SENG 1000
Software Engineering Foundations and Practice
Assignment 2

Date Assigned: Tue. 4th Feb. Due Date: Sun. 16th Feb. Midnight

Maximum Possible Marks: 100

This assignment serves two purposes:

- It is designed to help you understand conditional and looping structures.
- Use functions to modularize your code. Refer examples on Canvas.

Note:

- Import "import math" into your python script to use math functions.

Questions:

1. [10 Points] Write a Python script to accept an integer number from user and check whether a number is positive or negative. Also, print if the number is even or odd.

Example 1:
Enter a number: 5
It is a positive odd number

Example 2:
Enter a number: -4
It is a negative even number

2. [10 Points] Write a python script to accept a year from the user and check whether it is a leap year or not.

Example 1:
Enter year: 2017
2017 is not a leap year

Example 2:
Enter year: 2012
2012 is a leap year

3. [10 Points] Write a python script to accept an integer number from the user and check whether it is a prime number.

Example 1:
Enter a number: 6
6 is not a prime number
2 times 3 is 6

Example 2:
Enter a number: 5
5 is a prime number

4. [10 Points] Write a python script to accept an integer number from the user and print its multiplication table for first 10 iterations.

```
Example 1:
Enter a number: 12

Multiplication Table
12 x 1 = 12
12 x 2 = 24
12 x 3 = 36
12 x 4 = 48
12 x 5 = 60
12 x 6 = 72
12 x 7 = 84
12 x 8 = 96
12 x 9 = 108
12 x 10 = 120
```

5. [10 Points] Explain the following script

```
while (True):
    print("\n1 -> Addition")
    print("2 -> Subtraction")
    print("3 -> Multiplication")
    print("4 -> Division")
    print("5 -> Exit")
    ch = int(input("Enter your choice: "))
    if(ch == 1):
        print("\nInside Addition Block")
    elif(ch == 2):
        print("\nInside Subtraction Block")
    elif(ch == 3):
        print("\nInside Multiplication Block")
    elif(ch == 4):
        print("\nInside Division Block")
    elif(ch == 5):
        print("\nExiting.....")
        break
    else:
        print("\nInvalid Choice")
```

6. [10 Points] Write a Python script to accept a starting and ending range from user and print all the squares of the numbers in that range. Perform validation for proper range input.

Example 1:
Starting Range : 12
Ending Range : 16

Squares
12 -> 144
13 -> 169
14 -> 196
15 -> 225
16 -> 256

Example 2:
Starting Range : 16
Ending Range : 12

Invalid Range

7. [10 Points] What are conditional structures and looping structures in Python. Explain with syntax.

8. [10 Points] Write a python script to accept a temperature from user and convert it from Fahrenheit to Celsius [Formula: Celsius = (Fahrenheit - 32) * 5.0/9.0]

Example 1:
Enter temperature in Fahrenheit: 77
Celsius: 25

9. [10 Points] Write a python script to accept two complex numbers and add them and display them in appropriate form.

Example 1:
Enter First Complex Number
Real Part: 2
Imaginary Part: 4

Enter Second Complex Number
Real Part: 12
Imaginary Part: 3

Addition = (2 + 4i) + (12 + 3i) = (14 + 7i)

10. [10 Points] Write a python script to accept a number and reverse it [Hint: Use %, *, //]

Example 1:
Enter a number: 12345
Reverse: 54321