

CS115 Introduction to Programming with Python

Objectives: Data visualization with matplotlib and numpy.

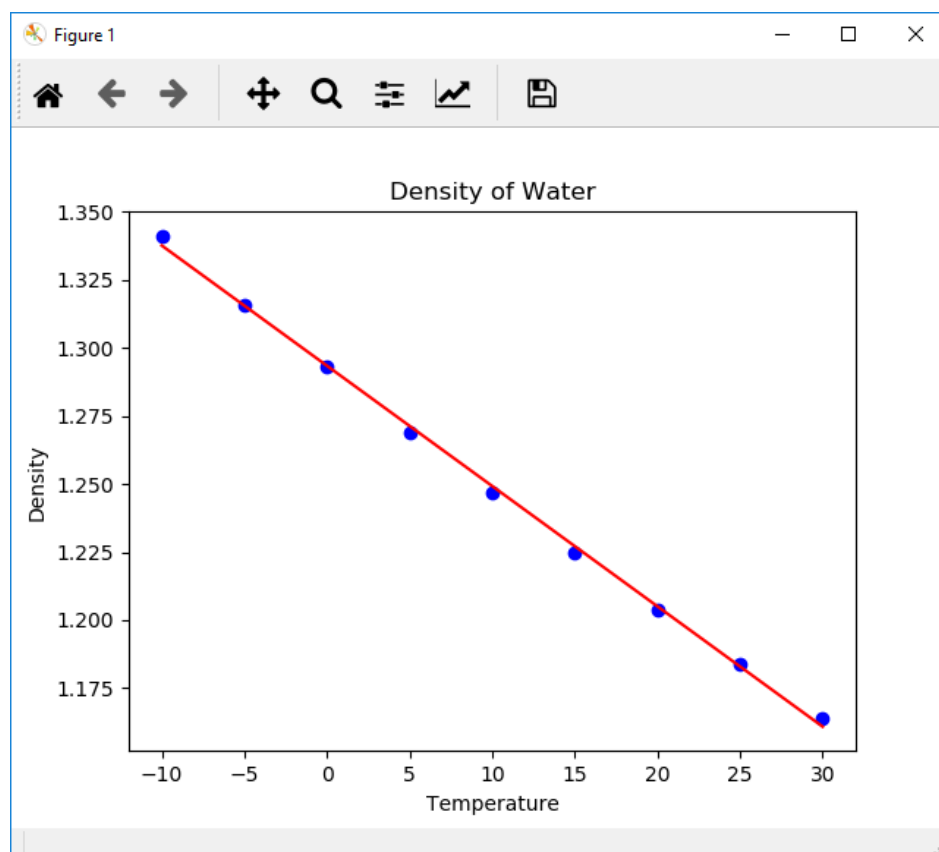
1. An experiment measures and writes the density of water at different temperatures. The results are as follows:

Temps: -10,-5,0,5,10,15,20,25,30

Densities: 1.341,1.316,1.293,1.269,1.247,1.225,1.204,1.184,1.164

Write a script that does the following:

- a. Load the data into two numpy arrays, `temps` and `dens`.
- b. Create the plot below, by first plotting the temperatures vs. the densities.
- c. Find the first-degree polynomials for the curve fitting these measurements and produce a plot of the curve in the format shown below. All formatting should be done according to the figure below.



2. Download the file `pop_data.txt`, and create a Python script that does the following:
- Import the data in the file into a numpy array, `arr_pop`.
 - The regions in the file are 1 – Africa, 2 – America, 3 – Asia, 4 – EU. Select the records whose region is EU and store as a new numpy array, `arr_eu`.
 - Open a new Figure1 window and create the bar charts and plots shown below using the appropriate data.
 - Create the histogram showing the frequencies of Female Employment in EU (from `arr_eu`), using 3 bins.
 - Create the plot comparing the Male vs. Female Life Expectancies in the EU.
 - Create the pie chart with the data shown below.
 - Select the data about employed females in Turkey (row 27, column 10). Create the bar chart comparing the average EU female employment rate with the Female Employment rate in Turkey.

