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: ```1. 1 1. list_name.append(element)``` Copied! Example: ```1. 1 2. 2 1. fruits = ["apple", "banana", "orange"] 2. fruits.append("mango") print(fruits)``` Copied!
copy()	The `copy()` method is used to create a shallow copy of a list.	Example 1: ```1. 1 2. 2 3. 3 1. my_list = [1, 2, 3, 4, 5] 2. new_list = my_list.copy() print(new_list) 3. # Output: [1, 2, 3, 4, 5]``` Copied!
count()	The `count()` method is used to count the number of occurrences of a specific element in a list in Python.	Example: ```1. 1 2. 2 3. 3 1. my_list = [1, 2, 2, 3, 4, 2, 5, 2] 2. count = my_list.count(2) print(count) 3. # Output: 4``` Copied!
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: ```1. 1 1. fruits = ["apple", "banana", "orange", "mango"]``` Copied!
del	The `del` statement is used to remove an element from list. `del` statement removes the element at the specified index.	Example: ```1. 1 2. 2 3. 3 1. my_list = [10, 20, 30, 40, 50] 2. del my_list[2] # Removes the element at index 2 print(my_list) 3. # Output: [10, 20, 40, 50]``` Copied!
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: ```1. 1 1. list_name.extend(iterable)``` Copied! Example: ```1. 1 2. 2 3. 3 4. 4 1. fruits = ["apple", "banana", "orange"] 2. more_fruits = ["mango", "grape"] 3. fruits.extend(more_fruits) 4. print(fruits)``` Copied!
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: ```1. 1 2. 2 3. 3```

```
4. 4
5. 5

1. my_list = [10, 20, 30, 40, 50]
2. print(my_list[0])
3. # Output: 10 (accessing the first element)
4. print(my_list[-1])
5. # Output: 50 (accessing the last element using negative indexing)
```

Copied!

Syntax:

```
1. 1

1. list_name.insert(index, element)
```

Copied!

insert()	The `insert()` method is used to insert an element.

Example:

```
1. 1
2. 2
3. 3

1. my_list = [1, 2, 3, 4, 5]
2. my_list.insert(2, 6)
3. print(my_list)
```

Copied!

Modifying a list	You can use indexing to modify or assign new values to specific elements in the list.

Example:

```
1. 1
2. 2
3. 3
4. 4

1. my_list = [10, 20, 30, 40, 50]
2. my_list[1] = 25 # Modifying the second element
3. print(my_list)
4. # Output: [10, 25, 30, 40, 50]
```

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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:

```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7

1. my_list = [10, 20, 30, 40, 50]
2. removed_element = my_list.pop(2) # Removes and returns the element at index 2
3. print(removed_element)
4. # Output: 30
5.
6. print(my_list)
7. # Output: [10, 20, 40, 50]
```

Copied!

Example 2:

```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7

1. my_list = [10, 20, 30, 40, 50]
2. removed_element = my_list.pop() # Removes and returns the last element
3. print(removed_element)
4. # Output: 50
5.
6. print(my_list)
7. # Output: [10, 20, 30, 40]
```

Copied!

remove()	To remove an element from a list. The `remove()` method removes the first occurrence of the specified value.

Example:

```
1. 1
2. 2
3. 3
4. 4

1. my_list = [10, 20, 30, 40, 50]
2. my_list.remove(30) # Removes the element 30
3. print(my_list)
4. # Output: [10, 20, 40, 50]
```

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reverse()	The `reverse()` method is used to reverse the order of elements in a list	Example 1: 1 2 3 1 my_list = [1, 2, 3, 4, 5] 2 my_list.reverse() print(my_list) 3 # Output: [5, 4, 3, 2, 1] Copied! Syntax: 1 1 list_name[start:end:step] Copied! Example: 1 2 3 4 5 6 7 8 9 10 11 12 1 my_list = [1, 2, 3, 4, 5] 2 print(my_list[1:4]) 3 # Output: [2, 3, 4] (elements from index 1 to 3) 4 5 print(my_list[:3]) 6 # Output: [1, 2, 3] (elements from the beginning up to index 2) 7 8 print(my_list[2:]) 9 # Output: [3, 4, 5] (elements from index 2 to the end) 10 11 print(my_list[::2]) 12 # Output: [1, 3, 5] (every second element) Copied!
Slicing	You can use slicing to access a range of elements from a list.	
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: 1 2 3 4 1 my_list = [5, 2, 8, 1, 9] 2 my_list.sort() 3 print(my_list) 4 # Output: [1, 2, 5, 8, 9] Copied! Example 2: 1 2 3 4 1 my_list = [5, 2, 8, 1, 9] 2 my_list.sort(reverse=True) 3 print(my_list) 4 # Output: [9, 8, 5, 2, 1] Copied!

Dictionary

Package/Method	Description	Code Example
Accessing Values	You can access the values in a dictionary using their corresponding `keys`.	Syntax: 1 1 Value = dict_name["key_name"] Copied! Example: 1 2 1 name = person["name"] 2 age = person["age"]

