1- Read the data in the file spectrum.csv and plot it. The first column in the file is wavelength in nm, the second column is intensity in arbitrary units (a.u.).

2- Plot the current (A) and magnetic field (T) data given below. Apply a linear fit. Get the slope and the error in slope.

current = [5.0, 10.0, 15.0, 20.0, 25.0, 30.0, 35.0]
bfield = [0.1056, 0.2125, 0.3179, 0.4265, 0.5258, 0.6058, 0.6678]

3- Read the data in the file NMR.csv and plot it. The first column in the file is time in ms, the second column is pulse amplitude in V. Apply an exponential fit of the form $A_0\,e^{-t/\tau} + c$ to the data. Obtain τ and its error from the fit.

4- Magnetic field for a pair of Helmholtz coils is given by:

$$B = \frac{8\mu_0 N i_{DC}}{r\sqrt{125}}$$

where $\mu_0 = 4\pi\times10^{-7}$ N/A^2, N is the number of turns in the coil (N= 320), i_{DC} the DC current through the coils, and r is the coil radius (r= 0.068 m). Calculate the magnetic field (T) for the following i_{DC} (A) values. Print the results into a results.csv file in the format: current value,magnetic field value.

i_DC = [0.16, 0.21, 0.25, 0.29, 0.33, 0.37, 0.42, 0.46, 0.50, 0.54, 0.58, 0.63, 0.67, 0.71]

5- Find all prime numbers up to 1000 and write them into a prime.csv file.