1) Using the code and circuit from part I and lab 3-II, create a sketch to:
   a. establish communication with matlab using '?' and 'K';
   b. wait to receive the character 'g' (for go);
   c. make one loop to take 512 points of time series data from
      photoresistor on A0 measuring the PWM pin 9 LED set to 128;
   d. make a second loop to send the data to matlab using
      Serial.println();
   e. at the end of the second loop send the total acquisition time;
   f. loop back to part b.

2) Modify (part I) matlab script to:
   a. establish communication with arduino using '?' and 'K';
   b. send the character 'g' (for go);
   c. loop over the serial data using fgetl() and str2double() to store the
      data in an array:

   ```matlab
   V=zeros(1,N);
   t=(0:N-1)/N;
   for m=1:N
       str=fgetl(s);
       V(m)=str2double(str);
   end
   ```
   d. read the acquisition time using fgetl() and str2double();
   e. plot the data using a time axis in µs;
   f. drawnow;
   g. Loop back to part b.

3) Move the wire connected to A0 to other points in the circuit while the
   script is running to see the data update.

4) Change the plotting to display the FFT of the data.
   a. The horizontal axis should be in Hz. Include a nice plot of the FFT
      with x and y axis labels in the report.
   b. What is the frequency of the PWM light?
   c. Is it consistent with the value in the description of analogWrite on
   d. Measure the frequency directly using the time series data to
      measure the time from one peak to the next. Is it consistent?

5) (Extra credit) modify to allow matlab to set the value of the LED output
   on each loop.