource → drag & drop the idea to a few slots in the NDLR session → send it back to the NDLR with the variations to try out → love the variations send again but this time with a save to the NDLR flash. Don't forget to also save the Session to your computer disk.

The Resource element's data is displayed when selected and although it looks like it could be edited, it cannot. You could load the same file as a NDLR Session and edit it - save it with a new name.

By using a listbox to display the Resource element Names, you can click on the top entry and down cursor to very quickly see what's in each element in the Resource Session.

To help you remember that the Resource is NOT for editing I have added a message and locked the editing controls. Click on a NDLR Session editbox, on the left, to release the locks.



Resource Use Example: Rearrange the Pattern order in your NDLR.

Fetch the data -> NDLR Session → save it to a file → load this new file into the Resource Session
→ drag & drop Patterns to the NDLR Session → Save this new re-arranged NDLR Session and
send-save the NDLR Session back to the NDLR

Installing the Library Program: Hopefully this should be easy as there is no installer.

When you UnZip the library zip file it shows a '**NDLR_Lib.exe**', a **config.xml** and the needed **Sessions** directory.

Inside that directory is a sessions file called Default.ses. Drag the '**NDLR_Lib.exe**' and
'Config.xml' and this pdf and the **Sessions** directory to a folder on your hard disk. Create the
NDLR_Lib.exe shortcut on your desktop.

That's all there is to the installation except for the serial device permission file (see below). To
remove the program delete the program directory with the **Sessions** directory in it and the shortcut.

Setting up the NDLR: Despite being a MIDI machine, the NDLR sends it's internal data via a serial
device. This serial communication is part of NDLR's single USB connection that also contains its 4
Midi ports.

"Unlike a standard Arduino, the Teensy Serial object always communicates at 12 Mbit/sec USB
speed." (from pjrc) so it is much faster than MIDI, but.. it can cause some teething problem.

On Linux you don't need to install a serial driver, but you need to set permissions to access it.

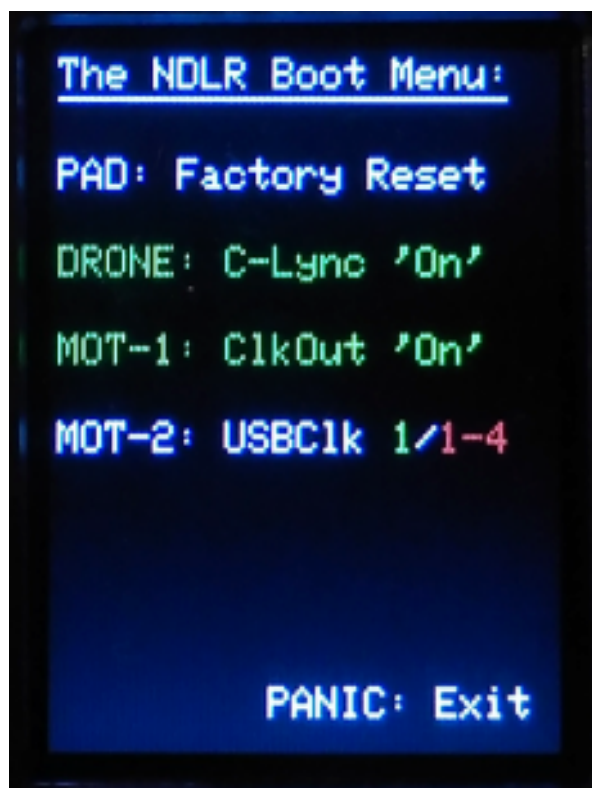
The *teensy* makers pjrc have the info you need, including the script below used to set the correct
permissions.

Just cut and paste into a text file in the directory as per the commented (#) instructions or get the file
from pjrc.

```
# UDEV Rules for Teensy boards, http://www.pjrc.com/teensy/
#
# The latest version of this file may be found at:
#   http://www.pjrc.com/teensy/49-teensy.rules
#
# This file must be placed at:
#
# /etc/udev/rules.d/49-teensy.rules    (preferred location)
# or
# /lib/udev/rules.d/49-teensy.rules    (req'd on some broken systems)
#
# To install, type this command in a terminal:
#   sudo cp 49-teensy.rules /etc/udev/rules.d/49-teensy.rules
#
# After this file is installed, physically unplug and reconnect Teensy.
#
ATTRS{idVendor}=="16c0", ATTRS{idProduct}=="04[789B]?",
ENV{ID_MM_DEVICE_IGNORE}="1", ENV{ID_MM_PORT_IGNORE}="1"
ATTRS{idVendor}=="16c0", ATTRS{idProduct}=="04[789A]?", ENV{MTP_NO_PROBE}="1"
SUBSYSTEMS=="usb", ATTRS{idVendor}=="16c0", ATTRS{idProduct}=="04[789ABCD]?",
MODE:="0666"
KERNEL=="ttyACM*", ATTRS{idVendor}=="16c0", ATTRS{idProduct}=="04[789B]?",
MODE:="0666"
#
# If you share your linux system with other users, or just don't like the
```

```
# idea of write permission for everybody, you can replace MODE:="0666" with
# OWNER:="yourusername" to create the device owned by you, or with
# GROUP:="somegroupname" and manage access using standard unix groups.
#
# ModemManager tends to interfere with USB Serial devices like Teensy.
# Problems manifest as the Arduino Serial Monitor missing some incoming
# data, and "Unable to open /dev/ttyACM0 for reboot request" when
# uploading. If you experience these problems, disable or remove
# ModemManager from your system. If you must use a modem, perhaps
# try disabling the "MM_FILTER_RULE_TTY_ACM_INTERFACE" ModemManager
# rule. Changing ModemManager's filter policy from "strict" to "default"
# may also help. But if you don't use a modem, completely removing
# the troublesome ModemManager is the most effective solution.
```

Setting Up the NDLR for the Serial connection



Your NDLR may or may not have the serial communication turned on, so to make sure... with the power/USB **NOT** connected to the NDLR, HOLD down the blue SHIFT button along with the white MENU button above it and then plug in the USB chord into the NDLR. As the NDLR turns on it will display the above screen.

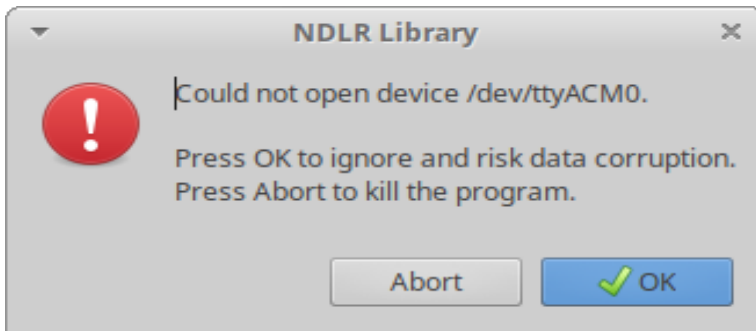
The values are changed by pressing the white 'Play' buttons at the bottom of the NDLR. The C-Lync is the only one we are interested in here.

Press the 'Drone' play button to switch on the C-Lync (serial) function. Now press the white PANIC button and the NDLR will complete its normal start up.

You can now start the NDLR Library program.

My NDLR serial installation defaulted to ACM0 and I don't have any other Teensy serial ports in my computer, so I have made that the default value in the program. If yours is different then

changing the serial port can be done in the 'Settings' page of the NDLR Library.



This warning means that the program could not connect to the NDLR's USB serial port.

With that done you should be able to start the Library program and automatically connect to the NDLR in the Settings page..

The Library: Many synth library programs store a database full of patches and performances and effects setups etc. so you could build a complete synth setup from the elements in the databases

This program doesn't have any databases, but has separate files of how the NDLR memory was at a particular moment.

The program started out as a simple a way to save the contents of the NDLR, so you can start making new things without losing your previous work. It has developed into a bit of an extension to the NDLR, but essentially it's main function is to save and load your NDLR programming and create sessions from the parts of other sessions.

It **fetches** the data from the NDLR and you save it, hopefully with a **meaningful name**, to a hard disk or a USB stick.

These session files are your NDLR database and can be loaded back into the program and then sent to the NDLR **overwriting** what is currently in NDLR flash memory and restoring it back to where it was. So a **meaningful name** is important. There is no index of all your hard work except for the filenames.

Do not forget to make backups of these session files.

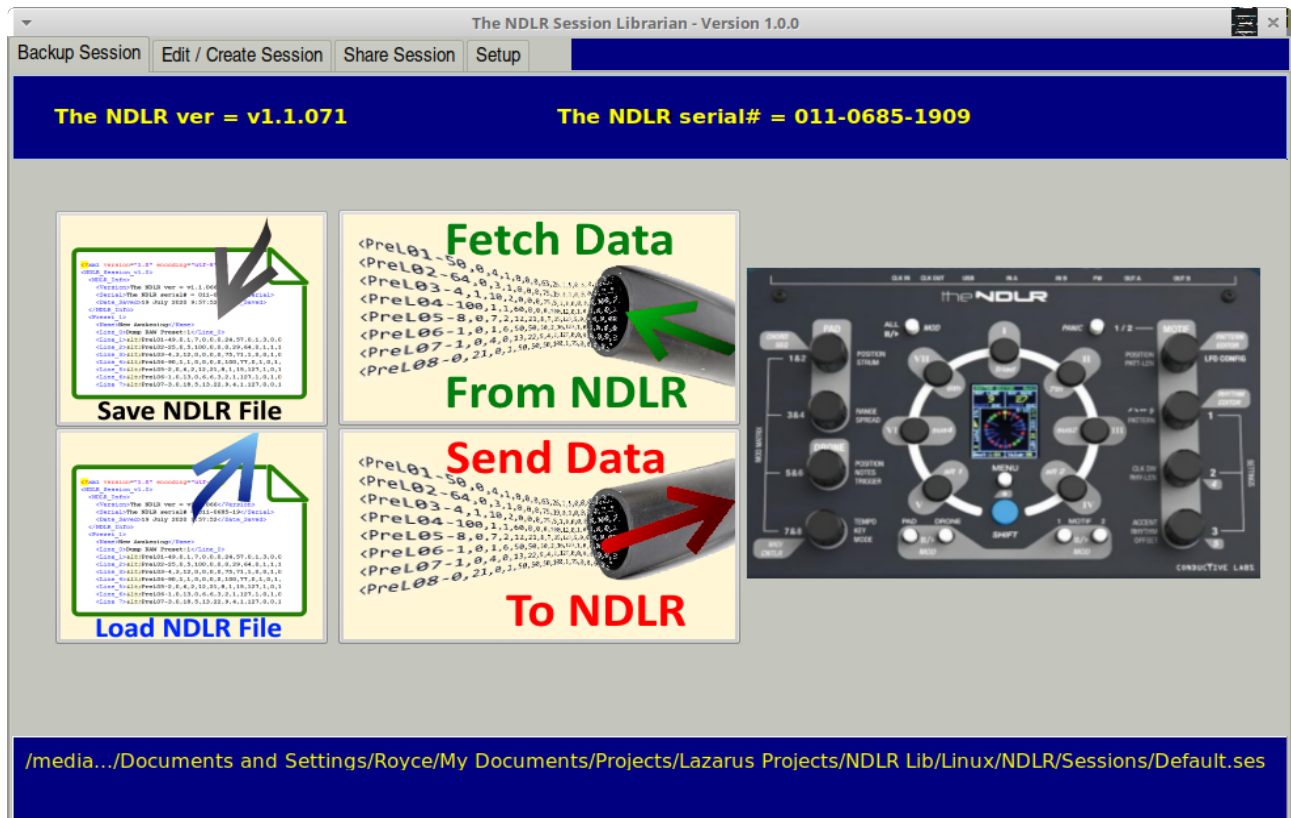
You can name any/all of the session elements and add some notes about it to help you remember what each part was. You can then use this file to build another session file by copying elements across sessions. There is also a page to help you share your session files using the internet.

Backup Session...

The Library program starts up by testing the connection to the NDLR. You should see your NDLR's Firmware Version and its Serial number up the top of the 'Backup Session' page.

You need to have your NDLR firmware at least version **1.1.073** with the latest fixes from Conductive Labs (get it at their NDLR forum).

The filename at the bottom is the 'Default' session file.



Click on the 'Fetch Data' button and all the data from the NDLR is sent to the PC. A Save dialog then opens in the *program/Session/* directory so you can save your data in a *filename.ses* file.

Remember this 'meaningful' filename is what you will use find a certain Rhythms or Patterns or Sequences or all the other settings in the Presets.

The 'Save NDLR File' button is automatically clicked for you after a *Fetch Data*. (You can turn this automatic action off in the 'Settings' page.)

To get your data from a saved file back into the NDLR, just click on 'Load NDLR File' button to bring up an *Open* dialog in the same Session directory and select the session file to load it into the program.

Click 'Send Data To NDLR' and all the session data will be sent along with requests to save it in flash memory inside the NDLR.

A NDLR **Session** comprises of 8 Presets, 20 Patterns, 20 Rhythms and 5 Chord Sequences.

