Assignment-03
(Assignment on Loops)

1. Write a Python program to get the Fibonacci series between 0 to a number given by the user.
   Note : The Fibonacci Sequence is the series of numbers : 0, 1, 1, 2, 3, 5, 8, 13, 21, ...
   Every next number is found by adding up the two numbers before it.

2. Write a Python program to find the sum of odd numbers, even numbers within 1 to **n** using only one loop. Use break, continue statement if required. Compute the absolute difference between them.

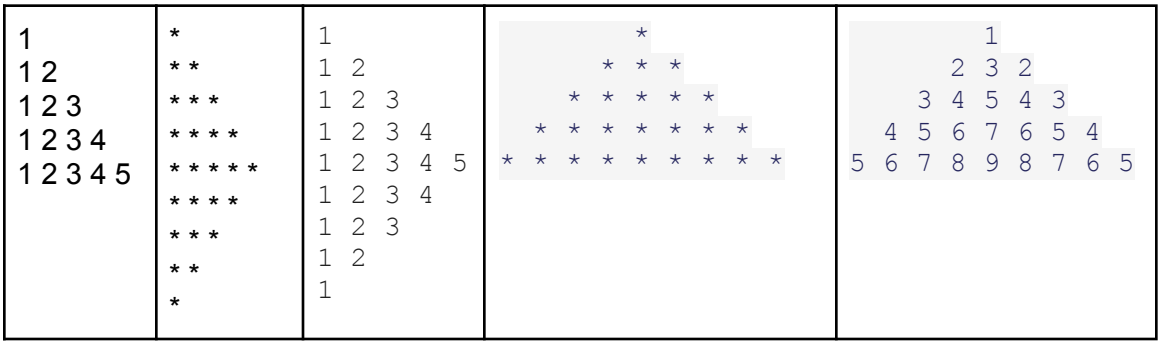
3. Write a program using loops to enter the numbers till the user wants and at the end the program should display the largest and smallest numbers entered.

4. Write a Python program to compute the factorial of a given number using loops.

5. Write a program that generates a random integer within 1 to 500 and asks the user to guess what the number is. If the user's guess is higher than the number, the program should display "Too high, try again." If the user's guess is lower than the number, the program should display "Too low, try again." The program should use a loop that repeats until the user correctly guesses the random number.
   [**To generate a random number within a range use**
   import random
   n=random.randint(lower_limit_value,upper_limit_value)]

6. Write a Python program to find the sum of the series 2 +22 + 222 + 2222 + .. upto n terms

7. Write Python program to print the following patterns upto **n** line



8. Write a Python program to display all the prime numbers within a range given by user using loops
9. Write a python program to reverse a given integer number using loops

10. Write a Python program to compute the cosine of x. The user should supply x and a positive integer n. We compute the cosine of x using the series and the computation should use all terms in the series up through the term involving x^n

$$cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} .....$$

11. Write a program to compute sin(x) for given x. The user should supply x and a positive integer n. We compute the sine of x using the series and the computation should use all terms in the series up through the term involving x^n

$$sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \frac{x^9}{9!} .....$$