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`.	Syntax:
		`statement1 and statement2`
		Copied!
		Example:
		`marks = 90`
		`attendance_percentage = 87`
		
		`if marks >= 80 and attendance_percentage >= 85:`
		`    print("qualify for honors")`
		`else:`
		`    print("Not qualified for honors")`
		
		`# Output = qualify for honors`
		Copied!

Class Definition	Defines a blueprint for creating objects and defining their attributes and behaviors.	Syntax:
		`class ClassName: # Class attributes and methods`
		Copied!
		Example:
		`class Person:`
		`    def __init__(self, name, age):`
		`        self.name = name`
		`        self.age = age`
		Copied!

Define Function	A `function` is a reusable block of code that performs a specific task or set of tasks when called.	Syntax:
		`def function_name(parameters): # Function body`
		Copied!
		Example:
		`def greet(name): print("Hello,", name)`
		Copied!

Equal(==)	Checks if two values are equal.	Syntax:
		`variable1 == variable2`
		Copied!
		Example 1:
		`5 == 5`
		Copied!
		returns True
		Example 2:
		`age = 25 age == 30`
		Copied!
		returns False

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:
		`for variable in sequence: # Code to repeat`
		Copied!
		Example 1:
		`for num in range(1, 10):`
		`    print(num)`
		Copied!
		Example 2:
		`fruits = ["apple", "banana", "orange", "grape", "kiwi"]`
		`for fruit in fruits:`
		`    print(fruit)`
		Copied!

Function Call	A function call is the act of executing the code within the function using the provided arguments.	Syntax:
		`function_name(arguments)`
		Copied!
		Example:
		`greet("Alice")`
		Copied!

Greater Than or Equal To(>=)	Checks if the value of variable1 is greater than or equal to variable2.	Syntax:
		`variable1 >= variable2`
		Copied!
		Example 1:
		`5 >= 5 and 9 >= 5`
		Copied!
		returns True
		Example 2:
		`quantity = 105`
		`minimum = 100`
		`quantity >= minimum`
		Copied!
		returns True

Greater Than(>)	Checks if the value of variable1 is greater than variable2.	Syntax:
		`variable1 > variable2`
		Copied!
		Example 1: 9 > 6
		returns True
		Example 2:
		`age = 20`
		`max_age = 25`
		`age > max_age`
		Copied!
		returns False

If Statement	Executes code block `if` the condition is `True`.	Syntax:
		`if condition: #code block for if statement`
		Copied!
		Example:
		`if temperature > 30:`
		`print("It's a hot day!")`
		Copied!

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.	Syntax:
		`if condition1:`
		`# Code if condition1 is True`
		
		`elif condition2:`
		`# Code if condition2 is True`
		
		`else:`
		`# Code if no condition is True`
		Copied!
		Example:
		`score = 85  # Example score`
		`if score >= 90:`
		`    print("You got an A!")`
		`elif score >= 80:`
		`    print("You got a B.")`
		`else:`
		`    print("You need to work harder.")`
		
		`# Output = You got a B.`
		Copied!

If-Else Statement	Executes the first code block if the condition is `True`, otherwise the second block.	Syntax:
		`if condition: # Code, if condition is True`
		`else: # Code, if condition is False`
		Copied!
		Example:
		`if age >= 18:`
		`    print("You're an adult.")`
		`else:`
		`    print("You're not an adult yet.")`
		Copied!

