ASSIGNMENT-2- PROBLEM ON CONTROL SATEMENT

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

SOURCE CODE:

```
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

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

SOURCE CODE:

```
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 ....

SOURCE CODE:

```
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

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

SOURCE CODE:

```
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.....+N.

SOURCE CODE:

```
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.....+N.

SOURCE CODE:

```
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!+.....N/(N+1)!

SOURCE CODE:
```
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

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8. Write a Program to print the Fibonacci series.

SOURCE CODE:
```
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

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

SOURCE CODE:

```
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.

SOURCE CODE:

```
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

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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

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

SOURCE CODE:

```python
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 = 111111102

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Convert decimal to binary number

SOURCE CODE:

```
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

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Convert binary to decimal number

SOURCE CODE:

```
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

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Check the given number is Armstrong number

SOURCE CODE:

```python
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 armsrtong number")
else:
    print(num,"is not an armsrtong number")
```

OUTPUT:

Enter a number:371

371 is an armsrtong number

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Reversing a Number

SOURCE CODE:

```
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

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Print all the prime numbers from 1 -50

SOURCE CODE:

```python
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

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Print all the leap year from 1900 – 2000

SOURCE CODE :

```python
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

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NUMBER PATTERN

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

SOURCE CODE:

```
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

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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.

SOURCE CODE:

```
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

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PYRAMID PATTERN OF NUMBERS

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

SOURCE CODE:

```
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
```

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Inverted Pyramid pattern with the same digit

SOURCE CODE:

```
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

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ALTERNATE NUMBERS PATTERN USING WHILE LOOP

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

SOURCE CODE:

```
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
```

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REVERSE PYRAMID OF NUMBERS

SOURCE CODE :

```
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

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SIMPLE HALF PYRAMID PATTERN:

SOURCE CODE:

```
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

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

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DOWNWARD HALF-PYRAMID PATTERN OF STAR

SOURCE CODE:

```
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

* * * * *

* * * *

* * *

* *

*

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Downward full Pyramid Pattern of star

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

SOURCE CODE:

```
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

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

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RIGHT DOWN MIRROR STAR PATTERN

SOURCE CODE;

```
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

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

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EQUILATERAL TRIANGLE PATTERN OF STAR

SOURCE CODE:

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

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RIGHT START PATTERN OF STAR

SOURCE CODE :

```
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

*

* *

* * *

* * * *

* * * * *

* * * *

* * *

* *

*

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