ASSIGNMENT-2- PROBLEM ON CONTROL SATEMENT

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

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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

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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

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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

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

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

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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

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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

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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.

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 = 111111102

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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

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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 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

PROGRAM:

```python
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

PROGRAM:

```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

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

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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.

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

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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
```

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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):
```

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```
    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: "))
```

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```python
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:

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```
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  : "))
```

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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

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```
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

*

* *

* * *

* * * *

* * * * *

* * * *

* * *

* *

*