

LOOP WITH ELSE

Definition

In Python, loops (for and while) can have an else clause, which executes **only if the loop runs completely without encountering a break statement**.

- If the loop completes all iterations normally, the else block runs.
 - If a break statement interrupts the loop, the else block **does not execute**.
-

For Loop with Else

Definition:

A for loop iterates over a sequence (list, tuple, string, or range). The else block runs if the loop completes all iterations without a break.

```
for i in range(5):
```

```
    print(i)
```

```
else:
```

```
    print("Loop completed successfully") # Runs only if loop is not broken
```

While Loop with Else

Definition:

A while loop executes as long as the condition is True. The else block runs if the loop completes normally (not interrupted by break).

```
x = 0
while x < 5:
    print(x)
    x += 1
else:
    print("Loop completed successfully") # Runs only if loop is not broken
```

For Loop with Else Using a List

Code:

```
numbers = [10, 20, 30, 40, 50]
for num in numbers:
    print(num)
else:
    print("All elements printed successfully") # Runs if all elements are printed
```

For Loop with range() and Else

Example Code:

```
for i in range(1, 6):  
    print(i)  
else:  
    print("Loop completed successfully")
```

Using in Operator in For Loop with Else

Example Code:

```
word = "Python"  
for char in word:  
    print(char)  
else:  
    print("All characters printed successfully")
```

Break Statement Preventing Else Execution

Example Code:

```
for i in range(5):  
    print(i)  
    if i == 2:  
        print("Breaking the loop")  
        break  
else:  
    print("Loop completed successfully") # Won't run
```
