

# Introduction to Music Production

Week6: On a synthesizer of your choice demonstrate the usage of these controls: Oscillator waveform, oscillator frequency, filter type, filter frequency, filter resonance, and amplitude envelope ADSR. How are they similar and how are they different from the simple synthesizer used in the video demonstrations?

## Introduction

Hi, I'm Takahiro Kubo from Chiba in Japan. I'll demonstrate how to use synthesizer in Studio One. In conclusion, it was quite different from the synthesizer used in the lecture. So It was difficult to understand how to use. I hope this material helps you when using the Studio One!

## Lesson

First of all, let's confirm the components of synthesizer.

- Oscillator: It creates the sound. The sound is controlled by its waveform and frequency.
- Filter: It mainly used as low pass filter. The resonance is used to emphasize the sound around the cutoff frequency.
- Amplifier: It controls the volume. The phases of control are called ADSR (attack, delay, sustain, release), and the set of its parameters are called envelope.
- LFO: LFO means the low frequency oscillator, it modulates the parameters of the target (ex. VCO) by its cyclic frequency (it is 0 ~ 20Hz, that we can't hear).

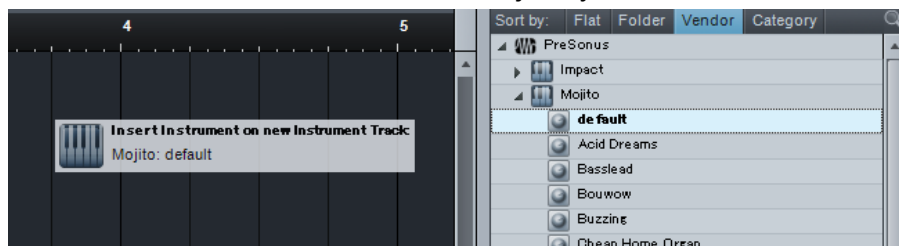
Now, let's see where each components are in Studio One!

### 1.Preparation

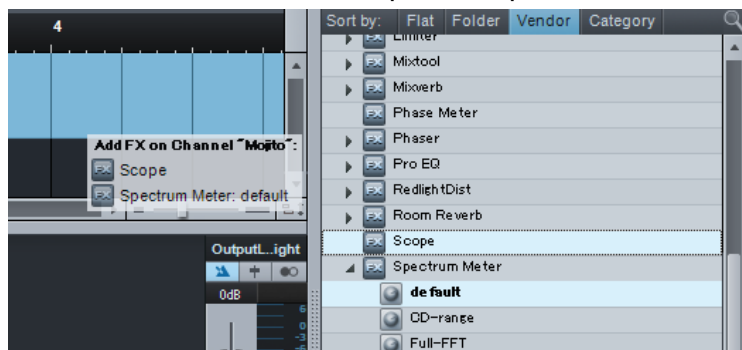
I prepared the synthesizer and monitor to see the waveform of frequency.

- Synthesizer: I used [Mojito](#), it includes all components of synthesizer above.
- Monitor: To see the waveform, I used Scope and Spectrum Meter.

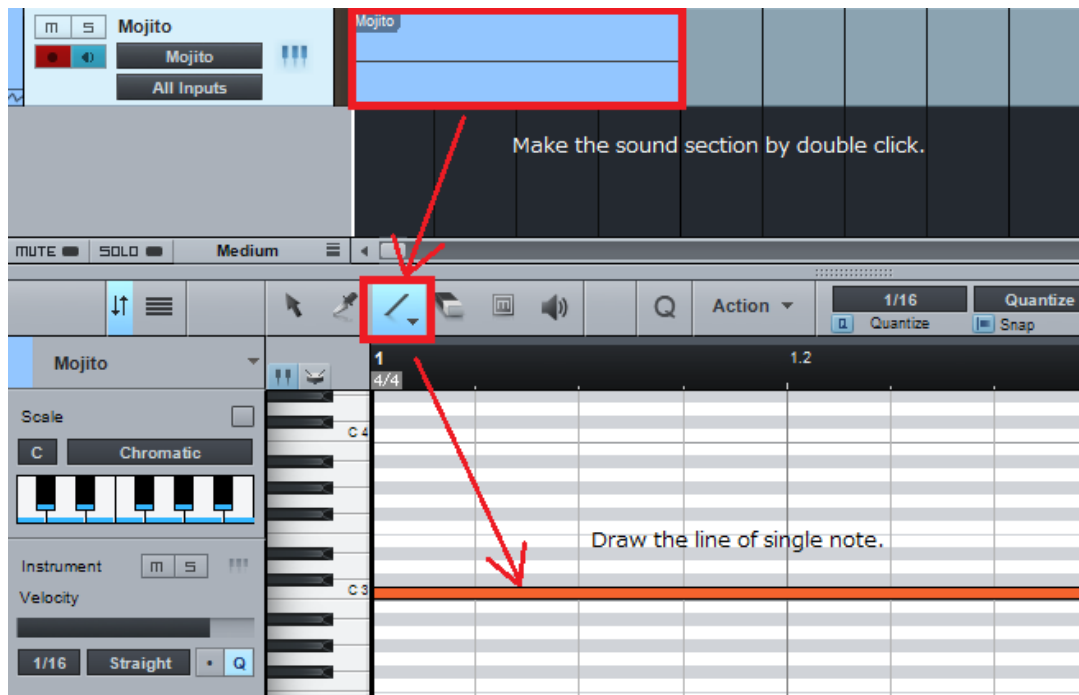
From the **Instruments**, choose the Mojito synthesizer.



