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
```

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
```

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)
```

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)
```

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)
```

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)
```

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)
```

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
```

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

```
N=int(input("enter the no:"))
sum=0
for i in range(1,N+1,2):
    sum+=i
    print("sum of the series 1+3+5+7+...+n",sum)
```

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

```
N=int(input("enter the number:"))
sum=0
for i in range (1,N+1):
    sum+=i
    print("sum of the series1+2+3+..+n",sum)
```

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

```
n = int(input('Enter the value of n: '))
sum = 0
for i in range(1, n+1):
  fact = 1
  for j in range(1, i+1):
    fact = fact * j
  sum += fact
print('The sum of the series is',sum)
```

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

```
n = int(input("Enter the no of terms: "))
sum = 0
for i in range(1, n+1):
    sum = sum + ((10**i)-1)
print("Sum of series is: ",sum)
```

#numer 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")
```

(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")
```

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

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

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

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

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

```
num = 1
while num <= 9:
    for i in range(num):
```

```
        if num%2 != 0:
            print(num, end=" ")
    num += 1
    print("\n")
```

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

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

#(3)pyramid patterns for using stars

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

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

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

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

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

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

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

```
n=int(input("Enter number of rows: "))
for i in range(n):
```

```
    for j in range(n-i-1):
        print(end=" ")
    for j in range(i+1):
        print("*",end="")
    print()
```

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

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

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

```
n=int(input("Enter the number of rows: "))
i=1
while i<=n:
    print((n-i) * ' ' + i * '* ')
    i=i+1
```

#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)
```

#(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)
```

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

```
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")
```

#(4)(iv)write a python code for 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)
```

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

```
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)
```

#(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
```

OUPUTS FOR ALL PROGRAMS

Enter the value of N: 5

0 2 6 12 20 enter the value of N:5

0 2 8 18 32 [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]

Enter the value of n: 5

Sum of the series is: 225

Enter the value of n: 6

The sum of the series is 12

Enter the value of N: 7

7654321

Enter the value of n:8

Sum of the series is: 6.171031746031746

enter the 1 value:9

enter the 2nd value:8

enter the n value:6

9

8

17

25

42

67

enter the no:5

sum of the series 1+3+5+7+...+n 1

sum of the series 1+3+5+7+...+n 4

sum of the series 1+3+5+7+...+n 9

enter the number:6

sum of the series1+2+3+..+n 1

sum of the series1+2+3+..+n 3

sum of the series1+2+3+..+n 6

sum of the series1+2+3+..+n 10

sum of the series1+2+3+..+n 15

sum of the series1+2+3+..+n 21

Enter the value of n: 4

The sum of the series is 33

Enter the no of terms: 5

Sum of series is: 111105

1

2 2

3 3 3

4 4 4 4

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

12345

1234

123

12

1

Enter a number: 5

5 5 5 5 5

5 5 5 5

5 5 5

5 5

5

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

Enter the number of rows: 6

1 2 3 4 5 6

1 2 3 4 5

1 2 3 4

1 2 3

1 2

1

*

* *

* * *

* * * *

Enter the number of rows: 6

* * * * * *

 * * * * *

  * * * *

   * * *

    * *

     *

Enter the number of rows: 5

* * * * *

* * * *

* * *

* *

*

Enter number of rows: 10

        *

       **

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

Enter the number of rows: 5

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

Enter the number of rows: 7

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

Enter a decimal number: 50

The binary value is: 110010

Input a binary number: 00001010

Decimal value is 80

Enter a number: 509

509 is not an Armstrong number

Enter a number: 45

Reversed Number: 54

Prime numbers between 0 and 50 are:

2

3

5

7

11

13

17

19

23

29

31

37

41

43

47

(4)(IV)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.