

Lesson 5. Using Patches and Recording MIDI

Lesson Files Time Goals

Logic Pro X Files > Lessons > 05 Dub Beat

This lesson takes approximately 90 minutes to complete.

Use patches from the Library

Create Track Stacks

Save layered synthesizer patches

Map and assign Smart Controls

Save layered synthesizer patches

Record MIDI performances

Quantize MIDI recordings

Merge a MIDI recording with an existing MIDI region

Record MIDI in take folders

MIDI (Musical Instrument Digital Interface) was created in 1983 to standardize the way electronic musical instruments communicate. Today, MIDI is extensively used throughout the music industry to record and program synthesizers and samplers. Many TV and film composers use MIDI to sequence large software sound libraries, getting ever closer to realizing the sound of a real orchestra.

MIDI sequences can be compared to piano rolls, the perforated paper rolls once used by mechanical player pianos. Like the punched holes in piano rolls, MIDI events do not contain audio. They contain note information such as pitch and velocity. To turn MIDI data into sound, MIDI events are routed to a software instrument or to an external MIDI instrument.

There are two basic types of MIDI events: MIDI note events, which trigger musical notes, and MIDI continuous controller (MIDI CC) events, which control parameters such as volume, pan, or pitch bend.

For example, when you press C3 on a MIDI controller keyboard, the keyboard sends a “note on” MIDI event. The note on event contains the pitch of the note (C3) and the velocity of the note (which indicates how fast the key was struck, thereby showing how hard the musician pressed the key).

By connecting a MIDI controller keyboard to Logic, you can use Logic to route the MIDI events to a virtual software instrument or to an external MIDI instrument. The instrument reacts to the note on event by producing a C3 note, and the velocity typically determines how loud the note sounds.

When a MIDI controller keyboard is connected to your computer, and its driver is properly installed (some devices are class-compliant and don't require a driver installation), you can use that keyboard to record MIDI in Logic. Logic automatically routes all incoming MIDI events to the record-enabled software instrument or external MIDI track.

Note

When connecting certain MIDI controllers, Logic opens a dialog asking if you want to automatically assign its controls. To follow the exercises in this lesson, click No. If you've clicked Auto Assign before in this dialog, choose Logic Pro X > Control Surfaces > Preferences, click the MIDI Controllers tab, and deselect the Auto checkbox for all listed controllers.

Tip

If you don't have a MIDI controller keyboard, choose Window > Show Musical Typing (or press Command-K) to turn your Mac keyboard into a polyphonic MIDI controller. Pressing the Z and X keys allows you to choose the octave range, and pressing C and V lets you adjust the note velocities. Keep in mind that you may need to close the Musical Typing window (or press Command-K) to access some of the Logic key commands.



Tip

You will apply the Logic Remote app to use your iPad as a wireless MIDI controller in [Appendix A “Controlling Logic with an iPad Using Logic Remote.”](#)

Using a Patch from the Library

When working with software instruments in Logic, the MIDI events can be recorded, created, and edited inside MIDI regions placed on the track. The MIDI events generated by playing your MIDI keyboard are routed to the record-enabled track in the Tracks area. From the track, those real-time events from your keyboard, or the events played back from MIDI regions on the tracks, are routed to the top of the channel strip. They can be preprocessed by MIDI effect plug-ins before the MIDI data is passed to the instrument plug-in. The instrument produces an audio signal that can be further processed using audio effect plug-ins. The audio can then be adjusted with the Volume fader and Pan knob before being routed to the output destination.



The Setting button at the top of a channel strip allows you to load or save channel strip settings, which contain all the plug-ins inserted on a channel strip and their individual settings.

The Library lets you load or save patches, channel strip settings, or plug-in settings. A patch can be a single channel strip setting, or multiple channel strips and their channel strip settings.

Tip

To see a plug-in's settings in the Library, click to the left of the plug-in on the channel strip in the inspector. A blue triangle and a white frame indicate which plug-in's settings the Library is currently displaying.



