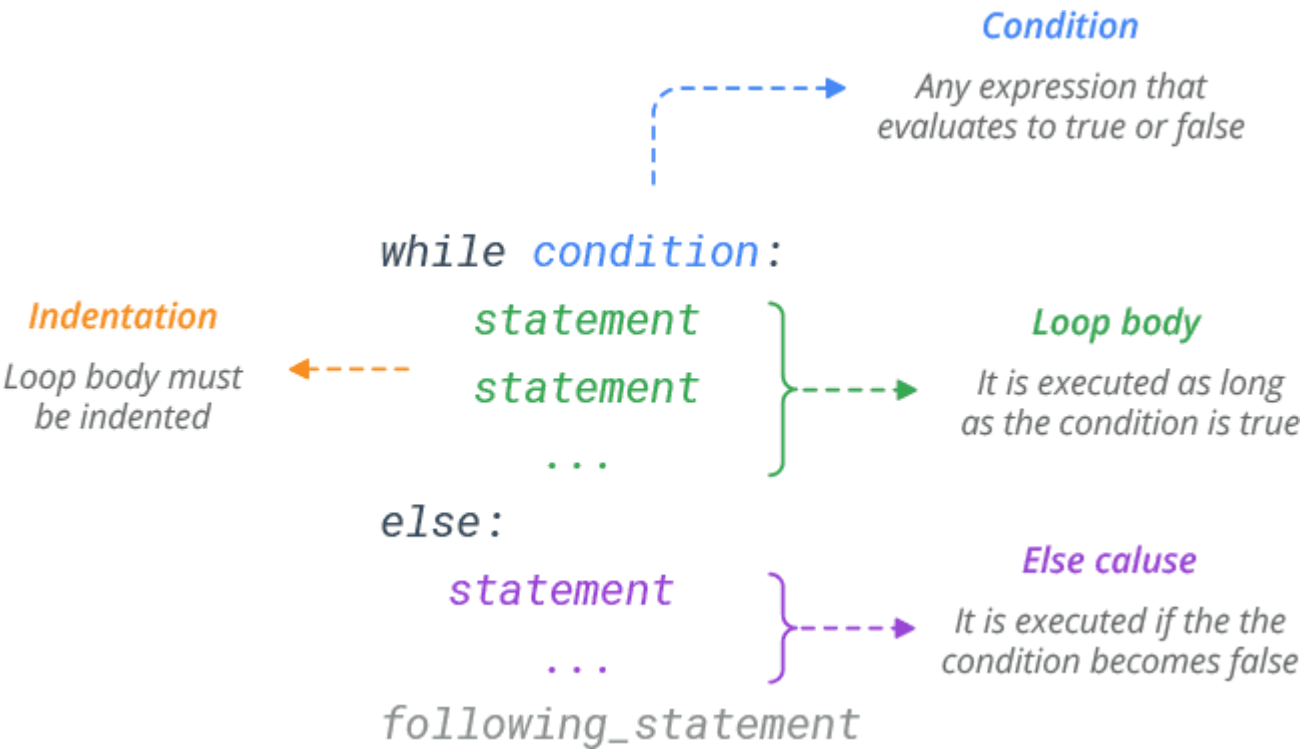
Python While Loop

A `while` loop is used when you want to perform a task indefinitely, until a particular condition is met. It's a condition-controlled loop.

Syntax

Here's the syntax of the `while` statement:



Basic Examples

Any non-zero value or nonempty container is considered TRUE; whereas Zero, None, and empty container is considered FALSE.

```
# Iterate until x becomes 0
x = 6
while x:
  print(x)
```

```
    x -= 1
# Prints 6 5 4 3 2 1

# Iterate until list is empty

L = ['red', 'green', 'blue']

while L:

    print(L.pop())
# Prints blue green red

# Iterate until string is empty

x = 'blue'

while x:

    print(x)

    x = x[1:]

# Prints blue

# Prints lue

# Prints ue
# Prints e
```

If the condition is false at the start, the `while` loop will never be executed at all.

```
# Exit condition is false at the start

x = 0

while x:

    print(x)
    x -= 1
```

Break in while Loop

Python break statement is used to exit the loop immediately. It simply jumps out of the loop altogether, and the program continues after the loop.

```
# Exit when x becomes 3

x = 6

while x:
```

```
    print(x)
    x -= 1
    if x == 3:
        break
# Prints 6 5 4
```

Continue in while Loop

The continue statement skips the current iteration of a loop and continues with the next iteration.

```
# Skip odd numbers
x = 6
while x:
        x -= 1
        if x % 2 != 0:
                continue
        print(x)
# Prints 4 2 0
```

Else in While Loop

Python allows an optional `else` clause at the end of a `while` loop. The `else` clause will be executed when the loop terminates normally (the condition becomes false).

```
x = 6
while x:
    print(x)
    x -= 1
else:
    print('Done!')
# Prints 6 5 4 3 2 1
# Prints Done!
```

The `else` clause will still be executed if the condition is false at the start.

```
x = 0
while x:
    print(x)
    x -= 1
else:
    print('Done!')
# Prints Done!
```

If the loop terminates prematurely with `break`, the `else` clause won't be executed.

```
x = 6
while x:
    print(x)
    x -= 1
    if x == 3:
        break
else:
    print('Done!')
# Prints 6 5 4
```

Infinte Loop (while true)

The condition must eventually become false. Otherwise, the loop will execute forever, creating an infinite/endless loop.

```
# Infinte loop with while statement
while True:
    print('Press Ctrl+C to stop me!')
```

You can safely implement an infinite loop in your program using a `break` statement.

```
# Loop runs until the user enters 'stop'
while True:
```

```
    name = input('Enter name:')
    if name == 'stop': break
    print('Hello', name)


# Output:
# Enter name:Bob
# Hello Bob
# Enter name:Sam
# Hello Sam
# Enter name:stop
```