EHB 110E - Introduction to Scientific and Engineering Computing (C)
MIDTERM EXAM
Date: 30/11/2020 Time : 13.30 - 15.30

- Use the Microsoft Word file (Answers File) that is provided on Ninova, to write your answers.
- When you finish all answerings, save the Word file on your computer and exit from the Word program.
- Submit the Word file to Ninova from the Homeworks section.

QUESTION 1) [20 points] Write a C function whose prototype is : ***float calc (int x, int c, int v);***

- The x, c, v are parameters.
- Function calculates and returns the z result, according to formula below.
- Function does not display any results on screen.

$$Z = \frac{x+c}{3-\sqrt{1+\frac{v^2}{c^2}}}$$

Also write the main C program to do the followings:

- Asks user to enter the x, c, v values.
- Call the **calc()** function with the parameters.
- Display the returned result from the calc function, on screen.

QUESTION 2) [20 points]
The followings are the wind force descriptions, based on the wind speeds.

Write a C program that asks user to enter a wind speed, then displays the corresponding description.

WIND SPEED	DESCRIPTION
Less than 1	Calm
1 - 5	Light
6 - 30	Breeze
31 - 50	Storm
Above 50	Hurricane

QUESTION 3) [30 points]

Write a C program to display a centered triangle on screen (**by loopings**).

- The height of the triangle should be entered by user.
- In each line of the screen output, odd number of stars should be displayed (i.e. 1, 3, 5, 7, 9, 11, ...)
- The number of stars per line and the number of spaces per line must be calculated.

Example screen output:

```
Enter height of triangle : 6

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

QUESTION 4) [30 points] Write a C program to display the following **series** :
9 , 99 , 999 , 9999 , 99999 , ... , $(10^N - 1)$

- Program should ask user to enter the number of **terms** (N) in the series.
- Then, program should display each term of the series on screen (**by looping**).
- Program should also calculate the **sum** of the all terms in series, and display it at the end of program.

Example screen output:

```
Enter the number of terms : 5

Series:
9    99    999    9999    99999

Sum of series is : 111105
```