

## Python Data Structures Cheat Sheet

### List

Package/Method	Description	Code Example
append()	The `append()` method is used to add an element to the end of a list.	<p>Syntax:</p> <pre>list_name.append(element)</pre> <p>Example:</p> <pre>fruits = ["apple", "banana", "orange"] fruits.append("mango") print(fruits)</pre>
copy()	The `copy()` method is used to create a shallow copy of a list.	<p>Example 1:</p> <pre>my_list = [1, 2, 3, 4, 5] new_list = my_list.copy() print(new_list) # Output: [1, 2, 3, 4, 5]</pre>
count()	The `count()` method is used to count the number of occurrences of a specific element in a list in Python.	<p>Example:</p> <pre>my_list = [1, 2, 2, 3, 4, 2, 5, 2] count = my_list.count(2) print(count) # Output: 4</pre>
Creating a list	A list is a built-in data type that represents an ordered and mutable collection of elements. Lists are enclosed in square brackets [] and elements are separated by commas.	<p>Example:</p> <pre>fruits = ["apple", "banana", "orange", "mango"]</pre>
del	The `del` statement is used to remove an element from list. `del` statement removes the element at the specified index.	<p>Example:</p> <pre>my_list = [10, 20, 30, 40, 50] del my_list[2] # Removes the element at index 2 print(my_list) # Output: [10, 20, 40, 50]</pre>

extend()	The `extend()` method is used to add multiple elements to a list. It takes an iterable (such as another list, tuple, or string) and appends each element of the iterable to the original list.	<p>Syntax:</p> <pre>list_name.extend(iterable)</pre> <p>Example:</p> <pre>fruits = ["apple", "banana", "orange"] more_fruits = ["mango", "grape"] fruits.extend(more_fruits) print(fruits)</pre>
Indexing	Indexing in a list allows you to access individual elements by their position. In Python, indexing starts from 0 for the first element and goes up to `length_of_list - 1`.	<p>Example:</p> <pre>my_list = [10, 20, 30, 40, 50] print(my_list[0]) # Output: 10 (accessing the first element) print(my_list[-1]) # Output: 50 (accessing the last element using negative indexing)</pre>
insert()	The `insert()` method is used to insert an element.	<p>Syntax:</p> <pre>list_name.insert(index, element)</pre> <p>Example:</p> <pre>my_list = [1, 2, 3, 4, 5] my_list.insert(2, 6) print(my_list)</pre>

Modifying a list	You can use indexing to modify or assign new values to specific elements in the list.	<p>Example:</p> <pre>my_list = [10, 20, 30, 40, 50] my_list[1] = 25 # Modifying the second element print(my_list) # Output: [10, 25, 30, 40, 50]</pre>
pop()	'pop()' method is another way to remove an element from a list in Python. It removes and returns the element at the specified index. If you don't provide an index to the 'pop()' method, it will remove and return the last element of the list by default	<p>Example 1:</p> <pre>my_list = [10, 20, 30, 40, 50] removed_element = my_list.pop(2) # Removes and returns the element at index 2 print(removed_element) # Output: 30 print(my_list) # Output: [10, 20, 40, 50]</pre> <p>Example 2:</p> <pre>my_list = [10, 20, 30, 40, 50] removed_element = my_list.pop() # Removes and returns the last element print(removed_element) # Output: 50 print(my_list) # Output: [10, 20, 30, 40]</pre>
remove()	To remove an element from a list. The 'remove()' method removes the first occurrence of the specified value.	<p>Example:</p> <pre>my_list = [10, 20, 30, 40, 50] my_list.remove(30) # Removes the element 30 print(my_list) # Output: [10, 20, 40, 50]</pre>
reverse()	The 'reverse()' method is used to reverse the order of elements in a list	<p>Example 1:</p> <pre>my_list = [1, 2, 3, 4, 5] my_list.reverse() print(my_list) # Output: [5, 4, 3, 2, 1]</pre>
Slicing	You can use slicing to access a range of elements from a list.	<p>Syntax:</p> <pre>list_name[start:end:step]</pre>

Example:

```
my_list = [1, 2, 3, 4, 5]
print(my_list[1:4])
# Output: [2, 3, 4] (elements from index 1 to 3)
print(my_list[:3])
# Output: [1, 2, 3] (elements from the beginning up to index 2)
print(my_list[2:])
# Output: [3, 4, 5] (elements from index 2 to the end)
print(my_list[::-2])
# Output: [1, 3, 5] (every second element)
```

sort()	The `sort()` method is used to sort the elements of a list in ascending order. If you want to sort the list in descending order, you can pass the `reverse=True` argument to the `sort()` method.	<p>Example 1:</p> <pre>my_list = [5, 2, 8, 1, 9] my_list.sort() print(my_list) # Output: [1, 2, 5, 8, 9]</pre> <p>Example 2:</p> <pre>my_list = [5, 2, 8, 1, 9] my_list.sort(reverse=True) print(my_list) # Output: [9, 8, 5, 2, 1]</pre>

## Tuple

Package/Method	Description	Code Example
count()	The count() method for a tuple is used to count how many times a specified element appears in the tuple.	<p>Syntax:</p> <pre>tuple.count(value)</pre> <p>Example:</p> <pre>fruits = ("apple", "banana", "apple", "orange") print(fruits.count("apple")) #Counts the number of times apple is found in tuple. #Output: 2</pre>

index()	The index() method in a tuple is used to find the first occurrence of a specified value and returns its position (index). If the value is not found, it raises a ValueError.	<p>Syntax:</p> <pre>tuple.index(value)</pre> <p>Example:</p> <pre>fruits = ("apple", "banana", "orange","apple") print(fruits.index("apple")) #Returns the index value at which apple is present. #Output: 0</pre>
sum()	The sum() function in Python can be used to calculate the sum of all elements in a tuple, provided that the elements are numeric (integers or floats).	<p>Syntax:</p> <pre>sum(tuple)</pre> <p>Example:</p> <pre>numbers = (10, 20, 5, 30) print(sum(numbers)) #Output: 65</pre>
min() and max()	Find the smallest (min()) or largest (max()) element in a tuple.	<p>Example:</p> <pre>numbers = (10, 20, 5, 30) print(min(numbers)) #Output: 5 print(max(numbers)) #Output: 30</pre>
len()	Get the number of elements in the tuple using len().	<p>Syntax:</p> <pre>len(tuple)</pre>

Example:

```
fruits = ("apple", "banana", "orange")
print(len(fruits)) #Returns length of the tuple.
#Output: 3
```



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