

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!
		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!
copy()	The `copy()` method is used to create a shallow copy of a list.	Example:  1. 1 2. 2 3. 3  1. my_list = [1, 2, 3, 4, 5] 2. count = my_list.count(2) print(count) 3. # Output: 4  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!
		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!
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. my_list.insert(2, 6) 3. print(my_list)
insert()	The `insert()` method is used to insert an element.	Syntax:  1. 1  1. list_name.insert(index, element)  Copied!
		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!

Example:

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

Modifying a list

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

```
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]
```

Copied!

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]
```

Copied!

Example:

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

remove()

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

```
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]
```

Copied!

Example 1:

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

reverse()

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

```
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]
```

Copied!

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
```

Slicing

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

```
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	Code Example
		<div>Syntax: <pre>1. 1  1. Value = dict_name["key_name"]</pre><div>Copied!</div></div> <div>Example: <pre>1. 1 2. 2  1. name = person["name"] 2. age = person["age"]</pre><div>Copied!</div></div>
Accessing Values	You can access the values in a dictionary using their corresponding `keys`.	<div>Syntax: <pre>1. 1  1. dict_name[key] = value</pre><div>Copied!</div></div> <div>Example: <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></div>
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>Syntax: <pre>1. 1  1. dict_name.clear()</pre><div>Copied!</div></div> <div>Example: <pre>1. 1  1. grades.clear()</pre><div>Copied!</div></div>
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.	<div>Syntax: <pre>1. 1  1. new_dict = dict_name.copy()</pre><div>Copied!</div></div> <div>Example: <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></div>
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>Syntax: <pre>1. 1  1. del dict_name[key]</pre><div>Copied!</div></div> <div>Example: <pre>1. 1 2. 2  1. dict_name = {} #Creates an empty dictionary 2. person = { "name": "John", "age": 30, "city": "New York"}</pre><div>Copied!</div></div>
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 `{}`.	<div>Syntax: <pre>1. 1  1. del dict_name[key]</pre><div>Copied!</div></div> <div>Example: <pre>1. 1  1. del person["Country"]</pre><div>Copied!</div></div>
del	Removes the specified key-value pair from the dictionary. Raises a `KeyError` if the key does not exist.	<div>Syntax: <pre>1. 1  1. items_list = list(dict_name.items())</pre><div>Copied!</div></div> <div>Example: <pre>1. 1  1. items_list = list(dict_name.items())</pre><div>Copied!</div></div>
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.	

Example:

```
1. 1
1. info = list(person.items())
```

Copied!

Example:

```
1. 1
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!

Example:

```
1. 1
1. person_keys = list(person.keys())
```

Copied!

Syntax:

```
1. 1
1. dict_name.update({key: value})
```

Copied!

Example:

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

Copied!

Syntax:

```
1. 1
1. values_list = list(dict_name.values())
```

Copied!

Example:

```
1. 1
1. person_values = list(person.values())
```

Copied!

key existence

You can check for the existence of a key in a dictionary using the `'in'` keyword

keys()

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

update()

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

values()

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

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!

Syntax:

```
1. 1
1. new_set = set_name.copy()
```

Copied!

copy()

The `'copy()'` method creates a shallow copy of the set. Any modifications to the copy won't affect the original set.

Example:

```
1. 1
1. new_fruits = fruits.copy()
```

Copied!

Example:

```
1. 1
2. 2
1. empty_set = set() #Creating an Empty Set
2. fruits = {"apple", "banana", "orange"}
```

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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.

		<div>Syntax:<pre>1. 1  1. set_name.discard(element)</pre><div>Copied!</div><div>Example:<pre>1. 1  1. fruits.discard("apple")</pre><div>Copied!</div></div></div>
discard()	Use the <code>`discard()`</code> method to remove a specific element from the set. Ignores if the element is not found.	<div>Syntax:<pre>1. 1  1. is_subset = set1.issubset(set2)</pre><div>Copied!</div><div>Example:<pre>1. 1  1. is_subset = fruits.issubset(colors)</pre><div>Copied!</div></div></div>
issubset()	The <code>`issubset()`</code> 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.	<div>Syntax:<pre>1. 1  1. is_superset = set1.issuperset(set2)</pre><div>Copied!</div><div>Example:<pre>1. 1  1. is_superset = colors.issuperset(fruits)</pre><div>Copied!</div></div></div>
issuperset()	The <code>`issuperset()`</code> 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.	<div>Syntax:<pre>1. 1  1. removed_element = set_name.pop()</pre><div>Copied!</div><div>Example:<pre>1. 1  1. removed_fruit = fruits.pop()</pre><div>Copied!</div></div></div>
pop()	The <code>`pop()`</code> method removes and returns an arbitrary element from the set. It raises a <code>`KeyError`</code> if the set is empty. Use this method to remove elements when the order doesn't matter.	<div>Syntax:<pre>1. 1  1. set_name.remove(element)</pre><div>Copied!</div><div>Example:<pre>1. 1  1. fruits.remove("banana")</pre><div>Copied!</div></div></div>
remove()	Use the <code>`remove()`</code> method to remove a specific element from the set. Raises a <code>`KeyError`</code> if the element is not found.	<div>Syntax:<pre>1. 1 2. 2 3. 3 4. 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)</pre><div>Copied!</div><div>Example:<pre>1. 1 2. 2 3. 3 4. 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)</pre><div>Copied!</div></div></div>
Set Operations	Perform various operations on sets: <code>`union`</code> , <code>`intersection`</code> , <code>`difference`</code> , <code>`symmetric difference`</code> .	<div>Syntax:<pre>1. 1 2. 2 3. 3 4. 4  1. set_name.update(iterable)</pre><div>Copied!</div><div>Example:<pre>1. 1  1. fruits.update(["kiwi", "grape"])</pre><div>Copied!</div></div></div>
update()	The <code>`update()`</code> method adds elements from another iterable into the set. It maintains the uniqueness of elements.	



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