PROBLEM SLOVING AND PYTHON PROGRAMMING
ASSIGNMENT NO 2

NUMBER SERIES

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

```python
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

```python
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)!

```python
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

```python
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.

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

for i in range (num,0,-1):

   for j in range(0,i):

      print("*",end=" ")

   print()

OUTPUT:
Enter the number of rows: 6

* * * * * *

 * * * * *

  * * * *

   * * *

    * *

     *

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

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

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.

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.

```python
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.

```python
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.