Physics 524 Week 1 Homework Exercises

Due: Tuesday 8/29/2023 in class

Finish all of the in-class exercises in Unit 1 mentioned in the notes, and be prepared to show your results to the course staff during class. The following is a summary of the 3 in-class exercises.

1. ***Blink code***.
   Modify the blink program so that it blinks the initials (of your English/American name) in Morse code.

2. ***BME680***
   Install the BME680 onto your breadboard. You should power it using the Arduino's +5V and GND lines. Using sensible colors (red for +5V, black for ground, other colors for signal lines), connect GND to one of the Arduino's GND lines and VIN to one of the Arduino's 5V lines. Also connect the leads of a 0.1µF capacitor to the BME680's power and ground inputs. Install one of Adafruit's libraries to drive the BME680. Then open, compile, and run the example program BME680test.

3. ***Install more devices***
   On your breadboard, install the following devices (in addition to the BME680 and Arduino): LCD (including 10kW trimpot), keypad, and microSD breakout. See the schematic in the notes.

   For each device find a demo program (perhaps on the Adafruit site, or from a library that you might install, or from the course's "Code & design resources repository") and confirm that it functions properly. You'll need to fool around with the 10k trimpot to adjust the LCD contrast properly.