15/09/25 PYTHON

For Loop: Write a program to check for prime number

```
num = int(input())
count=0
print (“before count:”, count)
for i in range(2,num,1):
        if(num%i==0):
            count+=1
        else:
            count=count
print(“after count:”, count)
if(count==0):
        print(“prime number”)
else:
        print (“not a prime number”)
```

```
Tracing:3
1.Intially count =0
  count=0
 => i=2
     3%2==0 [false]
     count=0
  =>i=3
     3%3==0[true]
     count=1
   count==0(false)
   Not a prime number
```

=>There are 3 loop statements:

- Break
- Continue
- Pass

1.break statement: It will stop the execution if the given condition is satisfied.

```
Eg: for i in range(1,6,1):
        if (i==5):
            break
        else:
            print(i)
```

o/p: 1 2 3 4

2.continue statement: To skip a particular condition

```
Eg: for i in range(1,6,1):
        if (i==5):
            continue
        else:
            print(i)
```

o/p:1 2 3 4 6

=>Using break statement check no. is prime or not

```
num = int(input())
for i in range(2,num,1):
      if(num%i==0):
            print(“It is prime no.”)
else:
      print(“It’s not a prime no.”)
```

Tracing:

num = 4

i=2

4%2==0

It’s a prime no.

2.While Loop: Syntax: initialization

```
                              while(condition):
                                    statements
                                    increment/decrement
```

=>Fibonacci series using while loop:

```
num = int(input())
a=0
b=1
```

```
i=1
while(i<=5):
        print(a)
        s=a+b
        a=b
        b=s
        i+=1
```

o/p:5

```
0 1 1 2 3 5
```

Tracing: 5

```
=>i =1
1<=(true)
a = 0
s = 0+1=1
a = 1
b = 1
=>i = 1+1=2
2<=5(true)
a=1
s=1+1=2
a=1
b=2
=>i=2+1=3
3<=5(true)
a=1
s=1+2=3
a=2
b=3
```

```
=>i=3+1=4
   4<=5(true)
   a=2
   s=2+3=5
   a=3
   b=5
=>i=4+1=5
   5<=5(true)
   a=3
   s=3+5=8
   a=5
   b=8
=>i=5+1=6
  6<=5(false)
```

=>Sum of digits using while loop

```
num = int (input())
s=0
while(num>0):
        dig=num%10 [to extract value]
        s=s+dig
        num=num//10 [to delete the value]
print(s)
```

o/p:123=>6

Tracing: 123

=>s=0

123>0(true)

dig=123%10=3

s=0+3=3

num=123//10=12

s=3

=>s=3

12>0(true)

dig=12%10=2

s=3+2=5

num=12//10=1

s=5

=>s=5

1>0(true)

dig=1%10=1

s=5+1=6 , num=1//10=0 , s=6

3.Nested Loops: A loop inside another loop.

When we have a table like structure or rows and column structure go for nested loops.

- **For loop inside for loop:**

```
Syntax: for var1 in range(): #outer loop
                 for var2 in range(): #inner loop
                         statements for inner loop
                  statements for outer loop
```

Eg: write a program to tables from 1-3

```
for i in range(1,11,1):
    for j in range(1,4,1):
         print(i*j, end=" \t")  [end we use to print one after other]
   print()
```

```
                                            Tracing: =>i=1     =>i=2        =>i=3
o/p: 1       2      3                              j=1,2,3     j=1,2,3      j=1,2,3
     2       4      6                              1 2 3       2 4 6        3 6 9
     3       6      9                              =>i=4       =>i=5        =>i=6
     4       8      12                             j=1,2,3     j=1,2,3      j=1,2,3
     5       10     15                             4 8 12      5 10 15      6 12 18
     6       12     18                             =>i=7       =>i=8        =>i=9
     7       14     21                             j=1,2,3     j=1,2,3      j=1,2,3
     8       16     24                             7 14 21     8 16 24      9 18 27
     9       18     27                             =>i=10
     10      20     30                             j=1,2,3
                                                   10 20 30
```