

# Python Programming Fundamentals Cheat Sheet

Package/Method	Description	Syntax and Code Example
AND	Returns `True` if both statement1 and statement2 are `True`. Otherwise, returns `False`.	<p>Syntax:</p> <pre>1. 1 1. statement1 and statement2</pre> <p>Copied!</p> <p>Example:</p> <pre>1. 1 2. 2 3. 3 4. 4 5. 5 6. 6 7. 7 8. 8 9. 9  1. marks = 90 2. attendance_percentage = 87 3. 4. if marks &gt;= 80 and attendance_percentage &gt;= 85: 5.     print("qualify for honors") 6. else: 7.     print("Not qualified for honors") 8. 9. # Output = qualify for honors</pre> <p>Copied!</p>
		<p>Syntax:</p> <pre>1. 1 1. class ClassName: # Class attributes and methods</pre> <p>Copied!</p> <p>Example:</p> <pre>1. 1 2. 2 3. 3 4. 4  1. class Person: 2.     def __init__(self, name, age): 3.         self.name = name 4.         self.age = age</pre> <p>Copied!</p>
Class Definition	Defines a blueprint for creating objects and defining their attributes and behaviors.	<p>Syntax:</p> <pre>1. 1 1. def function_name(parameters): # Function body</pre> <p>Copied!</p> <p>Example:</p> <pre>1. 1 1. def greet(name): print("Hello,", name)</pre> <p>Copied!</p>
Define Function	A `function` is a reusable block of code that performs a specific task or set of tasks when called.	<p>Syntax:</p> <pre>1. 1 1. variable1 == variable2</pre> <p>Copied!</p> <p>Example 1:</p> <pre>1. 1 1. 5 == 5</pre> <p>Copied!</p> <p>returns True</p> <p>Example 2:</p> <pre>1. 1 1. age = 25 age == 30</pre> <p>Copied!</p> <p>returns False</p>
Equal(==)	Checks if two values are equal.	

For Loop

A 'for' loop repeatedly executes a block of code for a specified number of iterations or over a sequence of elements (list, range, string, etc.).

Syntax:

- ```
1. 1
1. for variable in sequence: # Code to repeat
```

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Example 1:

- ```
1. 1
2. 2
1. for num in range(1, 10):
2.     print(num)
```

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Example 2:

- ```
1. 1
2. 2
3. 3
1. fruits = ["apple", "banana", "orange", "grape", "kiwi"]
2. for fruit in fruits:
3.     print(fruit)
```

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Syntax:

- ```
1. 1
1. function_name(arguments)
```

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Function Call

A function call is the act of executing the code within the function using the provided arguments.

Example:

- ```
1. 1
1. greet("Alice")
```

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Syntax:

- ```
1. 1
1. variable1 >= variable2
```

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Example 1:

- ```
1. 1
1. 5 >= 5 and 9 >= 5
```

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Greater Than or Equal To(>=)

Checks if the value of variable1 is greater than or equal to variable2.

returns True

Example 2:

- ```
1. 1
2. 2
3. 3
1. quantity = 105
2. minimum = 100
3. quantity >= minimum
```

Copied!

returns True

Greater Than(>)

Checks if the value of variable1 is greater than variable2.

Syntax:

- ```
1. 1
1. variable1 > variable2
```

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Example 1: 9 > 6

returns True

Example 2:

- ```
1. 1
2. 2
3. 3
1. age = 20
2. max_age = 25
3. age > max_age
```

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If Statement                      Executes code block `if` the condition is `True`.

If-Elif-Else                      Executes the first code block if condition1 is `True`, otherwise checks condition2, and so on. If no condition is `True`, the else block is executed.

If-Else Statement                      Executes the first code block if the condition is `True`, otherwise the second block.

Less Than or Equal To(<=)                      Checks if the value of variable1 is less than or equal to variable2.

```
returns False
Syntax:

1. 1

1. if condition: #code block for if statement
```

```
Example:

1. 1
2. 2

1. if temperature > 30:
2. print("It's a hot day!")
```

```
Syntax:

1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8

1. if condition1:
2. # Code if condition1 is True
3.
4. elif condition2:
5. # Code if condition2 is True
6.
7. else:
8. # Code if no condition is True
```

```
Example:

1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9

1. score = 85 # Example score
2. if score >= 90:
3.     print("You got an A!")
4. elif score >= 80:
5.     print("You got a B.")
6. else:
7.     print("You need to work harder.")
8.
9. # Output = You got a B.
```

```
Syntax:

1. 1
2. 2

1. if condition: # Code, if condition is True
2. else: # Code, if condition is False
```

```
Example:

1. 1
2. 2
3. 3
4. 4

1. if age >= 18:
2.     print("You're an adult.")
3. else:
4.     print("You're not an adult yet.")
```

```
Syntax:

1. 1

1. variable1 <= variable2
```

```
Example 1:

1. 1

1. 5 <= 5 and 3 <= 5
```

Copied!

returns True

Example 2:

```
1. 1
2. 2
3. 3

1. size = 38
2. max_size = 40
3. size <= max_size
```

Copied!

returns True

Syntax:

```
1. 1

1. variable1 < variable2
```

Copied!