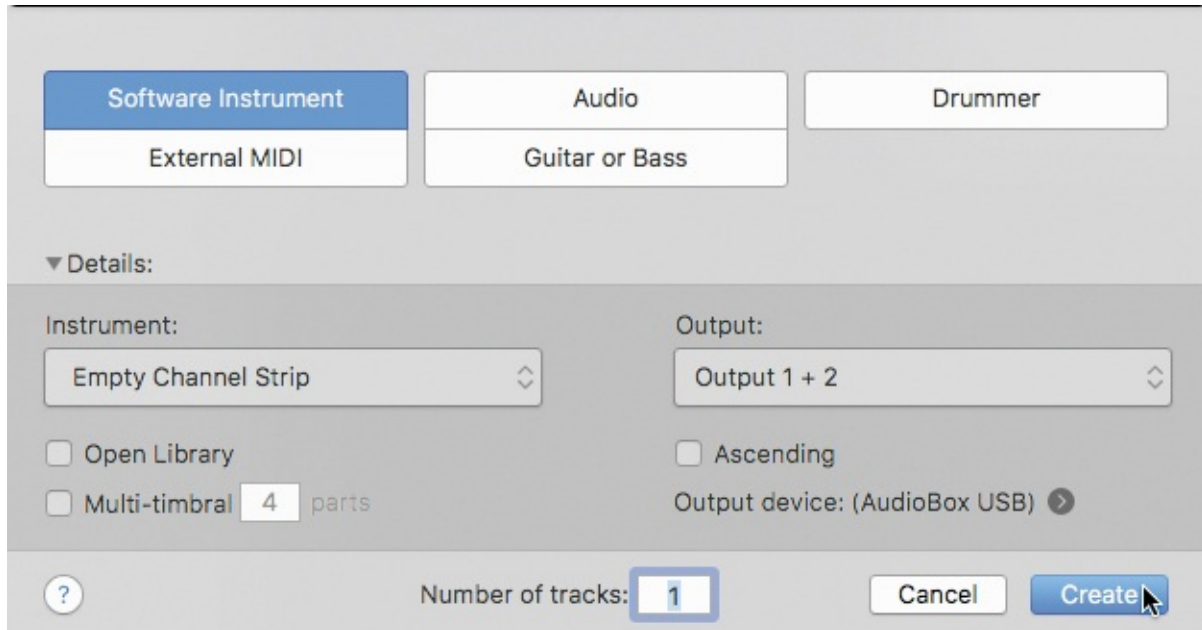
In this exercise, you will create a software instrument track, choose a patch from

In this exercise, you will create a software instrument track, choose a patch from the Library, and examine the channel strips created in the Mixer.

1 Choose File > New (or press Command-Shift-N).

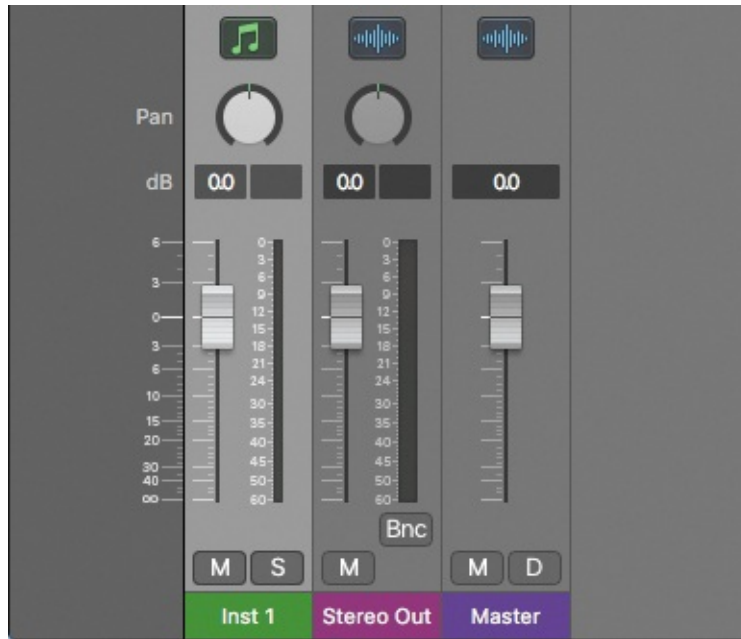
If a project was already open, an alert asks if you want to close the current project. Click Close (a Save dialog then prompts you to save it).

