CSC241 – HW6

Reading: Chapters 6 and 7

Problems:

Place your solutions to the following problems in a file hw6.py. Make sure you run the doctest before you submit.

1. Write a function `game` that teaches children how to add single-digit numbers. The function should take an integer n as a parameter and ask the child to answer n single-digit addition questions. The numbers should be chosen randomly from between 0 and 9, including both 0 and 9. The user will enter the answer when prompted. Your function should print 'Correct' for correct answers and 'Incorrect' for incorrect answers. After n questions, the function should print the number of questions answered correctly. The following shows several sample runs of the function:

```
>>> random.seed(5)
>>> game(1)
9 + 4 = ?
Enter answer: 13
Correct
You got 1 correct answers out of 1.
>>> game(2)
5 + 8 = ?
Enter answer: 13
Correct
0 + 7 = ?
Enter answer: 6
Incorrect
You got 1 correct answers out of 2.
>>> game(3)
3 + 0 = ?
Enter answer: 3
Correct
2 + 1 = ?
Enter answer: 3
Correct
5 + 7 = ?
Enter answer: 9
Incorrect
You got 2 correct answers out of 3.
>>>
```

Craps is a dice-based game played in many casinos. Like blackjack, a player plays against the house. The game starts with the player throwing a pair of standard, six-sided dice. If the player rolls a total of 7 or 11, the player wins. If the player rolls a total of 2, 3, or 12, the player loses. For all other roll values, the player will repeatedly roll the pair of dice until either she/he rolls the initial value again (in which case she/he wins) or 7 (in which case she/he loses).

2. Write a function `craps` that takes no parameters, simulates one game of craps, and **returns** 1 if the player won and 0 if the player lost. It should also **print** a history of the rolls so that the player can verify that the function is doing the right thing. The following shows several sample runs of the function:

```
>>> random.seed(1)
>>> craps()
2 5
1
>>> random.seed(2)
>>> craps()
1 1
0
>>> random.seed(9)
>>> craps()
4 5
3 3
2 2
6 1
0
>>> random.seed(7)
>>> craps()
3 2
4 6
1 1
5 1
3 5
1 5
2 1
1 4
1
>>>
```

3. Next, copy your function, change its name to `quietCraps` and comment out the print statements. Note that it (with same seed) should return the same value, either 0 or 1, as before but does not display the results of the rolls. The following shows several sample runs of the function:

```
>>> random.seed(1)
>>> quietCraps()
```

```
1
>>> random.seed(2)
>>> quietCraps()
0
>>> random.seed(9)
>>> quietCraps()
0
>>> random.seed(7)
>>> quietCraps()
1
```

4. Finally, implement a function `testCraps` that takes a positive integer n as a parameter, simulates n games of craps using the `quietCraps` function, and **returns** the fraction of games the player won. This function should not include the code and/or logic from the quietCraps function. Instead it should call that function (the doctest will check this) . The following shows several sample runs of the function.

```
>>> random.seed(5)
>>> testCraps(10)
0.3
>>> random.seed(5)
>>> testCraps(100)
0.44
>>> random.seed(5)
>>> testCraps(1000)
0.497
```