Less Than or Equal To(<=)	Checks if the value of variable1 is less than or equal to variable2.	Syntax:
		`variable1 <= variable2`
		Copied!
		Example 1:
		`5 <= 5 and 3 <= 5`
		Copied!
		returns True
		Example 2:
		`size = 38`
		`max_size = 40`
		`size <= max_size`
		Copied!
		returns True

Less Than(<)	Checks if the value of variable1 is less than variable2.	Syntax:
		`variable1 < variable2`
		Copied!
		Example 1:
		`4 < 6`
		Copied!

		returns True
		Example 2:
		`score = 60`
		`passing_score = 65`
		`score < passing_score`
		Copied!
		returns True

Loop Controls	\`break\` exits the loop prematurely. \`continue\` skips the rest of the current iteration and moves to the next iteration.	Syntax:
		`for: # Code to repeat`
		`    if # boolean statement`
		`        break`
		
		`for: # Code to repeat`
		`    if # boolean statement`
		`        continue`
		Copied!
		Example 1:
		`for num in range(1, 6):`
		`    if num == 3:`
		`        break`
		`    print(num)`
		Copied!
		Example 2:
		`for num in range(1, 6):`
		`    if num == 3:`
		`        continue`
		`    print(num)`
		Copied!

NOT	Returns \`True\` if variable is \`False\`, and vice versa.	Syntax:
		`!variable`
		Copied!
		Example:
		`!isLocked`
		Copied!
		returns True if the variable is False (i.e., unlocked).

Not Equal(!=)	Checks if two values are not equal.	Syntax:
		`variable1 != variable2`
		Copied!
		Example:
		`a = 10`
		`b = 20`
		`a != b`
		Copied!
		returns True
		Example 2:
		`count=0`
		`count != 0`
		Copied!
		returns False

Object Creation	Creates an instance of a class (object) using the class constructor.	Syntax:
		`object_name = ClassName(arguments)`
		Copied!
		Example:
		`person1 = Person("Alice", 25)`
		Copied!

OR	Returns \`True\` if either statement1 or statement2 (or both) are \`True\`. Otherwise, returns \`False\`.	Syntax:
		`statement1 || statement2`
		Copied!
		Example:
		`"Farewell Party Invitation"`
		`Grade = 12 grade == 11 or grade == 12`
		Copied!
		returns True

range()	Generates a sequence of numbers within a specified range.	Syntax:
		`range(stop)`
		`range(start, stop)`
		`range(start, stop, step)`
		Copied!
		Example:
		`range(5) #generates a sequence of integers from 0 to 4.`
		`range(2, 10) #generates a sequence of integers from 2 to 9.`
		`range(1, 11, 2) #generates odd integers from 1 to 9.`
		Copied!

Return Statement	\`Return\` is a keyword used to send a value back from a function to its caller.	Syntax:
		`return value`
		Copied!
		Example:
		`def add(a, b): return a + b`
		`result = add(3, 5)`
		Copied!

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.	Syntax:
		`try: # Code that might raise an exception except`
		`ExceptionType: # Code to handle the exception`
		Copied!
		Example:
		`try:`
		`    num = int(input("Enter a number: "))`
		`except ValueError:`
		`    print("Invalid input. Please enter a valid number.")`
		Copied!

Try-Except with Else Block	Code in the \`else\` block is executed if no exception occurs in the try block.	Syntax:
		`try: # Code that might raise an exception except`
		`ExceptionType: # Code to handle the exception`
		`else: # Code to execute if no exception occurs`
		Copied!
		Example:
		`try:`
		`    num = int(input("Enter a number: "))`
		`except ValueError:`
		`    print("Invalid input. Please enter a valid number")`
		`else:`
		`    print("You entered:", num)`
		Copied!

Try-Except with Finally Block	Code in the \`finally\` block always executes, regardless of whether an exception occurred.	Syntax:
		`try: # Code that might raise an exception except`
		`ExceptionType: # Code to handle the exception`
		`finally: # Code that always executes`
		Copied!
		Example:
		`try:`
		`    file = open("data.txt", "r")`
		`    data = file.read()`
		`except FileNotFoundError:`
		`    print("File not found.")`
		`finally:`
		`    file.close()`
		Copied!

While Loop	A \`while\` loop repeatedly executes a block of code as long as a specified condition remains \`True\`.	Syntax:
		`while condition: # Code to repeat`
		Copied!
		Example:
		`count = 0 while count < 5:`
		`    print(count) count += 1`
		Copied!

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