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`
		
		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`

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

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`

		Example: `def greet(name): print("Hello,", name)`

Equal(==)	Checks if two values are equal.	Syntax:
		`variable1 == variable2`
		Example 1:
		`5 == 5`

		returns True Example 2: `age = 25 age == 30` 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`

		Example 1:
		`for num in range(1, 10):`
		`  print(num)`
		
		Example 2:
		`fruits = ["apple", "banana", "orange", "grape", "kiwi"]`
		`for fruit in fruits:`
		`  print(fruit)`

Function Call	A function call is the act of executing the code within the function using the provided arguments.	Syntax: `function_name(arguments)`

		Example: `greet("Alice")`

Greater Than or Equal To(>=)	Checks if the value of variable1 is greater than or equal to variable2.	Syntax:
		`variable1 >= variable2`
		Example 1:
		`5 >= 5 and 9 >= 5`

		returns True
		
		Example 2:
		
		`quantity = 105`
		`minimum = 100`
		`quantity >= minimum`
		
		returns True

Greater Than(>)	Checks if the value of variable1 is greater than variable2.	Syntax: `variable1 > variable2`

		Example 1: 9 > 6
		
		returns True
		
		Example 2:
		
		`age = 20`
		`max_age = 25`
		`age > max_age`
		
		returns False

If Statement	Executes code block `if` the condition is `True`.	Syntax: `if condition: #code block for if statement` Example:

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

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`
		
		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.

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

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

		returns True

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

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

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

NOT	Returns `True` if variable is `False`, and vice versa.	Syntax: `not variable`

		Example:
		`isLocked = False`
		`print(not isLocked)`
		returns True if the variable is False (i.e., unlocked).

Not Equal(!=)	Checks if two values are not equal.	Syntax: `variable1 != variable2`

		Example:
		`a = 10`
		`b = 20`
		`a != b`
		
		returns True
		
		Example 2:
		`count=0`
		`count != 0`
		
		returns False

Object Creation	Creates an instance of a class (object) using the class constructor.	Syntax: `object_name = ClassName(arguments)`

		Example: `person1 = Person("Alice", 25)`
OR	Returns `True` if either statement1 or statement2 (or both) are `True`. Otherwise, returns `False`.	Syntax: `statement1 or statement2` Example:

		"Farewell Party Invitation" Grade = 12 grade == 11 or grade == 12 returns True
range()	Generates a sequence of numbers within a specified range.	Syntax: range(stop) range(start, stop) range(start, stop, step) 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.

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

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	Syntax: `try: # Code that might raise an exception except`

	executed.	`ExceptionType: # Code to handle the exception`
		
		Example:
		
		`try:`
		`  num = int(input("Enter a number: "))`
		`except ValueError:`
		`  print("Invalid input. Please enter a valid number.")`

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`

		Example:
		`try:`
		`  num = int(input("Enter a number: "))`
		`except ValueError:`
		`  print("Invalid input. Please enter a valid number")`
		`else:`
		`  print("You entered:", num)`

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`

		Example:
		`try:`
		`  file = open("data.txt", "r")`
		`  data = file.read()`
		`except FileNotFoundError:`
		`  print("File not found.")`
		`finally:`
		`  file.close()`

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`
		
		Example:
		`count = 0`
		`while count < 5:`
		`  print(count)`
		`  count += 1`