Example 1:

```
1. 1

1. 4 < 6
```

Copied!

returns True

Example 2:

```
1. 1
2. 2
3. 3

1. score = 60
2. passing_score = 65
3. score < passing_score
```

Copied!

returns True

Syntax:

```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7

1. for: # Code to repeat
2.     if # boolean statement
3.         break
4.
5. for: # Code to repeat
6.     if # boolean statement
7.         continue
```

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Example 1:

```
1. 1
2. 2
3. 3
4. 4

1. for num in range(1, 6):
2.     if num == 3:
3.         break
4.     print(num)
```

Copied!

Example 2:

```
1. 1
2. 2
3. 3
4. 4

1. for num in range(1, 6):
2.     if num == 3:
3.         continue
4.     print(num)
```

Copied!

Syntax:

```
1. 1
```

Less Than(<)

Checks if the value of variable1 is less than variable2.

Loop Controls

'break' exits the loop prematurely. 'continue' skips the rest of the current iteration and moves to the next iteration.

NOT

Returns 'True' if variable is 'False', and vice versa.

```
1. !variable
```

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Example:

```
1. 1
```

```
1. !isLocked
```

Copied!

returns True if the variable is False (i.e., unlocked).

Syntax:

```
1. 1
```

```
1. variable1 != variable2
```

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Example:

```
1. 1
```

```
2. 2
```

```
3. 3
```

```
1. a = 10
```

```
2. b = 20
```

```
3. a != b
```

Copied!

returns True

Example 2:

```
1. 1
```

```
2. 2
```

```
1. count=0
```

```
2. count != 0
```

Copied!

returns False

Syntax:

```
1. 1
```

```
1. object_name = ClassName(arguments)
```

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Example:

```
1. 1
```

```
1. person1 = Person("Alice", 25)
```

Copied!

Syntax:

```
1. 1
```

```
1. statement1 || statement2
```

Copied!

Example:

```
1. 1
```

```
2. 2
```

```
1. "Farewell Party Invitation"
```

```
2. Grade = 12 grade == 11 or grade == 12
```

Copied!

returns True

Syntax:

```
1. 1
```

```
2. 2
```

```
3. 3
```

```
1. range(stop)
```

```
2. range(start, stop)
```

```
3. range(start, stop, step)
```

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Example:

```
1. 1
```

```
2. 2
```

```
3. 3
```

```
1. range(5) #generates a sequence of integers from 0 to 4.
```

Not Equal(!=) Checks if two values are not equal.

Object Creation Creates an instance of a class (object) using the class constructor.

OR Returns 'True' if either statement1 or statement2 (or both) are 'True'. Otherwise, returns 'False'.

range() Generates a sequence of numbers within a specified range.

2. `range(2, 10)` #generates a sequence of integers from 2 to 9.
3. `range(1, 11, 2)` #generates odd integers from 1 to 9.

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Syntax:

1. 1
1. return value

Copied!

Return Statement

'Return' is a keyword used to send a value back from a function to its caller.

Example:

1. 1
2. 2
1. `def add(a, b): return a + b`
2. `result = add(3, 5)`

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Syntax:

1. 1
2. 2
1. `try: # Code that might raise an exception except`
2. `ExceptionType: # Code to handle the exception`

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Try-Except Block

Tries to execute the code in the try block. If an exception of the specified type occurs, the code in the except block is executed.

Example:

1. 1
2. 2
3. 3
4. 4
1. `try:`
2. `num = int(input("Enter a number: "))`
3. `except ValueError:`
4. `print("Invalid input. Please enter a valid number.")`

Copied!

Syntax:

1. 1
2. 2
3. 3
1. `try: # Code that might raise an exception except`
2. `ExceptionType: # Code to handle the exception`
3. `else: # Code to execute if no exception occurs`

Copied!

Try-Except with Else Block

Code in the 'else' block is executed if no exception occurs in the try block.

Example:

1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
1. `try:`
2. `num = int(input("Enter a number: "))`
3. `except ValueError:`
4. `print("Invalid input. Please enter a valid number")`
5. `else:`
6. `print("You entered:", num)`

Copied!

Try-Except with Finally Block

Code in the 'finally' block always executes, regardless of whether an exception occurred.

Syntax:

1. 1
2. 2
3. 3
1. `try: # Code that might raise an exception except`
2. `ExceptionType: # Code to handle the exception`
3. `finally: # Code that always executes`

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Example:

1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
1. `try:`
2. `file = open("data.txt", "r")`
3. `data = file.read()`
4. `except FileNotFoundError:`
5. `print("File not found.")`
6. `finally:`

```
7.     file.close()
```

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Syntax:

```
1. 1
```

```
1. while condition: # Code to repeat
```

Copied!

Example:

```
1. 1
```

```
2. 2
```

```
1. count = 0 while count < 5:
```

```
2.     print(count) count += 1
```

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While Loop

A `while` loop repeatedly executes a block of code as long as a specified condition remains `True`.



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