

sdmay19-32: Sound Effect Devices for Musicians

Week 3 Report

September 18 - September 27

Team MembersTim Day — *Analog Engineer*Eric Fischer — *Test Engineer*Francisco Alegria — *Cheif/Musical Engineer*Blake Beyer — *Digital Engineer*Travis Gillham — *Integration Engineer***Summary of Progress this Report**

This week we were able to accomplish the tasks of creating a Gantt chart and flow diagram of our design. The Gantt chart shows what we plan on accomplishing this semester and gives deadlines which the team and our advisers agreed upon. The flow diagram provides an insight to how each module will connect. It also shows which paths are control or the analog audio wave. We have decided the voltage regulations on the power supply and what voltage should be in between each module. All of us now are starting the modules that we have been assigned to. The noise module has made progress on the circuit design and simulation.

Pending Issues

Need to confirm voltage between each module.

Need circuit schematics for each module.

Need to create a better flow diagram. This one will show parts that are modular and non-modular. The voltage going into and out of each module.

Plans for Upcoming Reporting Period

Work on creating the improved flow diagram.

Begin circuit schematics on everyone's priority 1 module.

Everyone has full understanding of what voltage is required that their device inputs and outputs.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Tim Day	Research what pink noise is and how it can be created from white noise. This lead me learn about how to create a 3-dB filter to modify the incoming white noise. Created a simulation that was able to model the behavior of the 3-db filter. Moving from this I have decided to use a Zener diode to create the white noise. Developed a schematic that will amplify the white noise and will send it through the 3-dB filter to create the pink	4.5	14.5

	noise. Having both will allow the user to select white or pink noise which is an application that will be on the user interface.		
Eric Fischer	<p>This week I researched more about what kind filters are typically used in a synthesizer. I found that low-pass filters are the most common. However, many synthesizers have the option to switch between multiple kinds of filters. After talking with my team members, we all decided we want to have the option to switch between multiple filters. We also decided as a team that the low-pass and high-pass filters will be 4th order to allow for more of the frequencies to pass through. From these two filters, building the band-pass filter is just a matter of connections between the low-pass and high-pass. I am still in the process of determining whether a Chebyshev type filter would be the best option, or if the Butterworth type filter would be better.</p> <p>Briefly looked into our power module. I looked at how to convert voltage from the wall, and step it down to a more manageable voltage that each module can use.</p>	3	10
Francisco Alegria	<p>This week I researched ways to implement analog VCOs, and analog ADSR envelopes. For the VCOs I found various VCO IC chips that can greatly simplify our design process and overall circuit footprint. I also found a great resource for learning about how an ADSR envelope generator works and how it can be built. Finally, I have been learning how to use the Arduino Capacitive Sensor Libraries. I have been reading the code to understand how it works. My next step is to start making keyboard prototypes on solderless breadboards to learn how the code can be manipulated for our needs. Basically, we need to make a capacitive sensor behave like a push button that can be pressed for a theoretical unlimited amount of time, without causing any errors. Each sensor will be a key for our keyboard.</p>	3	13.5
Blake Beyer	Researched more on oscillators. Began preliminary research on ADSR.	3.5	10
Travis Gillham	Researched about capacitive touch keyboards	3.5	9.5

	and how they work. Researched more about what amplifiers will be need for the project and looked up what is needed to create the output amplifier. Watched videos of modules and synthesizers to understand how they function.		
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Gitlab Activity Summary

Nothing to report.
