<u>Module IV Tutorial – Sequencing</u>
In this lesson you'll combine techniques covered in past modules on looping, drum machines, and sampling. First you'll create a couple of patterns with a drum machine, and then overdub those with a sampler in a sequencer. If you want to go further you can vocalize over it or add edited audio.

In this demo we assume that you are using the Studio One Artist version or higher. If you are using Studio One Free you'll need the instructions on
- how to use the Impact machine Max patch to create a MIDI file, and then convert to to an audio file with iTunes
- how to use the Sampler Max patch to create an audio file
- how to combine these files in Studio One

The Impact Machine

Studio One has many useful percussion sounds in its Impact virtual instrument that you can trigger from a velocity-sensitive MIDI keyboard much as hip-hop producers were fond of doing with the Akai MPC60 starting in 1988.

I'll show you how to use the drum machine controller for it that I built with the Max program (from Cycling 74) called Impact Machine.

> If you have Max or Max Runtime installed on your computer, open the "Impact Machine.maxpat" Max patch file. If you don't have either of those two programs installed, consider getting <u>Max Runtime from Cyling 74 (free)</u> so that you can run this and other patches. You can also run the standalone application "Impact Machine".

> Once you have the Max patch loaded, click on "preset menu" and read in the presets stored in the file "Drum Machine presets".

> Click on Preset 1. This will change the beats per minute from 120 to 96, and set up the key names on the left column to agree with the assignments with Studio One's Impact virtual instrument. It should also pick your output device. Max offers two communication channels—"from Max 1" and "from Max 2". For this exercise you pick "from Max 1". This will set up Max to send notes out a communication channel that Studio One will be able to receive on, instead of the operating system's built-in GM drum kit.

> Now that we have Max ready to send information to Studio One, we need to set up Studio One to receive it

>> Start up Studio One and open the "Drum Machine start.song" located in the "Drum Machine Song" folder. Once it opens you should see the "Trance ID 2" kit loaded into an Impact instrument, which you can
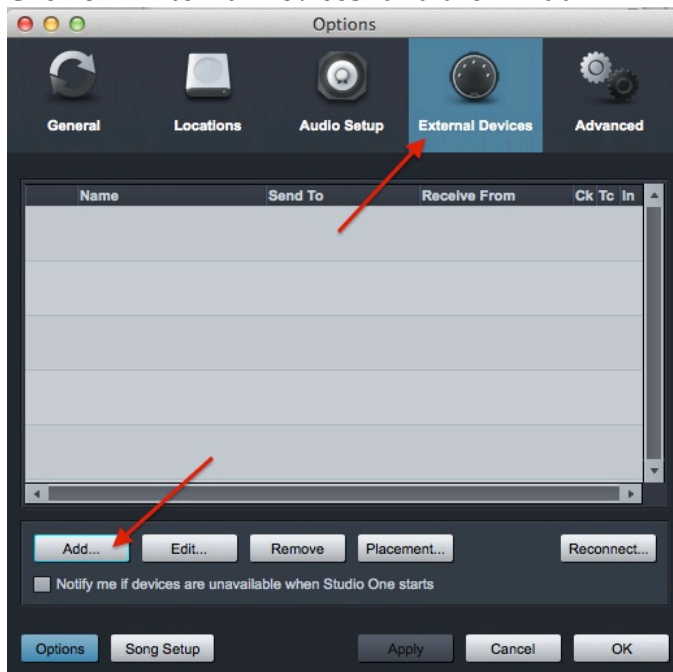
open if you click on the keyboard icon. We need to set this track up to have its input coming "from Max 1"

First create a new external device in Studio One so that it can get the information from the "from Max 1" channel. On the "Trance ID 2" track, click on the input field which may say "All Inputs" or "from Max 1".
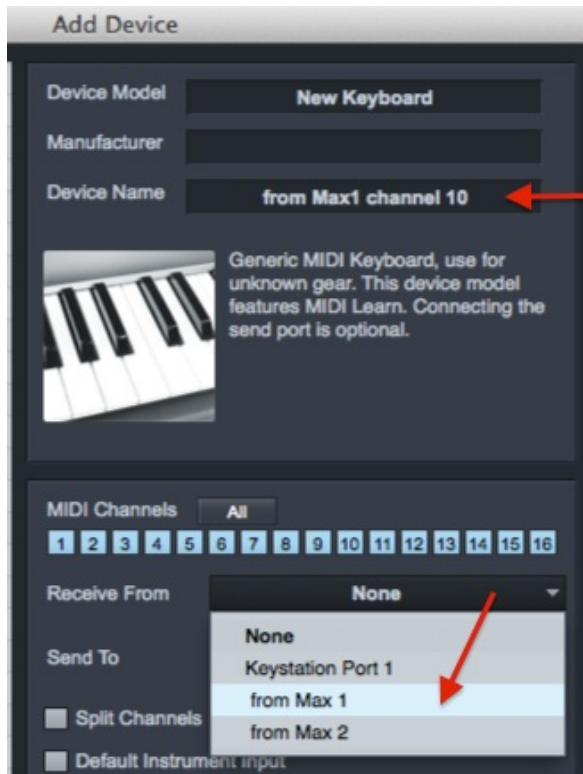

