

Python - Loops

Python programming language provides following types of loops to handle looping requirements.

Sr. No.	Loop Type & Description
1	while loop Repeats a statement or group of statements while a given condition is TRUE. It tests the condition before executing the loop body.
2	for loop Executes a sequence of statements multiple times and abbreviates the code that manages the loop variable.
3	nested loops Can use one or more loop inside any another 'while' or 'for' loop.

While Loop

A **while** loop statement repeatedly executes a target statement as long as a given condition is true.

Syntax

The syntax of a **while** loop in Python programming language is

```
while expression:  
    statement(s)
```

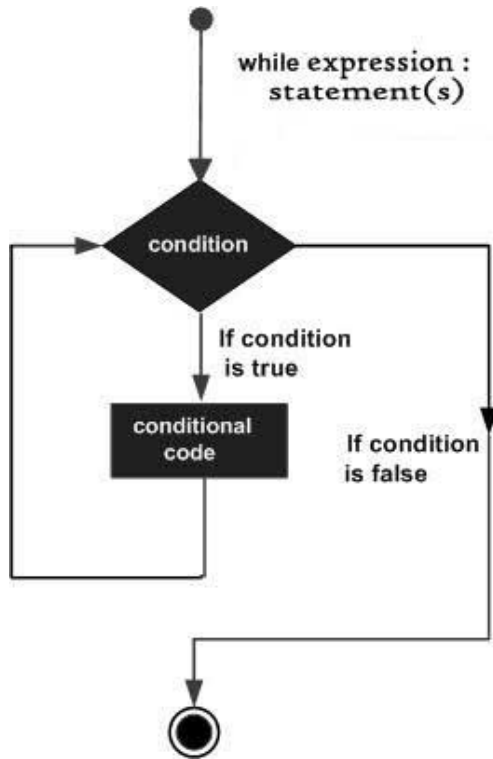
Statement(s) may be a single or a block of statements.

- The condition may be any expression, and true is any non-zero value.
- The loop iterates while the condition is true.
- When the condition becomes false, program control passes to the line immediately following the loop.

While Loop



INTERNSHIPSTUDIO



```
[ ] # while statement is like if statement.  
i = 0  
while i<2:  
    print (i)  
    i= i+1
```

```
0  
1
```

A break statement is used to break from a loop

```
i = 0  
while i<10:  
    if i==5:  
        break  
    print (i)  
    i= i+1
```

```
0  
1  
2  
3  
4
```

'while' Loop



INTERNSHIPSTUDIO

While loop with 'else'

Same as with 'for' loops, 'while' loops can also have an optional 'else' block. The 'else' part is executed if the condition in the while loop evaluates to False. The while loop can be terminated with a break statement.

In such cases, the else part is ignored. Hence, a while loop's else part runs if no break occurs and the condition is false.

```
#Using else Statement with While Loop
```

```
count = 0
```

```
while count < 5:
```

```
    print (count, " is less than 5")
```

```
    count = count + 1
```

```
else:
```

```
    print (count, " is not less than 5")
```

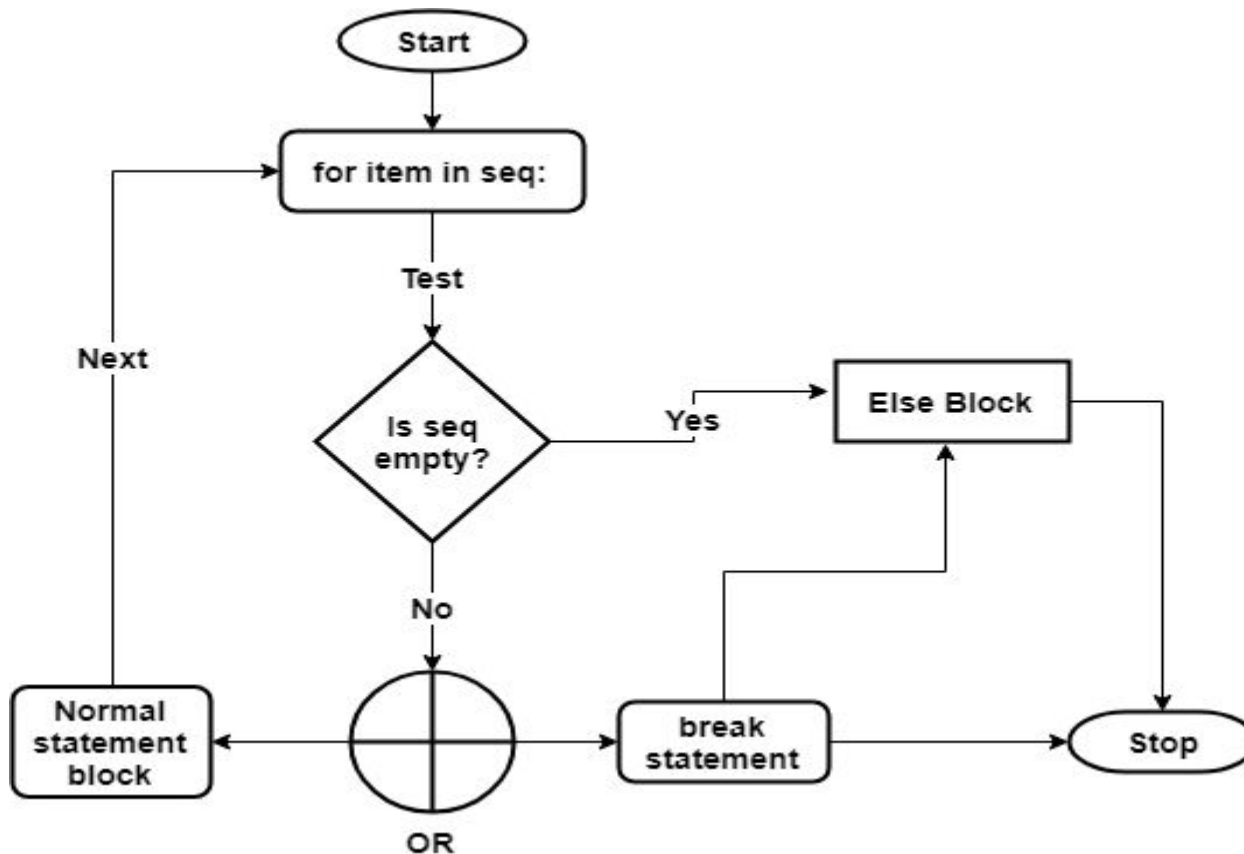
```
↳ 0 is less than 5  
1 is less than 5  
2 is less than 5  
3 is less than 5  
4 is less than 5  
5 is not less than 5
```

'for' Loop (cont)..



INTERNSHIPSTUDIO

- A 'for' loop is used for iterating over a sequence (that can be a list, a dictionary, a set, or a string).
- 'for' loops are traditionally used when you have a block of code which you want to repeat a fixed number of times.



'for' Loop (cont)..

INTERNSHIPSTUDIO

Syntax of 'for' Loop

```
for val in sequence:  
    Body of 'for'
```

Here, val is the variable that takes the value of the item inside the sequence on each iteration.

```
#Print each fruit in a fruit list:  
fruits = ["apple", "banana", "cherry"]  
for x in fruits:  
    print(x)
```

```
apple  
banana  
cherry
```

For Loop- Example



INTERNSHIPSTUDIO

```
# Program to find the sum of all numbers stored in a list

# List of numbers
numbers = [6, 5, 3, 8, 4, 2, 5, 4, 11]

# variable to store the sum
sum = 0

# iterate over the list
for val in numbers:
    sum = sum+val

print("The sum is", sum)
```

The sum is 48