Add or modify	Inserts a new key-value pair into the dictionary. If the key already exists, the value will be updated; otherwise, a new entry is created.	Copied! Syntax: 1. 1 1. dict_name[key] = value Copied! Example: 1. 1 2. 2 1. person["Country"] = "USA" # A new entry will be created. 2. person["city"] = "Chicago" # Update the existing value for the same key
clear()	The `clear()` method empties the dictionary, removing all key-value pairs within it. After this operation, the dictionary is still accessible and can be used further.	Copied! Syntax: 1. 1 1. dict_name.clear() Copied! Example: 1. 1 1. grades.clear()
copy()	Creates a shallow copy of the dictionary. The new dictionary contains the same key-value pairs as the original, but they remain distinct objects in memory.	Copied! Syntax: 1. 1 1. new_dict = dict_name.copy() Copied! Example: 1. 1 2. 2 1. new_person = person.copy() 2. new_person = dict(person) # another way to create a copy of dictionary
Creating a Dictionary	A dictionary is a built-in data type that represents a collection of key-value pairs. Dictionaries are enclosed in curly braces `{}`.	Copied! Example: 1. 1 2. 2 1. dict_name = {} #Creates an empty dictionary 2. person = { "name": "John", "age": 30, "city": "New York"}
del	Removes the specified key-value pair from the dictionary. Raises a `KeyError` if the key does not exist.	Copied! Syntax: 1. 1 1. del dict_name[key] Copied! Example: 1. 1 1. del person["Country"]
items()	Retrieves all key-value pairs as tuples and converts them into a list of tuples. Each tuple consists of a key and its corresponding value.	Copied! Syntax: 1. 1 1. items_list = list(dict_name.items()) Copied! Example: 1. 1 1. info = list(person.items())
key existence	You can check for the existence of a key in a dictionary using the `in` keyword	Copied! Example: 1. 1

```
2. 2
```

```
1. if "name" in person:
2.     print("Name exists in the dictionary.")
```

Copied!

keys()	Retrieves all keys from the dictionary and converts them into a list. Useful for iterating or processing keys using list methods.	Syntax:
		`1. 1`
		`1. keys_list = list(dict_name.keys())`
		Copied!
		Example:
		`1. 1`
		`1. person_keys = list(person.keys())`
		Copied!

update()	The `update()` method merges the provided dictionary into the existing dictionary, adding or updating key-value pairs.	Syntax:
		`1. 1`
		`1. dict_name.update({key: value})`
		Copied!
		Example:
		`1. 1`
		`1. person.update({"Profession": "Doctor"})`
		Copied!

values()	Extracts all values from the dictionary and converts them into a list. This list can be used for further processing or analysis.	Syntax:
		`1. 1`
		`1. values_list = list(dict_name.values())`
		Copied!
		Example:
		`1. 1`
		`1. person_values = list(person.values())`
		Copied!

Sets

Package/Method	Description	Code Example

add()	Elements can be added to a set using the `add()` method. Duplicates are automatically removed, as sets only store unique values.	Syntax:
		`1. 1`
		`1. set_name.add(element)`
		Copied!
		Example:
		`1. 1`
		`1. fruits.add("mango")`
		Copied!

clear()	The `clear()` method removes all elements from the set, resulting in an empty set. It updates the set in-place.	Syntax:
		`1. 1`
		`1. set_name.clear()`
		Copied!
		Example:
		`1. 1`
		`1. fruits.clear()`
		Copied!

copy()	The `copy()` method creates a shallow copy of the set. Any modifications to the copy won't affect the original set.	Syntax:
		`1. 1`
		`1. new_set = set_name.copy()`
		Copied!

		Example: ```1. 1 1. new_fruits = fruits.copy()``` Copied!
Defining Sets	A set is an unordered collection of unique elements. Sets are enclosed in curly braces `{}`. They are useful for storing distinct values and performing set operations.	Example: ```1. 1 2. 2 1. empty_set = set() #Creating an Empty Set 2. fruits = {"apple", "banana", "orange"}``` Copied!
discard()	Use the `discard()` method to remove a specific element from the set. Ignores if the element is not found.	Syntax: ```1. 1 1. set_name.discard(element)``` Copied! Example: ```1. 1 1. fruits.discard("apple")``` Copied!
issubset()	The `issubset()` method checks if the current set is a subset of another set. It returns True if all elements of the current set are present in the other set, otherwise False.	Syntax: ```1. 1 1. is_subset = set1.issubset(set2)``` Copied! Example: ```1. 1 1. is_subset = fruits.issubset(colors)``` Copied!
issuperset()	The `issuperset()` method checks if the current set is a superset of another set. It returns True if all elements of the other set are present in the current set, otherwise False.	Syntax: ```1. 1 1. is_superset = set1.issuperset(set2)``` Copied! Example: ```1. 1 1. is_superset = colors.issuperset(fruits)``` Copied!
pop()	The `pop()` method removes and returns an arbitrary element from the set. It raises a `KeyError` if the set is empty. Use this method to remove elements when the order doesn't matter.	Syntax: ```1. 1 1. removed_element = set_name.pop()``` Copied! Example: ```1. 1 1. removed_fruit = fruits.pop()``` Copied!
remove()	Use the `remove()` method to remove a specific element from the set. Raises a `KeyError` if the element is not found.	Syntax: ```1. 1 1. set_name.remove(element)``` Copied! Example: ```1. 1 1. fruits.remove("banana")``` Copied!

Set Operations	Perform various operations on sets: `union`, `intersection`, `difference`, `symmetric difference`.

Syntax:

```
1
2
3
4
```

```
union_set = set1.union(set2)
intersection_set = set1.intersection(set2)
difference_set = set1.difference(set2)
sym_diff_set = set1.symmetric_difference(set2)
```

Copied!

Example:

```
1
2
3
4
```

```
combined = fruits.union(colors)
common = fruits.intersection(colors)
unique_to_fruits = fruits.difference(colors)
sym_diff = fruits.symmetric_difference(colors)
```

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update()	The `update()` method adds elements from another iterable into the set. It maintains the uniqueness of elements.

Syntax:

```
1
```

```
set_name.update(iterable)
```

Copied!

Example:

```
1
```

```
fruits.update(["kiwi", "grape"]
```

Copied!