Then select "Configure…"

Click on "External Devices" and then "Add…"

For the "Device Name" type something like "from Max1". This gives your device a name that will help you remember what it stands for.

In the "Receive From" field click on "None" and drag down to "from Max 1". This tells Studio One that when you choose the device with the name "from Max1" that you want to get input from the Max 1 communication channel. Click "OK". Click on "OK" again.

Now go back and click on "All Inputs" and change it to the new option we just created called "from Max 1". Now Studio One should be receiving MIDI input from the Impact Machine.

Now that the Impact virtual instrument in Studio One is set to receive notes from Max we're ready to start playing the drum machine.

Click on the Impact Machine Max patch window to activate it. Press the space bar to start the drum machine. If you click on any of the circles you should hear the sound for that instrument on the corresponding $1/16^{th}$ note. Notice that when the drum machine is running lights at the top show you which subdivision of the beat you're on.

The four beats of the measure are separated horizontally in four groups of four $1/16^{th}$ notes. The buttons are also arranged in vertical groups of four. Each group of four vertically corresponds to one horizontal row of the Impact instrument.

The Basic Beat

The first step for this exercise is to create two drum patterns—a basic beat and a slightly more complex variation of it. The easiest way to do this is to make the basic beat and save it in a preset pattern storage location. Then copy this basic beat into a second storage location, add some complexity to it, and resave it in the second location. Then you switch between the basic beat for the verse of a song and the more complex version for the chorus.

Click on Preset 2. It's got a start on a basic beat with a kick drum. Press the <spacebar> to start playing. If you don't hear anything coming from Studio One, check to see that it is receiving MIDI from Max by clicking on the VIEW tab at the top of Studio One and scrolling down to "MIDI Monitor":
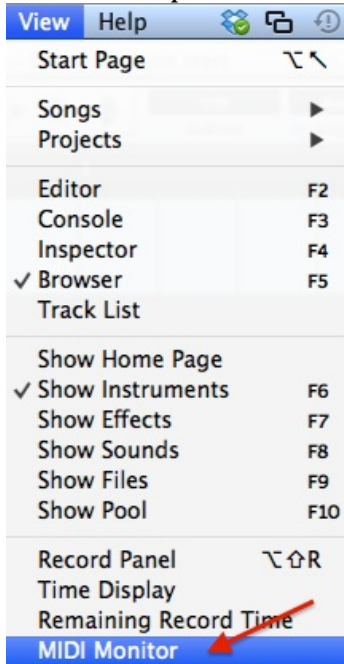
If your Impact Machine is playing notes and you've got the communication between Max and Studio One set up right you should see MIDI data in the window:
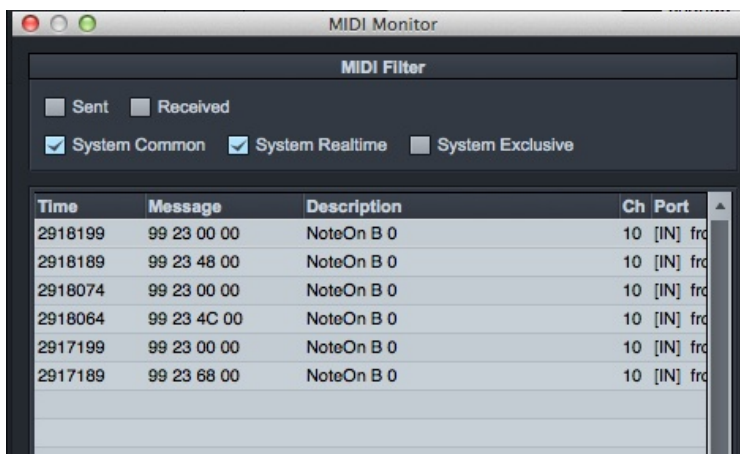
If you don't see the MIDI data activity then check that you see buttons lit yellow, blue, or red in the Impact Machine patch. If you don't you either don't have the Max presets loaded in or didn't click on Preset 2 in the upper corner of the preset panel. If the beat lights aren't advancing you need to press the <spacebar>. If the Max patch is all right and you still don't see activity in the MIDI monitor window, go back and check the configuration of the external device used as the input for the Impact track labeled "Trance ID 2 track". It should be set to "from Max 1":

