**#Write a Program to print series 0 2 6 12 20 30 42 ...N.**

**n= int(input("enter any no"))**

**i=1**

**while i<=n:**

**print((i\*i)-i,end=" ")**

**i+=1**

**output:**

**enter any no 10**

**0 2 6 12 20 30 42 56 72 90**

**#Write a Program to print series 0,2,8,14,24,34 ...N.**

**n= int(input("enter any no"))**

**i=0**

**while i<n:**

**if i%2==0 and i>0:**

**print((i\*i)-2,end=" ")**

**elif i%2!=0 and i>0:**

**print((i\*i)-1,end=" ")**

**i+=1**

**output:**

**enter any no 10**

**0 2 8 14 24 34 48 62 80**

**#Write a program to print Arithmetic series 1 4 7 10...**

**n= int(input("enter any no"))**

**i=1**

**for i in range(1,n+1,3):**

**print(i)**

**output:**

**enter any no 10**

**1**

**4**

**7**

**10**

**#Write a Program to Find the sum of series 1³+2³+3³+4³.....+N³#**

**sum=0**

**n= int(input("enter any no"))**

**for i in range(1,n+1):**

**sum)=sum+i\*\*3**

**print(sum)**

**output:**

**enter any no10**

**3025**

**#Write a Program to Find the sum of series 2+4+6+8.....+N.**

**n= int(input("enter any no"))**

**sum=0**

**for i in range(2,n+1,2):**

**sum=sum+i**

**print(sum)**

**output:**

**enter any no 10**

**30**

**#Write a Program to Find the sum of series 1+11+111+1111.....+N.**

**n= int(input("enter any no"))**

**sum=0**

**j=1**

**for i in range(1, n + 1):**

**sum = sum + j**

**j = (j \* 10) + 1**

**print(sum)**

**output:**

**enter any no5**

**12345**

**#Write a program to find the sum of series 1/2!+2/3!+3/5!+4/6!+.....N/(N+1)!**

**n=int(input("Enter the value of N: "))**

**sum=0**

**fact=1**

**for i in range(1,n+1):**

**fact=fact\*i**

**sum=sum+(i/fact)**

**print(sum)**

**output:**

**Enter the value of N: 5**

**2.708333333333333**

**#Write a Program to print the Fibonacci series.**

**f1=int(input("enter the 1 value:"))**

**f2=int(input("enter the 2nd value:"))**

**n=int(input("enter the n value:"))**

**print(f1)**

**print(f2)**

**i=0**

**while (i<n-2):**

**f3=f1+f2**

**print(f3)**

**f1=f2**

**f2=f3**

**i=i+1**

**output:**

**enter the 1 value: 0**

**enter the 2nd value:1**

**enter the n value: 5**

**0**

**1**

**1**

**2**

**3**

**#Write a program to find the sum of series 1+3+5+7..+N.**

**sum=0**

**n= int(input("enter any no"))**

**for i in range(1,n+1,2):**

**sum=sum+i**

**print(sum)**

**output:**

**enter any no 10**

**25**

**#Write a program to find the sum of series 1+2+3..+N.**

**sum=0**

**n= int(input("enter any no"))**

**for i in range(1,n+1):**

**sum=sum+i**

**print(sum)**

**output:**

**enter any no 10**

**55**

**#Write a Program to find the sum of series 1!+2!+3!...+n!**

**sum=0**

**fact=1**

**n= int(input("enter any no"))**

**for i in range(1,n+1):**

**fact=fact\*i**

**sum=sum+fact**

**print(sum)**

**output:**

**enter any no 10**

**4037913**

**#Write a Program to Find the sum of series 9+99+999+9999.....+N.**

**n = int(input("Enter the no of terms: "))**

**sum = 0**

**i=1**

**t=9**

**for i in range(1, n+1):**

**sum = sum +t**

**t=t\*10+9**

**print(sum)**

**output:**

**Enter the no of terms: 4**

**11106**

**# Python program to print the following simple number pattern using a for loop.  
1   
2 2   
3 3 3   
4 4 4 4   
5 5 5 5 5**

