Data Science Workshop-1 (CSE 2195)

ASSIGNMENT-2: FUNCTIONS, CONTROL STRUCTURES

1. Write a python script to solve the following problems.(Don't use loops or functions for the following problems)
   a. Given a positive integer, determine it is an even number or odd number.
   b. Given a string check it is a palindrome or not. Hint: Use string slicing with step=-1 to reverse the string.
   c. Given an alphabet, check whether it is a vowel or a consonant.
   d. Given a month and date, find which season does it belong to. Hint: Dec21-Mar20: winter, Mar21-June20: Spring, June21-Sep20: Summer, Sep21-Dec20: Fall
   e. Given a year find it is a leap year or not. Hint: A year that is an integer multiple of 4 (except for years evenly divisible by 100, but not by 400).

2. (Don't use conditional and loops for the following problems)
   a. Create functions add(), subtract(), multiply(), division(), so that we can get same value for the following two expressions.

$$2 + 3 - 4 * 5/6$$

   and

subtract(add(2,3),multiply(division(5,6),4))

   b. Write a python function *solution(a,b,c)* to find the quadratic roots of the equation

$$ax^2 + bx + c = 0.$$

   Hint: The return statement should return a tuple=(root1,root2)
   c. Write a python *HI(x)*, which will show output, "Hi x", when the argument 'x' is passed to the function *Hi()*.
   d. Write two python functions mean() and median(), to find the mean and median of three numbers
   e. Write a function to compute sum of first n natural numbers. Hint: use the formula

$$1 + 2 + 3 + \cdots + n = \frac{n(n+1)}{2}.$$

3. In this exercise you will create a program that displays a multiplication table that shows the products of all combinations of integers from 1 times 1 up to and including 10 times 10. Your multiplication table should include a row of labels across the top of it containing the numbers 1 through 10. It should also include labels down the left side consisting of the numbers 1 through 10. The expected output from the program is shown below:

	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

4. Write a function that accepts as an input parameter the number of rows to be printed and prints a figure like:

(a)

```
      1
    2 1 2
  3 2 1 2 3
4 3 2 1 2 3 4
```

(b)

```
5 4 3 2 1
4 3 2 1
3 2 1
2 1
1
```

(c)

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