UNIV199 Introduction to Programming with Python

Homework #5

Due: May 03, 2023, Wednesday, 23:59.

Functions: Roll the Die

For this homework, you are required to simulate a game called "Roll the Die" in Python. This game is played between the user and the computer. The game will be played for five rounds. In each round, the user will roll the die three times, after which the computer will roll the die three times as well. The player with the highest sum of dice will win the round. If both players have the same sum, the round is a tie, in which case it will be invalid and must be repeated. After five valid rounds, the user with the higher number of wins will be the victor.

To make the game more interesting, there will be some fun rules.

1. Biased Die:
    - There is a 10% chance of rolling a 1.
    - There is a 20% chance of rolling a 2.
    - There is a 30% chance of rolling a 3.
    - There is a 15% chance of rolling a 4.
    - There is a 10% chance of rolling a 5.
    - There is a 15% chance of rolling a 6.
2. Devil's Digits:
    - If a player rolls two or three 6’s in a round, his/her score for that round is zero.
3. Lucky Twelve:
    - If a player rolls a sum of 12 in a round (roll1+roll2+roll3; for example, 5,1,6 or 4,4,4 or 5,5,2, etc.), s/he receives a bonus of 12 points on top of the score for that round.
4. Odd or Even:
    - At the start of each round, the player must choose between odd or even.
    - If the player chooses “odd” and rolls three odd numbers, he/she receives an extra 15 points.
    - Similarly, if the player chooses “even” and rolls three even numbers, he/she receives an extra 15 points.

Functions to write:

Use a random seed of 100 (Revisit Hw#4 Orientation).

1. **roll_biased_die**
    a. This function receives nothing from its caller.
    b. It simulates rolling the biased die:
        i. Generate a random number from 1-100.
        ii. If the random number is between 1-10, then "1" is rolled.
        iii. If the random number is between 11-30, then "2" is rolled.
        iv. If the random number is between 31-60, then "3" is rolled.
        v. If the random number is between 61-75, then "4" is rolled.
        vi. If the random number is between 76-85, then "5" is rolled.
        vii. If the random number is between 86-100, then "6" is rolled.
    c. It returns the rolled die value.
2. **play_round**
    a. This function receives the player's name from its caller.
    b. If the player is the user:
        i. It asks the user to choose odd/even for this round.
        ii. It checks for the validity of input (should be either 0 for even or 1 for odd)
        iii. If input is invalid, it keeps asking the user for a valid input until it is valid.
    c. Otherwise, if the player is the computer:
        i. It randomly chooses between odd or even.
    d. It calls the **roll_biased_die** function three times.
    e. It checks for *Devil's Digits*, *Lucky Twelve*, and *Odd or Even* rules for each rolled die.
    f. It calculates the score of the player for that round and sends back it to its caller.
3. **play_game**
    a. This function does not receive anything from its caller.
    b. It asks the name of the user.
    c. It calls **play_round** function, first for the user and then for the computer.
    d. It determines the winner of each round by finding the player with the higher score. If there is a tie in a round, the round will be invalid and must be repeated.
    e. This game finishes when five valid rounds are played.
    f. The overall winner is the player with the greater number of rounds won.
    g. The function doesn't send back anything to the caller.
4. In the main program, call the **play_game** function and make sure the code executes just like the sample output shown below.

Note: The code should print informative messages in the console for each roll and round of the game.

The program output should be exactly as follows (bold entries are sample input):

```
Enter the name of user: Lynn
Round  1 :
Lynn 's turn:
Choose odd or even for this round (0/1): 5
Invalid choice. Choose either even or odd (0/1): 0
2 has been rolled.
3 has been rolled.
3 has been rolled.
Lynn 's score for this round:  8
Computer 's turn:
Computer chose even.
6 has been rolled.
3 has been rolled.
6 has been rolled.
Double Sixes!  Computer 's score for this round is 0.
Lynn wins round 1 !

Round  2 :
Lynn 's turn:
Choose odd or even for this round (0/1): 0
3 has been rolled.
3 has been rolled.
4 has been rolled.
Lynn 's score for this round:  10
Computer 's turn:
Computer chose even.
4 has been rolled.
2 has been rolled.
2 has been rolled.
All rolls are even!  Computer 's score for this round is increased by 15.
Computer 's score for this round:  23
Computer wins round 2 !

Round  3 :
Lynn 's turn:
Choose odd or even for this round (0/1): 0
6 has been rolled.
3 has been rolled.
3 has been rolled.
Lucky Twelve! Lynn 's score for this round is increased by 12.
Lynn 's score for this round:  24
Computer 's turn:
Computer chose even.
5 has been rolled.
5 has been rolled.
2 has been rolled.
Lucky Twelve! Computer 's score for this round is increased by 12.
Computer 's score for this round:  24
Round  3  is a tie! Replay the round.

Round  3 :
Lynn 's turn:
Choose odd or even for this round (0/1): 0
3 has been rolled.
2 has been rolled.
3 has been rolled.
Lynn 's score for this round:  8
Computer 's turn:
Computer chose even.
2 has been rolled.
2 has been rolled.
2 has been rolled.
All rolls are even!  Computer 's score for this round is increased by 15.
Computer 's score for this round:  21
Computer wins round 3 !
```

```
Round  4 :
Lynn 's turn:
Choose odd or even for this round (0/1): 2
Invalid choice. Choose either even or odd (0/1): 0
3 has been rolled.
3 has been rolled.
5 has been rolled.
Lynn 's score for this round:  11
Computer 's turn:
Computer chose odd.
2 has been rolled.
3 has been rolled.
3 has been rolled.
Computer 's score for this round:  8
Lynn wins round 4 !

Round  5 :
Lynn 's turn:
Choose odd or even for this round (0/1): 0
4 has been rolled.
3 has been rolled.
3 has been rolled.
Lynn 's score for this round:  10
Computer 's turn:
Computer chose even.
5 has been rolled.
5 has been rolled.
2 has been rolled.
Lucky Twelve! Computer 's score for this round is increased by 12.
Computer 's score for this round:  24
Computer wins round 5 !
Computer  wins the game with  3  rounds won!
```

Save your program as **hw05*yoursurname*.py**. Upload your file to Blackboard at "Homework 5".

Make sure you place comments in your program. Place your name, ID as comments at the top. **You should only use the features and commands you have learnt until this homework was given.**

While doing all your homework assignments, remember that:

- ***You should not work together,***
- ***You should not give or take any files,***
- ***You should not give or take help other than simple verbal hints.***