# PROBLEM SLOVING AND PYTHON PROGRAMMING
## ASSIGNMENT NO 2

## NUMBER SERIES

## 1)Write a program to find series 0 2 6 12 30 42...N

```
n=int(input("Enter the value of N: "))
a=0
d=2
for i in range(1,n+1):
  print(a,end=" ")
   a+=d
   d+=2
```

OUTPUT:

Enter the value of N: 5

0 2 6 12 20

## 2)write program for to find series 0,2,8,14,24,34,....N

```
n=int(input("enter the value of N:"))
a=0
d=2
for i in range(1,n+1):
    print(a,end = " ")
    a+=d
    d+=4
```

OUTPUT:
enter the value of N:5

0 2 8 18 32

### 3)write the program for arithmetic series 1 4 7  10.....

series = [1, 4, 7]

for i in range(3,30):

   series.append(series[i-1] + 3)

print(series)


OUTPUT:
[1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, 40, 43, 46, 49, 52, 55, 58, 61, 64, 67, 70, 73, 76, 79, 82, 85, 88]


### 4)write a program to a sum of the series 1**3+2**3+3**3+4**3+.....n

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

sum = 0

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

   sum = sum + i**3

print("Sum of the series is:", sum)

OUTPUT:

Enter the value of n: 5

Sum of the series is: 225


### 5)wriite a program to find the sum oof the series 2+4+6+8+....+n

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

sum = 0

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

 sum = sum + i

print("The sum of the series is", sum)

OUTPUT:
Enter the value of n: 6

The sum of the series is 12

## 6)write a program of the sum series 1+11+111+1111+....+N

```
n=int(input("Enter the value of N: "))
sum=0
for i in range(1,n+1):
    sum=sum+i*(10**(i-1))
print(sum)
```

OUTPUT:
Enter the value of N: 7

7654321

## 7)write a program for sum of the series 1/2!+2/3!+3/5!+4/6!+...N/(N+1)!

```
n=int(input("Enter the value of n:"))
sum=0
for i in range(1,n+1):
    sum=sum+(i/(i+1))

print("Sum of the series is:",sum)
```

OUTPUT:
Enter the value of n:8

Sum of the series is: 6.171031746031746

## 8)write a program for 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:9

enter the 2nd value:8

enter the n value:6

9

8

17

25

42

67

## 9)write the python code for the sum of the series 1+3+5+7...+n

```
print("Enter the range of number:")

n=int(input())
sum=0
i=1
while(i<=n):
    sum+=i
    i+=2
```

print("The sum of the series = ",sum)

OUTPUT:

Enter the range of number:

5

The sum of the series =  9


## 10)write a program to sum of the series1+2+3+..+N

```
n = int(input("Enter a number: "))
sum = 0
for i in range(1, n+1):
   sum += i
print("Sum:", sum)
```

OUTPUT:

Enter a number: 5

Sum: 15

## 11)write a program to find the sum of the series 1!+2!+3!+..+n!

```
n=int(input("Enter n values:"))
fact=1
if(n==0):
    fact=1
sum=0
for i in range(1,n+1):
    fact=fact*i
    sum=sum+fact
print(sum)
```

OUTPUT:

Enter n values:6

873

**12)write a program for to find the sum of the series 9+99+999+9999+...+n**

n=int(input("Enter range:"))

sum=0

num=9

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

   sum=sum+num

   num=(num*10)+9

print("The sum of series:",sum)

OUTPUT:

Enter range:3

The sum of series: 1107

Number Patterns Pyramid

**(2)(i)pyhton program to print the following simple number pattren using for loop**

```
for i in range(0,5):
    for j in range(i):
        print (i, end=" ")
    print("\r")
```

OUTPUT:

1

2 2

3 3 3

4 4 4 4

**(2)(ii)how to print the following half pyramid pattern of numbers**

```
n=5
for i in range(1,n+1):
    for j in range(1,i+1):
        print(j, end=" ")
    print("\r")
```

OUTPUT:

1

2 2

3 3 3

4 4 4 4

## (2)(iii)write a python code for inverted pyramid pattern of numbers

```python
n=6
for i in range (n,0,-1):
    for j in range(1,i):
        print(j,end="")
    print("\r")
```

OUTPUT:

12345

1234

123

12

1

## (2)(iv)write a python code for inverted pyramid pattern with same digit

```python
n=int(input("Enter a number: "))
for i in range(n,0,-1):
    for j in range(1,i+1):
        print(n,end=" ")
    print("")
```

