

Roll No.:

Name:

Submission time:

1. Create a folder (directory) **LAB1A** in your home directory.
2. Create a C program file **Yabyz.c** in the folder **LAB1A**, where **ab** stands for first two digits of your roll number and **yz** stands for last two digits of your roll number.
3. The C program **Yabyz.c** implements the following:
 - (a) It reads (from the keyboard) a real number x . It then checks whether x is a valid input which must satisfy $-1 < x \leq 1$. If the input is not valid, the code stops with an appropriate message.
 - (b) Next it reads a positive integer n . If the input n is not valid, the code stops with an appropriate message.
 - (c) It then calculates the value of $\log(1+x)$ using n terms of the Maclaurin series

$$\log(1+x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \cdots = \sum_{n=1}^{\infty} t_n, \quad -1 < x \leq 1,$$

where

$$t_1 = x \quad \text{and} \quad t_n = (-1)^{n-1} \frac{x^n}{n}, \quad n \geq 2.$$

- (d) It then prints the value of $\log(1+x)$ with four decimal places using the %e (exponential) format specifier.
- (e) Write the output values of $\log(1+x)$ for
 - i. $x = 1, n = 100$: _____
 - ii. $x = 1, n = 1000$: _____

$$[\log(1+x) \approx 0.69314 \text{ for } x = 1]$$

*Please upload the C file **Yabyz.c** to the link send to your email. Submit this slip too.*