

ASSIGNMENT-2- PROBLEM ON CONTROL STATEMENT

1. Write a program to print series 0 2 6 12 20 30 ...N

PROGRAM:

```
n=int(input("Enter the range of number(Limit):"))
i=1
while i<=n:
    print((i*i)-i,end=" ")
    i+=1
```

OUTPUT:

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

2. write a program to print series 0,2,8,14,24,34,...N

PROGRAM:

```
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:

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

3. WRITE A PROGRAM TO ARITHMETIC SERIES 1 4 7 10

PROGRAM:

```
first_num=int(input("Enter the First Number:"))  
n=int(input("Enter the range of number(Limit):"))  
diff=int(input("Enter the Difference Between two Number:"))  
while(first_num<=n):  
    print(first_num,end=" ")  
    first_num+=diff
```

Output:

```
Enter the First Number:1  
Enter the range of number(Limit):10  
Enter the Difference Between two Number:3  
1 4 7 10
```

4. Write a Program to Find the sum of series $1^3+2^3+3^3+4^3+....+N^3$.

PROGRAM:

```
n=int(input("Enter the range of number:"))  
sum=0  
for i in range(1,n+1):  
    sum+=pow(i,3)  
print("The sum of the series = ",sum)
```

Output:

```
Enter the range of number:15  
The sum of the series = 14400
```

**5. Write a Program to Find the sum of series $2+4+6+8. \dots +N.$ **

PROGRAM:

```
n = int (input ("Enter the range of numbers:"))  
sum=0  
i=0  
while(i<=n):  
    sum+=i  
    i+=2  
print("The sum of the series is :",sum)
```

OUTPUT:

```
Enter the range of number:100  
The sum of the series is :2550
```

6. Write a Program to Find the sum of series $1+11+111+1111. \dots +N$.

PROGRAM:

```
n=int(input("Enter the range of number:"))
sum=0
j=1
for i in range(1,n+1):
    sum=sum+j
    j=(j*10)+1
print(sum)
```

OUTPUT:

```
Enter the range of number:5
12345
```

**7. Write a program to find the sum of series
 $1/2!+2/3!+3/5!+4/6!+. \dots N/(N+1)!$**

PROGRAM:

```
num=int(input("enter your limit:"))
res = 0
fact = 1
for i in range(1, num+1):
    fact *= i
    res = res + (i/ fact)
print("the sum of the series is :",res)
```

OUTPUT:

```
enter your limit:10
the sum of the series is : 2.7182815255731922
```

8. Write a Program to print the Fibonacci series.

PROGRAM:

```
N=int(input("enter no, of number to be print:"))  
F1=int(input("enter the first no."))  
F2=int(input("enter the second no."))  
i=0  
print(F1)  
print(F2)  
while(i<N-2):  
    F3=F1+F2  
    print(F3)  
    F1=F2  
    F2=F3  
    i+=1
```

OUTPUT:

```
enter no, of number to be print:8  
enter the first no.0  
enter the second no.1  
0  
1  
1  
2  
3  
5  
8  
13
```


9. Write a program to find the sum of series $1+3+5+7+...+N$.

PROGRAM:

```
n = int (input ("Enter the range of numbers:"))  
sum=0  
i=1  
while(i<=n):  
    sum+=i  
    i+=2  
print("The sum of the series is :",sum)
```

OUTPUT:

Enter the range of numbers:19

The sum of the series is : 100

10. Write a program to find the sum of series $1+2+3+...+N$.

PROGRAM:

```
n = int (input ("Enter the range of numbers:"))  
sum=0  
i=1  
while(i<=n):  
    sum+=i  
    i+=1  
print("The sum of the series is :",sum)
```

OUTPUT:

```
Enter the range of numbers:20  
The sum of the series is : 210
```

11. Write a Program to find the sum of series $1!+2!+3!...+n!$

SOURCE CODE :

```
n=int(input("Enter the number:"))  
sum=0  
fact=1  
for i in range(1,n+1):  
    fact=fact*i  
    sum=sum+fact  
print(sum)
```

OUTPUT :

```
Enter the number : 5  
153
```

12. Write a Program to Find the sum of series $9+99+999+9999+....+N$.

PROGRAM:

```
n=int(input('Enter the range of number:'))  
sum=0  
p=9  
for i in range(1,n+1):  
    sum += p  
    p=(p*10)+9  
print('The sum of the series = ',sum)
```

Output:

Enter the range of number:8

The sum of the series = 11111102

Convert decimal to binary number

PROGRAM:

```
num=int(input("enter number:"))
```

```
result=""
```

```
while(num>0):
```

```
    r=num%2
```

```
    result=str(r)+result
```

```
    num//=2
```

```
print("the binary digit is :",result)
```

OUTPUT:

```
enter number:8
```

```
the binary digit is : 1000
```

Convert binary to decimal number

PROGRAM:

```
bin=int(input('enter binary number:'))  
decimal=0  
i=0  
while(bin>0):  
    r=bin%10  
    decimal+=r*(2**i)  
    bin//=10  
    i+=1  
print('the decimal number is :',decimal)
```

OUTPUT:

```
enter binary number:1000  
the decimal number is : 8
```

Check the given number is Armstrong number

PROGRAM:

```
n=int(input("Enter a number:"))
```

```
num=n
```

```
sum=0
```

```
while(n>0):
```

```
    rem=n%10
```

```
    sum=sum+(rem**3)
```

```
    n=n//10
```

```
if(sum==num):
```

```
    print(num,"is an armstrong number")
```

```
else:
```

```
    print(num,"is not an armstrong number")
```

OUTPUT:

Enter a number:371

371 is an armstrong number

Reversing a Number

PROGRAM:

