**UTEP EE3176 Summer 2016- Final Project**

Project Conclusion

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In this musical metronome project, we learned how to work as a team and put each team mate strongest skills at work for each of our short term goals and deadlines. This metronome by far challenged us the most than any of our part labs. We were able to setup out state machine to receive instructions from a terminal or android application and execute them in terms of moving a servo from -180 to +180 degrees repeatedly to act like a musical metronome. Our LCD screen is also functional with displaying both beats per minute (BPM) and time signature (TS). We used code and header file from lab four to do this. We also used code like that similar to lab five which utilized pulse width modulation (PMW) to move the servo back and forth at a set pulse using clocks. One thing with our code and the servo motion is that it had to move back and forth at a certain BPM with meant that we had to calculate this with what we knew about our internal clock and the user of other clocks we used in our previous labs. We initially were testing our design via USB as a serial connection (TX/RX) form of transmission with a command terminal like PUTTY or one used with iOS called Cool Term. All the commands implemented on our code worked successfully after we could figure out how to make the switch cases on the code work with each character being received on the microcontroller. After we received our HC-06 bluetooth receiver, we were able to successfully test our design wirelessly. We coded an Android application to work on Bluetooth but we were having issues using Android Studio to work with Bluetooth so we switched to the MIT app inventor. For the ADC, we setup the code so that it sent characters to the Android App or terminal within certain thresholds of voltage of about 4 to 5.5V. All an all this was a great project and we did get most of the points for all the parameters given in the design instructions with only minor details either not working or not implemented in the design but given the timeframe we had to complete the project I think we could have easily scored a full 100% with a little bit more time.