COSC 1336: Fall 2022

Assignment for Chapter 6

DUE: October 13, 2022, by 1 AM

Penalty for the late submission is 20% per each day

Important Notice:

- Please make sure your code runs on the online book to receive any credit.
- **Submit your own work**. Copying of code from the web or each other is strictly prohibited and will be acted on as a violation of academic honest policy.

[40 points] Question 1:

Develop a function **sumseries(N,K)** that computes and returns the sum of the series: N + (N+1) + (N+2) +… (N+(K-1))

Develop a function **sumrandseries(N,K**) that computes K random numbers between N and N+K, including (N and N+K as possible random numbers) and returns their sum.

Develop a function **compareseries(N,K)** that returns **sumseries(N,K)**, **sumrandseries(N,K)** and the difference **sumseries(N,K) - sumrandseries(N,K)**.^

^ It is possible to 'return' multiple numbers by separating them with comma (,). The outcome of this return will generate a datatype 'tuple' (a collection of variables similar to 'list').

Then write a short program that takes N and K as user input and calls the function **compareseries(N,K)** 10 times and prints the values returned by it. In this program, you are only allowed to use **compareseries(N,K)** function. You are not allowed to use **sumseries(N,K)** and **sumrandseries(N,K)** functions.

```
Program prompts: Input Number: N =
User Input: 10
Program prompts: Input Number: K =
User Input: 5

Output:
Difference between sumseries (60) and sumrandseries (56) is 4
Difference between sumseries (60) and sumrandseries (64) is -4
Difference between sumseries (60) and sumrandseries (68) is -8
Difference between sumseries (60) and sumrandseries (61) is -1
Difference between sumseries (60) and sumrandseries (65) is -5
Difference between sumseries (60) and sumrandseries (58) is 2
Difference between sumseries (60) and sumrandseries (62) is -2
Difference between sumseries (60) and sumrandseries (61) is -1
Difference between sumseries (60) and sumrandseries (60) is 0
Difference between sumseries (60) and sumrandseries (63) is -3

(Your answers may differ based on what numbers are generated)
```

[30 points] Question 2:

Write a Python function **`printline(numblanks,numsyms,sym)`** that takes integers **numblanks** and **numsyms,** and a symbol **sym** as parameters, and prints a line with **numblanks** blanks followed by **sym** repeated **numsyms** times.
For example the call **`printline(5,10,'*')`** will print the pattern below:

```
     **********
```

Next write a Python function **`printrectangle(length,height,sym)`** that prints **height** lines, each with **sym** repeated **length** times. You are required to call the function **`printline()`** above for printing each line.
For example the call **`printrectangle(8, 3,'*')`** will print the pattern below:

```
********
********
********
```

Next write a Python function **`printtriangle(size,sym)`** that prints a right angled triangle of length and height **size** as illustrated below. You are required to call the function **`printline()`** above for printing each line.
For example the call **`printtriangle(5,'*')`** will print the pattern below:

```
    *
   **
  ***
 ****
*****
```

[30 points] Question 3:

The following question is designed to help your understanding of variable name scoping in Python. Please analyze the code carefully and determine what the program will print. If a particular print statement will cause an error, then just mention that and assume that the statement is commented out for rest of the program to run.

```
Line 1.   def findmean(a,b,c):
Line 2.      sum = a+b+c
Line 3.      print ("Value of mean before processing is", mean)
Line 4.      mean = sum/3.0
Line 5.      print ("Numbers inside are", a, b, c)
Line 6.      return mean

Line 7.    mean = 0
Line 8.    a = 16
Line 9.    b = 14
Line 10.   c = 10
Line 11.   answer = findmean(a,a,c)

Line 12.   print("Numbers in my list are", a, b, c)
Line 13.   print("Answer returned is", answer)
Line 14.   print("Mean value is", mean)
```

Please answer the question as comments in the code window as indicated. Feel free to type the code to test and verify your answers.

```
# Line 3 prints
# (Answer as comments) ^^

# Line 5 prints
# (Answer as comments)

# Line 12 prints
# (Answer as comments)

# Line 13 prints
# (Answer as comments)

# Line 14 prints
# (Answer as comments)
```

^^ If your answer to Line 3 is 'Error', comment the line 3 in the code before you proceed to answer the rest of the questions.