HOMEWORK-1

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BE(CSE)

DOMAIN:DATA SCIENCE WITH AI-ML

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- *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:78
0
1
1
```

2
3
8
13
21
34
55

enter n:50
0
1
1
2
3
5
8
13
21
34

- *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: 10

0 1 1 2 3 5 8 13 21 34

Enter the number of terms: 30

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 75025 121393 196418 317811 514229
Enter the number of terms: 6

0 1 1 2 3 5

- *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:30

factorial of 30 is

265252859812191058636308480000

0000

enter the number:8

factorial of 8 is

40320.

enter the

number:-20

factorial of -

20 is 1

enter the

number:0

factorial of 0

is 1

- *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:22

factorial number is:

1124000727777607680000

enter a number:8

factorial number

is: 40320

- ***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 alreadyknown.	While loop is used when the number of iterations is alreadyUnknown.
absence of condition	The loop runs infinite times inthe absence of condition	Returns the compile time errorin the absence of condition
Nature of Initialization	Once done, it cannot berepeated	In the while loop, it can berepeated at every iteration.
Functions	To iterate, the range or x rangefunction is used.	There is no such function inthe while loop.
Initialization based oniteration	To be done at the beginning ofthe loop.	In the while loop, it is possible to do this anywhere in the loopbody.