

ASSIGNMENT – II

PROBLEMS ON CONTROL STATEMENTS

NUMBER SERIES:

1. Write a Program to print series 0 2 6 12 20 30 42 ...N.

```
n= int(input("enter any no"))
```

```
i=1
```

```
while i<=n:
```

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

```
    i+=1
```

OUTPUT:

enter any no 10

0 2 6 12 20 30 42 56 72 90

2. Write a Program to print series 0,2,8,14,24,34 ...N.

```
n= int(input("enter any no"))
```

```
i=0
```

```
while i<n:
```

```
    if i%2==0 and i>0:
```

```
        print((i*i)-2,end=" ")
```

```
    elif i%2!=0 and i>0:
```

```
        print((i*i)-1,end=" ")
```

```
    i+=1
```

OUTPUT:

enter any no 10

0 2 8 14 24 34 48 62 80

3. Write a program to print Arithmetic series 1 4 7 10...

```
n= int(input("enter any no"))  
i=1  
for i in range(1,n+1,3):  
    print(i)
```

OUTPUT:

enter any no 10

1
4
7
10

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

```
n= int(input("enter any no"))  
sum=0  
for i in range(1,n+1):  
    sum+=i**3  
print(sum)
```

OUTPUT:

enter any no 10

3025

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

```
n= int(input("enter any no"))  
sum=0  
for i in range(2,n+1,2):  
    sum+=i
```

```
print(sum)
```

OUTPUT:

enter any no 10

30

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

```
n= int(input("enter any no"))
```

```
sum=0
```

```
j=1
```

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

```
    sum = sum + j
```

```
    j = (j * 10) + 1
```

```
print(sum)
```

OUTPUT:

enter any no5

12345

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

```
n=int(input("Enter the value of N: "))
```

```
sum=0
```

```
fact=1
```

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

```
    fact=fact*i
```

```
    sum=sum+(i/fact)
```

```
print(sum)
```

OUTPUT:

Enter the value of N: 5

2.7083333333333333

8. Write a Program 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: 0

enter the 2nd value: 1

enter the n value: 5

0

1

1

2

3

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

```
n= int(input("enter any no"))
sum=0
for i in range(1,n+1,2):
    sum=sum+i
print(sum)
```

OUTPUT:

```
enter any no 10
25
```

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

```
n= int(input("enter any no"))
sum=0
for i in range(1,n+1):
    sum=sum+i
print(sum)
```

OUTPUT:

```
enter any no 10
55
```

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

```
sum=0
fact=1
n= int(input("enter any no"))
for i in range(1,n+1):
```

```
fact=fact*i
sum=sum+fact
print(sum)
```

OUTPUT:

```
enter any no 10
4037913
```

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

```
n = int(input("Enter the no of terms: "))
sum = 0
i=1
t=9
for i in range(1, n+1):
    sum = sum +t
    t=t*10+9
print(sum)
```

OUTPUT:

```
Enter the no of terms: 4
11106
```

NUMBER PATTERN:

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

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

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

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

OUTPUT:

enter n:5

1
22
333
4444
55555

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

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

```
n = int(input("enter n:"))  
for i in range(1,n+1):  
    for j in range(1,i+1):  
        print(j, end = "")  
    print()
```

OUTPUT:

enter n:5

1
12
123
1234

12345

3. Inverted pyramid pattern of numbers

1 1 1 1 1

2 2 2 2

3 3 3

4 4

5

```
n = int(input("enter value n="))
```

```
b=0
```

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

```
    b+=1
```

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

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

```
    print()
```

OUTPUT:

enter value n=5

11111

2222

333

44

5

4. Inverted Pyramid pattern with the same digit

Pattern: –

5 5 5 5 5

5 5 5 5

5 5 5

5 5

5


```
n = int(input("enter value n:"))
b=0
for i in range(n,0,-1):
    for j in range(i):
        print("5", end = "")
    print()
```

