Date: 4/3/17
Group number: dec1712
Project title: Sound Effect Devices for Musicians
Client &/Advisor: Professors Geiger and Chen
Team Members/Role: Jake Asmus/Team Leader, Joseph Brown/Team Communicator, Daniel Peterjohn/Team Webmaster, and Jiangning Xiong/Team Key Concept Holder

o **Weekly Summary**
  - This week was spent mostly working on the pedal mat functionality with a variety of methods, using JK flip flops, T flip flops, or programming. As well as Daniel Peterjohn working some more on the pedal functionality with a variety of different sound effects. Jake Asmus spent most of the time working with the JK flips flops, T flip flops, and programming for the multi-state buttons. He concluded that the T flip flops were not cooperating and the JK flip flops were going to need to switch the input in a more complicated matter. So, Jake Asmus and Daniel Peterjohn are pursuing the use of shift registers to better change/track the state of a button in a given layout. Joseph Brown spent most of his time polishing the website to look and work smoothly, and the remainder of time was spent on understanding the programming behind the Teensy better. Joseph also tried to implement an incremental counter and a toggle button using C coding. Jiangning Xiong spent his time learning more about JK flip flops and T flip flops mostly. The team decided that some of our issues with the buttons or an issue that could arise in the future could occur from the bouncing of our switches. So as a group we decided to look for a debouncing circuit to fix this issue.

o **Past week accomplishments**
  - Jake Asmus: Worked with Dan and discovered an alternative implementation of on/off state functionality using shift registers. Since our mat will have the ability to interface with multiple pedals, pedals not currently being controlled by the mat interface need to be ready to load the registers on what state that specific pedal is in currently. The solution is using shift registers. The T flip flops are retired. I've also been programming the multi-state buttons in the Arduino. The code's purpose is to increment once if pressed and lifted within 1 second (this time interval may be change). If the button is held for more than 1 second, the mat will increment by twice the speed. There are some bugs I'm working on but have the main structure/idea written down.
  - Joseph Brown: Helped finish up a professional looking website, took a stab at programming some of the mat functionality with incremental button presses.
  - Daniel Peterjohn:
    o Helped Joe finish up the website and upload to the team website.
    o Researched alternative solution to mat design using shift registers

- ▪ Started mock designing shift register solution using online Arduino IDE
- ▪ Researched parts needed for using shift registers as PISO and SIPO.
  - o Contributed to Project Plan Ver. 2
    - ▪ Created visual aids to help explain core concepts and designs
  - o Researched and cataloged parts needed for both mat designs (flip-flop & shift register) as well as other parts necessary for the effect pedal.

- o **Pending issues**
  - ● Jake Asmus: Bugs in code for multi-state buttons. Hopefully figured out by end of the week. It's almost complete.
  - ● Joseph Brown: Work out some kinks and misconceptions I have with the Teensy programming for the mat/pedal.
  - ● Daniel Peterjohn: Need to complete research on shift registers for pedal mat. Continue with sound effects library.

Individual contributions

NAME	Individual Contributions	Hours this week	HOURS cumulative
Jake Asmus		10	40
Joseph Brown	Researched Debouncing Switch Solution Circuits, worked on better understanding Arduino/Teensy programming, and adjustments to Project Plan Ver. 2	8	29
Daniel Peterjohn	Shift register research, Project Plan Ver. 2, research parts necessary for moving forward.	12	48
Jiangning Xiong	research about flip flop, how they work and try to implement those in the design	2	10.5

- o **Plan for coming week**
  - ● Jake Asmus: Work out bugs with the Arduino program and eventually use the seven segment displays to display the volume level. Work with shift register IC's if time allowed.
  - ● Joseph Brown: Work more on furthering my understanding of Arduino coding to help implement mat and pedal communications with the Teensy.
  - ● Daniel Peterjohn: Need to complete research on shift registers for pedal mat. Continue with sound effects library.
  - ● Jiangning Xiong: Try to better understand what we want for the mat and help with the design.

o **Summary of weekly advisor meeting**
   ● This week, Dan Peterjohn discussed his research the different capabilities of Teensy's audio adapter. Dr. Geiger asked questions during this discussion to clear up any information that was left out. Jiangning discussed what he had learned about flip flops and their truth tables. This lead to the discussion about how the pedal mat was to be implemented. Two different approaches were seen by Dr. Geiger so prodded further for more understanding about the mat. By the end of the meeting Jake had cleared up some misconceptions about how we were implementing the mat and its functionality. The mat should consist of 12 switches in a 2x6 formation using momentary switches to enable the user to use them as either toggle switches or incremental switches. This will depend on the layout the user chooses, where the toggle state will act like on/off buttons and the incremental state will allow the user to press it multiple times to count up or down to control "knob-like" values.