From the **Effect**, choose Scope and Spectrum Meter



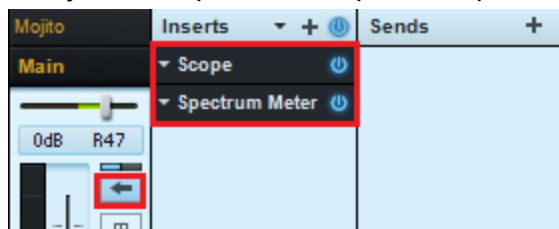
Then, open the Editor by F2 button. And draw the single note by line tool.  
This note will be a ocillator frequency.



After that, open the Mojito synthesizer.



And you can open the Scope and Spectrum Meter from the Console (F3 button).



## 2.Synthesize

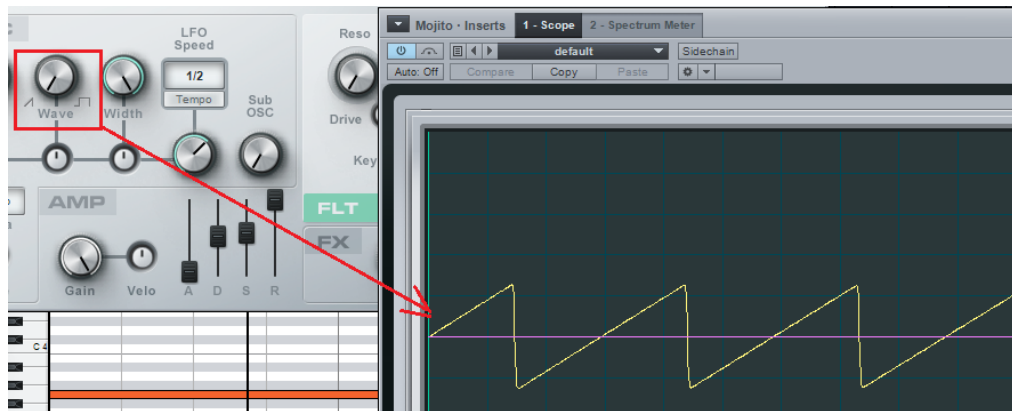
Now, let use Mojito synthesizer.

Each components of synthesizer are arranged as below. The LFO for modulating the parameter is set beside the destination components (Oscillator and Filter).



### 2.1 Oscillator

The wave dial controls the waveform of oscillator. And the oscillator frequency is the note that you drew above. So if you want to change the frequency, change the note in the Editor.



### 2.2 Filter

You can see the cutoff and resonance dial in the Filter section.



## 2.3 Amplifier

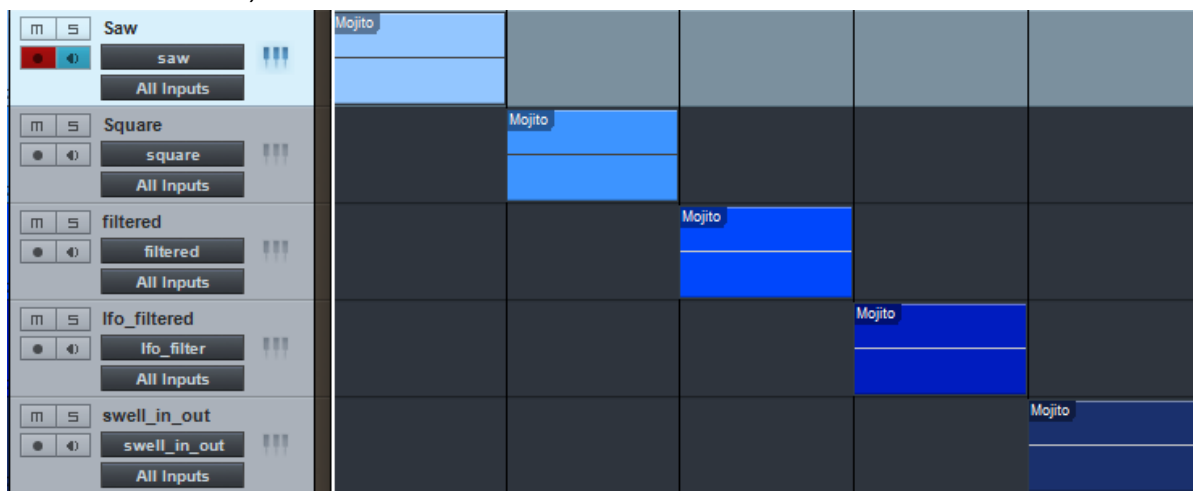
In the amplifier section, you can control the A(attack), D(delay), S(sustain), R(release).



That's all. And below is the sound that is synthesized by using each components.

### [synthesize](#)

The sound changes as saw wave -> square wave -> filtered -> filtered by LFO -> swell in/out (adjust attack and release).



## Reflection

I thought the usage of synthesizer varies by software (or Studio One is quite different from others?). So I want to try another one (I hope it will be more easy to use!).

Thank you for reading, and if there are anything I missed, please notify me.