The eight Presets are the 'GLOB ' 1 to 8 in NDLR's Settings 3. The twenty Patterns and Rhythms are numbered from 21 to 40 as this is the USER writable memory on the NDLR. They can be sent with or without saving them into flash memory. We will talk about this great feature later.

The Session is saved into a file, with a '*.ses' extension. It is just a text file in a XML format and so can be edited in a text editor if you feel like having a look, but perhaps don't edit it.

A needed file, 'Default.ses' is included in the NDLR Library 'Session' folder and this is loaded on start up.

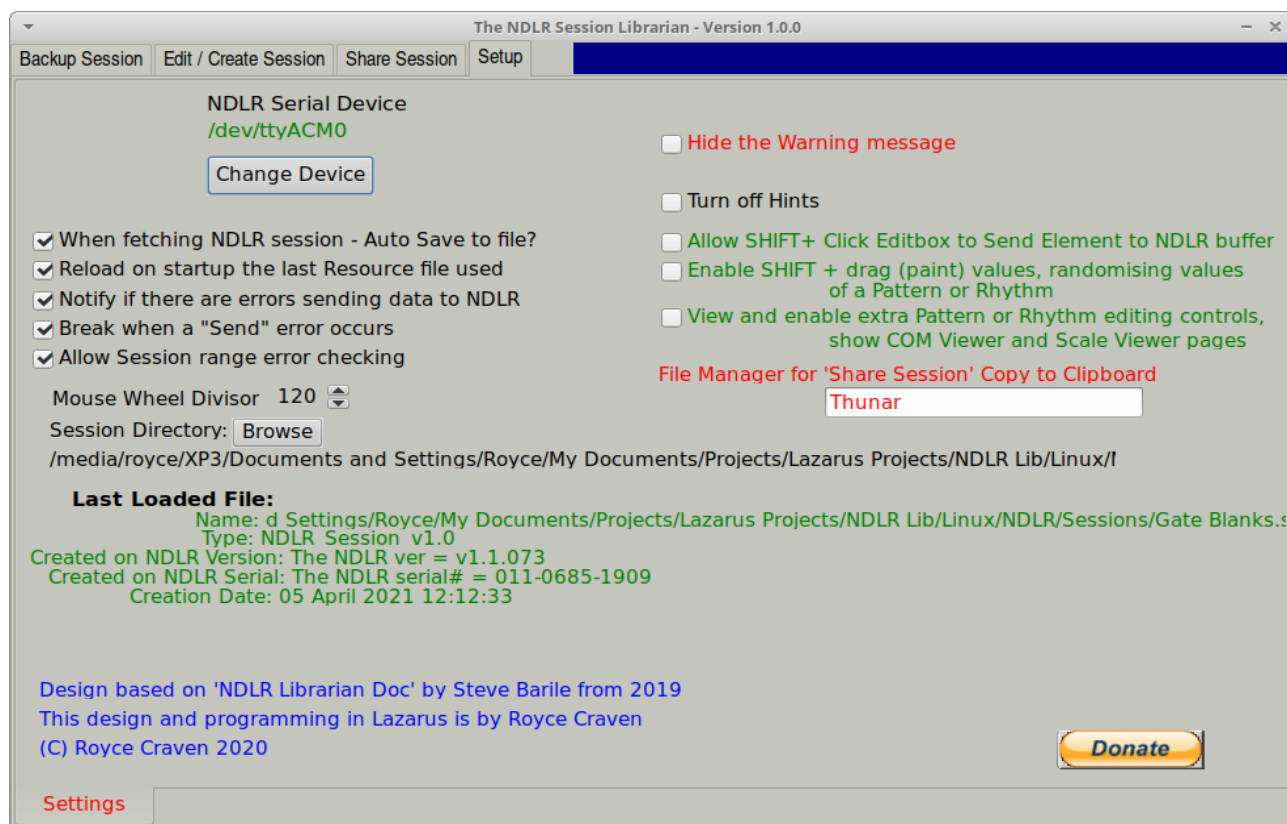
It is also the file that is loaded when the 'Load Default' button is pressed in the *Session Edit /Create* area. This is so you can start a with a known data set when you create a new Session from scratch.

If you don't like the one I have included, you can rename any session file 'Default.ses' and store it in the session directory. So feel free to create something that is a more suitable starting point.

For many users this page with its four buttons may be all that they need, but for the others let's look at the 'Setup' page to set some options for how you might want the Library program to work.

Setup...

Here is where you can select the serial port of the NDLR.



This is also where you can turn off the '**Auto Save**', after fetching data from the NDLR.

Although there is only one **type** of file used in the Library, two session files can be loaded at any time. The "NDLR session" is loaded from a file or the data fetched from the NDLR.

The other is the 'Resource session' that is just used as a source to copy Presets, Patches, Rhythms and Chord Sequences to build or change an NDLR session (which can then be sent or saved to disk).

Only a NDLR session can be sent to the NDLR. Only a NDLR session can be saved to disk.

'**Reload on startup the last Resource file used**' just saves you a couple of clicks when you start the program by remembering the Resource file that was loaded when you quit last time.

There are a couple of error settings that might be useful if things go wrong.

If you don't want to be warned about the errors then leave '**Notify if there are errors**' unchecked.

'Break when "Send" error occurs' – The program monitors the answers the NDLR gives when it tries to send Patterns or Rhythms etc to the NDLR. If there is a problem with the data then the NDLR will send back an error message eg "ERR23" for an error in Pattern 23.

These errors are written to the text file ERROR.LOG which is in the NDLR Library directory. At the end of the 'Send' of whatever you were sending, you are warned if an error has occurred so you can check out the ERROR.LOG

To stop sending the rest of the data if there is a first error, select this box. Otherwise the program continues the data dump to the NDLR after you click 'OK' and more errors and more messages may occur.

To unclutter the program's pages there are different layout 'states' and you enable the '**Randomise ...**' and '**...extra Pattern or Rhythm Editing...**' to select them. With none of the green check-boxes selected the program is in its simplest form (less cluttered) and this is what the first part of this manual will describe. The other features will be discussed later.

I found that the 'Hints' got in the way a bit in Linux so there is a way to turn them off.

The 'Hide the warning message' is there until some changes are made to the NDLR and will be removed in the next version.

You can change the default location for the Session file by pressing the 'Browse' button. DON'T FORGET to have a Default.ses file in that new directory otherwise you will get errors in the program.

The '**Mouse Wheel Divisor**' is used to adjust your wheeled mouse's response and is discussed later.

Every time you change one of these settings, all of them, including the name of the 'Last Loaded File', are saved in the 'Config.xml' file in the program directory.

Share Session...

This page is about sharing your creations with the NDLR community.

As you know, there are two 'Session' areas in the Library program and up the top you can choose the ses file to send from either area.

The 'NDLR Session' is the session where the 'Fetch' command puts the data coming in from the NDLR's COM port. .

In this example the program has just started and *Default.ses* was loaded into the NDLR Session.

The other area is called the 'Resource Session' and can have any ses file loaded.



Email: After clicking the button you will need to fill in the recipient's email address when the input box pops up. Then your email client should load with a some of the email information filled in.

NDLR Forum: This is a button to start your default browser and go to the NDLR forum page. Perhaps at some stage the Conductive Labs guys might create a repository for Session files on their web site and you can paste in the file name (loaded already into the clipboard) to up load it. Otherwise it is a quick link to either find the answer you need or post a question to the community.

Copy The NDLR file: The last one just copies the NDLR file into the clipboard. You can then go to an application, such as file explorer, and paste in the file to that directory to copy it.

If you hold down the Control key and press the button, the filename (including the file directory) is put into the clipboard instead to CTRL+V paste the name into a text document or use it to up load the file to a forum etc.

Edit/Create Session...

Stuff That Applies To All The Edit Pages

Here you can drag and drop to rearrange your Presets, Patterns, Rhythms and Sequences. Each element has its own page selected by a tab on the bottom.

As you know, the library uses two session areas, the NDLR Session that is writable and the Resource Session that is only readable. To load the Resource session you have to press the 'Open File' button in the top right green area.

In the blue NDLR area you can select and **Open** a session file. You can **Save** the file at any point as well as **Send** it to the NDLR.

The 'Clear Session' button loads the 'Default.ses' file (either yours or mine) into the NDLR area so you can start afresh. **To rearrange the current NDLR Session just fetch, save and then load it into the Resource Session area.** You might like to then save the edited NDLR again with a different name.

Drag and Drop : Dragging can only be FROM the Resource Listbox, on the right, over TO the edit boxes on the left.

Click and highlight a line in the Resource Listbox with the left mouse button (remembering to keep the left mouse button down) and 'drag' the mouse cursor to the target Editbox, on the left, that you want to store it to and all the data from that Resource Session element will be copied to the Editbox's element in the NDLR Session.

You can hold the SHIFT or the CTRL to select multiple lines in the Resource Listbox (remember to hold the left mouse button on the last click) and drag to any edit box. The elements will be placed in the order they appear in the resource session and fill the consecutive edit boxes. If you dropped more elements than there are remaining Editboxes then the extra ones are just dropped.

The screenshot shows the 'Edit / Create Session' window with a title bar 'Looking for the Serial Port...'. It has tabs for 'Backup Session', 'Edit / Create Session', 'Share Session', and 'Setup'. The main area is divided into two sections: 'NDLR' (blue background) and 'Resource' (green background). The 'NDLR' section has buttons for 'Send Session', 'Clear Session', 'Save to File', and 'Open File'. The 'Resource' section has a button for 'Open File' and a warning: 'Cannot Edit a Resource element. Drag and drop ONLY.' Below these are two listboxes: 'NDLR Presets' and 'Resource Preset'. The 'NDLR Presets' listbox contains 8 items: Preset 1, 'The Deep' //Title, 'The Deep' //Cut, Preset 7, Preset 5, Preset 6, Preset 7, and Preset 8. The 'Resource Preset' listbox contains 7 items: MODX Multi //This has NDL, MODX & Wavestate //through, 'The Deep' //Title track for 'Th, 'The Deep' //Cut 2, 'The Deep' //Credits, Preset 6, and Preset 7. Below the listboxes are several tables. The first table is for 'DRONE' with columns: Midi, On, Octave, Notes, and Trigger. The second table is for 'PAD' with columns: Midi, On, Position, Strum, Range, Spread, Poly, Invert, Quantize, and Velocity. The third table is for 'MOTIF' with columns: Midi, On, Pos, Vel-Hi, Low, Patt, Len, Vari, Rhym, Len, Clk Div, Accent, Vari, and Offset. The fourth table is for 'MOD' with columns: Source, Mod Amt, Destination, and Dest Val. The fifth table is for 'LFO' with columns: Shape, Rate, and Probability. At the bottom right is a button 'Store All Presets'. At the bottom left are tabs for 'Presets', 'Patterns', 'Rhythms', and 'Chord Sequences'.

DRONE	Midi	On	Octave	Notes	Trigger
	03 - DIN A	Off	4	1 - x - x	●●●● On 1

PAD	Midi	On	Position	Strum	Range	Spread	Poly	Invert	Quantize	Velocity
	04 - DIN A	Off	50	None	10	Rt+Open+Clo	1	On	1/4	127

MOTIF	Midi	On	Pos	Vel-Hi	Low	Patt	Len	Vari	Rhym	Len	Clk Div	Accent	Vari	Offset
1	01 - DIN A	Off	8	127	75	1	8	--->	1	8	÷4	RhymVel	0%	0
2	02 - DIN A	Off	6	127		2	8	<----	14	8	÷4	RhymVel		0

MOD	Source	Mod Amt	Destination	Dest Val
1	Off	0%	PadPosi	50
2	Off	0%	PadRange	50
3	Off	0%	Mot1Posi	20
4	Off	0%	Mot1PatLen	16
5	Off	0%	Mot2Posi	20
6	Off	0%	Mot2PatLen	16
7	Off	0%	DronePosi	6
8	Off	0%	DroneType	4

LFO	Shape	Rate	Probability
1	Triangle	5.0s	100%
2	Saw	10.0s	100%
3	Square	16 Beats	100%

Eg Grab Preset 3 and 4 and Preset 7 in the Resource and drag them to the Preset 2 Editbox.

Then 3 → 2, 4 → 3 and Resource Preset 7 to Preset Editbox 4.

When you click on an editbox or a line in the Resource listbox the contents (or a lot of it in the case of a Preset) is displayed for you so you can see what the element contains.

Although the NDLR is incredibly easy to edit, sometimes I want to change just one or two things without sending the session back to the NDLR. so I made the NDLR Session data editable.

Names – all elements: There are editable names for for each Preset, Pattern, Rhythm and Sequence. These are not part of the data inside the NDLR. These names are only for the Session file and it is there to help you remember what each element is used for.

Although the size of the name allows for 15 or so visible characters, sometimes you might need more information. For example video cue details or the name of the synth preset.

