CSE102 Structured Programming Language Sessional

Online on loops

Section: A
Time: 40 minutes

Problem description

In this problem, you will be given an integer x and an integer n for the series:

$$\frac{x^0}{0!} - \frac{x^1}{1!} + \frac{x^2}{2!} - \frac{x^3}{3!} + \ldots + (-1)^n \frac{x^n}{n!}$$

The "!" symbols in the denominators are factorial symbols.

Your task is to:

1. **Print the sum of the series (from the 0-th to the n-th term. So, a sum of $n+1$ terms)**
2. **Print series terms in the console. Check the sample I/O for details**

Rules

- You cannot use any library functions except printf() and scanf(). No other function usage is allowed
- You cannot define your own function. Write all your code in main()

Input

The input contains two integers x and n separated by a space, where,
$(1 \leq x \leq 10, 1 \leq n \leq 10)$.

Output

There will be $n+1$ lines at first. The i-th line will contain the value of the first i terms of the series and the proper signs in between. Use "%g" in the printf() function for this part.
In the last line, print "sum=" and then the sum of the series up to 4 decimal places

Sample I/O

Input	Output
3 2	1 1-3 1-3+4.5 sum=2.5000
3 3	1 1-3 1-3+4.5 1-3+4.5-4.5 sum=-2.0000
3 10	1 1-3 1-3+4.5 1-3+4.5-4.5 1-3+4.5-4.5+3.375 1-3+4.5-4.5+3.375-2.025 1-3+4.5-4.5+3.375-2.025+1.0125 1-3+4.5-4.5+3.375-2.025+1.0125-0.433929 1-3+4.5-4.5+3.375-2.025+1.0125-0.433929+0.162723 1-3+4.5-4.5+3.375-2.025+1.0125-0.433929+0.162723-0.0542411 1-3+4.5-4.5+3.375-2.025+1.0125-0.433929+0.162723-0.0542411+0.0162723 Sum=0.0533
8 5	1 1-8 1-8+32 1-8+32-85.3333 1-8+32-85.3333+170.667 1-8+32-85.3333+170.667-273.067 Sum=-162.7333

Marks distribution

Total marks:	20
Calculating sum correctly:	10
Printing the series correctly:	10

Submission Guideline

1. Create a new folder named "<*your 7-digit student ID*>*_online_loop*".
2. Your .c file should be named "<*your 7-digit student ID*>*.c*".
3. Put your .c file (not .exe or .o files) in the folder created in step 1.
4. Right click on the folder, select "*send to* > *compressed (zipped) folder*" to zip the folder.
5. Submit the zip file on moodle.

For example, if your student ID is 2305999, then, write your collusion in "2305999.c" and create a folder called "2305999_online_loop". Put the .c file in the folder and zip it.