2 In the New Track dialog, click Software Instrument. Make sure all checkboxes are deselected, and from the Instrument pop-up menu, choose Empty Channel Strip. Click Create.



A new, empty software instrument track is created.

3 In the control bar, click the Mixer button (or press X).



The Mixer opens and shows three channel strips that are, from left to right:

- ▶ The software instrument channel strip you just created (Inst 1)
- ▶ The Stereo Out channel strip
- ▶ The Master channel strip

You will now load a patch for the selected software instrument track while watching what happens in the Mixer.

- 4 In the control bar, click the Library button (or press Y).



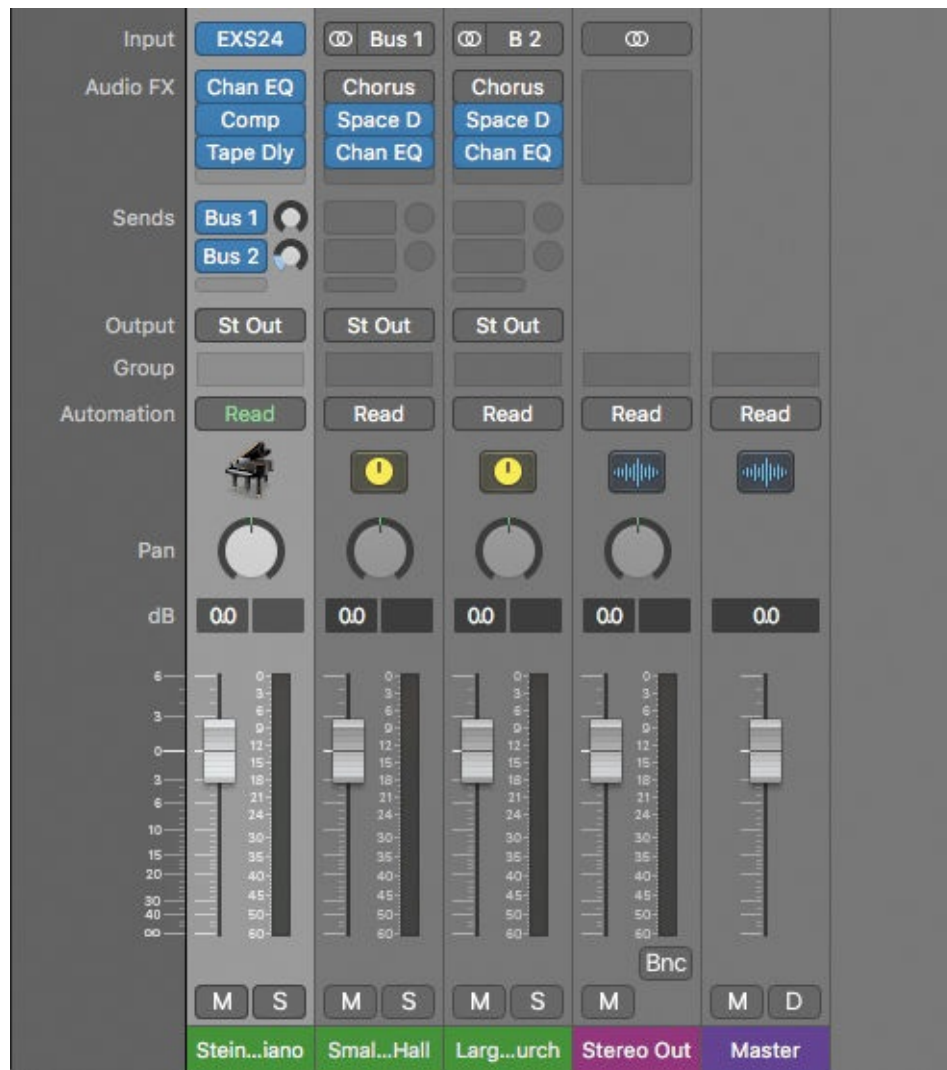
The Library opens to the left of the inspector.

