Assignment 2

Python Applications (10%)

DUE DATE

Session 11

OBJECTIVE

- Code decision-making structures and Boolean logic using Python.
- Code repetition structures using Python.
- Code selection and sequence structures using Python.
- Define, declare and call void and value returning functions.
- Pass arguments to functions.
- Implement file input and output functions.
- Use loops to process content of files.
- Implement exception handling constructs in Python.
- Perform operations on sequences, lists and tuples.
- Perform basic string operations using built-in string functions.
- Test, search and manipulate strings.

DESCRIPTION

This assignment requires you to complete a number of typical tasks that you would normally use Python List and Tuples, Strings, Dictionaries and Sets to solve. Each task is typical situation that requires you to apply specific Python techniques and features. This is assignment focuses on you being able to apply the techniques covered in Chapters 7 to 9 of the textbook.

INSTRUCTIONS

1. In your assignment folder for this assignment you will have access to a file named WorldSeriesWinners.txt. This file contains the chronological list of World Series winning teams from 1903 to 2019. The first line in the file is the name of the team that one in 1903 and the last line is the name of the team that won in 2019.
   (**Note**: The World series was not played in 1904 nor in 1994.)

   Write a program that lets the user enter the name of a team (As it appears in the file), then displays the number of times that team has won the World Series in the time period from 1903 to 2019. Be sure to include exception handling.

Hint: Read the contents of the file into a list, and after the user enters the name of the team, the program should step through the list to count the number of times the selected team appears.

(10 Points)

2. Create a text file that contains your expenses for last month in the following categories
   - Rent (Mortgage)
   - Gas
   - Food
   - Clothing
   - Car Payment
   - Miscellaneous

   Write a Python Program that reads the data from the file and uses matplotlib to plot a colour pie chart or Bar chart showing the distribution of your expenses
   (10 marks)

3. The file pbnumbers.txt contains the winning lottery numbers selected weekly between February 3, 2010 and May 11, 2016. (The file contains 654 sets of winning numbers). Each line in the file contains the set of six winning numbers that we selected on a given date. The numbers are separated by a space and the last number in each line is the complementary number for that day. For example, the first line in the file shows the numbers for February 3 2010, which were 17, 22, 36, 37, 52 and the complementary
   number is 24.
   Write a program that will work with this file to search through the file and display the 10 most common numbers ordered by frequency. The program should then display the 10 least common numbers (10 marks)

4. In Chapter 9 of the textbook, you saw a programming exercise (card_dealer.py) that simulates cards being dealt from a deck. The file has been provided as a starting point for this assignment. Enhance that program so that it simulates a simplified version of blackjack between two virtual players:
   - The cards have the following values:
   - Numeric cards are assigned the value they printed on them. (2 of spades has a value of 2, the 5 of hearts has a value of 5 etc.,)
   - Jacks, Queens and Kings have a value of 10
   - Aces are valued at 1 or 11 depending on the player's choice.

   The program should deal cards to each player until one player's hand is worth more than 21 points. When that happens, the other player is the winner. (It is possible that both players exceed 21 , in which case neither player wins)
   The program should repeat until all the cards have been dealt from the deck.
   If a player is dealt an ace, the program should decide the value of the card according to the following rule: the ace will be assigned a value of 11 unless that makes the player's hand exceed 21 points. In that case the ace is assigned a value of 1.
   (10 points)

SUBMISSION INSTRUCTIONS

Your assignment must include the following:

- All source code, as well as all other files required for the proper functioning of your programs.
- Place all files in a single folder
- Zip your folder into a single file and follow the naming convention described below.

Work must be submitted in the correct file type and be properly labelled as per the College naming convention:
NAME_COURSE_ASSIGNMENT. E.g. XuXiaLing_FM50D_A01.

GRADING CRITERIA

Assignment Value: **10%**

Grading Criteria	Gradin
World Series Winners: • Program should read file into a list, Prompts user for a team name • Steps through list to identify the number of time the team has won Displays the name of the team and the number of time it has won • Includes exception handling	/10
Personal expenses distribution: • Creation of the text file • Plotting the data in the correct format	/10
Lottery numbers: • Search through the file to locate the data Identify and track the 10 most common numbers • Display the 10 most common numbers in ordered by frequency. • Display the frequency of each number 1-69	/10
BlackJack: • Deal cards to each player until the player requests to stop (hold) Deal cards until the player's hand is worth more than 21 points Repeat until all the cards have been dealt from the deck. • Program should decide the value the Ace as 1 or 11 as per rule.4]	/10
TOTAL	/40