Adding two forward slashes '/' anywhere in the name will display everything coming after it in the blue message area at the top of the screen. See above 'Use the NDLR 3' preset...' in Preset 1

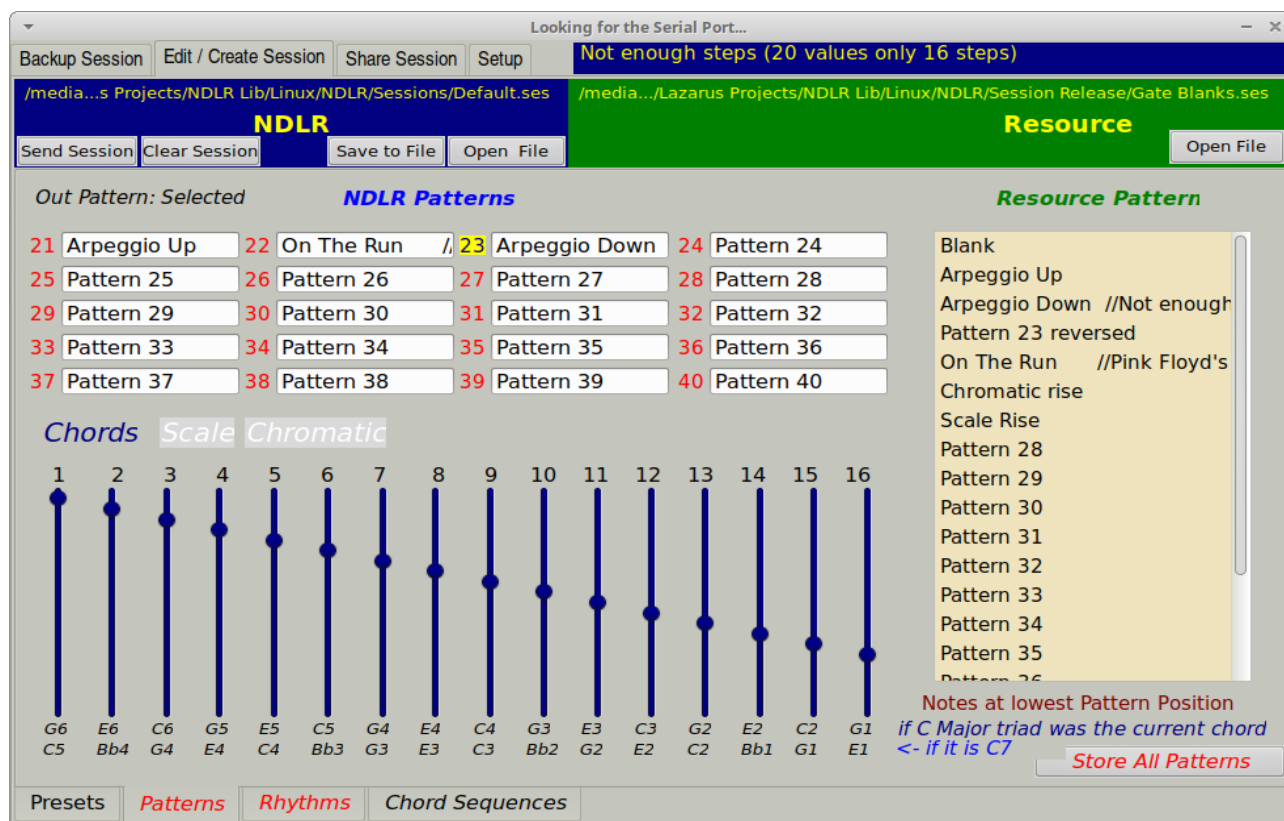
All of the Names and extra details are saved in the Session.ses file.

Clicking on either an edit box in the NDLR area or an entry in the Resource Listbox brings up the extra information from the name.

Clicking on the editbox selects it and the currently selected one has its number label in yellow.

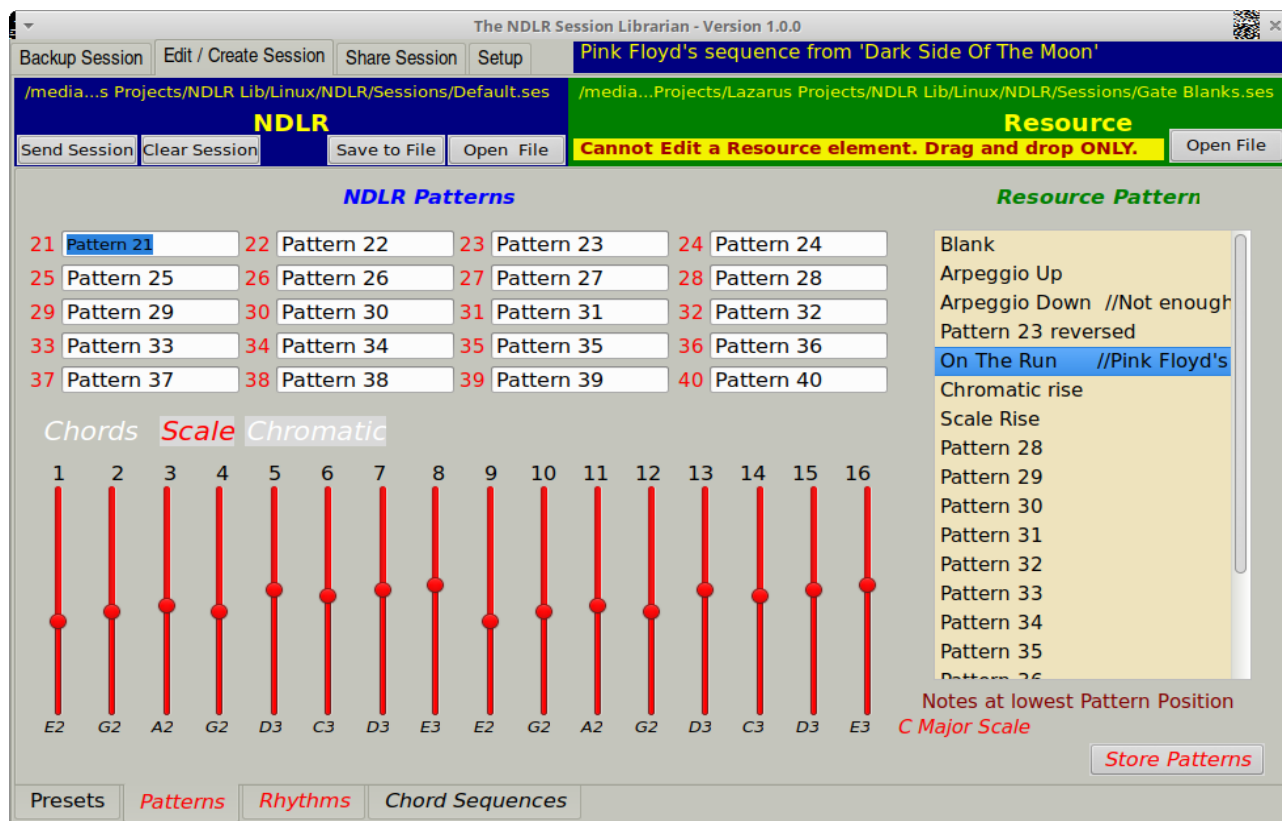
This Applies To The Pattern & Rhythm Pages

Patterns page: The detail of the steps allows you to easily see what the Pattern is you clicked on, as well as the Name//notes display.



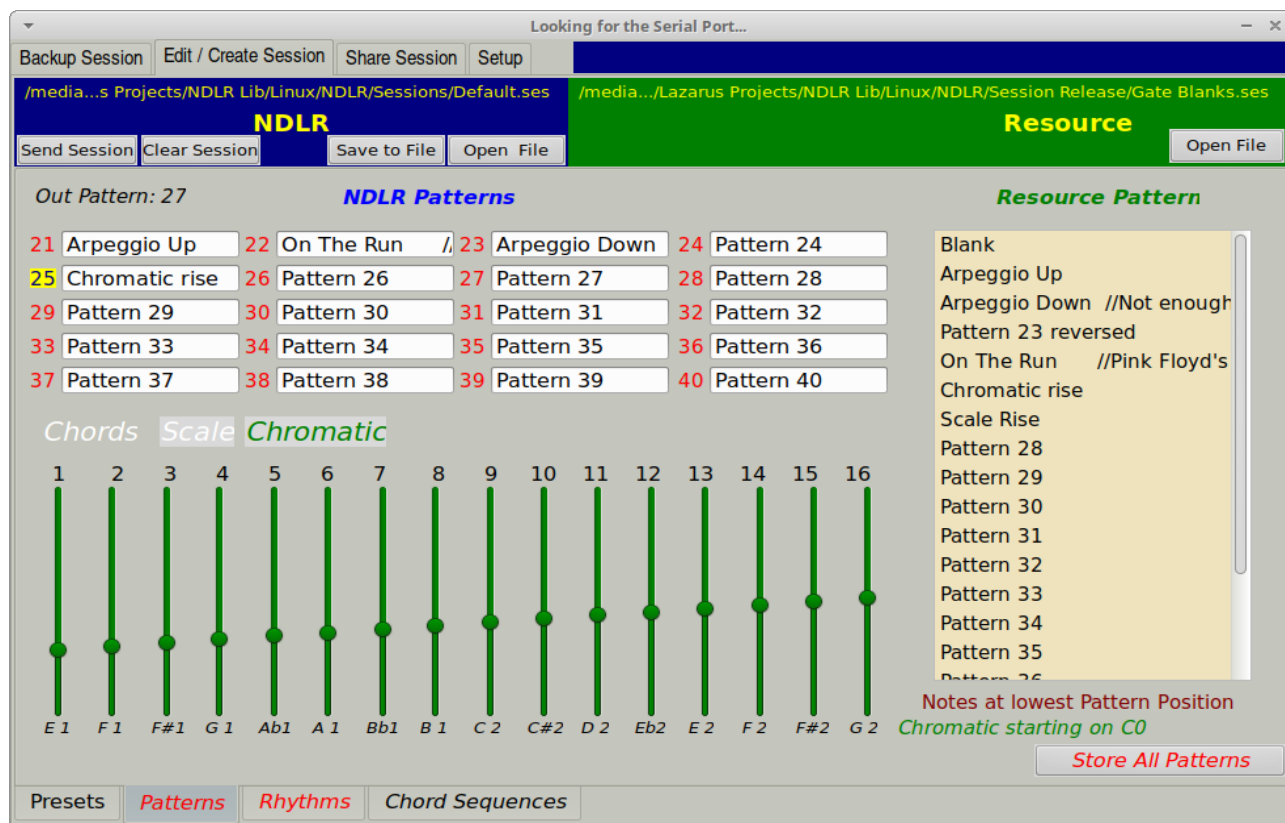
The Chord, Scale and Chromatic data can be displayed from either the NDLR section when you click an editbox or from the Resource section when you click on an element of the listbox.

In Chords mode the information below the steps is hopefully a useful guide, but doesn't allow for the Motif's 'Pattern Position' or the 'Key' or 'Chord'. So it is displayed for **chord I in C Major**, just as a guide, I have used the notes of a C7 chord to show what happens if you are playing a 4 note chord.



Above is a picture of a Scale pattern from the currently loaded Resource session. Again the notes names underneath are just a guide as the Position (offset), Key or Mode is not really information you need to identify a Pattern.

Below is a Chromatic pattern and although unaffected by mode it is still affected by Key and Position.



ONLY FOR NDLR Session – not for the Resource Session

Note that the '**Can't Edit a Resource element...**' label becomes visible when you click on the Resource listbox to remind you that the Resource is read only and the displayed data is locked.

Sending Patterns: You can send all 20 User Patterns **and save them to flash in the NDLR** by pressing the 'Store Patterns' button. If you click on the button while holding down the SHIFT key you **Send Patts to Buf** with that button. **All 20 User Patterns are loaded and ready to use, but they aren't saved to flash so they are lost when the NDLR is powered off.** This is good when you are testing things or adding Patterns during performance

You can send any of the individual NDLR session patterns to the NDLR buffer by HOLDING the SHIFT and clicking in the editbox of the pattern you want to send. There is the less common action of CTRL+SHIFT+click and this sends it to the buffer and saves it to flash.

In both cases it sends the currently display Pattern data to the **Out Pattern**. Number 27 in the above example. So although 23 is selected (yellow number) it goes to the NDLR as Pattern 27.

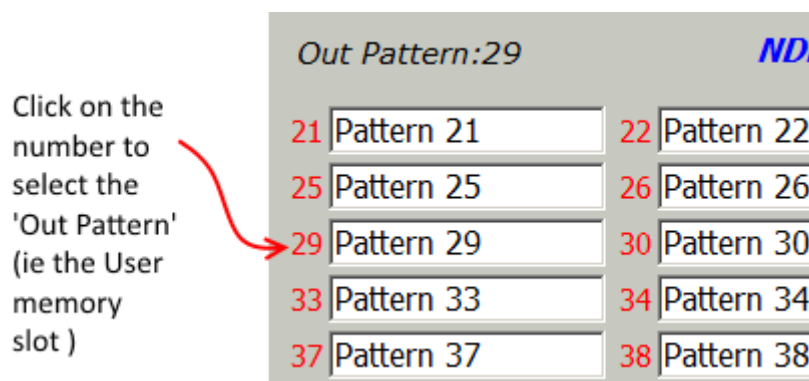
If all this SHIFT and CTRL+SHIFT stuff is hard to remember, hold down F1 to display a list.

