CS 115 - Introduction to Programming in Python

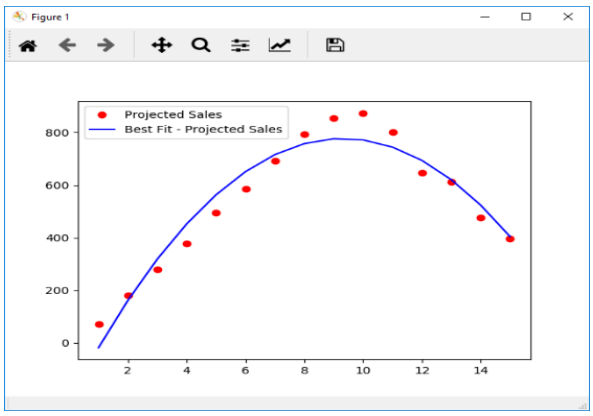
Lab Guide 09

Lab Objectives: Plotting.

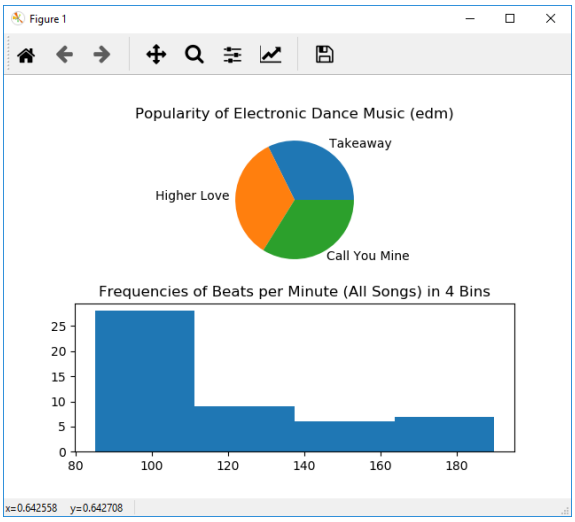
1. Write a script, `Lab09_Q1.py` that does the following:
    a. Reads data from data.txt into a numpy array, **`orders`**.
    b. Creates a numpy array, sales, which stores the projected sales of each book. Projected sales are 90% of the ordered books.
    c. Display projected sales over the mean.
    d. Display the indexes of the books with the maximum projected sales.
    e. Create an array which stores the indexes of the books, starting from 1.
    f. Using the arrays defined above, create the plot shown in the sample run.
    g. Find the second-degree polynomial for the curve fitting these measurements.
    h. Produce a plot of the curve in the format shown below. Plot should appear as below.

Sample Output:

```
Projected Sales:[72.180. 279. 378. 495. 585. 693. 792. 855. 873. 801. 648. 612. 477. 396.]
Projected sales over mean: [585. 693. 792. 855. 873. 801. 648. 612.]
Index(es) of the books with maximum projected sales:[9]
```



2. Write a python script, `Lab09_Q2.py`, that does the following:
    a. Import the data from the file `top50info.txt` into a numpy array, `top50_info`. You should look at the contents of the file/column headings to understand the data. The data in the file is tab-delimited.
    b. Import the data from the file `top50.txt` into a numpy array, `top50`. You should look at the contents of the file/column headings to understand the data. **NOTE:** the contents of the two files are parallel, so the data in `top50_info` is parallel with `top50`.
    c. Store in a new numpy array, `array_edm`, data about all songs whose Genre is **edm** (Electronic Dance Music).
    d. In the Figure 1 window, create the Pie and Histogram charts shown below. The plots should appear as shown.
    e. **Hint:** to set the pie chart labels to the Track Names, you may create an array with only the Track Names of edm songs.



    f. Store in a new array, `ed_billie`, data about all songs whose artist is Ed Sheeran **or** Billie Eilish.
    g. Using the data in the `ed_billie` array, in the Figure 2 window, create the plots shown below. Figure 2 window should appear as shown. You may use any color/style/markers you choose.