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` `if grade == 11 or grade == 12:` `print("Farewell Party Invitation")` `else:` `print("Not eligible")` 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 executed.	Syntax: `try: # Code that might raise an exception except 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`

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