Stop playback by pressing the <spacebar> again. If the Impact instrument is not open, click on the keyboard icon in the Trance ID 2 track. Try out the available Impact sounds by clicking on the various buttons in the 4x4 matrix of sample buttons:

Note that you can change the audio output for each instrument and use different plugins for that channel in the mixing Console.

When you get to doing your own project you can change the bank of sounds either by clicking on the bank name "Trance ID 2" (which is what I named this Impact instrument track in Studio One) and dragging down to any name in the list that strikes your fancy, or by clicking on the left or right arrows and go through each of the options in order:

I'm using Preset 1 just to store the key assignments for the rows that are matched with Impact's buttons in Studio One. I'm using Preset 2 for the basic beat, and I'll use Preset 3 for the variation. You can create, write, and read your own preset banks later using the menu above the presets in Max.

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I'll show you how to work with presets in the Impact Machine now.
The easiest way to get the two patterns is by creating the basic beat and then copying it into the second location and then modifying it there.

Click on the second dot from the left to load the basic kick drum beat stored in Preset 2:

We are currently using Preset #2 (notice the arrow pointing to the button lit blue). Preset #2 is in the cue box (pink) which has no affect at the moment, because pattern cueing is turned off.

While I'm editing the presets I need to leave the "pattern cueing" option off so that the drum machine won't lose my changes before I have saved them. While pattern cueing is off the number in the pink box of the pattern to cue up doesn't have any effect.

Two bytes are used in MIDI note commands to specify the key number (in Impact viewed as pitch class+octave) and the velocity—the speed with which a key is played. Velocity can be any value between 0 and 127. Each time you click on the same button it cycles through different colors—yellow, blue, red, and grey/white. I've set red to be my "hard" attacks, with velocities in the

range 100-120. Blue will be the medium strikes in the 80-100 velocity range, and yellow the soft hits in the 60-80 range. Grey/white means "off".

When I made the Impact Machine I decided to allow for some randomization in velocity so that the patterns could sound more or less lively or mechanical. The reason there is now a range of 20 possible velocity values for each color is because the "dVariation" parameter is set to 20. If you don't want any variation in the strength of notes change the drum variation to 0. Click on a number box, type the number, and then press return. If you want more, increase the value. Extreme values will cause certain notes not to be heard at all.

Let's add hand claps. Studio One gives me two options for triggering the "Clap 2" sample—D#1 and G3. I've set up one of the rows in the Impact Machine Max patch to transmit notes on D#1, so I'll use that row for clapping. I click on the D#1 row on the 1/16th notes on beats 2 and 4. I've decided I want beat 2 to be softer than beat 4, so I'll make it yellow and beat 4 red. Notice the dynamics in the kick drum pattern—beat 1 is the loudest. Once I get the pattern the way I want it I will shift click on it to write over the data that was there with the new version I want to save in that location.

You also shift-click on a new location to copy the settings there. I'll copy the basic beat that is now stored in Preset 2 into Preset 3 by shift-clicking on the third dot from the left. Then I click on Preset 3 to select it. The preset that is currently playing is tinted blue.

Preset 3 is now identical to Preset 2. I'll add some extra elements to it and use it for the chorus. After experimenting with what's available in this bank of samples I've decided to use "Perc" on the A1 key. I can click on the key to test out possible rhythms, and then transfer what I end up with to the Impact Machine subdivisions on the A1 row.

Next I'll do the same with some "Closed HH 1" notes using key F#1.

Since I made some changes to the pattern I will need to re-save it by shift-clicking on Preset 3. Now I can switch back and forth between presets 2 and 3 by simply clicking on them (no shift-clicking). Notice that with "pattern cueing" turned off the pattern changes as soon as you click on a preset. If you want to make it so the new pattern takes effect only on the downbeat of the next measure (which is what a drummer normally does) click on the "off" label for pattern cueing and change to "on". Type the number of the pattern you want to cue up in the pink box, and the next time Beat 1 comes around it will switch automatically to that pattern. Practice alternating four bars of Preset 2 with four bars of Preset 3 using the pattern cueing function.

