

# Python Data Structures Cheat Sheet

## List

Package/Method	Description	Code Example
		Syntax: <pre>1. 1  1. list_name.append(element)</pre> <div>Copied!</div>
append()	The `append()` method is used to add an element to the end of a list.	Example: <pre>1. 1 2. 2  1. fruits = ["apple", "banana", "orange"] 2. fruits.append("mango") print(fruits)</pre> <div>Copied!</div>
copy()	The `copy()` method is used to create a shallow copy of a list.	Example 1: <pre>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]</pre> <div>Copied!</div>
count()	The `count()` method is used to count the number of occurrences of a specific element in a list in Python.	Example: <pre>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</pre> <div>Copied!</div>
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: <pre>1. 1  1. fruits = ["apple", "banana", "orange", "mango"]</pre> <div>Copied!</div>
del	The `del` statement is used to remove an element from list. `del` statement removes the element at the specified index.	Example: <pre>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]</pre> <div>Copied!</div>
		Syntax: <pre>1. 1  1. list_name.extend(iterable)</pre> <div>Copied!</div>
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.	Example: <pre>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)</pre> <div>Copied!</div>
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: <pre>1. 1 2. 2 3. 3</pre>

```
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)
```

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Syntax:

```
1. 1

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

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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)
```

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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]
```

Modifying a list

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

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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]
```

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

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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]
```

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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]
```

remove()

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

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reverse()

The `reverse()` method is used to reverse the order of elements in a list

Example 1:  

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

1. my_list = [1, 2, 3, 4, 5]
2. my_list.reverse() print(my_list)
3. # Output: [5, 4, 3, 2, 1]
```

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Syntax:

```
1. 1

1. list_name[start:end:step]
```

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Slicing

You can use slicing to access a range of elements from a list.

Example:  

```
1. 1
2. 2
3. 3
4. 4
5. 5
6. 6
7. 7
8. 8
9. 9
10. 10
11. 11
12. 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)
```

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

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Dictionary

Package/Method	Description
Accessing Values	You can access the values in a dictionary using their corresponding `keys`.

Code Example

Syntax:

```
1. 1

1. Value = dict_name["key_name"]
```

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Example:

```
1. 1
2. 2

1. name = person["name"]
2. age = person["age"]
```

		<div>Copied!</div> <p>Syntax:</p> <pre>1. 1 1. dict_name[key] = value</pre>
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.	<div>Copied!</div> <p>Example:</p> <pre>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</pre>
		<div>Copied!</div> <p>Syntax:</p> <pre>1. 1 1. dict_name.clear()</pre>
clear()	The <code>clear()</code> method empties the dictionary, removing all key-value pairs within it. After this operation, the dictionary is still accessible and can be used further.	<div>Copied!</div> <p>Example:</p> <pre>1. 1 1. grades.clear()</pre>
		<div>Copied!</div> <p>Syntax:</p> <pre>1. 1 1. new_dict = dict_name.copy()</pre>
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.	<div>Copied!</div> <p>Example:</p> <pre>1. 1 2. 2 1. new_person = person.copy() 2. new_person = dict(person) # another way to create a copy of dictionary</pre>
		<div>Copied!</div> <p>Example:</p> <pre>1. 1 2. 2 1. dict_name = {} #Creates an empty dictionary 2. person = { "name": "John", "age": 30, "city": "New York"}</pre>
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 <code>{}</code> .	<div>Copied!</div> <p>Syntax:</p> <pre>1. 1 1. del dict_name[key]</pre>
del	Removes the specified key-value pair from the dictionary. Raises a <code>KeyError</code> if the key does not exist.	<div>Copied!</div> <p>Example:</p> <pre>1. 1 1. del person["Country"]</pre>
		<div>Copied!</div> <p>Syntax:</p> <pre>1. 1 1. items_list = list(dict_name.items())</pre>
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.	<div>Copied!</div> <p>Example:</p> <pre>1. 1 1. info = list(person.items())</pre>
key existence	You can check for the existence of a key in a dictionary using the <code>'in'</code> keyword	<div>Copied!</div> <p>Example:</p> <pre>1. 1</pre>

2. 2

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

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Syntax:

1. 1

1. keys\_list = list(dict\_name.keys())

Copied!

keys()

Retrieves all keys from the dictionary and converts them into a list. Useful for iterating or processing keys using list methods.

Example:

1. 1

1. person\_keys = list(person.keys())

Copied!

Syntax:

1. 1

1. dict\_name.update({key: value})

Copied!

update()

The `update()` method merges the provided dictionary into the existing dictionary, adding or updating key-value pairs.

Example:

1. 1

1. person.update({"Profession": "Doctor"})

Copied!

Syntax:

1. 1

1. values\_list = list(dict\_name.values())

Copied!

values()

Extracts all values from the dictionary and converts them into a list. This list can be used for further processing or analysis.

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!

Syntax:

1. 1

1. set\_name.clear()

Copied!

clear()

The `clear()` method removes all elements from the set, resulting in an empty set. It updates the set in-place.

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!

		<p>Example:</p> <pre>1. 1 1. new_fruits = fruits.copy()</pre> <p>Copied!</p> <p>Example:</p> <pre>1. 1 2. 2 1. empty_set = set() #Creating an Empty Set 2. fruits = {"apple", "banana", "orange"}</pre> <p>Copied!</p> <p>Syntax:</p> <pre>1. 1 1. set_name.discard(element)</pre> <p>Copied!</p>
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.	
discard()	Use the `discard()` method to remove a specific element from the set. Ignores if the element is not found.	<p>Example:</p> <pre>1. 1 1. fruits.discard("apple")</pre> <p>Copied!</p> <p>Syntax:</p> <pre>1. 1 1. is_subset = set1.issubset(set2)</pre> <p>Copied!</p>
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.	<p>Example:</p> <pre>1. 1 1. is_subset = fruits.issubset(colors)</pre> <p>Copied!</p> <p>Syntax:</p> <pre>1. 1 1. is_superset = set1.issuperset(set2)</pre> <p>Copied!</p>
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.	<p>Example:</p> <pre>1. 1 1. is_superset = colors.issuperset(fruits)</pre> <p>Copied!</p> <p>Syntax:</p> <pre>1. 1 1. removed_element = set_name.pop()</pre> <p>Copied!</p>
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.	<p>Example:</p> <pre>1. 1 1. removed_fruit = fruits.pop()</pre> <p>Copied!</p> <p>Syntax:</p> <pre>1. 1 1. set_name.remove(element)</pre> <p>Copied!</p>
remove()	Use the `remove()` method to remove a specific element from the set. Raises a `KeyError` if the element is not found.	<p>Example:</p> <pre>1. 1 1. fruits.remove("banana")</pre> <p>Copied!</p>

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

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



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Syntax:

- 1.
- 2.
- 3.
- 4.

```
1. union_set = set1.union(set2)
2. intersection_set = set1.intersection(set2)
3. difference_set = set1.difference(set2)
4. sym_diff_set = set1.symmetric_difference(set2)
```

Copied!

Example:

- 1.
- 2.
- 3.
- 4.

```
1. combined = fruits.union(colors)
2. common = fruits.intersection(colors)
3. unique_to_fruits = fruits.difference(colors)
4. sym_diff = fruits.symmetric_difference(colors)
```

Copied!

Syntax:

- 1.

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

Copied!

Example:

- 1.

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

Copied!