183DA-LAB 3 TEAM FRED

Objective:
Continuing on the lab2, we are going to add sensor for my instrument to make it sense the environment and combine 3 instruments to form a band

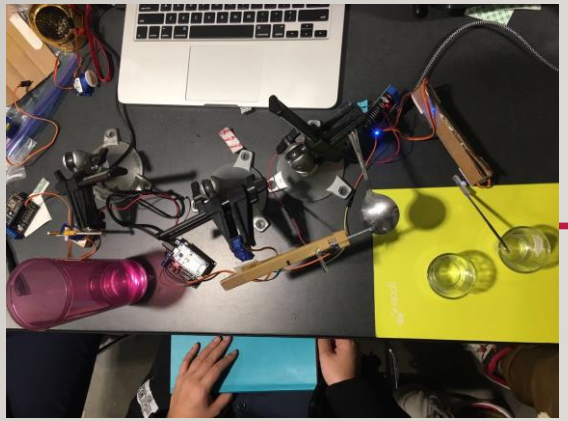

Figure 1, picture of full band

Method:
To control this instrument, I using a vibration sensor, which will act as a open when it placed horizontally and act like wire when placed horizontally, I use software de-bouncing to ensure perform once upon get signal.

Figure 2: left is sensor on and right is sensor off

This sensor will measure the angular movement of instrument 2, when it play a sound, it will rise and fall, so my instrument will know instrument 2 has play a sound and instrument 3 will follow to play a sound.

Result:
The sensor will switch state at about 45 degree inclination, if the sensor is on, the horizontal arm will rotate 30 degree to next pitch and play that pitch, the pitch is implemented by glass cup fill with different amount of water, as a result, this instrument can play based on the performance of previous instrument

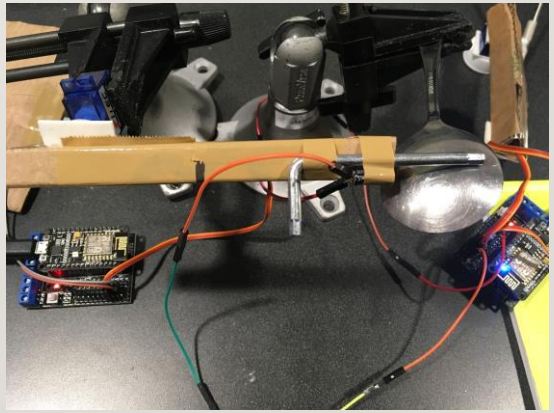

Figure 3: picture of my instrument

Conclusion:
For this lab, I leaned to use sensor to measure the states of other objects and act based on the sensor measurement, using the sensors we have, there are more complex task and perform. There are some tricks we can learned to use sensor as switch, such as debouncing.

Reference:
link to life performance:
https://youtu.be/NavZ0dLaNok.
Link to Arduino code:
https://github.com/yanhan2017/EE183DA_lab3/blob/master/instrument_3.ino

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