

# CPS310 Lab 6 – AVR III

## Preamble

In this lab, you'll make beautiful music using PWM with Arduino and a passive buzzer.

-- Dr. Ufkes

## Lab Description

Using the frequency/duration format we saw in the lectures, create a song. If your code works and plays a tune that isn't just random and arbitrary values for frequency and duration, you'll get full marks.

You don't have to create your own song from scratch. This would require more musical theory than I can reasonably expect. There are online resources for this you can discover. Here is a website with many examples:

<https://dragaosemchama.com/en/2019/02/songs-for-arduino/>

The code used here is far more sophisticated than what we saw in class, but the frequencies and durations are there for you to adapt to your own code.

## Requirements

- Your song should be at least 5 seconds in duration and repeat after one second of silence. Feel free to make it as long and elaborate as you like.
- The output PWM signal should be on Arduino Pin9, just like we saw in the slides. I will test your program on the very simple buzzer setup from the slides as well (pictured below).
- Beyond this, that's it. Implement an example you find online, or, if you're musically inclined, translate your own favorite bit of sheet music into a buzzer tune. There's an example in the slides near the very end of AVR showing how to connect the buzzer and create different tones on it. Write a program that plays a song, using the buzzer. The website linked above has a list of notes and buzzer frequencies that create them, and you can use those notes and frequencies to create a song. Essentially, create your own tune with the buzzer, or use a song that you find on that website and convert it to inline assembly.

## Submission

Groups can be 1-3. If working in a group, only one person should submit. Clearly indicate in the submission the names of all group members. Submit a single source code file under Lab #6 on D2L. I will supply my own **pitches.h** file. You don't need to submit a picture of your circuit.

