MySynth Writeup

My project was based around my own analog synthesizer, so it inherited a lot of the main features from that. This synth is actually built into a keyboard (Nord stage 1,) so its design is very simple which makes it perfect as a reference point for what a synthesizer actually needs.

I started with the volume envelope that is applied to a Sin wave from my main oscillator. The user is given the options of ADSR, ASR and AR as in my opinion sculpting the main sound exactly how you want it is key. Especially for making a bass or lead.

Next, I added a second oscillator except this time using a saw wave and only with attack and release. I always use a Sin for the melody – cuts through and holds the important notes, and a saw for adding weird effects or synthesising a sound. So, I made the saw oscillator the target for FM modulation to experiment with creating some crazy tones. I then found it a bit too crazy, so I added a low pass filter (Idea from my keyboard) to sculpt the sound even further. Another thing my keyboard has is an option to put your envelopes on repeat, so I added this as well.

Next, I added a LFO with multiple target options. You can route it to osc1/2 volume, fm mod or Delay time. This created some very complex and changing tones.

I struggled with adding the delay signal option because the lfo was calculated in synthNote whereas delay is all done in mysynth. The issue was passing variables between the two classes.

I then experimented with playing the Bach track and finding which variables to use with the automated parameters. I then tried to restructure the controls by setting the coordinates. I quickly realised however, this was taking too long and looking messy. Eventually I cut my losses and used auto_size for everything instead which was cleaner but meant I had reshuffle everything around and sacrifice good layout for putting the right controls in parameters 5,6,7 and 8.

I also had to rescale some of the rotaries to match the automation values. And then revert them back when assigning to their variables.

Finally, I messed around with the ranges of some of the parameters to try and get the midi recording sounding the best I could.

Block Diagram on the next page….

Attack Decay Sustain Release

Sin Level

osc1

In

osc2

Saw Level

Attack Release

LP Filter

Filter Frq

FM
Modulation

Mod Frq Mod Index

X

X

LFO1

Mod Rate Mod Depth

Delay

Out

Metering