HOMEWORK-1

S.MALATHY, B.E-CSE

DOMAIN:DATA SCIENCE WITH AI-ML

ANNAPOORANA ENGINEERING COLLEGE, SALEM

*1.Generate Fibonacci series using **while** loop in python.*

Program:

```
#fibonicci series
#0,1,1,2,3,5,8.....n
n=int(input("enter n:"))
a=0
b=1
c=a+b
print(a)
print(b)
while c<=n:
    print(c)
    a=b
    b=c
    c=a+b
```

output:

enter n:20

0

1

1

2

3

5

8

13

enter n:78

0

1

1

2

3

5

8

13

21

34

55

- *Fibonacci series using **for** loop in python.*

Program:

```
#python program for fibonacci series using for loop
n=int(input("Enter the number of terms: "))
a=0
b=1
if n<=0:
    print("The Output of your input is",a)
else:
    print(a,b,end=" ")
    for x in range(2,n):
        c=a+b
        print(c,end=" ")
        a=b
        b=c
```

output:

Enter the number of terms: 15

0 1 1 2 3 5 8 13 21 34 55 89 144 233 377

Enter the number of terms: 25

0 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987 1597 2584 4181 6765 10946 17711 28657 46368

Enter the number of terms: 8

0 1 1 2 3 5 8 13

*2.Factorial program using **for** loop*

Program:

```
n=int(input("enter the number:"))
result =1
for i in range(n,0,-1):
    result=result*i
print("factorial of",n,"is",result)
```

output:

enter the number:25

factorial of 25 is 15511210043330985984000000

enter the number:5

factorial of 5 is 120

enter the number:- 25

factorial of -25 is 1

enter the number:100

factorial of 100 is
933262154439441526816992388562667004907159682643816214685929638952175999932299156089414639761565182862536979208272237582511852109168640000000000000000000000000

enter the number:0

factorial of 0 is 1

*2.Factorial program using **while** loop*

Program:

```
num=int(input("enter a number:"))
fact=1
while(num>0):
    fact=fact*num
    num=num-1
print("factorial number is:",fact)
```

output:

enter a number:25

factorial number is: 15511210043330985984000000

enter a number:4

factorial number is: 24

enter a number:5

factorial number is: 120

3.Difference between for loop and while loop .

Basis of Comparison	For Loop	While Loop
Keyword	Uses **for** keyword	Uses **while** keyword
Used	For loop is used when the number of iterations is already known.	While loop is used when the number of iterations is already Unknown.
absence of condition	The loop runs infinite times in the absence of condition	Returns the compile time error in the absence of condition
Nature of Initialization	Once done, it cannot be repeated	In the while loop, it can be repeated at every iteration.
Functions	To iterate, the range or x range function is used.	There is no such function in the while loop.
Initialization based on iteration	To be done at the beginning of the loop.	In the while loop, it is possible to do this anywhere in the loop body.
Generator Support	Python's for loop can iterate over generators.	While loops cannot be directly iterated on Generators.