**n = int(input("enter n"))**

**for i in range(1,n+1):**

**for j in range(1,i+1):**

**print(i, end = "")**

**print()**

**output:**

**enter n5**

**1**

**22**

**333**

**4444**

**55555**

**# Let’s see how to print the following half pyramid pattern of numbers  
1   
1 2   
1 2 3   
1 2 3 4   
1 2 3 4 5**

**n = int(input("enter n"))**

**for i in range(1,n+1):**

**for j in range(1,i+1):**

**print(j, end = "")**

**print()**

**output:**

**enter n 5**

**1**

**12**

**123**

**1234**

**12345**

**#Inverted pyramid pattern of numbers**

**#1 1 1 1 1**

**#2 2 2 2**

**#3 3 3**

**#4 4**

**#5**

**b=0**

**n = int(input("enter value n "))**

**for i in range(n,0,-1):**

**b+=1**

**for j in range(i+1):**

**print(b, end = "")**

**print()**

**output:**

**enter value n 5**

**11111**

**2222**

**333**

**44**

**5**

**Inverted Pyramid pattern with the same digit  
Pattern: –  
5 5 5 5 5   
5 5 5 5   
5 5 5   
5 5   
5**

**b=0**

**n = int(input("enter value n "))**

**for i in range(n,0,-1):**

**for j in range(i):**

**print("5", end = "")**

**print()**

**output:**

**enter value n 5**

**55555**

**5555**

**555**

**55**

**5**

**Alternate numbers pattern using while loop  
Let’s see how to use the while loop to print the number pattern.  
Pattern: –  
1   
3 3   
5 5 5   
7 7 7 7   
9 9 9 9 9**

**n = int(input("enter value n"))**

**i=1**

**for i in range(1,n+1,2):**

**for j in range(1,i+1,2):**

**print(i, end = "")**

**print()**

**output:**

**enter value n10**

**1**

**33**

**555**

**7777**

**99999**

**Reverse Pyramid of Numbers  
Pattern 2: –  
1   
2 1   
3 2 1   
4 3 2 1   
5 4 3 2 1**

**n = int(input("enter value n"))**

**i=1**

**for i in range(1,n+1):**

**for j in range(i,0,-1):**

**print(j, end = " ")**

**print()**

**output:**

**enter value n5**

**1**

**2 1**

**3 2 1**

**4 3 2 1**

**5 4 3 2 1**

**Pyramid Patterns**

**Simple half pyramid pattern: –  
\*   
\* \*   
\* \* \*   
\* \* \* \*   
\* \* \* \* \***

**n = int(input("enter value n"))**

**i=1**

**for i in range(1,n+1):**

**for j in range(i):**

**print("\*", end = " ")**

**print()**

**output:**

**enter value n 5**

**\***

**\* \***

**\* \* \***

**\* \* \* \***

**\* \* \* \* \***

**Downward half-Pyramid Pattern of Star  
Pattern: –  
\* \* \* \* \*   
\* \* \* \*   
\* \* \*   
\* \*   
\***

**n = int(input("enter value n"))**

**i=1**

**for i in range(n,0,-1):**

**for j in range(i):**

**print("\*", end = " ")**

**print()**

**output:**

**enter value n5**

**\* \* \* \* \***

**\* \* \* \***

**\* \* \***

**\* \***

**\***

**3. Downward full Pyramid Pattern of star  
Let’s see how to print reversed pyramid pattern in Python.  
Pattern: –  
 \* \* \* \* \* \*   
 \* \* \* \* \*   
 \* \* \* \*   
 \* \* \*   
 \* \*  
 \***