You can adjust the parameters of a sample in Impact by selecting it (it turns blue), and then adjusting the controls on the right. I'm going to pan some of the higher pitched samples to the left and right in order to create more of a stereo spread, and adjust the volumes with the gain knob. The settings will be saved with the song.

Let's record a 16-bar verse followed by a 16-bar chorus using the drum machine into Studio One.

Recording in Studio One

Now that we have our two patterns stored we can record a verse and chorus in Studio One

Turn on the metronome by clicking on the metronome icon ("c"). so that you'll know where you are in Studio One's bars. The metronome speed should be set to the same BPM as the Impact Machine (96).
You will probably need some time to get ready to play after you start recording. Click on the settings wrench next to the metronome icon and set the Precount to 4 bars of countoff. Activate the countoff by clicking on the dot or using the shortcut ("<shift>c").
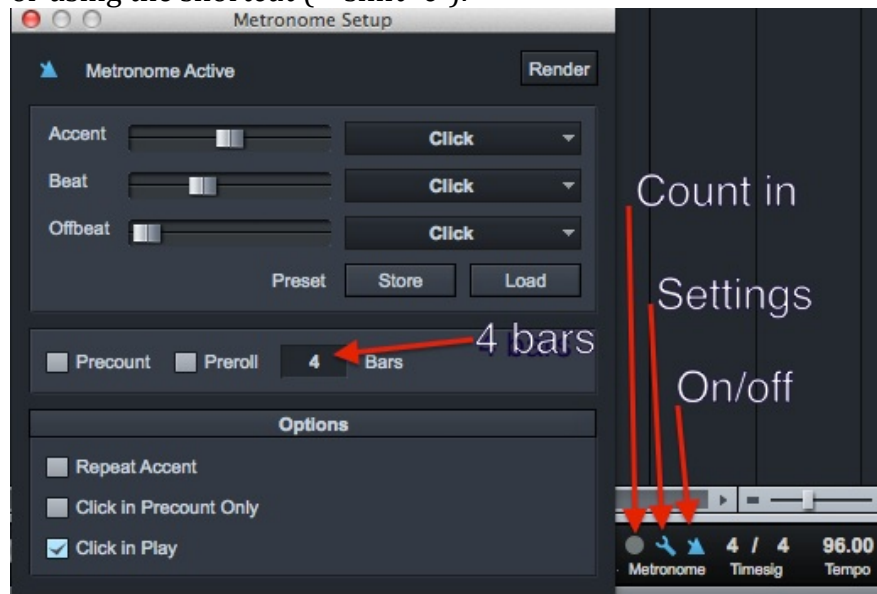
If you are not accurate in your performance of the drum machine you can go back later and move the notes around to snap to the bar lines. You might also consider turning "Input Quantize" on, and setting Quantize to 1/16th notes, since that is the shortest subdivision in the drum machine:
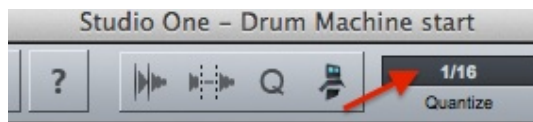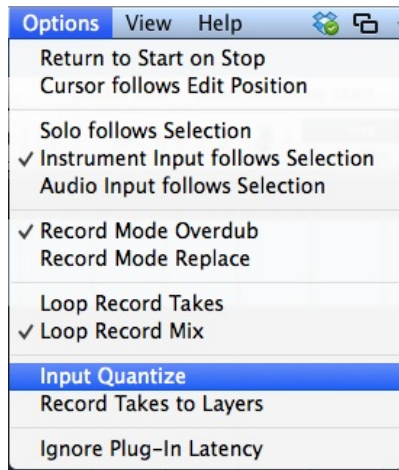
This will cause all the notes to snap to the nearest 1/16th note. Remember to turn it off later if it interferes with the recording of your keyboard performance.

Record 16 bars of Pattern 2 followed by 16 bars of Pattern 3. You can repeat if you make a mistake or edit the MIDI notes that Studio One records.

Add a bass line

Add some bass notes to go with your drum beat. Create a new track in Studio One with a Presence instrument loaded with the "Fat Fingers" settings. You'll need to add a new external device for your keyboard like you did when you created the connection with Max's Impact Machine. Click on the input to configure the new external device, add a new keyboard to the list, name it, choose which MIDI input port it is connected to, and save. Back on the Studio One then choose it for the input for the desired track.

