# PROGRAM ON CONTROL STATEMENTS

## 1.SUM OF SERIES

**Program 1:**

#Series 0,2,6,12, N

n=int(input("Enter the range of number(limit):")) i=1

while(i<=n): print((i\*i)-i,end=" ")

i+=1

## Output 1:

Enter the range of number(limit):7 0 2 6 12 20 30 42

## Program 2:

#Series 0,2,8,14,24,34 N

n=int(input("Enter the range of number(limit):")) i=1

pr=0 while(i<=n):

if(i%2==0):

pr=pow(i,2)-2

print(pr,end=" ") else:

pr=pow(i,2)-1

print(pr,end=" ")

i+=1

## Output 2:

Enter the range of number(limit):8 0 2 8 14 24 34 48 62

## Program 3:

#Series 1 4 7 10 N

n=int(input("Enter the rangeof number(limit):")) i=1

while(i<=n+1): print(i)

i=i+3

print("It's the series")

**Output 3:**

Enter the rangeof number(limit):40 1

4

10

13

16

19

22

25

28

31

34

37

40

It's the series

## Program 4:

#Series 1^3+2^3+3^3 N^3

n=int(input("Enter the value:")) res=0

for i in range(1,n+1): res=res+(i\*i\*i)

print("Series:",res)

## Output 4:

## Enter the value:4

## Series: 100

## Program 5:

#Series 2+4+6+ N

n=int(input("Enter the range of number:")) sum=0

i=0 while(i<=n):

sum+=i i+=2

print("Series:",sum)

## Output 5:

Enter the range of number:12 Series: 42

## Program 6:

#Series 1+11+111+1111 N

n=int(input("Enter the number of term:"))

s=0 sum1=0

print("Series are",end=" ") for i in range(0,n):

s=s\*10+1 print(s,end=" ") sum1=sum1+s

print()

print("Series sum=",sum1)

## 

## Output 6:

Enter the number of term:5 Series are 1 11 111 1111 11111

Series sum= 12345

## Program 7:

#Series 9+99+999+9999...N

n=int(input("Enter the number of term:")) s=0

sum1=0

print("Series are",end=" ") for i in range(0,n):

s=s\*10+9 print(s,end=" ") sum1=sum1+s

print()

print("Series sum=",sum1)

## Output 7:

Enter the number of term:5 Series are 9 99 999 9999 99999

Series sum= 111105

## Program 8:

#Fibonacci series

n = int(input("Enter the value of 'n': ")) a = 0

b = 1

sum = 0

count = 1

print("Fibonacci Series: ", end = " ") while(count <= n):

print(sum, end = " ") count += 1

a = b

b = sum

sum = a + b

## Output 8:

Enter the value of 'n': 8

Fibonacci Series: 0 1 1 2 3 5 8 13

## Program 9:

#Series 1/2!+2/3!+3/4! N/(N+1)!

s=0 f=1

n=int(input("Enter the number:")) for i in range(1,n+1):

f=(f+1)\*i s=s+(i/f)

print(s)

## Output 9:

Enter the number:5 1.0328809767012013

## Program 10:

#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("Series:",sum)

## Output 10:

Enter the range of number:51 Series: 676

## Program 11:

#Series 1+2+3+4+ N

n=int(input("Enter the value:")) sum=0

for i in range(1,n+1): sum+=i

print("Series:",sum)

## Output 11:

Enter the value:9 Series: 45

## Program 12:

#Series 1!+2!+3! N!

n=int(input("Enter the value:")) fact=1

for i in range(1,n+1): fact=fact\*i

print(fact)

**Output 12:**

Enter the value:5 120

## 2.NUMBER PATTERN

**Program 1:**

#Number pattern 1

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

for j in range(i): print(i,end=" ")

print(" ")

## Output 1:

Enter the number of rows:6

1

2 2

3 3 3

4 4 4 4

5 5 5 5 5

## Program 2

#Number pattern 2

n=int(input("Enter the number of rows:")) for i in range(1,n+1):

for j in range(1,i+1): print(j,end=' ')

print(" ")

## Output 2:

Enter the number of rows:5 1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

## Program 3:

#Number pattern 3

n=int(input("Enter the number of rows:")) b=0

for i in range(n,0,-1): b+=1

for j in range(1,i+1): print(b,end=" ")

print('\r')

## Output 3:

Enter the number of rows:5 1 1 1 1 1

2 2 2 2

3 3 3

4 4

5

**Program 4:**

#Number pattern 4

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

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

print()

