**Every Boilermaker Engineering Code – Entry Level Programming**

**Week 9 – Programming Exercises**

1. (**15 points, Sales Values**) Write a Python program, asking the user to input the sales of each month (1-12) of a year and storing all the sales in a list. Then using ***matplotlib*** to read the 12 sales values from the list and plot the sales value as a ***pie*** chart. When plotting, send the color of each slice, from January to December, by a tuple, (‘r’, ‘g’, ‘b’, ‘y’, ‘m’, ‘w’, ‘k’, 'blue', 'pink', 'brown', 'ivory', 'black'). Display the title of the pie chart and the label for each slice of the chart.

**Use the following numbers to test (Only type in the red numbers in interactive mode):**

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| **Sample Input** |
| **Enter the sales value of January: 2000**  **Enter the sales value of February: 4000**  **Enter the sales value of March: 3000**  **Enter the sales value of April: 5000**  **Enter the sales value of May: 6000**  **Enter the sales value of June: 4000**  **Enter the sales value of July: 2000**  **Enter the sales value of August: 5000**  **Enter the sales value of September: 8000**  **Enter the sales value of October: 5000**  **Enter the sales value of November: 6000**  **Enter the sales value of December: 10000** |
| **Expected Output** |
|  |

1. **(15 points, Population Data)** In the attachment, you’ll find a file named USPopulation.txt. The file contains the midyear population of the United States, in thousands, during the year 1950 through 1990. The first line in the file contains the population for 1950, the second line contains the population for 1951, and so forth.

Write a program that read the files contents into a list. Using *matplotlib* to plot a line graph and a bar char of the file contents. Be sure to display meaningful labels along the X and Y axes, as well as the tick marks.

**Use the following numbers to test (Only type in the red numbers in interactive mode):**

|  |  |
| --- | --- |
| **Sample Input** | **Expected Output** |
|  |  |

1. **(15 points, 1994 Weekly Gas Graph)** In the attachments, you’ll find a text file named ‘1994\_weekly\_Gas\_Average.txt’. The file contains the average gas price for each week in the year 1994. (There are 52 lines in the file.) Using *matplotlib*, write a Python program that reads the contents of the file then plots the data as a line graph and a bar chart. Be sure to display meaningful labels along the X and Y axes, as well as the tick marks.

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| --- | --- |
| **Sample Input** | **Expected Output** |
|  |  |

1. **(20 points, Magic 8 Ball)** Write a program that simulates a Magic 8 Ball, which is fortune-telling toy that displays a random response to a yes or no question. In the attachment, you’ll find a text file named 8\_ball\_responses.txt. The file contains 12 responses, such as “I don’t think so”, “Yes, of course!”, “I’m no sure”, and so forth. The program should read the responses from the file into a list. It should prompt the user to ask a question, then display one of the responses, randomly selected from the list. The program should repeat until the user is ready to quit.

**Test your program with 3 questions (you can write your own questions) and take the screenshot for all the results. Here is a sample of test. You should follow the format with random generated answers from your own code. (Only the red numbers should be typed in the interactive mode).**

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| **Enter your question: Are you a Purdue student?**  **Ask me later.**  **Enter your question: Are you a graduate student?**  **For sure!**  **Enter your question: Quit**  **Thanks for playing.** |