OUTPUT:

12345

1234

123

12

1


## (2)(v)write a python code for alternate odd numbers pattern using while loop

```python
num = 1
while num <= 9:
    for i in range(num):
        if num%2 != 0:
            print(num, end=" ")
    num += 1
    print("\n")
```

OUTPUT:

1

3 3 3

5 5 5 5 5

7 7 7 7 7 7 7

9 9 9 9 9 9 9 9 9

**(2)(vi)write a python code for reverse pyramid of numbers**.

```python
n=int(input("enter no of rows:"))
for i in range(1,n+1):
    for j in range(i,0,-1):
        a=j
        print(a,end=" ")
        a=j+1
    print()
```

OUTPUT:

enter no of rows:5

1

2 1

3 2 1

4 3 2 1

5 4 3 2 1

**#(3)pyramid patterns for using stars**

# #(3)(i)write a python code for simple half pyramid pattern for using star.

```python
for i in range(5):
    for j in range(i):
        print('* ', end="")
    print('')
```

OUTPUT:

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

# #(3)(ii)write a python code for downward half-pyramid pattern for using star.

```python
n=int(input("Enter the number of rows: "))
for i in range(n,0,-1):
    print((n-i) * ' ' + i * '* ')
```

OUTPUT:
Enter the number of rows: 5

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

# #(3)(iii)write a python code for downward full pyramid pattern of star.

```python
num=int(input("Enter the number of rows: "))
```

```python
for i in range (num,0,-1):
    for j in range(0,i):
        print("*",end=" ")
    print()
```

OUTPUT:
Enter the number of rows: 6

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

# #(3)(iv)write a python code for right down mirron star pattern.

rows = int(input("Please Enter the Total Number of Rows  : "))

```python
print("Reverse Mirrored Right Triangle Star Pattern")
for i in range(1, rows + 1):
    for j in range(1, rows + 1):
        if(j < i):
            print(' ', end = ' ')
        else:
            print('*', end = ' ')
    print()
```

OUTPUT:

Please Enter the Total Number of Rows  : 5

Reverse Mirrored Right Triangle Star Pattern

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

## #(3)(v)write a python code for equilateral triangle pattern of star.

```python
num_rows = int(input("Enter the number of rows"))
for i in range(0, num_rows):
    for j in range(0, num_rows-i-1):
        print(end=" ")
    for j in range(0, i+1):
        print("*", end=" ")
    print()
```

OUTPUT:

Enter the number of rows3
```
    *
  *   *
*   *   *
```

**#(3)(vi)write a python code for right start pyramid pattern of star**.

```python
n=int(input("Enter range value:"))
for i in range(n):
    for j in range(i+1):
        print("*",end=" ")
    print()
for i in range(n):
    for j in range(n-i-1):
        print("*",end=" ")
    print()
```

OUTPUT:
 Enter range value:5

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

**#PROBLEMS**

# #(4)(i)write a python code for decimal to binary number.

```
dec = int(input('Enter a decimal number: '))
binary = ''
while dec != 0:
binary = str(dec % 2) + binary
dec = dec // 2
print('The binary value is:', binary)
```

OUTPUT:

Enter a decimal number: 50
The binary value is: 110010

# #(4)(ii)write a python code for binary to decimal number.

```
binary_num = list(input("Input a binary number: "))
value = 0
power = len(binary_num) - 1
while power >= 0:
digit = binary_num.pop()
if digit == '1':
value += pow(2, power)
power -= 1
print("Decimal value is", value)
```

OUTPUT:
Enter a decimal number: 50
The binary value is: 110010

# #(4)(iii)write python code for check the given no is amstrong no.

```python
n=int(input("Enter a number: "))
sum=0
temp=n
while temp>0:
   d=temp%10
   sum+=d**3
   temp//=10
if n==sum:
   print(n,"is an Armstrong number")
else:
   print(n,"is not an Armstrong number")
```

OUTPUT:

Enter a decimal number: 50
The binary value is: 110010

# #(4)(iv)write a python code for reversing a number.

```python
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: 45

Reversed Number: 54

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

```python
a = 0
b = 50
print("Prime numbers between", a, "and", b, "are:")
for num in range(a, b + 1):
    if num > 1:
        for i in range(2, num):
            if (num % i) == 0:
                break
        else:
            print(num)
```

OUTPUT:
Prime numbers between 0 and 50 are:

2

3

5

7

11

13

17

19

23

29

31

37

41

43

47

**#(4)(vi )write a python code for 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.