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.	Syntax:
		
		```\nlist_name.append(element)\n```
		
		Example:
		
		```\nfruits = ["apple", "banana", "orange"]\nfruits.append("mango") print(fruits)\n```

copy()	The `copy()` method is used to create a shallow copy of a list.	Example 1: ```\nmy_list = [1, 2, 3, 4, 5]\nnew_list = my_list.copy() print(new_list)\n# Output: [1, 2, 3, 4, 5]\n```
count()	The `count()` method is used to count the number of occurrences of a specific element in a list in Python.	Example: ```\nmy_list = [1, 2, 2, 3, 4, 2, 5, 2]\ncount = my_list.count(2) print(count)\n# Output: 4\n```
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.	Example: ```\nfruits = ["apple", "banana", "orange", "mango"]\n```
del	The `del` statement is used to remove an element from list. `del` statement removes the element at the specified index.	Example: ```\nmy_list = [10, 20, 30, 40, 50]\ndel my_list[2] # Removes the element at index 2 print(my_list)\n# Output: [10, 20, 40, 50]\n```

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.	Syntax:
		
		``python
		list_name.extend(iterable)
		``
		
		Example:
		
		``python
		fruits = ["apple", "banana", "orange"]
		more_fruits = ["mango", "grape"]
		fruits.extend(more_fruits)
		print(fruits)
		``

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`.	Example:
		
		``python
		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)
		``

insert()	The `insert()` method is used to insert an element.	Syntax:
		
		``python
		list_name.insert(index, element)
		``
		
		Example:
		
		``python
		my_list = [1, 2, 3, 4, 5]
		my_list.insert(2, 6)
		print(my_list)
		``

Modifying a list	You can use indexing to modify or assign new values to specific elements in the list.	Example:
		
		``python
		my_list = [10, 20, 30, 40, 50]
		my_list[1] = 25 # Modifying the second element
		print(my_list)
		# Output: [10, 25, 30, 40, 50]
		``

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	Example 1:
		
		``python
		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]
		``
		
		Example 2:
		
		``python
		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]
		``

remove()	To remove an element from a list. The `remove()` method removes the first occurrence of the specified value.	Example:
		
		``python
		my_list = [10, 20, 30, 40, 50]
		my_list.remove(30) # Removes the element 30
		print(my_list)
		# Output: [10, 20, 40, 50]
		``

reverse()	The `reverse()` method is used to reverse the order of elements in a list	Example 1:
		
		``python
		my_list = [1, 2, 3, 4, 5]
		my_list.reverse() print(my_list)
		# Output: [5, 4, 3, 2, 1]
		``

Slicing	You can use slicing to access a range of elements from a list.	Syntax:
		
		``python
		list_name[start:end:step]
		``

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)
```

Package/Method	Description	Code Example

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.	Example 1:
		
		```python\nmy_list = [5, 2, 8, 1, 9]\nmy_list.sort()\nprint(my_list)\n# Output: [1, 2, 5, 8, 9]\n```
		
		Example 2:
		
		```python\nmy_list = [5, 2, 8, 1, 9]\nmy_list.sort(reverse=True)\nprint(my_list)\n# Output: [9, 8, 5, 2, 1]\n```

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.	Syntax:
		
		```python\ntuple.count(value)\n```
		
		Example:
		
		```python\nfruits = ("apple", "banana", "apple", "orange")\nprint(fruits.count("apple")) #Counts the number of times apple is found in tuple.\n#Output: 2\n```

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.	Syntax:
		
		`tuple.index(value)`
		
		Example:
		
		```fruits = ("apple", "banana", "orange","apple")```
		```print(fruits.index("apple")) #Returns the index value at which apple is present.```
		```#Output: 0```

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).	Syntax:
		
		`sum(tuple)`
		
		Example:
		
		```numbers = (10, 20, 5, 30)```
		```print(sum(numbers))```
		```#Output: 65```

min() and max()	Find the smallest (min()) or largest (max()) element in a tuple.	Example:
		
		```numbers = (10, 20, 5, 30)```
		```print(min(numbers))```
		```#Output: 5```
		```print(max(numbers))```
		```#Output: 30```

len()	Get the number of elements in the tuple using len().	Syntax: `len(tuple)`

Example:

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

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