WEEK 3

1. Print the series upto N terms: 1, 4, 9, 16, 25, 36…
2. Print the series up to N terms: 2, 4, 8, 16, 32, 64…
3. Print the series upto N terms: 1, 3, 7, 13, 21, 31…..
4. Print the series upto N terms: 1, 2, 4, 8, 16, 23, 28, 38, 49, 62 …
5. Print the series upto N terms: 1,2,6,24,120,720 …
6. write a program that takes a positive integer N as input and calculates the sum of the reciprocals of all numbers from 1 up to N. The program should display the final sum.
7. Write a Python program that prompts the user to enter a base number and an exponent, and then calculates the power of the base to the exponent. The program should not use the exponentiation operator (**) or the math.pow() function.
8. Write a Python program that prompts the user to enter a positive integer. Your program should display all the factors of the number. Additionally, calculate and display the sum of its factors.
9. Write a python program that uses a loop to repeatedly ask the user to enter integers. The loop will come to an end when zero is entered. After collecting all the integers, the program will compute and display the average of all the entered numbers.
10. Write a python program to enter the numbers till the user wants and at the end it should display the count of positive, negative and zeros entered.
11. Write a python program that prompts the user to input two numbers and display its HCF.
12. Write a python program to add first seven terms of the following series using a for loop:

$$\frac{1}{1!} + \frac{2}{2!} + \frac{3}{3!} + \cdots$$

13. Compute the sum up to n terms in the series
    1 - 1/2 + 1/3 - 1/4 + 1/5 -... 1/n where n is a positive integer and input by user.
14. 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
    $\sin x = x - x^3/3! + x^5/5! - x^7/7! + x^9/9!$ ....
15. Write a program to compute 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
    $\cos x = 1 - x^2/2! + x^4/4! - x^6/6!$ ....