If it is in 'Selected' mode (click on the 'Out Pattern' label to make it 'Selected') the number it is sent to is the selected Editbox number (yellow number)

The 'Out Pattern' number can be any Editbox number by clicking the red label to the left of the edit box.

This is a quick way to move elements around in the NDLR in real time.

For example, if you want to always send to a fixed number no matter what SHIFT+CTRL editbox you click, say Pattern 29, you can select what number it is by.....



Remember clicking the 'Out Pattern' label will return it to 'Selected' mode.

Basic Pattern Editing : I much prefer mouse editing, especially using the mouse wheel so the editing controls started out as mouse wheel based, but Jesse works differently and so you can also use left (+) or right (-) mouse button click instead of the mouse wheel if you don't have a wheeled mouse. (Use CTRL as well to change by a jump rather than a step)

Hovering over a bar and rolling the middle mouse wheel will change the value of that step by 1 per detente click of the middle wheel (you may need to go to the Settings page to adjust the MouseWheel setting).

If you move the wheel with the CTRL key down then it will increment or decrement the step by more than 1 (how much more depends if it is in Chord, Scale or Chromatic mode). These changes are written back into the NDLR Session in the **computer memory**. Don't forget to save.

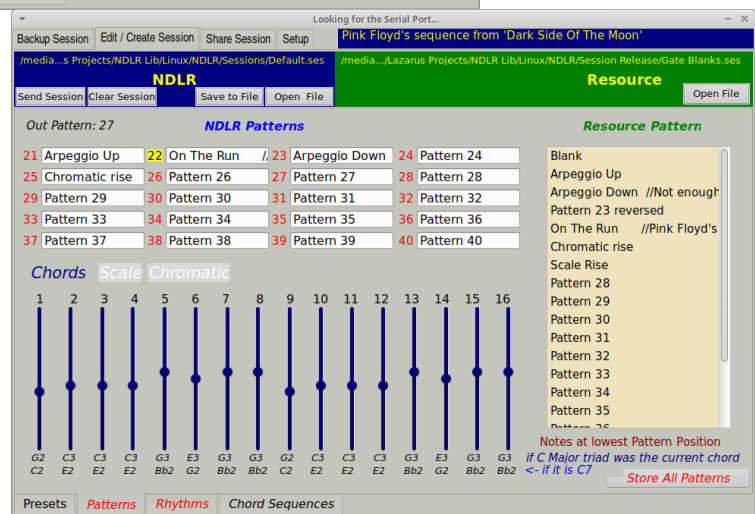
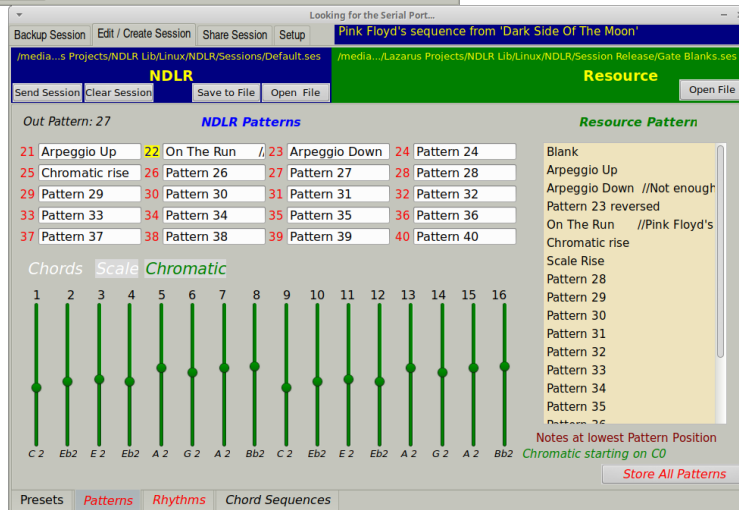
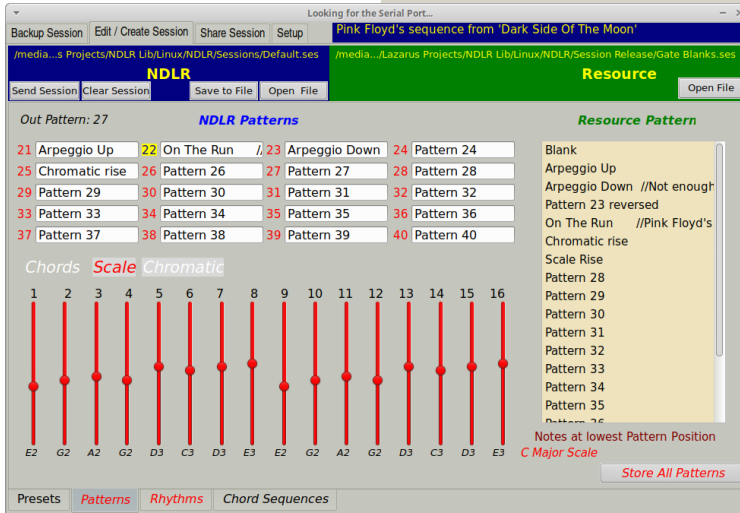
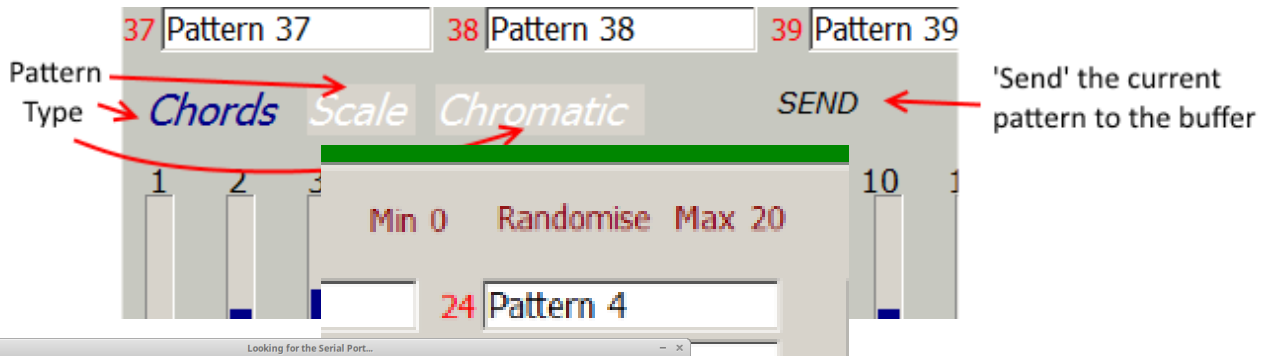
A '**SEND**' label appears when anything is changed. Clicking on the SEND label will send the freshly edited Pattern to the NDLR buffer. It won't be saved inside the NDLR's Flash memory, but it will be played by the NDLR

Then the 'Send' label vanishes so you know there is nothing new to send. Again this is great for a small tweak that you can test **without stopping** the NDLR playing.

If the NDLR is running, the changed pattern will take over from the old one and play on the currently selected (visible) Motif. Nothing permanent has changed inside the NDLR flash memory.

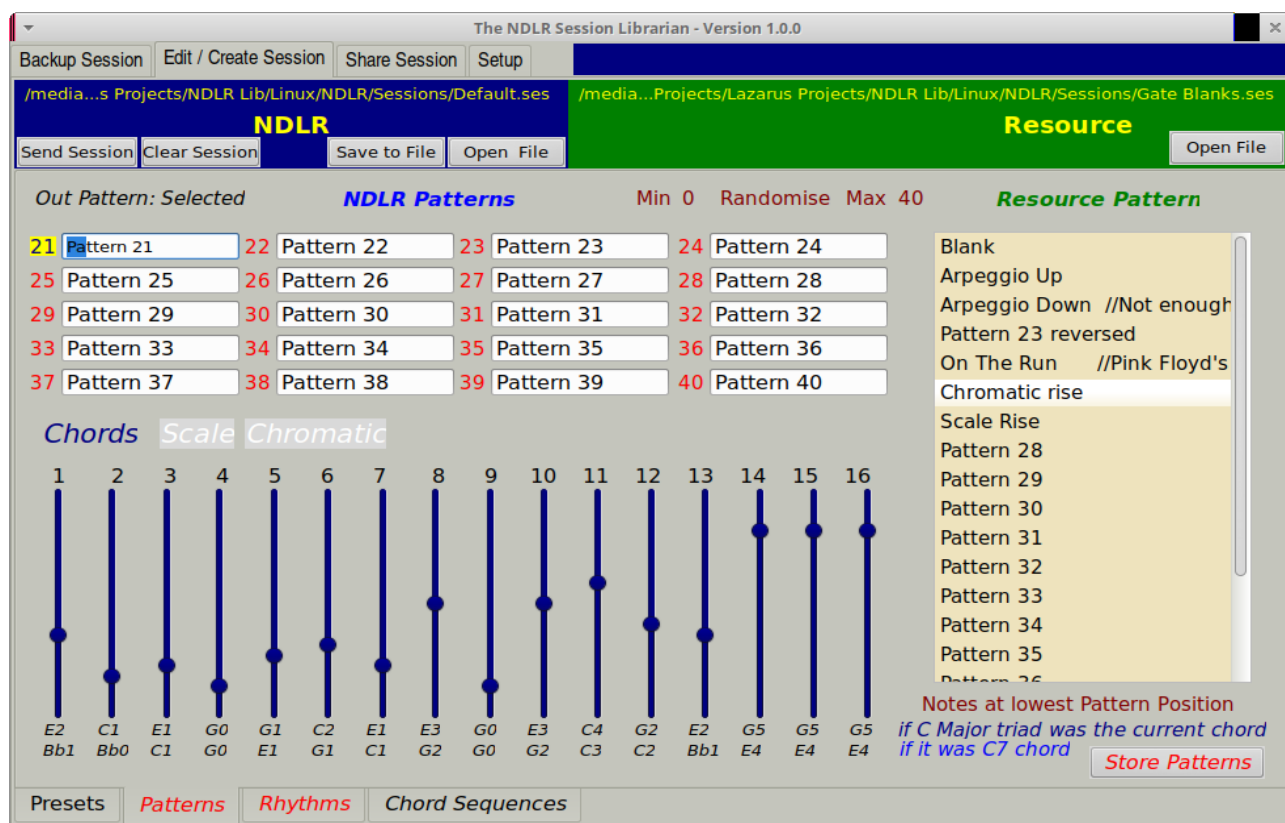
If you turn encoder 6 back and forward it will reload the old pattern from memory. Its just a way for you to test out all your experiments in real time.

Pattern Type Change: Click on the light coloured words, 'Chord', 'Scale' or 'Chromatic'. You can change the type of pattern from Chord to Chromatic to Scale and back again. This will take the current step values and scale them so the contour is the same (looks the same) in the new Pattern type and sends it out to NDLR. **This type change changes a lot of things so it has the auto-send of the pattern to the NDLR buffer (no flash save) and as it has been newly sent, the 'SEND' label is removed.**



Now for some of the extra elements. You will need to make sure you have selected the first two **GREEN** options on the right in the Setting page. The second one turns on the Randomisation and SHIFT + drag 'painting' functions.

Here is what appears when you do select the checkboxes.



Paint a Pattern: Position your mouse cursor over any step bar. When you press the SHIFT key, the bar will jump to that value if you move the mouse a bit. Good for quick big change then fine tune it with the mouse wheel or left or right click.

Because you are likely to want make a few changes the SEND label appears rather than the Pattern being auto-sent.

If you position the cursor to the side of the Step bars then **hold** the SHIFT key down and move the mouse across the bars, the Step bars will jump to the new value as if the cursor is a magnet or painting a line where the new values should be.

You can produce quick contours or scales when set to the Scale type. (This is also great for Velocity crescendos and diminuendos in the Rhythm page.)

As you may need to make some fine adjustments this action is also not auto-sent.

Randomisation: If you hover over the numbers next to the 'Min' and 'Max' labels you can change them with the mouse wheel (or left and right click). Use with CTRL for bigger jumps.

This narrows the range of the randomisation.

Clicking on the 'Randomise' word will generate a set of pattern values between the Min and Max (including those Max and Min values).

This is a 'complete' action so it has auto-send to the NDLR buffer (no flash save) after each randomisation.

Don't like the sound of it? Click the 'Randomise' label again and again until you do.

Click on 'Min' (or 'Max') text to reset the randomise range to the minimum (or the maximum).

**** Now that you have a Pattern you like, don't forget to save your NDLR session to disk, as the pattern is not saved in the NDLR's permanent flash memory.*

If you are in the Pattern Editor on the NDLR when doing all this messing around you can save the Pattern to flash memory.

Now you have one new pattern, click on another Editbox to select a new work area and start editing again till you build up your performance's Patterns/Rhythms that you can download and store into the NDLR's flash memory.

