Cycle 2.1

Program :1

Aim: Program to Find the Factorial of a number.

Algorithm

Steps

1. Read a number
2. Set Fact equal to one
3. If number is less than 0. print Factorial not found
   3.1 else number is zero print Fact
   3.2 else consider the number and Use For Loop For Find Facterial
   3.3 print Facterial.
4. STOP

Program

```
n = int(input ("Enter number: "))
Fact = 1
if num<0:
    Print("Facterial not found")
elif num==0:
    Print ("Facterial is", fact)
else:
    for i in range (1, num+1):
        Fact = fact * i
    Print("Facterial of", num, "is", Facterial)
```

Output

Enter number : 5

Factorial of 5 is : 120

Program: 2

Aim: Generate Fibonacci series of N terms.

Algorithm

1. Start
2. Set First number equal to zero and Second number equal to one.
3. Set count equal to zero
4. Read the no^th how many terms to Series
5. If nterms less than or equal to one Print series not found
   5.1. elseIf nterms equal to one Print First term.
   5.2. else Print Fibonacci series using while loop
      5.2.2. print First term and increment count and change First term to Sec
6. Stop.

Program:

```
n1=0
n2=1
count=0
nterms=int(input("How many terms:"))

if nterms<=0:
    print("Enter a positive no")
elif nterms==1:
    print("Fibonacci series upto",nterms)
    print(n1)

else:
    print("Fibonacci series:")
    while count<nterms:
        print(n1,end=' ')
        nth=n1+n2
        n1=n2
        n2=nth
        count=count+1
```

Output

How many terms: 10

Fibonacci Series:

0 1 1 2 3 5 8 13 21 34

Program: 3

Aim: Find the sum of all items in a list

Algorithm

1. Start
2. Declare a list
3. Set sum=0
4. enter no of elements in list
5. use for loop to read elements in list
6. Find the sum using for loop
7. Print sum of all elements in list
8. Stop

Program

```
num = []
sum=0
n=int(input("Enter no of elements:"))
for i in range(0,n):
    num.append(int(input("Enter elements")))
for i in range(0, len(num)):
    sum = sum+num[i]
Print("Sum of items:", Sum)
```

Output

Enter no.of elements: 4

Enter elements: 10

Enter elements: 20

Enter elements: 30

Enter elements: 40

Sum of items: 100

Program: 4

Aim: Generate a list of four digit numbers in a given range with all their digits even and the number is a perfect square.

Algorithm

1. use an outer loop for getting all 4 digit numbers
2. Now use an inner loop to check which of the 3 digit number have 4 digit number as square
3. perfect square of a 4 digit number starts from 32 and ends in 99.
4. check i with j*j
5. If it is true, then took each digit and check if that is even or not.
6. If even, print the numbers, else loop iterates until all numbers are printed
7. End

program

```
for i in range (1000, 10000, 1):
    for j in range (32, 100, 1):
        if i = j * j:
            String = str(i)
            if int(String[0]) % 2 == 0 and int(String[1]) % 2 == 0 and int(String[2]) % 2 == 0 and int(String[3]) % 2 == 0:
                print(i)
```

Output:

4624

6084

6400

8464

Program:5

Aim: Display the given pyramid with step number accepted from user Eg: N=4

1
2 4
3 6 9
4 8 12 16

Algorithm:

1. Start
2. Read the input from user
3. print the multiplication table in pyramid
4. Print
5. Stop

Program

```
n=int(input("Enter no.of steps:"))
for i in range (1,n+1):
    for j in range (1,1+i):
        Print (i*j, end=" ")
    Print ()
```

Output

Enter no of steps: 4

1

2 4

3 6 9

4 8 12 16

Program: 6

Aim: Count the number of characters (character frequency) in a string.

Algorithm

1. Start
2. Declare a dictionary
3. read a string
4. Calculate the frequency of each character
5. print character frequency
6. Stop.

Program

```
dict = {}
Str = input ("Enter a string:")
For n in Str:
        key_s = dict.keys()
        if n in key_s:
                dict[n] = dict[n]+1

        else:
                dict[n]=1

Print ("character frequency of :", Str, "is:", dict)
```

Output

Enter a String: programming lab

character frequency of programming lab is

{'p': 1, 'r': 2, 'o': 1, 'g': 2, 'a': 2, 'm': 2, 'i': 1, 'n': 1, 'b': 1}