**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=1if(n==0): fact=1

sum=0for i in range(1,n+1): fact=fact\*i sum=sum+factprint(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=0num=9for i in range(1,n+1): sum=sum+num num=(num\*10)+9print("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

1. 2

1. 3 3

1. 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

1. 2

1. 3 3

1. 4 4 4

**(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")

OUTPUT:

12345

1234

123

12

1

# (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("")

OUTPUT:

12345

1234

123

12

1

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

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

1. 1
2. 2 1
3. 3 2 1
4. 4 3 2 1

# #(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('')

OUTPUT:

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

# #(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 \* '\* ')

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

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

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

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**.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.

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.

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.

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.