- 5 In the Library, choose Piano > Steinway Grand Piano.

Tip

In the Library, you can press the Up and Down Arrow keys to select categories or patches in a list, and press the Left and Right Arrow keys to navigate to the left and right columns.

- 6 Play a few keys on your MIDI keyboard to hear the piano sound.
- 7 In the Mixer, look at the channel strips.



On the software instrument channel strip (Steinway Grand Piano), a channel strip setting is loaded, containing an EXS24 (the Logic sampler) instrument plug-in and three audio effect plug-ins: a Channel EQ, a Compressor, and a Tape Delay.

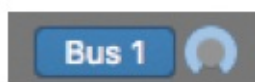
Two new auxiliary channel strips are also created (Small Hall/1.3s Diffuse Hall and Large Hall/6.6s Botta Church), each one with its own channel strip setting. The software instrument channel strip has two bus sends that route the audio signal to the inputs of the two auxiliaries, set to bus 1 (B 1) and bus 2 (B 2). Together, the software instrument channel strip setting, along with the two auxiliaries and their channel strip settings, make up the Steinway Grand Piano patch.

In a Mixer, a bus transports the audio signal from one channel strip to another. Here, Bus 1 and Bus 2 route the stereo audio signal of the piano to two different reverberation effects on the two auxiliaries.

Tip

In Logic, a single bus can transport a mono, stereo, or surround audio signal.

- 8** On the Steinway Piano channel strip, next to the Bus 1 send, drag the bus Send Level knob all the way up.



Play the piano with your MIDI keyboard. You can hear the reverberation sound of a smaller room.

- 9** Next to the Bus 1 send, lower the Send Level knob all the way down.

The piano now has a small amount of reverb that comes from the Bus 2 send.

- 10** Next to the Bus 2 send, lower the send level all the way down.

The piano now sounds completely dry with no reverberation.

- 11** Next to the Bus 2 send, raise the send level all the way up.

You can hear the reverb of the second auxiliary, which sounds like a much bigger room. Notice that this reverb sustains for a longer time than the first one.

- 12** Continue adjusting the bus send levels to compare the sound of the two reverbs, and then set them to a level that sounds good to you.

Tip

To load a patch without its bus sends and auxiliary channel strips, start with an empty software instrument channel strip. At the lower left of the Library, from the Action menu, choose Enable Patch Merging. Then deselect the Sends button.

- 13** Close the Mixer.

Now that you know how to choose a patch from the Library, and how to adjust the amount of reverb using the bus Send Level knobs, you will create and save

the amount of reverb using the Low End Filter knob, you will create and save your own custom patch.

