Practice Arena

Practice problems aimed to improve your coding skills.

- PRACTICE-02_SCAN-PRINT
- PRACTICE-03_TYPES
- LAB-PRAC-02_SCAN-PRINT
- LAB-PRAC-01
- PRACTICE-04_COND
- BONUS-PRAC-02
- LAB-PRAC-03_TYPES
- PRACTICE-05_COND-LOOPS
- LAB-PRAC-04_COND
- LAB-PRAC-05_CONDLOOPS
  - Forgetful Mr C
  - Rich Mr C
  - Perfect Numbers
  - Mr C builds a Calculator
  - Love for Primes
  - Tryst with Taylor
  - Mr C is very busy
  - Fabulous Fibonacci
  - Digit Debacle
  - May the fourth be with you
  - Phone a friend
  - The legend of Chess
- PRACTICE-07_LOOPS-ARR
- LAB-PRAC-06_LOOPS
- LAB-PRAC-07_LOOPS-ARR
- LABEXAM-PRAC-01_MIDSEM
- PRACTICE-09_PTR-MAT
- LAB-PRAC-08_ARR-STR
- PRACTICE-10_MAT-FUN
- LAB-PRAC-09_PTR-MAT
- LAB-PRAC-10_MAT-FUN
- PRACTICE-11_FUN-PTR
- LAB-PRAC-11_FUN-PTR
- LAB-PRAC-12_FUN-STRUC
- LABEXAM-PRAC-02_ENDSEM
- LAB-PRAC-13_STRUC-NUM
- LAB-PRAC-14_SORT-MISC

Tryst with Taylor

LAB-PRAC-05_CONDLOOPS

Tryst with Taylor [20 marks]

Problem Statement
Given a **real number** x such that |x| < 1, and a **positive integer** k, we can calculate the value of log(1+x) using the first k terms of the Taylor series for the log function as follows

$$\log(1+x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \ldots + (-1)^{k+1}\frac{x^k}{k}$$

We will give you the real number x such that |x| < 1 and a positive integer k. You have to output **on two different lines**

1. the value of log(1+x) calculated using the Taylor series upto 3 terms
2. the value of log(1+x) calculated using the Taylor series upto k terms

Give all outputs **rounded to four decimal places**

Caution

1. The number x may be negative too
2. Use double variable to store x and use double typecasts and computations for this problem.
3. Do not attempt to cheat and use the math.h function log() to compute this. The math.h function uses a really large number of terms while calculating the log function whereas we will ask you to use smaller number of terms. You will fail the test cases if you try to use the math.h log function.
4. Be careful about extra/missing lines and extra/missing spaces.

INPUT:
x k

OUTPUT:
log(1+x) computed using the first 3 terms of the Taylor series
log(1+x) computed using the first k terms of the Taylor series

EXAMPLE:
INPUT

OUTPUT:

Grading Scheme:
Total marks: **[20 Points]**

There will be partial grading in this question. There are two lines in your output. Printing each line

correctly, in the correct order, carries 50% weightage. Each visible test case is worth 2 points and each hidden test case is worth 4 points. There are 2 visible and 4 hidden test cases.

Please remember, however, that when you press Submit/Evaluate, you will get a green bar only if all parts of your answer are correct. Thus, if your answer is only partly correct, Prutor will say that you have not passed that test case completely, but when we do autograding afterwards, you will get partial marks.

Start Solving! (/editor/practice/6082)