

**ECSE 4230: Embedded Systems**

Small Project 2: Blink LED

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**Data**

1. RPi.GPIO
2. WiringPi
3. Pigpio

**Objectives**

1. Determine the maximum frequency output from each method using an oscilloscope.
2. Determine which method provides the most control over the square wave output. In this case, control means aspects of the square wave you are generating frequency, duty-cycle, and gpio selection.
3. Determine which method provides the cleanest square wave output using an oscilloscope (jitter; rise/fall time; accuracy: frequency, duty-cycle). Note, for jitter you should look at using the persistence mode of the oscilloscope.
4. Is there a frequency above which the output degrades such that the square wave is no longer usable as a square wave?
5. Finally, taking all of your data into account, for each library technique, describe the strengths and weaknesses of the approach. Is there one "goto" gpio library call or does it depend on the desired results?
6. You should have a final version of your Python code on GitHub. It should be well commented and structured. A final version should also be included in your document per the document instructions.
7. Your results should be in a pdf document (See the projectassignmentinstructions.pdf). Your results should include data in graph form. Your raw data should be included in spreadsheet form. Your answers should be well considered and grammatically correct. Photos can also help with your descriptions.