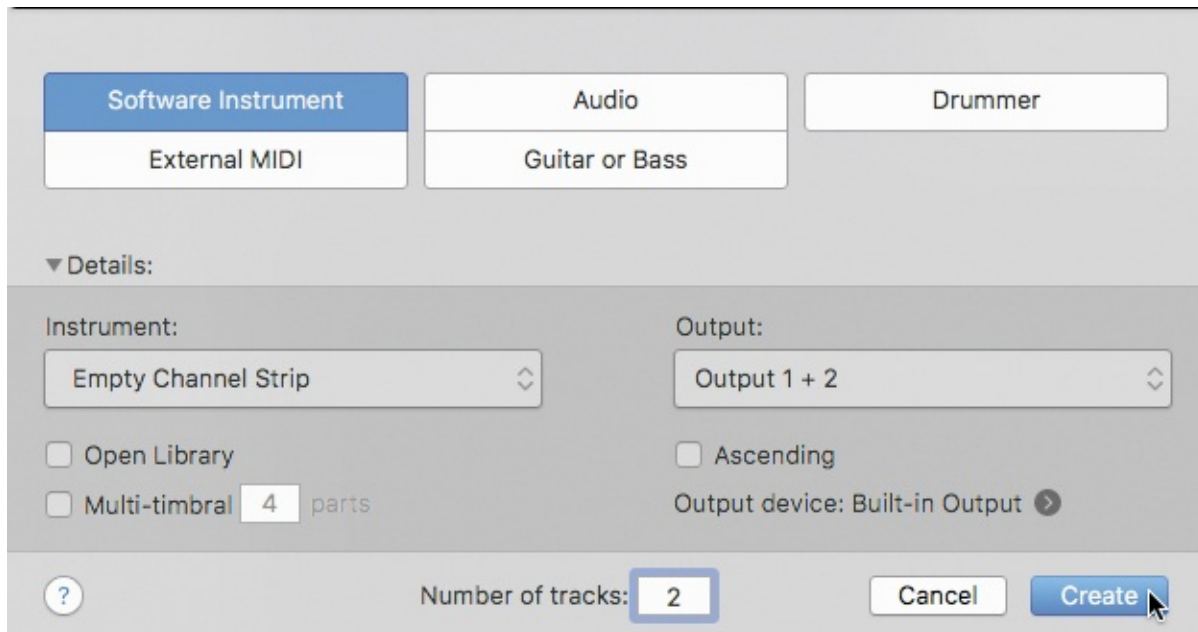
Creating a Layered Sound Patch

Well before recording was invented, composers used instrumental sound layering to thicken sounds. In a classical orchestra, you often hear multiple musicians playing the same part at the same time. When all the violins play a melody together, you hear a rich warm tone and the emotional level is raised. Sound layering is a common technique used by music producers to make just about any instrument sound thicker, or to mix the timbres of different sounds. For example, many vocals on commercial songs are doubled (that is, the singer records two identical performances that are played back simultaneously), and dance music producers often layer multiple kick drum samples, such as combining a kick drum with a strong percussive attack and another that has a boomy sustain.

In Logic, Track Stacks allow you to combine a group of tracks and control them as a single track. Track Stacks can be used to organize tracks you want to group together (such as drum tracks or backup vocal tracks). They can also be used to group software instrument tracks, so that the MIDI notes on a single track can trigger all of the instruments in the Track Stack.

In this exercise, you will create a Track Stack for two different synthesizer patches and save the Track Stack as a new patch.

- 1 Choose File > New (or press Command-Shift-N), and when prompted, close but don't save the existing project.
- 2 In the New Tracks dialog, choose Software Instrument. Set "Number of tracks" to 2, and click Create.



Two empty software instrument tracks are created.

3 Click the Library button (or press Y) to open the Library.

4 In the Tracks area, select the first track, and in the Library, choose Synthesizer > Lead > Nightlife Lead.

5 Play your MIDI keyboard.

The synth sounds modern; it is quite edgy and buzzy. Try playing a bass line in the C1–C2 range. This modern bass has a lot of character, but it lacks the body and thickness of an older analog synth.

6 In the Tracks area, select track 2, and in the Library, choose Synthesizer > Lead > 70s Analog Lead.

That synth is more rounded and warm. Plus, it has more low frequencies, which will bring body to the layered sound. Let's select both tracks and create a Track Stack for them.

Tip

To hear both sounds layered before you create the Track Stack, record-enable both track headers and play your MIDI keyboard.

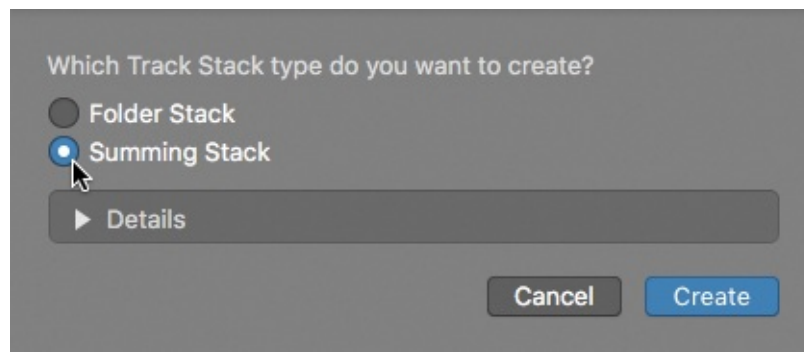
7 Shift-click the unselected track header to select both track headers.