**n = int(input("enter value n"))**

**i=1**

**for i in range(n,0,-1):**

**for j in range(0,n-i):**

**print( end = " ")**

**for j in range(i):**

**print("\*",end=" ")**

**print()**

**output:**

**enter value n 5**

**\* \* \* \* \***

**\* \* \* \***

**\* \* \***

**\* \***

**\***

**#Right down mirror star Pattern  
Pattern: –  
\*\*\*\*\*  
 \*\*\*\*  
 \*\*\***

**\*\*  
 \***

**n = int(input("enter value n"))**

**i=1**

**for i in range(1,n+1):**

**for j in range(0,n+1):**

**if(j<=n-i):**

**print( " ",end = " ")**

**else:**

**print("\*",end=" ")**

**print()**

**output:**

**enter value n 5**

**\***

**\* \***

**\* \* \***

**\* \* \* \***

**\* \* \* \* \***

**Equilateral triangle pattern of star  
Pattern: –  
 \*   
 \* \*   
 \* \* \*   
 \* \* \* \*   
 \* \* \* \* \*   
 \* \* \* \* \* \***

**n = int(input("enter value n"))**

**i=1**

**for i in range(0,n):**

**for j in range(0,n-i-1):**

**print( end = " ")**

**for j in range(0,i+1):**

**print("\*",end=" ")**

**print()**

**output:**

**enter value n5**

**\***

**\* \***

**\* \* \***

**\* \* \* \***

**\* \* \* \* \***

**6. Right start pattern of star  
Pattern: –  
\*   
\* \*   
\* \* \*   
\* \* \* \*   
\* \* \* \* \*   
\* \* \* \*   
\* \* \*   
\* \*   
\***

**n = int(input("enter value n"))**

**i=1**

**for i in range(0,n):**

**for j in range(0,i):**

**print( "\*",end = " ")**

**print("\r")**

**for i in range(0,n):**

**for j in range(n,i,-1):**

**print( "\*",end = " ")**

**print("\r")**

**output:**

**enter value n 5**

**\***

**\* \***

**\* \* \***

**\* \* \* \***

**\* \* \* \* \***

**\* \* \* \***

**\* \* \***

**\* \***

**\***

**Problems:**

1. **Convert decimal to binary number**

**def convertToBinary(n):**

**if n > 1:**

**convertToBinary(n//2)**

**print(n % 2,end = '')**

**dec=int(input("enter decimal no"))**

**convertToBinary(dec)**

**output:**

**enter decimal no 9**

**1001**

**2.Convert binary to decimal number#**

**num=int(input("enter any binary no"))**

**sum=0**

**i=0**

**while num!=0:**

**rem=num%10**

**sum=sum+rem\*(2\*\*i)**

**num=num//10**

**i=i+1**

**print("decimal value",sum)**

**output:**

**enter any binary no 1010**

**decimal value 10**

**3.Check the given number is Armstrong number**

**n=int(input("Enter a number: "))**

**sum=0**

**temp=n**

**while temp>0:**

**rem=temp%10**

**sum+=rem\*\*3**

**temp//=10**

**if n==sum:**

**print(n,"is an Armstrong number")**

**else:**

**print(n,"is not an Armstrong number")**

**output:**

**Enter a number: 371**

**371 is an Armstrong number**

**Reversing a Number**

**num = int(input("Enter a number: "))**

**rev = 0**

**while num > 0:**

**rem = num % 10**

**rev = (rev \*10) + rem**

**num = num // 10**

**print("Reversed Number:", rev)**

**output:**

**Enter a number: 456**

**Reversed Number: 654**

**4)(v)write a python code for print the all prime numbers 1-50.**

**for num in range(2,51):**

**if num > 1:**

**for i in range(2, num):**

**if (num % i) == 0:**

**break**

**else:**

**print(num)**

**output:**

**2 3 5 7 11 13 17 19 23 29 31 37 41 43 47**

**Print all the leap year from 1900 - 2000**

**year = 1900**

**while year <= 2000:**

**if (year % 4 == 0 and year % 100 != 0) or year % 400 == 0:**

**print(year, end = ' ')**

**year = year + 1**

**output:**

**1904 1908 1912 1916 1920 1924 1928 1932 1936 1940 1944 1948 1952 1956 1960 1964 1968 1972 1976 1980 1984 1988 1992 1996 2000**