

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)write 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 series $1+2+3+...+N$

```
N=int(input("enter the number:"))
```

```
sum=0
```

```
for i in range (1,N+1):
```

```
    sum+=i
```

```
    print("sum of the series  $1+2+3+...+n$ ",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)python 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
```


OUTPUTS 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 $1+3+5+7+\dots+n$ 1

sum of the series $1+3+5+7+\dots+n$ 4

sum of the series $1+3+5+7+\dots+n$ 9

enter the number:6

sum of the series $1+2+3+\dots+n$ 1

sum of the series $1+2+3+\dots+n$ 3

sum of the series $1+2+3+\dots+n$ 6

sum of the series $1+2+3+\dots+n$ 10

sum of the series $1+2+3+..+n$ 15

sum of the series $1+2+3+..+n$ 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

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.