Module 2 Cheatsheet: Python Data Structures Part-2

Dictionaries

Package/Method	Description	Code Example

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 `{}`.	Example:
		1
		2
		`dict_name = {} #Creates an empty dictionary`
		`person = { "name": "John",  "age": 30, "city": "New York"}`
		Copied!
		Syntax:
		1
		`Value = dict_name["key_name"]`
		Copied!

Accessing Values	You can access the values in a dictionary using their corresponding `keys`.	Example:
		1
		2
		`name = person["name"]`
		`age = person["age"]`
		Copied!
		Syntax:
		1
		`dict_name[key] = value`
		Copied!

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.	Example:
		1
		2
		`person["Country"] = "USA" # A new entry will be created.`
		`person["city"] = "Chicago"  # Update the existing value for the same key`
		Copied!

del	Removes the specified key-value pair from the dictionary. Raises a `KeyError` if the key does not exist.	Syntax:
		`1. 1`
		`1. del dict_name[key]`
		Copied!
		Example:
		`1. 1`
		`1. del person["Country"]`
		Copied!

update()	`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!

clear()	`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.	Syntax:
		`1. 1`
		`1. dict_name.clear()`
		Copied!
		Example:
		`1. 1`
		`1. grades.clear()`
		Copied!

key existence	You can check for the existence of a key in a dictionary using the `in` keyword	Example:
		`1. 1`
		`2. 2`
		`1. if "name" in person:`
		`2. print("Name exists in the dictionary.")`
		Copied!

copy()	Creates a shallow copy of the dictionary. The new dictionary contains the same key-	Syntax:
		`1. 1`
		`1. new_dict = dict_name.copy()`
		Copied!
		Example:

	value pairs as the original, but they remain distinct objects in memory.	```1. 1 2. 2 1. new_person = person.copy() 2. new_person = dict(person) # another way to create a copy of 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!
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!
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.	Syntax: ```1. 1 1. items_list = list(dict_name.items())``` Copied! Example: ```1. 1 1. info = list(person.items())``` Copied!

Sets

Defining Sets	A set is an unordered collection of unique elements. Sets are enclosed in curly braces `{}`.	Example: ```1. 1 2. 2 1. empty_set = set() #Creating an Empty Set 2. fruits = {"apple", "banana", "orange"}``` Copied!

	They are useful for storing distinct values and performing set operations.	

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!

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!

discard()	Use the `discard()` method to remove a specific element from the set. ignores if not the element is not found.	Syntax:
		`1. 1`
		`1. set_name.discard(element)`
		Copied!
		Example:
		`1. 1`
		`1. fruits.discard("apple")`
		Copied!

update()	The `update()` method adds elements from another iterable into the set. It maintains the uniqueness of elements.	Syntax:
		`1. 1`
		`1. set_name.update(iterable)`
		Copied!
		Example:

		1. 1 1. fruits.update(["kiwi", "grape"]) 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!
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!
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!
Set Operations	Perform various operations on sets: `union`, `intersection`, `difference`, `symmetric difference`.	Syntax: 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)
```

Copied!

Example:

```
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)
```

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!

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Changelog

Date	Version	Changed by	Change Description
2023-17-10	0.2	Malika	Updated cheatsheet
2023-17-10	0.1	Pooja Patel	Initial version created