```
num = int(input("enter a number "))  
reversed_num = 0  
while (num != 0):  
    digit = num % 10  
    reversed_num = reversed_num * 10 + digit  
    num //= 10  
print("Reversed Number: " + str(reversed_num))
```

OUTPUT:

enter a number 34567

Reversed Number: 76543

Print all the prime numbers from 1 -50

PROGRAM:

```
lower_value = int(input ("Please, Enter the Lowest Range Value: "))  
upper_value = int(input ("Please, Enter the Upper Range Value: "))  
print ("The Prime Numbers in the range are: ")  
for number in range (lower_value, upper_value + 1):  
    if (number > 1):  
        for i in range (2, number):  
            if (number % i) == 0:  
                break  
        else:  
            print (number,end=' ' )
```

OUTPUT:

Please, Enter the Lowest Range Value: 1

Please, Enter the Upper Range Value: 100

The Prime Numbers in the range are:

**2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83
89 97**

Print all the leap year from 1900 – 2000

SOURCE CODE :

```
n=int(input("Enter the year:"))  
m=int(input("Enter the year:"))  
for i in range(m,n+1):  
    if(i%4==0 and i%100!=0 or i%400==0):  
        print(i,end=' ')
```

OUTPUT :

Enter the year : 2000

Enter the year : 1900

**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**

NUMBER PATTERN

Python program to print the following simple number pattern using a for loop.

PROGRAM:

```
rows = int(input('Enter the number of rows :'))  
for i in range(rows):  
    for j in range(i):  
        print(i, end=' ')  
    print('')
```

OUTPUT:

Enter the number of rows7

```
1  
2 2  
3 3 3  
4 4 4 4  
5 5 5 5 5  
6 6 6 6 6 6
```

INVERTED PYRAMID PATTERN OF NUMBERS

An inverted pyramid is a downward pattern where numbers get reduced in each iteration, and on the last row, it shows only one number. Use reverse for loop to print this pattern.

PROGRAM:

```
n=int(input("Enter the Value :"))  
for i in range(1,n+1):  
    print()  
    for j in range(n-i,0,-1):  
        print(i,end=' ')
```

OUTPUT:

Enter the Value : 6

11111

2222

333

44

5

PYRAMID PATTERN OF NUMBERS

Let's see how to print the following half pyramid pattern of numbers

PROGRAM:

```
rows = int(input('enter a number:'))
```

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

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

```
        print(j, end=' ')
```

```
    print('')
```

OUTPUT:

enter a number:5

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

Inverted Pyramid pattern with the same digit

PROGRAM:

```
rows = 5
num = rows
for i in range(rows, 0, -1):
    for j in range(0, i):
        print(num, end=' ')
    print("\r")
```

OUTPUT:

```
5 5 5 5 5
5 5 5 5
5 5 5
5 5
5
```

ALTERNATE NUMBERS PATTERN USING WHILE LOOP

Let's see how to use the while loop to print the number pattern.

PROGRAM:

```
rows = 5
i = 1
while i <= rows:
    j = 1
    while j <= i:
        print((i * 2 - 1), end=" ")
        j = j + 1
    i = i + 1
    print("")
```

OUTPUT:

```
1
3 3
5 5 5
7 7 7 7
9 9 9 9 9
```

REVERSE PYRAMID OF NUMBERS

PROGRAM:

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

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

OUTPUT :

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

SIMPLE HALF PYRAMID PATTERN:

PROGRAM:

```
rows = int(input("Enter number of rows: "))
```



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

OUTPUT;

Enter number of rows: 5

```
*  
* *  
* * *  
* * * *  
* * * * *
```

DOWNWARD HALF-PYRAMID PATTERN OF STAR

PROGRAM:

```
rows = int(input("Enter number of rows: "))
```

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

OUTPUT;

Enter number of rows: 5

```
* * * * *  
* * * *  
* * *  
* *  
*
```

Downward full Pyramid Pattern of star

Let's see how to print reversed pyramid pattern in Python.

PROGRAM:

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

```
space=0
```

```
for i in range(n):
```

```
    for j in range(space):
```

```
        print(" ",end= " ")
```

```
    space=space+1
```

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

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

```
    print(" ")
```

OUTPUT:

Enter the number of rows:5

```
* * * * *
```

```
* * * *
```

```
* * *
```

```
* *
```

```
*
```

RIGHT DOWN MIRROR STAR PATTERN

PROGRAM:

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

```
print("Mirrored Right Triangle Star Pattern")
```

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

```
    for j in range(1, rows + 1):
```

```
        if(j <= rows - i):
```

```
            print(' ', end = ' ')
```

```
        else:
```

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

```
    print()
```

OUTPUT:

Please Enter the Total Number of Rows : 5

Mirrored Right Triangle Star Pattern

```
      *
     * *
    * * *
   * * * *
  * * * * *
```

EQUILATERAL TRIANGLE PATTERN OF STAR

PROGRAM:

n=20

```
num=int(input('enter number :'))
```

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

```
    print(' '*n, end='')
```

```
    print('* '*(i))
```

```
    n-=1
```

OUTPUT:

enter number :5

```

    *
  * *
* * *
* * * *
* * * * *
```

RIGHT START PATTERN OF STAR

PROGRAM:

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

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

```
        for j in range(1,i+1):
            print('*',end=" ")
        print()
for i in range(1,n+1):
    for j in range(n-i):
        print('*',end=" ")
    print()
```

OUTPUT :

enter the number : 5

```
*
* *
* * *
* * * *
* * * * *
* * * * *
* * * *
* * *
* *
*
```