CSCE A101, Introduction to Computer Science
Assignment 3 Practice Problems with Solutions

1. Design a program that lets the user enter the total rainfall for each of 12 months into a list. The program should calculate and display the total rainfall for the year, the average monthly rainfall, the months with the highest and lowest amounts as the tick marks.

2. Find a file named USPopulation.txt in the Assignment 3 (Solutions) folder. The file contains the midyear population of the United States, in thousands, during the years 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 reads the file's contents into a list. The program should display the following data:

   - The average annual change in population during the time period
   - The year with the greatest increase in population during the time period
   - The year with the smallest increase in population during the time period

3. If you have downloaded the source code you will find a file named WorldSeriesWinners. txt in the Chapter 07 folder. This file contains a chronological list of the World Series winning teams from 1903 through 2009. (The first line in the file is the name of the team that won in 1903, and the last line is the name of the team that won in 2009. Note the World Series was not played in 1904 or 1994.)

   Write a program that lets the user enter the name of a team, then displays the number of times that team has won the World Series in the time period from 1903 through 2009.

   TIP: Read the contents of the WorldSeriesWinners.txt file into a list. When the user enters the name of a team, the program should step through the list, counting the number of times the selected team appears.

4. Write a program that simulates a Magic 8 Ball, which is a fortune-telling toy that displays a random response to a yes or no question. In the Assignment 3 (Solutions) folder, you will 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 not 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.

   Contents of 8_ball_responses.txt:

   ```
   Yes, of course!
   Without a doubt, yes.
   You can count on it.
   For sure!
   ```

```
Ask me later.
I'm not sure.
I can't tell you right now.
I'll tell you after my nap.
No way!
I don't think so.
Without a doubt, no.
The answer is clearly NO.
```

5. Create a text file that contains your expenses for last month in the following categories:

   - Rent
   - Gas
   - Food
   - Clothing
   - Car payment
   - Misc

   Write a program that reads the data from the file and uses matplotlib to plot a pie chart showing how you spend your money.

   Program Output: