**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 14 24

**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**

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)

Output:

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

**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)

Output:

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

**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)

Output:

Enter the value of n: 4

The sum of the series is 33

**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

Output:

Enter the no of terms: 5

Sum of series is: 111105

**(2)(i)python program to print the following simple number pattern using for loop**

for i in range(0,6):

for j in range(i):

print (i, end=" ")

print("\r")

Output:

1

2 2

3 3 3

4 4 4 4

5 5 5 5 5

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

rows = 5

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

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

print(j, end=' ')

print('')

Output:

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

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

rows = 5

b = 0

# reverse for loop from 5 to 0

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

b += 1

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

print(b, end=' ')

print('\r')

Output:

1 1 1 1 1 2 2 2 2 3 3 3 4 4 5

**(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:

Enter a number: 5

5 5 5 5 5

5 5 5 5

5 5 5

5 5

5

**(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")

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**.

rows = 6

for i in range(1, rows):

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

print(j, end=' ')

print("")

Output:

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**.

rows = 5

for i in range(0, rows):

# nested loop for each column

for j in range(0, i + 1):

# print star

print("\*", end=' ')

# new line after each row

print("\r")

Output:

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

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

rows = 5

for i in range(rows + 1, 0, -1):

# nested reverse loop

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

# display star

print("\*", end=' ')

print(" ")

Output:

\* \* \* \* \*

\* \* \* \*

\* \* \*

\* \*

\*

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

rows = 5

k = 2 \* rows - 2

for i in range(rows, -1, -1):

for j in range(k, 0, -1):

print(end=" ")

k = k + 1

for j in range(0, i + 1):

print("\*", end=" ")

print("")

Output:

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

\* \* \* \* \*

\* \* \* \*

\* \* \*

\* \*

\*

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

rows = 5

i = rows

while i >= 1:

j = rows

while j > i:

# display space

print(' ', end=' ')

j -= 1

k = 1

while k <= i:

print('\*', end=' ')

k += 1

print()

i -= 1

Output:

\* \* \* \* \*

\* \* \* \*

\* \* \*

\* \*

\*

**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()

Output:

Enter the number of rows: 7

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

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

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

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

rows = 5

for i in range(0, rows):

for j in range(0, i + 1):

print("\*", end=' ')

print("\r")

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

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

print("\*", end=' ')

print("\r")

Output:

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

**#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:

Input a binary number: 00001010

Decimal value is 80

**#(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 number: 509

509 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)

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.