Chords

If you play guitar or keyboard you can add some chords to go with the bass. If you use a virtual instrument from the Presence family you can choose the same external keyboard for input that you used when you recorded the bass.

Add some samples over the top

Add some sampled sounds for fills during the chorus using the Sample One instrument provided. Pick the external MIDI keyboard controller you've been using for the bass and chords to receive data from for Sample One

I found some baby sounds on Freesound.org. First I drag in the .wav file to a track in Studio One and then using the Split Tool ("3") to create regions around the individual baby sounds.

The Split Tool

Once you've isolated the regions you can drag them into the   Sample One instrument and then set up the root keys and key zones by selecting each sample one by one, highlighting each root key, low key, and hi key field and playing the desired keys on the keyboard.

After the Sample One instrument is set up you can record some of its samples as fills during the chorus. This fill further distinguish it from the verse.

Assignment

Create an instrumental track with contrast between a 16-bar verse and a 16-bar chorus. Add some bass notes and sweeten the chorus with a few sampled sounds.
1) Do a "Save As…" in Studio One and give the song a new name like "Drum machine and sampler".
2) In the Impact Machine patch read in the preset file "Impact Machine.maxpresets"
3) Create a basic beat for a verse and save it in preset location 2.
4) Copy Preset 2 into Preset 3 (shift-click on Preset 3)
5) Select Preset 3 (click). The dot should turn blue.
6) Add some new elements to it for the chorus. The typical situation is to have some contrast, but not too much. Re-save your modifications in Preset 3 (shift-click on Preset 3).
7) Record a 16-bar verse and 16-bar chorus in Studio One alternating the two patterns.
8) Add some bass notes. Add some keyboard or guitar harmony if you dare.
9) Create a Sample One sampler layout and record some fills with it during the chorus, leaving space for a vocal to be added at a later time.
10) Export your work (under SONG menu, choose "Export Mixdown…"). Convert to mp3 and post to the discussion board along with documentation of the samples that you used in Sample One.
11) Comment on your colleagues work. What do you think about the differentiation they made between verse and chorus? Was it enough? Too extreme? How did the samples complement the texture? Is there enough space left for a vocal to be added?

Exploration

Load in a different sample bank into Impact and come up with a new set of preset patterns. To clear all the notes in a pattern, click on the button above "erase all". Click on "clear" underneath the preset panel to erase a single preset from the preset panel. To erase all the presets choose "clearall" from the menu above the panel.

Choose "write" in the preset menu and store your bank with a name of your choosing that you can read back in later.
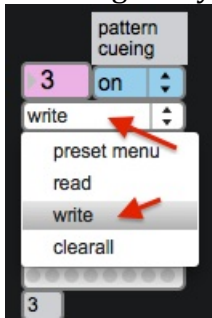
Departure

The Impact Machine can be used to drive other instruments. Try it with a Presence instrument or Sample One. Experiment with reducing the length of the notes that are triggered by lowering the drumDuration time.

You can replace individual sounds in a bank of Impact sounds by clicking on sample you want to replace and then click on the "+" and "-" buttons in the edit window:
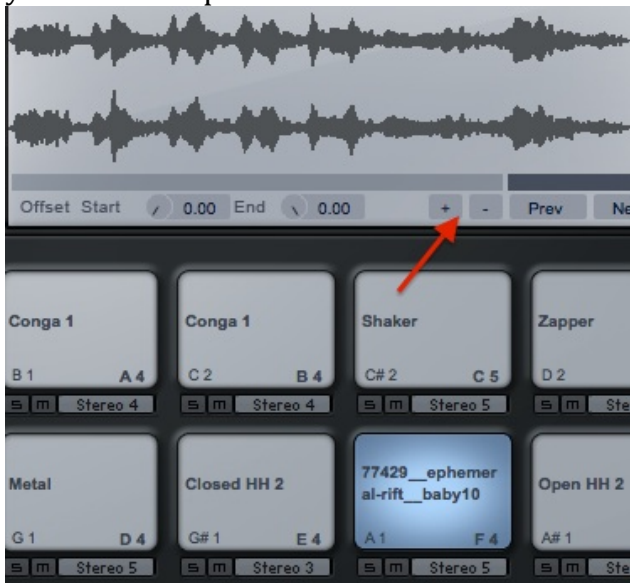
It looks like some has replaced the A1 sound with the recordings of babies.

Resources

Max Runtime software: http://cycling74.com/downloads/runtime/

How to Create and Dominate Hip-Hop Drums:
http://music.tutsplus.com/tutorials/how-to-create-and-dominate-hip-hop-drums--audio-833