CS115 Introduction to Programming with Python

Lab Guide 10

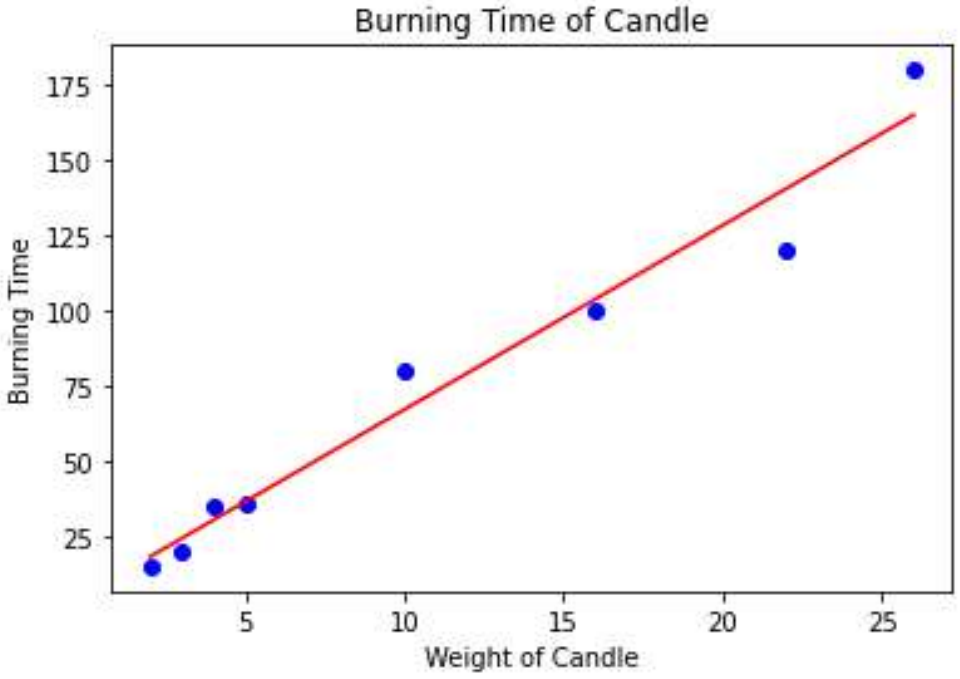
Objectives: Plotting, Experimental Data

1. The following table shows how long it takes to burn candles of different weights:

Candle Weight (oz)	Burning Time (hours)
2	15
3	20
4	35
5	36
10	80
16	100
22	120
26	180

Write a script that does the following:

a. Load the data into two numpy arrays, `weight` and `time`.
b. Create the plot below, by first plotting weight vs. the time.
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 `student.txt`, and create a Python script that does the following:
    a. Import the data in the file into a numpy array, `student`.
    b. The scholarship values in the file are 1-Full Scholarship, 2-Half Scholarship and 3-Non-Scholarship. Select the records whose scholarship is Full Scholarship and store as a new numpy array, `full`.
    c. Open a new Figure1 window and create the bar charts and plots shown below using the appropriate data.
    d. Create the histogram showing the math grades of Full Scholarship students (from `full`), using 3 bins.
    e. Create the plot comparing the reading vs. writing grades of Full Scholarship students.
    f. Create the pie chart with the data shown below.
    g. Select the data about the average of math grades of all students vs. Full Scholarship students