REAL TIME: As, as far as I understand, the buffer memory isn't flash memory there is no reason why you can't send 100s of thousands to the Pattern / Rhythm buffer. So creating them during a performance on stage or in your bedroom studio while recording is completely possible and fun.

Of course, you could use this feature to just extend the number of User Patterns and Rhythms during a performance.

There are some tricks though: Sending a Pattern or Rhythm to a NDLR as it is playing will make the visible Motif (selected with the Panic button) respond.

If Motif 2 is selected (visible in the box) and sending a Pattern, as Pattern 24, this will change Motif 2's Pattern to 24 and it will start playing the buffer you have just filled. If Motif 1 has been playing Pattern 24 all along it will stay on 24 and also read the newly filled buffer.

ONLY the 'selected' Motif's Pattern number will change when the Pattern is sent.

Set the different Motifs on different User Patterns (and Rhythms) say 21 and 22 and send to 21 for Motif 1 and 22 for Motif 2 by clicking the Editbox Labels (see 'Out Pattern')

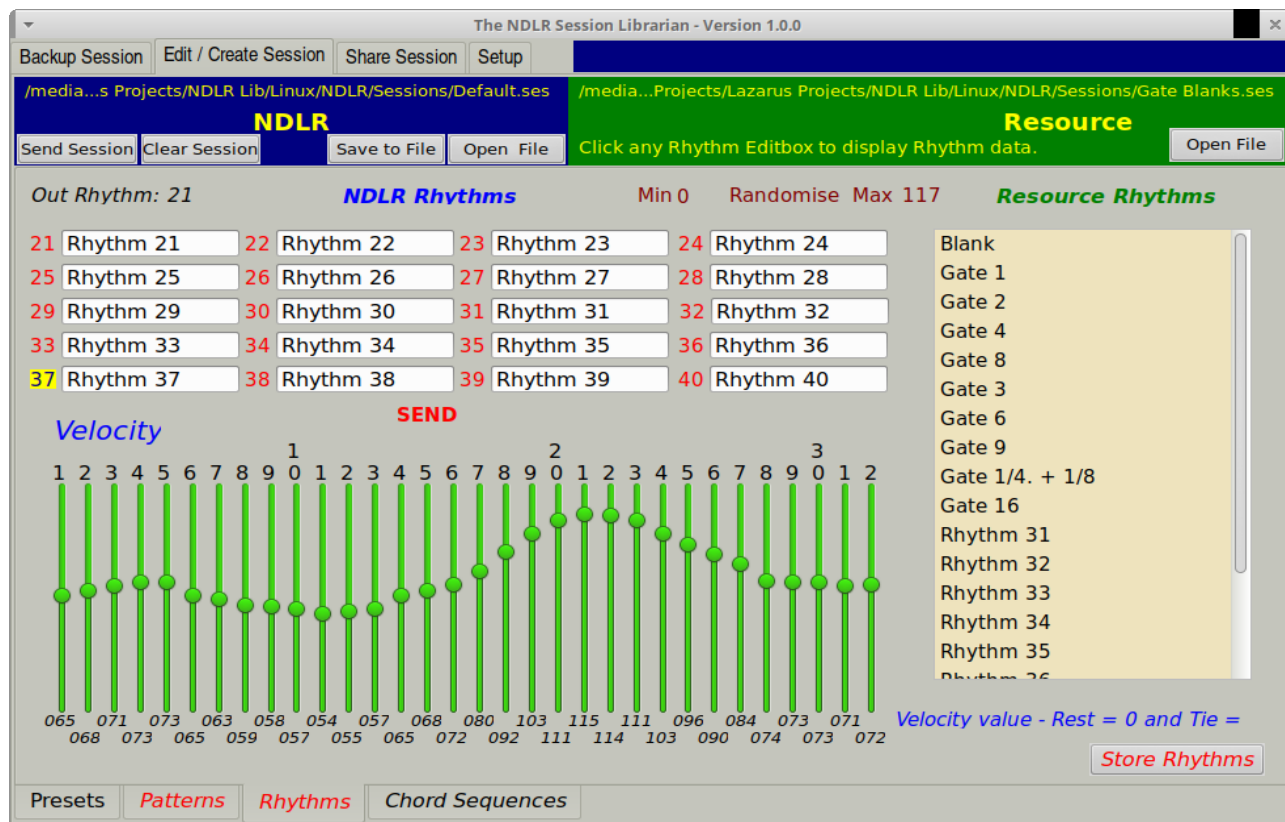
Or Just swap between them using the 'Panic 1 / 2' white button remembering what the now hidden Motif's Pattern number is.

If both Motifs have the same user pattern selected you can send the new pattern to both.

- 1) Select pattern 21 for Motif 1 then swap to Motif 2 with the white button.
- 2) Click the label next to Editbox '21' and the 'Out Pattern' number will be 21 and start making changes (and click 'Send' if it doesn't have auto-send) with Type change, Painting, Mouse wheel or Randomisation.

'Selected' makes the 'Out Pattern' to be the selected Editbox you clicked in. Click on the 'Out Pattern' label to reset it to 'Selected'. It is a bit confusing reading about it, but hopefully you will get the idea once you have tried it out.

Rhythm page: Most of the Pattern page stuff above is true for the Rhythm page.
Click on the number below the bar to move the value to a 'Rest' (0) or a 'Tie' (128).



Of course, the Randomisation function also works for the Velocity value of the Rhythms.

So that you don't miss out on random rests (value 0) and ties (value 128), when the randomised values are generated a value = Min causes a **rest** to be written and when the value = Max a **tie** is written. So you should set the range to be one value lower in the Min and one value higher in the Max that you want.

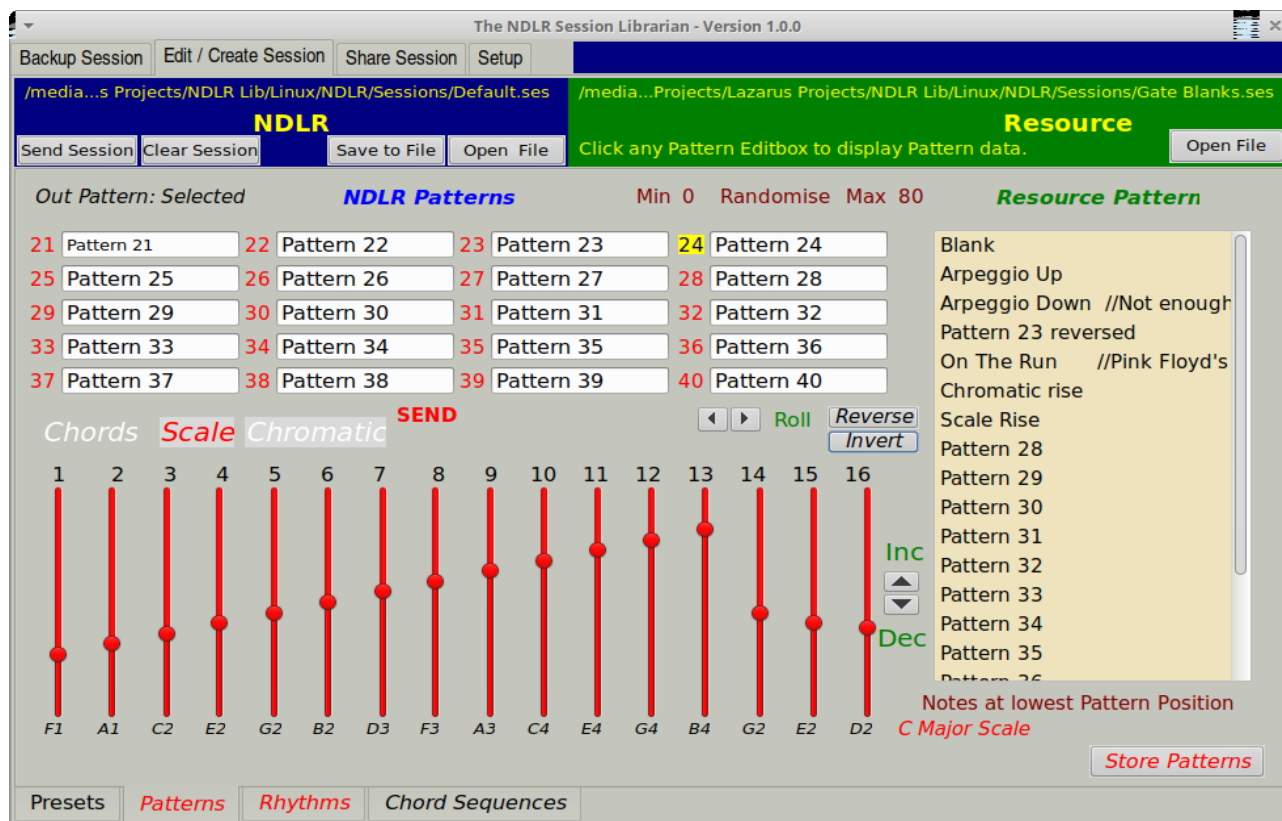
For example, if you want a loud velocity range, say between 100 and 120 then set the Min to 99 and the Max to 121. Every time the random value is 121, a tie (128) is substituted for the value and every time 99 is randomly produced a rest (0) is substituted. Click on the label 'Rst' or 'Tie' below to remove the tie or rest if one is in the wrong spot.

'Extra Motif Editing'

This Applies To The Pattern & Rhythm & Settings Pages

In the Settings page there is a **GREEN** checkbox called '...enable extra Pattern or Rhythm editing...'. It is just for the Pattern and Rhythm pages, but also adds some extra data viewing pages in the Settings area.

Here is what appears when you do click the checkbox.



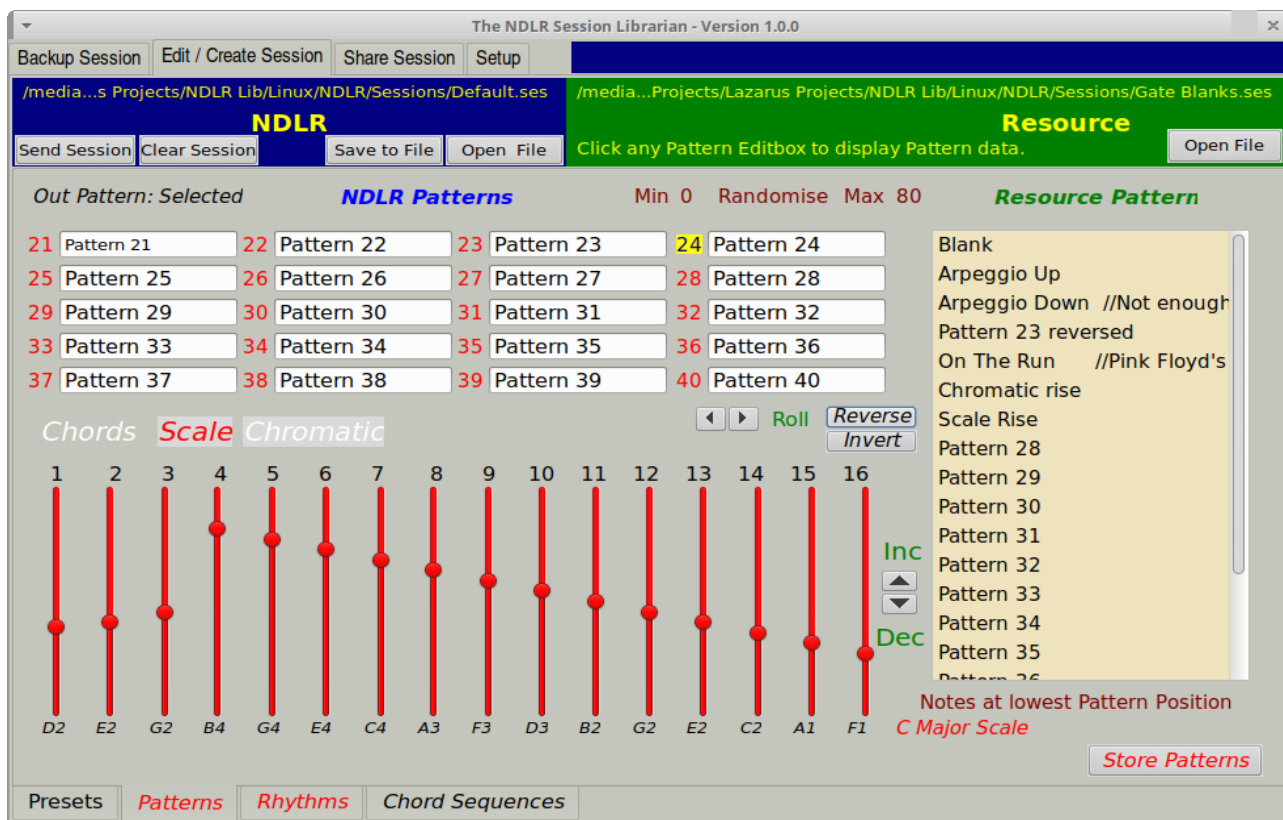
Start with this scale Pattern...

Roll: This is not like an aeroplane 'roll', but comes more from a computer term that really means to slide along – backwards or forwards with one end vale going to fill the hole left at the other end.

