

While loop

Whenever we don't have any pre-information about number of terms for the given sequence or number of times the iteration going to execute has not been specified, then we use while loop.

Syntax:-

```
initialization  
while(condition):  
    #working  
    update
```

Q. Print the following sequence:-

4, -8, 12, -16, 20, -24,, -816, 820

Program:-

```
term = 4
```

```
while(term <= 820):
```

```
    if (term % 8 == 0):
```

```
        print(-term, end=',')
```

```
    else:
```

```
        print(term, end=',')
```

```
    term = term + 4
```

for loop

- It is used to iterate over sequence datatype in Python.
- Whenever we have pre information about number of terms for the given sequence or number of times the iteration is going to be executed has been given, then we use for loop.

Syntax:-

```
for variable in Sequencedatatype:  
    #working
```

e.g.

```
for x in [80, 70, 20, 50, 60, 10]:  
    print(x, end=',')
```

Output :-

80, 70, 20, 50, 60, 10,

Q.

```
for m in [2, 5, 9, 4, 7, 3]:  
    print((m**2), end=',')
```

Output:-

4, 25, 81, 16, 49, 9,

Q.

```
Sum = 0  
for x in (20, 10, 30, 40, 60):  
    print(x, end=',')  
    Sum = Sum + x  
print("\n Sum =", Sum)
```

Output:-

20, 10, 30, 40, 60,
Sum = 160

Dry run

Sum	x
0	+ 20
20	+ 10
30	+ 30
60	+ 40
100	+ 60
160	

range() function

It is used to generate a sequence of numbers in the specified range.

Syntax :-

Variable = range(Start, end, Step)

Start → It indicates the first value of the sequence (included)

default value = 0

End → It indicates last value of range.
It is not included in sequence.

Step → It indicates interval or gap between two numbers of sequence.

default value = +1

Q.4

$x = \text{range}(20)$

$\therefore x = (0, 1, 2, 3, 4, 5, 6, \dots, 18, 19)$

$m = \text{range}(10, 50)$

$\therefore m = (10, 11, 12, 13, 14, \dots, 49)$

$n = \text{range}(10, 50, 4)$

$\therefore n = (10, 14, 18, 22, 26, 30, 34, 38, 42, 46)$

Q. Write a program to print first 20 natural number.

Program:-

```
#displaying first 20 natural number
```

```
print("first 20 natural number:")
```

```
for x in range(1, 21):
```

```
    print(x, end=',')
```

Output:-

first 20 natural number:

1, 2, 3, 4, , 19, 20,

Q. Write a program to print first 30 even natural number. Also print their sum.

Program:-

```
Sum = 0
```

```
print("First 30 even natural number:")
```

```
for x in range(1, 31):
```

```
    print(x*2, end=',')
```

```
    Sum = Sum + (x*2)
```

```
print("\n Sum =", Sum)
```

Output:-

First 30 even natural number:

2, 4, 6, 8, 10, , 60,

Sum = 930