OUTPUT:

enter value n:5

55555

5555

555

55

5

5. Alternate numbers pattern using while loop

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

Pattern: –

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

```
n = int(input("enter value n:"))
i=1
for i in range(1,n+1,2):
    for j in range(1,i+1,2):
        print(i, end = "")
    print()
```

OUTPUT:

enter value n:10

1
33
555
7777
99999

6.Reverse Pyramid of Numbers

Pattern 2: –

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

```
n = int(input("enter value n="))
```

```
i=1
```

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

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

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

```
    print()
```

OUTPUT:

enter value n=5

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

PYRAMID PATTERNS:

Simple half pyramid pattern: –

*

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

```
n = int(input("enter value n="))
```

```
i=1
```

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

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

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

```
    print()
```

OUTPUT:

```
enter value n= 5
```

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

2.Downward half-Pyramid Pattern of Star

Pattern: –

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

```
n = int(input("enter value n="))
```

```
i=1
```

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

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

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

```
    print()
```

OUTPUT:

enter value n=5

* * * * *

* * * *

* * *

* *

*

3. Downward full Pyramid Pattern of star

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

Pattern: –

* * * * *

* * * * *

* * * *

* * *

* *

*

```
n = int(input("enter value n:"))
```

```
i=1
```

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

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

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

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

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

```
    print()
```

OUTPUT:

enter value n:5

* * * * *

* * * *

* * *

* *

```
*
```

4.Right down mirror star Pattern

Pattern: –

```
*****
```

```
****
```

```
***
```

```
**
```

```
*
```

```
n = int(input("enter value n:"))
```

```
i=1
```

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

```
    for j in range(0,n+1):
```

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

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

```
        else:
```

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

```
    print()
```

OUTPUT:

```
enter value n:5
```

```
*****
```

```
****
```

```
***
```

```
**
```

```
*
```

5.Equilateral triangle pattern of star

Pattern: –

```
*
```

```
* *
```

```
* * *
```

```
* * * *
```

```

    * * * * *
 * * * * * *

n = int(input("enter value n="))
i=1
for i in range(0,n):
    for j in range(0,n-i-1):
        print( end = " ")
    for j in range(0,i+1):
        print("*",end=" ")
    print()

```

OUTPUT:

enter value n=5

```

 *
* *
* * *
* * * *
* * * * *

```

6. Right start pattern of star
Pattern: —

```

*
* *
* * *
* * * *
* * * * *
* * * * *
* * * *
* * *
* *
*

```

```

n = int(input("enter value n"))
i=1
for i in range(0,n):

```

```

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

```

OUTPUT:

enter value n 5

```

*
* *
* * *
* * * *
* * * * *
* * * * *
* * * *
* * *
* *
*

```

PROBLEMS:

1.Convert decimal to binary number

```

def convertToBinary(n):
    if n > 1:
        convertToBinary(n//2)
    print(n % 2,end = " ")
dec=int(input("enter decimal no:"))
convertToBinary(dec)

```

OUTPUT:

enter decimal no:9

1001

2.Convert binary to decimal number

```
num=int(input("enter any binary no"))
```

```
sum=0
```

```
i=0
```

```
while num!=0:
```

```
    rem=num%10
```

```
    sum=sum+rem*(2**i)
```

```
    num=num//10
```

```
    i=i+1
```

```
print("decimal value",sum)
```

OUTPUT:

enter any binary no 1010

decimal value 10

3.Check the given number is Armstrong number

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

```
sum=0
```

```
temp=n
```

```
while temp>0:
```

```
    rem=temp%10
```

```
    sum+=rem**3
```

```
    temp//=10
```

```
if n==sum:
```

```
    print(n,"is an Armstrong number")
```


else:

```
print(n,"is not an Armstrong number")
```

OUTPUT:

Enter a number: 371

371 is an Armstrong number

4.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: 456

Reversed Number: 654

5. Write a python code for print the all prime numbers 1-50.

```
for i in range(1,51):
```

```
    count=0
```

```
    for j in range(2,i//2+1):
```

```
        if(i%j==0):
```

```
            count+=1
```

```
    if(count==0 and i!=1):
```

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

OUTPUT:

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

6. 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