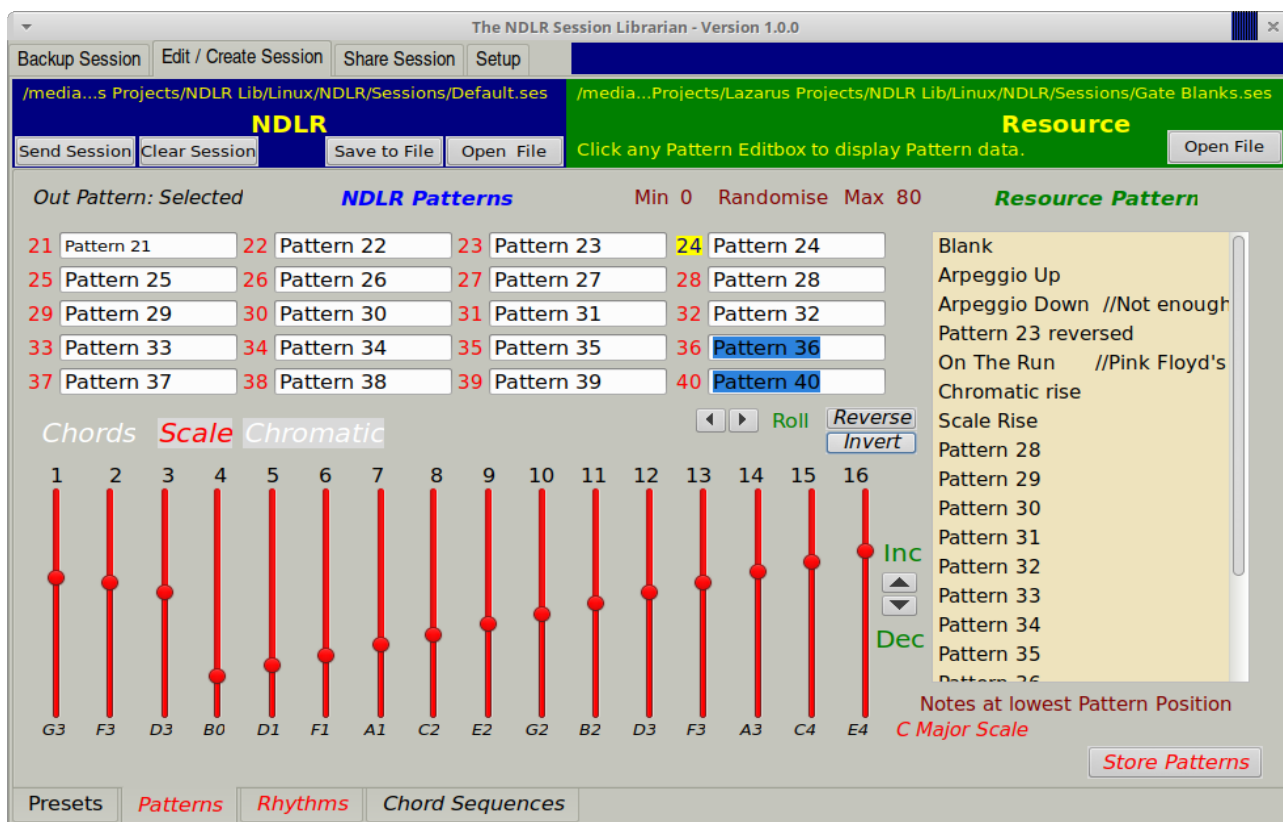
Rolling to the right will put the first value into the second step and the old second value into the third step etc. until the last value wraps around to the start and in placed in the first step. Rolling to the left does this in the opposite direction.

The pattern remains the same but shifts its phase. The Mousewheel can be used with the cursor over the Roll arrow buttons.

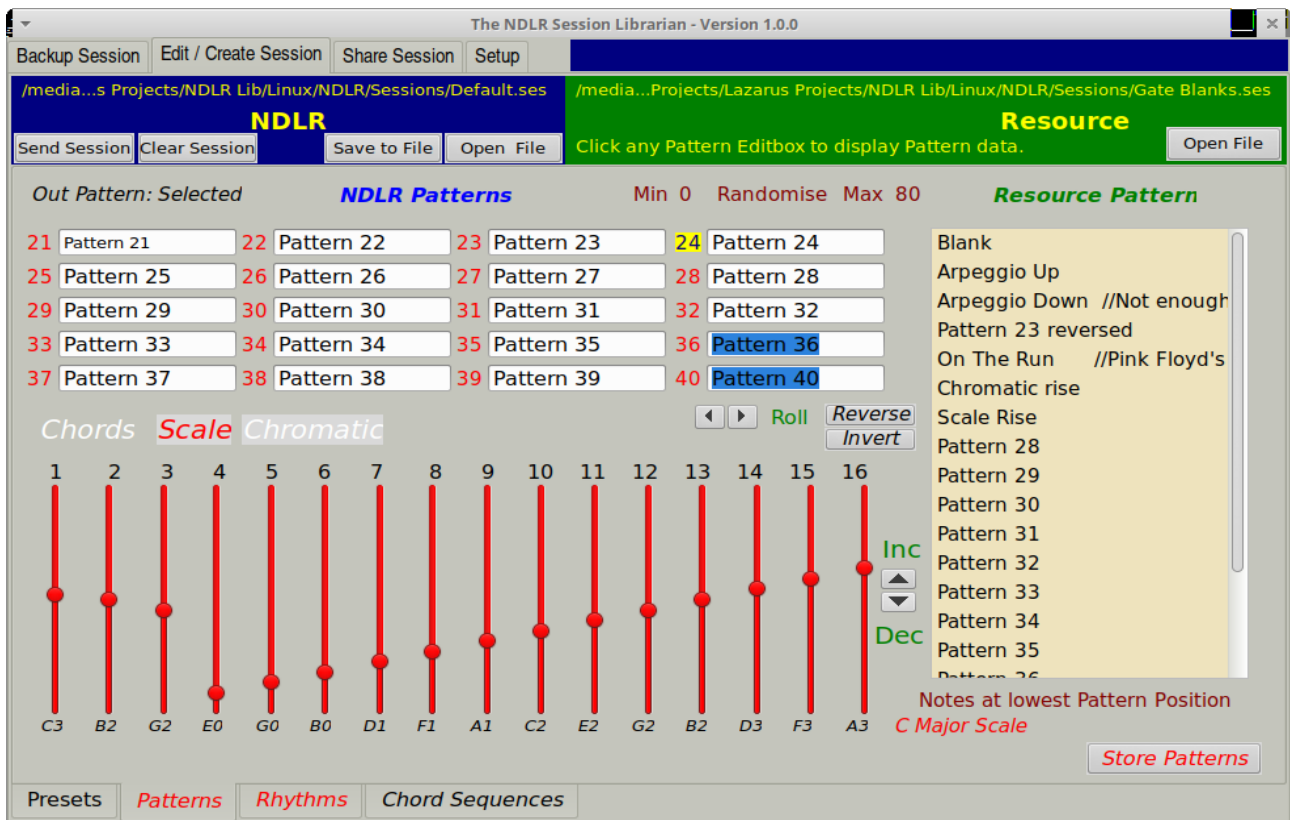
This Roll action is auto-sent to the NDLR as are all the following actions.



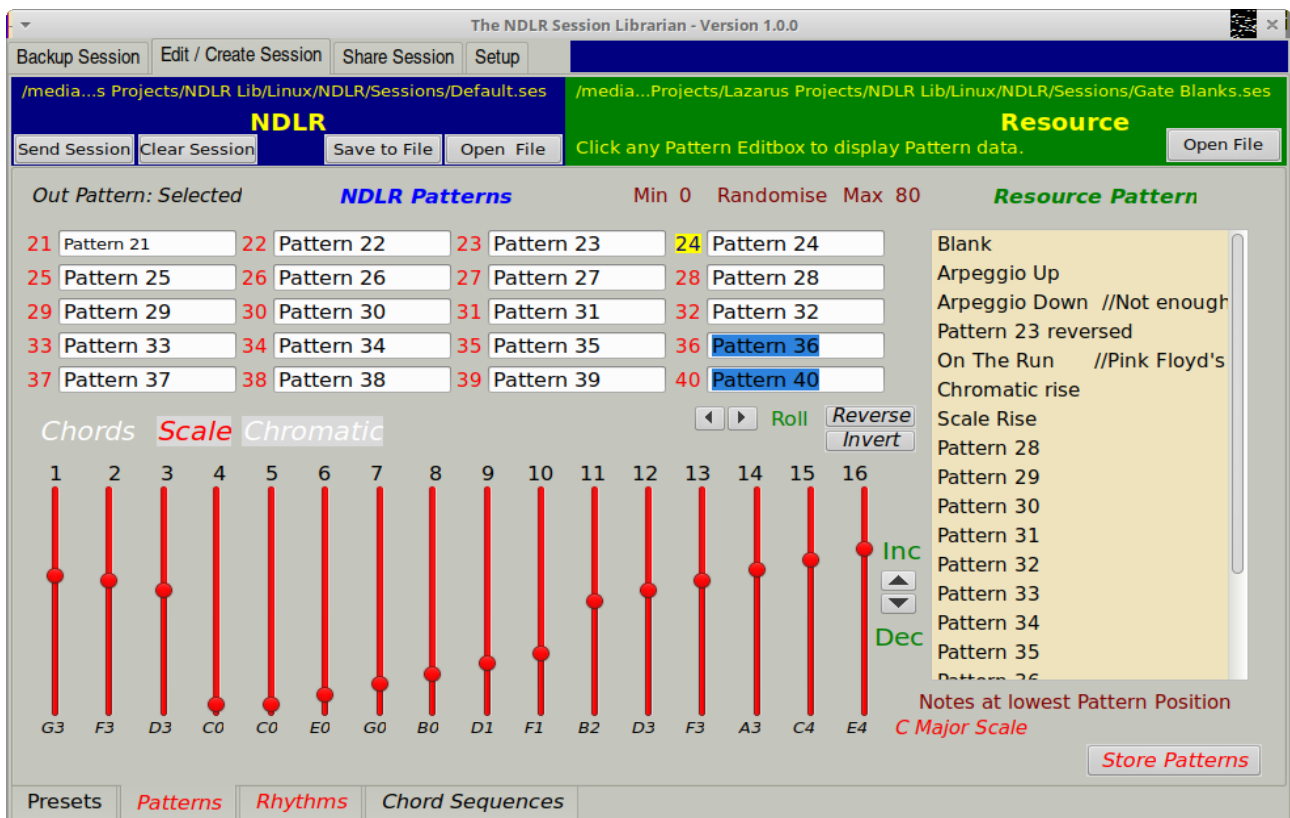
Reverse: Playing the Pattern/Rhythm backwards. Standard counterpoint technique. 1 and 16 swap. 2 and 15 swap ...etc



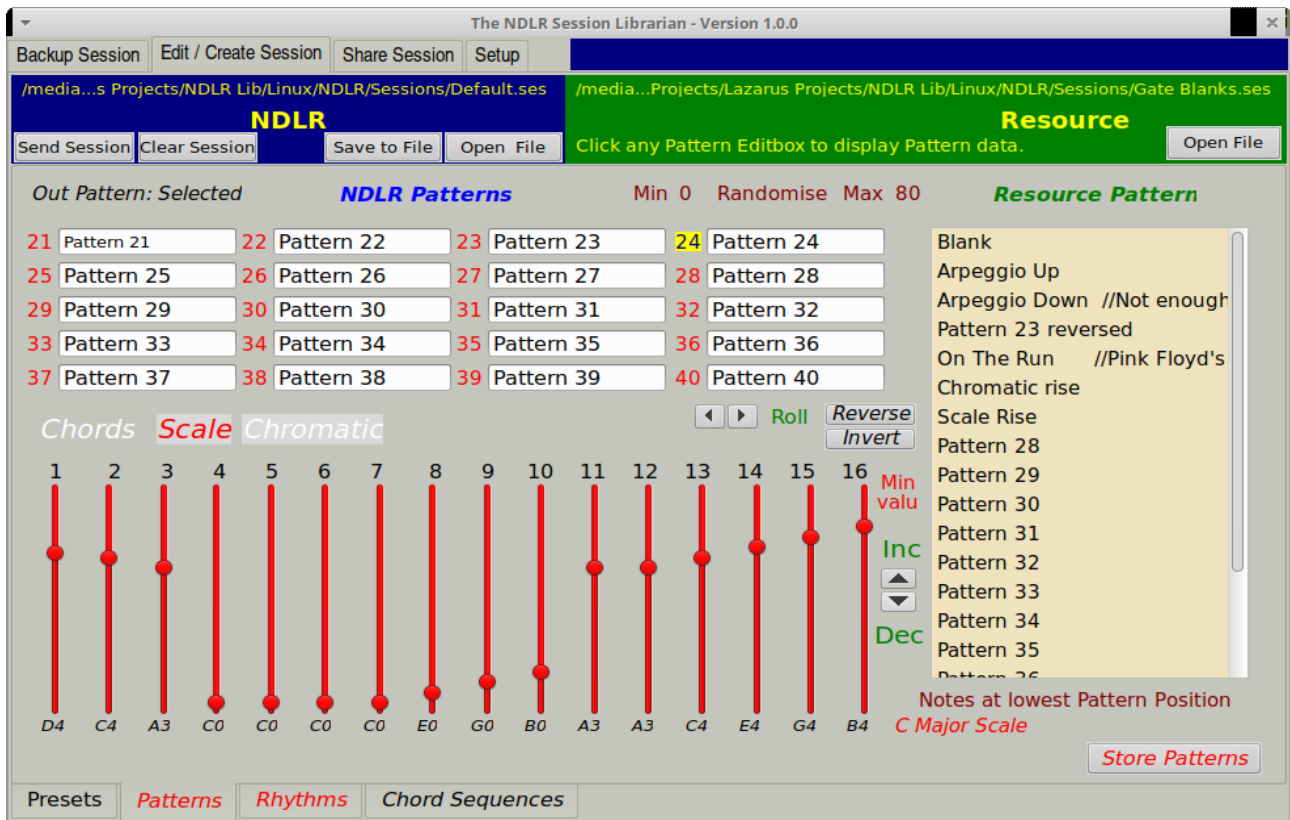
Inverse: Reflecting the pitches in a horizontal axis. Another standard counterpoint technique



