**Assignment 5.1: Report**

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**YouTube Links:**

<https://www.youtube.com/watch?v=DZP0Wqgtgts>

<https://www.youtube.com/watch?v=wEkmmh9C234>

**Description:**

This lab was all about how to generate audio feedback using an ATmega328. Usually, this can be done using the Arduino tone() function. However, we were without that for this lab. Instead, we used Timer 0 on the ATmega328 and set it to be in CTC mode (Clear Time on Compare). This allows for a square wave output with adjustable frequency. We then needed to set up a way to map the frequency to a suitable value for the OCR0X register (in my case, OCR0A). To do this, I created a function that calculates the possible values based on the desired frequency and the pre-scalers until a good value was reached (i.e. a value under 256). This value could then be used to set the desired frequency. My test for this program was to play the song “Mary Had a Little Lamb” through an 8-Ohm speaker. Then, I set up a pentatonic keyboard, where a set of five buttons were each mapped to a note on the pentatonic scale.