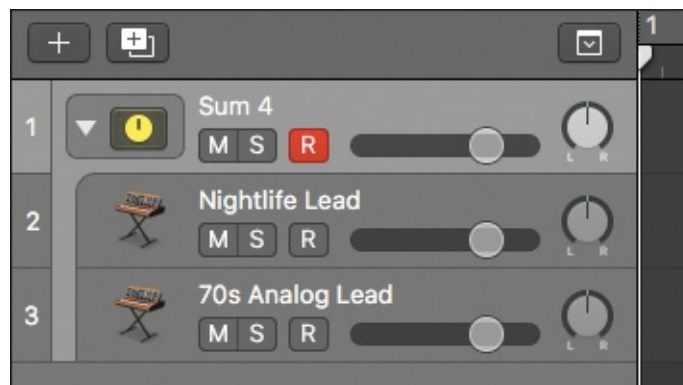
8 Choose Track > Create Track Stack (or press Command-Shift-D).

A dialog lets you choose between a folder stack or a summing stack. To group software instruments and work with the MIDI data on the main track of a Track Stack, you must use a summing stack.

9 Choose Summing Stack, and click Create.



In the Tracks area, the main track of the new summing stack appears at the top, and the two original software instrument tracks become subtracks of the Track Stack.



In the workspace, the main track and the subtracks have a green background to indicate that they all belong to a summing stack.

10 Make sure the main track of the Track Stack is record-enabled, and play your MIDI keyboard.

You can now hear the layered sound combining both the Nightlife Lead and the 70s Analog Lead patches.

11 Try muting either subtrack inside the Track Stack.

Muting a subtrack allows you to determine exactly what each subtrack adds to the layered sound. When you mute Nightlife Lead, the sound loses its edge and buzzy quality. When you mute 70s Analog Lead, the sound loses body and warmth.

12 Unmute both subtracks.

Let's assign the main track an icon that will be saved along with the patch.

13 On the main track, Control-click the icon, and choose a keyboard icon.

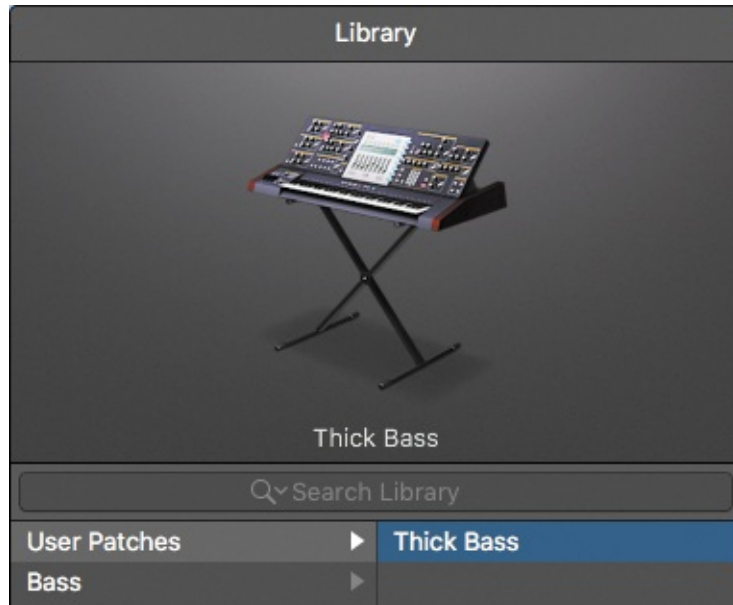
14 At the bottom of the Library, click Save.



15 In the Save dialog, type a filename for the patch, such as *Thick Bass*, and save it to the default location.



In the Library, a new User Patches category is created in the left column and your new patch is selected inside it.



In the workspace, the main track in the Track Stack is renamed after the patch you saved.



- 16 On the Track Stack's main track header, click the disclosure triangle next to the icon.



The Track Stack is now closed and appears as a single track. It retains all functionality, and as long as the Track Stack is record-enabled, you can continue playing or recording the layered patch from your MIDI keyboard.

Now that you have saved your custom patch in the Library, it will be available in any project you open in Logic whenever a track of the same type (a software instrument track) is selected. Selecting the Thick Bass patch from the Library will replace the selected software instrument track with the summing stack and