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)=sum+i**3
print(sum)
```

OUTPUT:

```
enter any no10
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=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

2.708333333333333

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
```

<u>NUMBER PATTERN</u>:

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