Test 1

Group 3

Questions: You cannot use arrays and functions for the following programs:

1. The infinite series for $\sinh x$ is given by $\sinh x = \sum_{k=0}^{\infty} \frac{x^{2k+1}}{(2k+1)!}$.

   Write a C program which keeps on reading a floating point input x from the keyboard till $0 \leq x \leq 1$. The first time the user gives an input $0 \leq x \leq 1$ your program should use this value of x to compute the infinite series for $\sinh x$ upto terms whose magnitude is at most 10^{-6}.

2. Write a C program to take as input a positive integer n and output the following pattern:
   The upper half of the pattern is a right-angled triangle of $*$'s and spaces over n rows: The first row has $2n-2$ spaces followed by 1 $*$ and the last row has n $*$'s and $n-1$ spaces appearing alternately.
   The lower half of the pattern is an inverted right-angled triangle of #'s and spaces over n rows: The first row has n #'s and $n-1$ spaces appearing alternately and the last row has $2n-2$ spaces followed by 1 #.
   Please find an example pattern in the next page.

Pattern when n = 4
Description: The upper half of the pattern is a right-angled triangle of *'s and spaces over n rows: The first row has 2n-2 spaces followed by 1 * and the last row has n *'s and n-1 spaces appearing alternately.
The lower half of the pattern is an inverted right-angled triangle of #'s and spaces over n rows: The first row has n #'s and n-1 spaces appearing alternately and the last row has 2n-2 spaces followed by 1 #.