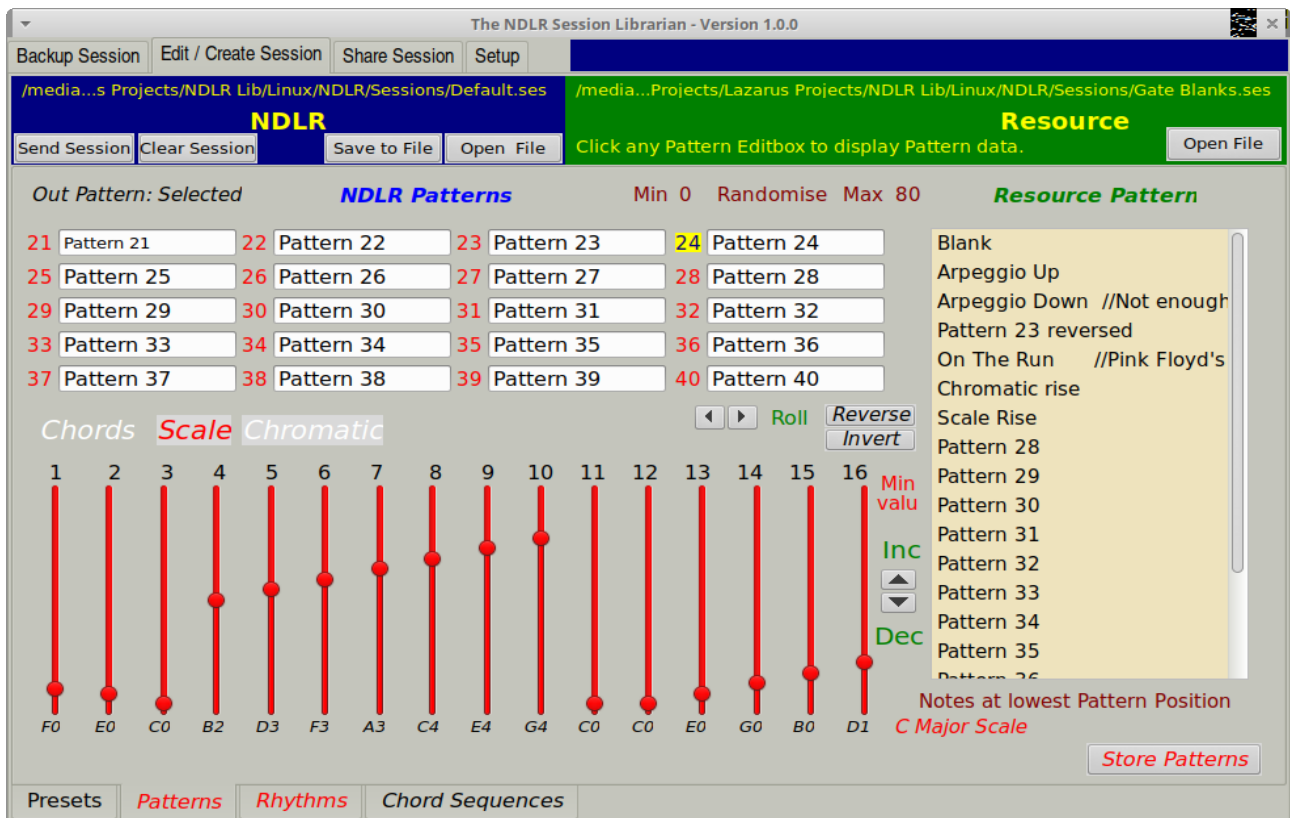
Increment and Decrement: This is like the 'Position' control on the NDLR for Patterns. You can also use the Mousewheel, with the cursor over the Inc/Dec buttons, to speed the change up.



Increment and Decrement + SHIFT: This compresses/decompresses the pitch range maintaining the melodic shape. It uses a horizontal line at the median with some values increasing and some reducing.



As it keeps going past the median it creates a new contour.



This is of most use on the pitches in the Patterns, but also interesting to compress/decompress the velocity. The shape is remembered so you can wind the settings back.

Rhythm Only: There is no inverse button in the velocities

Creating a Gated Note: A gated note is an electronic music term that means shortening the duration of a note, like staccato, but staccato is, generally, not a precise term and has varied through time and between styles. Some say it is 'half the value of the note' but it is very different from a note of half the value and a rest', which has me scratching my head. Gate values are more precise. Here is the traditional staccato of 1/8 notes in 4/4 time. The Gate slider is moved right for more legato.

The NDLR Session Librarian - Version 1.0.0

Backup Session Edit / Create Session Share Session Setup

/media...s Projects/NDLR Lib/Linux/NDLR/Sessions/Default.ses /media...Projects/Lazarus Projects/NDLR Lib/Linux/NDLR/Sessions/Gate Blanks.ses

NDLR **Resource**

Send Session Clear Session Save to File Open File Open File

Out Rhythm: 21 **NDLR Rhythms** Min 0 Randomise Max 117 **Resource Rhythms**

21 Rhythm 21 22 Rhythm 22 23 Rhythm 23 24 Rhythm 24

25 Rhythm 25 26 Rhythm 26 27 Rhythm 27 28 Rhythm 28

29 Rhythm 29 30 Rhythm 30 31 Rhythm 31 32 Rhythm 32

33 Rhythm 33 34 Rhythm 34 35 Rhythm 35 36 Rhythm 36

37 Rhythm 37 38 Rhythm 38 39 Gate 8 40 Rhythm 40

Velocity **SEND** Gate Roll Reverse

1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2

120 Rst 106 Rst 117 Rst 108 Rst 119 Rst 100 Rst 121 Rst 100 Rst

Velocity value - Rest = 0 and Tie =

Store Rhythms

Presets Patterns Rhythms Chord Sequences

The NDLR Session Librarian - Version 1.0.0

Backup Session Edit / Create Session Share Session Setup

/media...s Projects/NDLR Lib/Linux/NDLR/Sessions/Default.ses /media...Projects/Lazarus Projects/NDLR Lib/Linux/NDLR/Sessions/Gate Blanks.ses

NDLR **Resource**

Send Session Clear Session Save to File Open File Click any Rhythm Editbox to display Rhythm data. Open File

Out Rhythm: 21 **NDLR Rhythms** Min 0 Randomise Max 117 **Resource Rhythms**

21 Rhythm 21 22 Rhythm 22 23 Rhythm 23 24 Rhythm 24

25 Rhythm 25 26 Rhythm 26 27 Rhythm 27 28 Rhythm 28

29 Rhythm 29 30 Rhythm 30 31 Rhythm 31 32 Rhythm 32

33 Rhythm 33 34 Rhythm 34 35 Rhythm 35 36 Rhythm 36

37 Rhythm 37 38 Rhythm 38 39 Gate 8 40 Rhythm 40

Velocity Gate Roll Reverse

1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2

120 Tie 106 Tie 117 Tie 108 Tie 119 Tie 100 Tie 121 Tie 100 Tie

Velocity value - Rest = 0 and Tie =

Store Rhythms

Presets Patterns Rhythms Chord Sequences

Here is $\frac{3}{4}$ of the eight note

The screenshot shows the 'The NDLR Session Librarian - Version 1.0.0' interface. The top menu bar includes 'Backup Session', 'Edit / Create Session', 'Share Session', and 'Setup'. Below this, there are two tabs: 'NDLR' (selected) and 'Resource'. The 'NDLR' tab has buttons for 'Send Session', 'Clear Session', 'Save to File', and 'Open File'. The 'Resource' tab has an 'Open File' button.

The main area is divided into two sections: 'NDLR Rhythms' and 'Resource Rhythms'. The 'NDLR Rhythms' section has a 'Min 92 Randomise Max 123' range and a 'Velocity' slider. It displays a grid of 40 rhythms, numbered 21 to 40. The 'Resource Rhythms' section displays a list of rhythms, including 'Blank', 'Gate 1', 'Gate 2', 'Gate 4', 'Gate 8', 'Gate 3', 'Gate 6', 'Gate 9', 'Gate 1/4. + 1/8', 'Gate 16', 'Rhythm 31', 'Rhythm 32', 'Rhythm 33', 'Rhythm 34', 'Rhythm 35', and 'Rhythm 36'.

The 'Velocity' section shows a grid of 40 vertical sliders, each with a green dot indicating the velocity value. The sliders are labeled with numbers 1 through 40. Below the sliders, there are labels for 'Tie', 'Rst', and 'Inc'. The 'Inc' label is highlighted in green. The 'Dec' label is also visible. The 'Store Rhythms' button is located at the bottom right of the interface.

Fully legato.

This screenshot is identical to the one above, showing the 'The NDLR Session Librarian - Version 1.0.0' interface. The 'NDLR' tab is selected, and the 'Velocity' slider is visible. The 'NDLR Rhythms' section displays a grid of 40 rhythms, numbered 21 to 40. The 'Resource Rhythms' section displays a list of rhythms, including 'Blank', 'Gate 1', 'Gate 2', 'Gate 4', 'Gate 8', 'Gate 3', 'Gate 6', 'Gate 9', 'Gate 1/4. + 1/8', 'Gate 16', 'Rhythm 31', 'Rhythm 32', 'Rhythm 33', 'Rhythm 34', 'Rhythm 35', and 'Rhythm 36'.

The 'Velocity' section shows a grid of 40 vertical sliders, each with a green dot indicating the velocity value. The sliders are labeled with numbers 1 through 40. Below the sliders, there are labels for 'Tie', 'Rst', and 'Inc'. The 'Inc' label is highlighted in green. The 'Dec' label is also visible. The 'Store Rhythms' button is located at the bottom right of the interface.

With NDLR's Clock Division, the Motifs can change the length of their note against the Drone or Pad.

÷8 setting and the Rhythms 32 sub beats will create a 4/4 bar with 1/32 note gate resolution.

÷4 setting gives two bars of 4/4 with 1/16 note resolution.

The way you can create a gated note on the NDLR is to have the note and then ties to make up the length of the gate and then rests for the remainder of the note. So a 'staccato' note in a 4/4 bar at a Clock setting of ...

÷2 would be the note plus 1 ties and 2 rests.