## Output 4 :

Enter the number of rows:5 5 5 5 5 5

5 5 5 5

5 5 5

5 5

5

## Program 5:

#Number pattern 5

n=int(input("Enter the number of rows:")) i=1

while(i<=n): j=1 while(j<=i):

print((i\*2-1),end=" ") j=j+1

i=i+1

print("")

## Output 5:

Enter the number of rows:5

1

3 3

5 5 5

7 7 7 7

9 9 9 9 9

**Program 6:**

#Number pattern 6

n=int(input("Enter the number of rows:")) for i in range(1,n):

for j in range(i,0,-1): print(j,end=" ")

print(" ")

## Output 6:

Enter the number of rows:6

1

2 1

3 2 1

4 3 2 1

5 4 3 2 1

## 3.PYRAMID PATTERN

**Program 1:**

#Pyramid pattern 1

n=int(input("Enter the number of rows:")) for i in range(0,n):

for j in range(0,i+1): print('\*',end=" ")

print("\r")

## Output 1:

Enter the number of rows:5

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**Program 2:**

#Pyramid pattern 2

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

for j in range(0,i-1): print('\*',end=" ")

print(" ")

## Output 2:

Enter the number of rows:5

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## Program 3:

#Pyramid pattern 3

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

print(" ",end="")

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

print(" ")

## Output 3:

Enter the number of rows:6

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## Program 4:

#Pyramid pattern 4

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

for j in range(i):

print(" ",end="")

print(" ")

## Output 4:

Enter the number of rows:5

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## Program 5:

#Pyramid pattern 5

n=int(input("Enter the number of rows:")) m=(2\*n)-2

for i in range(0,n): for j in range(0,m):

print(end=" ") m=m-1

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

print("\*",end=)

print(" ")

## Output 5:

Enter the number of rows:6

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## Program 6:

#Pyramid pattern 6

n=int(input("Enter the number of rows:")) for i in range(0,n):

for j in range(0,i+1): print("\*",end=" ")

print("\r")

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

for j in range(0,i-1): print("\*",end=" ")

print("\r")

## Output 6:

Enter the number of rows:5

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## PROGRAMS ON CONDITION

**Program 1:**

#Decimal to binary n=int(input("Enter the number:")) sum=0

while(n>0): r=n%2 sum=sum\*10+rn=n//2

print(sum)

## Output 1:

Enter the number:46 11101

## Program 2:

#Binary to decimal n=int(input("Enter the num:")) num=n

sum=0 base=1 while(n>0):

rem=n%10 sum=sum+rem\*base n=n//10 base=base\*2

print(sum)

## Output 2:

## Enter the num:1101 13

## Program 3:

#Armstrong number n=int(input("Enter the num:")) num=n

sum=0 while(n>0):

rem=n%10 sum=sum+(rem\*\*3) n=n//10

if(sum==num): print("Armstrong number")

else:

print("Not Armstrong number")

## Output 3:

Enter the num:153 Armstrong number

## Program 4:

#Reversing a number n=int(input("Enter the num:")) num=n

sum=0 while(n>0):

rem=n%10 sum=(sum\*10)+rem n=n//10

print(sum)

## Output 4:

Enter the num:153 351

## Program 5:

#Prime numbers between 1 to 50 start=int(input("Enter the lower bound:")) stop=int(input("Enter the upper bound:"))

print("Prime numbers are:")

for n in range(start,stop): if(n>1):

for i in range(2,n): if(n%i)==0:

break else:

print(n,end=" ")

## Output 5:

Enter the lower bound:1 Enter the upper bound:50 Prime numbers are:

2 3 5 7 11 13 17 19 23 29 31 37 41 43 47

## Program 6:

#Leap year between 1900 to 2000 start=int(input("Enter the lower bound year:")) stop=int(input("Enter the higher bound year:")) years=[]

for year in range(start,stop+1): if (year%400==0):

years.append(year)

elif ((year%4==0)and(year%100!=0)): years.append(year)

print(years)

## Output 6:

Enter the lower bound year:1900 Enter the higher bound year:2000

[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]

## Web reference :

<https://www.programiz.com/python-programming/examples> <https://pynative.com/python-exercises-with-solutions/>

[https://www.geeksforgeeks.org/python-programming-](https://www.geeksforgeeks.org/python-programming-language/) [language/](https://www.geeksforgeeks.org/python-programming-language/)