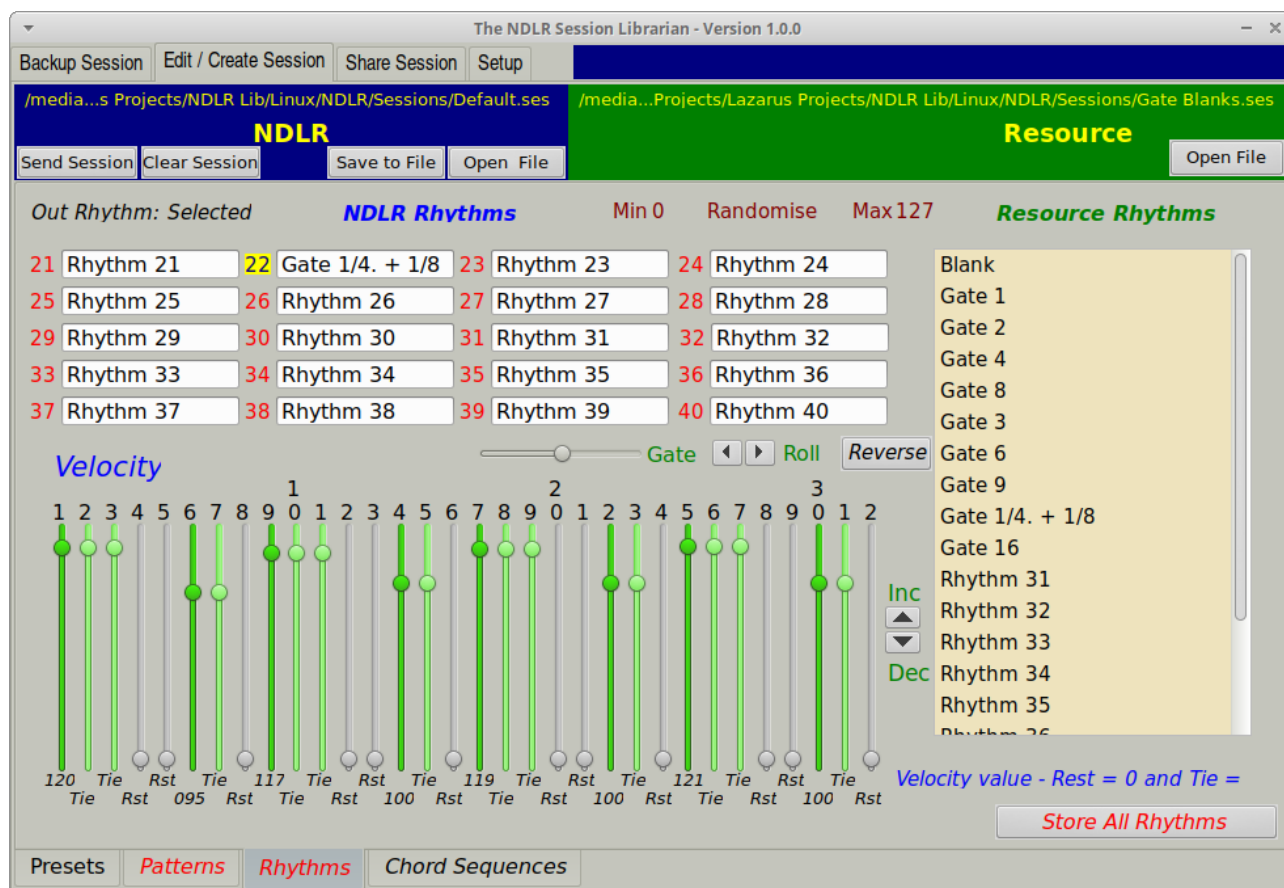
÷4 would be the note plus 3 ties and 4 rests.

÷8 would be the note plus 7 ties and 8 rests.

You could edit the beats to do this, but I have included a slider control to speed it up.

You can drag the knob, but, of course, you can use the Mousewheel when the cursor is over the slider.

I have included a session file called 'Gate Blanks.ses' in the Session directory so you can try it out.



Chord Sequencer page:

The NDLR Session Librarian - Version 1.0.0

Backup Session Edit / Create Session Share Session Setup

/media...s Projects/NDLR Lib/Linux/NDLR/Sessions/Default.ses /media...Projects/Lazarus Projects/NDLR Lib/Linux/NDLR/Sessions/Gate Blanks.ses

NDLR **Resource**

Send Session Clear Session Save to File Open File Click any Sequence Editbox to display Sequence data. Open File

Out Sequence: Selected **NDLR Chord Sequence** **Resource Chord Sequences**

1 Chord Sequence 2 Chord Sequence 3 Chord Sequence 4 Chord Sequence
5 Chord Sequence

Chord Changes

		Key	Mode	Degree	Type	1/4 Notes
A	1	F	Tonic 6ths	ii	Triad	12.0
	2	G	Dorian	iii	6ths	8.0
	3	D	Phrygian	iii	7ths	13.0
	4	A	Lydian	IV	Sus2	2.0
	5	E	Mixolydian	V	Sus4	2.5
	6	B	Minor	I	7ths	5.0
B	1	F#	Minor Pentatonic	I	Triad	4.5
	2	Db	Tonic 2nds	I	Triad	4.0
	3	Ab	Tonic 2nds	ii	Sus4	4.5
	4	Eb	Minor Pentatonic	iii	7ths	5.0
	5	Bb	Wholetone	IV	Sus2	5.5
	6	F	Tonic 2nds	vi	7ths	10.5
C	1	C	Tonic 3rds	I	Triad	6.5
	2	G	Tonic 4ths	vii	Alt2	7.0
	3	D	Tonic 6ths	I	Triad	7.5
	4	A	Major	ii	6ths	8.0
	5	E	Dorian	iii	7ths	8.5
	6	B	Phrygian	vi	7ths	2.0

Chord Sequence 1
Chord Sequence 2
Chord Sequence 1
Chord Sequence 4

Structure

	Sect.	Repeat
1	A	: 4
2	B	: 7
3	C	: 6
4	B	: 5
5	A	: 4
6	A	: 3
7	B	: 2
8	C	: 2

Store Sequences

Presets Patterns Rhythms Chord Sequences

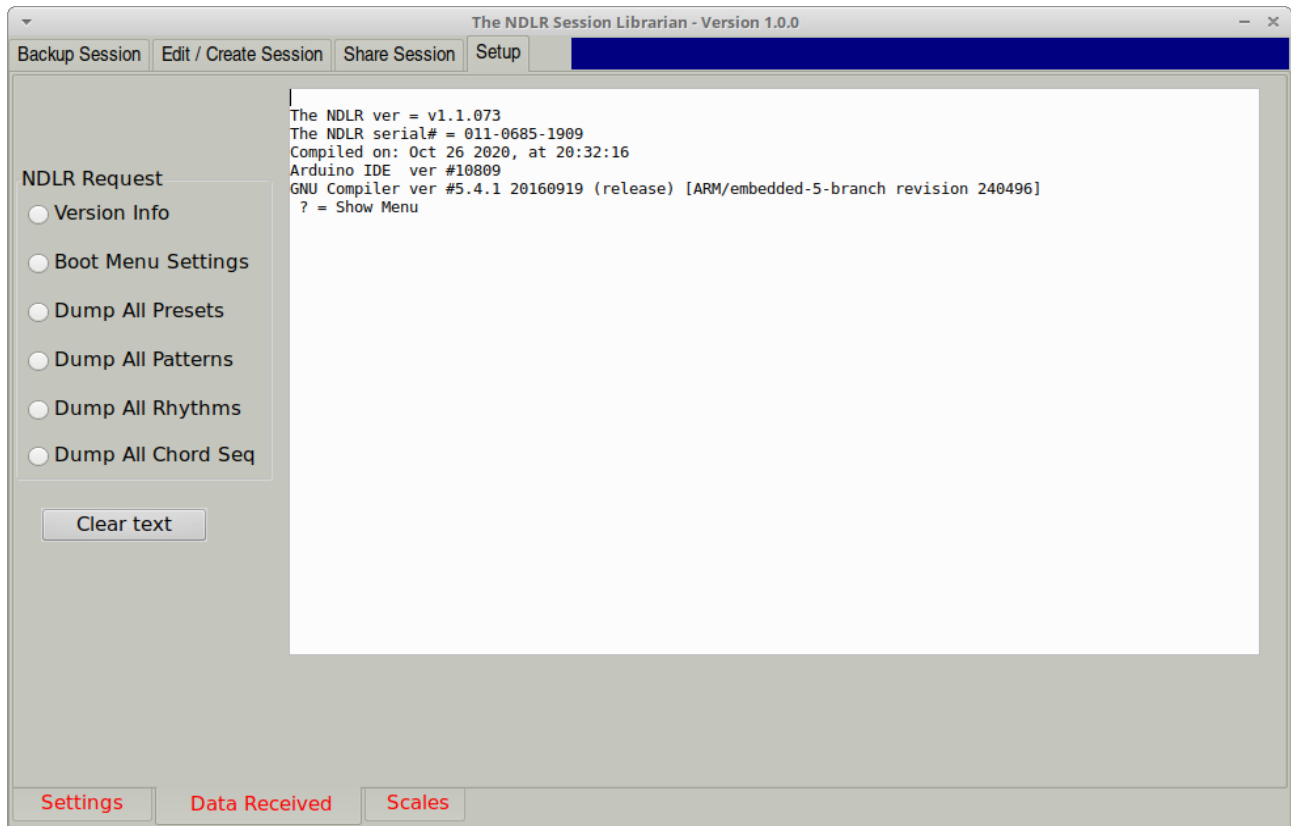
TIP : If a line is blank in the table then then the '1 / 4 Notes' entry is 0.

(If no time is allocated then there is no point in displaying the other information.)

Edit this column first and give it a value greater than 1 and the other fields in that line will appear.

Note: the program uses hovering over labels, vertical bars etc then rolling the mouse wheel. If you accidentally press the ALT key in Windows it will stop working. Just click on the label or bar to refocus.

Settings page EXTRA ... COM Viewer and Scale Viewer



Data Received : This tab is just for viewing, testing and trouble shooting communications with the NDLR.

Scales and Chords: This tab was where I was doing some programming experiments developing scales and chords. - Perhaps it could be useful ???

If you click on any of the radio button lists (like the 'Chords of Mode') or the Scale drop down box you can use the cursor down arrows to quickly move through the list.

The NDLR Session Librarian - Version 1.0.0

Backup Session Edit / Create Session Share Session Setup

Seven Tone Scale Builder

'#3','#4','#5','#6'= excessive sharps
 'x' = Double Sharp
 '#' = Sharp
 '' = Natural
 'b' = Flat
 'bb' = Double Flat
 'b6','b5','b4','b3'= excessive flats

Display
☒ Note
☐ Interval

Steps from the root

Maj7 = Major 7th
 7th = Dominant 7th
 m7 = Minor 7th
 °Maj7 = Diminished Major7th
 ø 7 = Half Diminished 7th
 ° 7 = Diminished 7th
 m#7 = Minor with #7
 Aug7 = Dominant 7 with #5
 #5#7 = Like Aug7, but #7
 b5b7 = Maj with b5 and b7

Major (Ionian)

	I	II	III	IV	V	VI	VII	I	II	III	IV	V	VI	VII
Interval	0	2	4	5	7	9	11	12	14	16	17	19	21	23
Chord Type	Maj7	m7	m7	Maj7	7th	m7	ø 7							
7th	B	C	D	E	F	G	A							
5th	G	A	B	C	D	E	F							
3rd	E	F	G	A	B	C	D							
Major-Ionian	C	D	E	F	G	A	B	C						
Dorian		C	D	E ^b	F	G	A	B ^b	C					
Phrygian			C	D ^b	E ^b	F	G	A ^b	B ^b	C				
Lydian				C	D	E	F [#]	G	A	B	C			
Mixolydian					C	D	E	F	G	A	B ^b	C		
Minor-Aeolian						C	D	E ^b	F	G	A ^b	B ^b	C	
Locrian							C	D ^b	E ^b	F	G ^b	A ^b	B ^b	C

Chords of Mode
☒ I
☐ II
☐ III
☐ IV
☐ V
☐ VI
☐ VII

Key
☒ Flat ☐ Sharp

Key
☒ C ☐ D^b ☐ D ☐ E^b ☐ E ☐ F ☐ G^b ☐ G ☐ A^b ☐ A ☐ B^b ☐ B

Settings Data Received Scales

F1 Help key shows a page of Mouse and Key actions

F2 will bring up your PDF reader with this document loaded.

All Pages	Effect	CTRL	SHIFT	ALT	LEFT	RIGHT
Edibox					click	click
Left Click	Select Element - Display that element's data					
Left Click	Send the Element to the NDLR Buffer		X			
Left Click	Send and Store Element in NDLR	X	X			
Click 'Store xxxx' button	Send all visible elements to NDLR buffer and flash					
Click 'Store xxxx' button	Send all visible elements to NDLR buffer		X			
For Pattern & Rhythm Pages						
Out Pattern' (Rhythm) label	Displayed Element will be sent as selected					
Click Editbox Number	Displayed Element will be sent as that number					
Mouse Wheel over Value bar	Increase or Decrease value by 1				+1	-1
Mouse Wheel over Value bar	Increase or Decrease value by 10	X			+10	-10
Move Mouse over Value bar	Move value to that position ('Paint' values)		X			
Click Rhythm Velocity Value label	Value to : Tie to Rest :					
Randomise						
Mouse wheel 'Min' or 'Max' num	Increase or Decrease value by 1				+1	-1
Mouse wheel 'Min' or 'Max' num	Increase or Decrease value by 10	X			+10	-10
Click 'Min' Label	Set Min to lowest value		X		Min	Min
Click 'Max' Label	Set Max to highest value		X		Max	Max
Click 'Randomise'	Set each value to number between Min and Max					
Click 'SEND' label	Send to buffer as 'selected' or 'number'					
Roll < >	Move by 1 left/right + add value from front to end					
Roll < >	Big Move left/right + add value from front to end	X				
Inc ^ v Dec	Move by 1 up/down until one value is max or min					
Inc ^ v Dec	Big Move up/down until value is max or min	X				
Slide 'Gate' Scroll bar	Add/Remove 1 tie to previous note					
Tables						
Double click data cell	Open List box- Drop with V button					
Cursor keys	Move between cells					
Enter	Open List box					
Down Cursor on open List	Drop List box – select with Enter			X		

If you ever find the Mousewheel or Ctrl key or Shift key not functioning , it is usually caused by the Alt key. Tap the Alt key and the other keys and Mousewheel should function.