

# **Dictionaries**

**Day 9 - Python Basics** 

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### Agenda

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1 What are dic	tionaries?
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- Creating and accessing dictionaries
- Adding, updating, and deleting items
- 4 Dictionary methods (keys(), values(), items())

**5** Looping through dictionaries

6 Hands-on practice

#### What are Dictionaries?

Definition: A dictionary is a collection of key-value pairs.

#### Features:

- Unordered: Items are not stored in a specific order.
- Mutable: Items can be added, removed, or changed.
- Keys must be unique and immutable (e.g., strings, numbers).

#### • Example:

```
student = {"name": "Ali", "age": 17, "grade": "A"}
```

#### **Creating and Accessing Dictionaries**

Creating a Dictionary:

```
my_dict = {"key1": "value1", "key2": "value2"}
```

- Accessing Items:
  - Use the key to access the value (dict[key]).

```
student = {"name": "Ali", "age": 17, "grade": "A"}
print(student["name"]) # Output: Ali
```

- Using get() Method:
  - Safely access a value without raising an error if the key doesn't exist.
     print(student.get("age")) # Output: 17

```
print(student.get("address", "Not Found")) # Output: Not Found
```

### Adding, Updating, and Deleting Items

Adding Items:

```
student["address"] = "Islamabad"
```

Updating Items:

```
student["age"] = 17
```

- Deleting Items:
  - o Use del to remove a key-value pair.
    del student["grade"]
  - Use pop() to remove a key-value pair and return the value.

```
age = student.pop("age")
```

Use clear() to remove all items. student.clear()



### **Dictionary Methods**

• **keys():** Returns a list of all keys.

```
print(student.keys())
# Output: dict_keys(['name', 'age', 'grade'])
```

• values(): Returns a list of all values.

```
print(student.values())
# Output: dict_values(['Ali', 17, 'A'])
```

• items(): Returns a list of key-value pairs as tuples.

```
print(student.items())
# Output: dict_items([('name', 'Ali'), ('age', 17), ('grade', 'A')])
```

### **Looping Through Dictionaries**

Looping Through Keys:

```
for key in student:
    print(key)
```

Looping Through Values:

```
for value in student.values():
    print(value)
```

Looping Through Key-Value Pairs:

```
for key, value in student.items():
    print(f"{key}: {value}")
```



#### **Hands-On Practice**

 Task 1: Create a dictionary to store student information (name, age, grade) and print it.

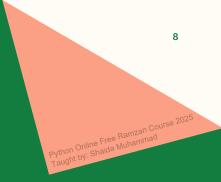
```
student = {"name": "Ali",
"age": 17, "grade": "A"}
print(student)
```

• Task 2: Add a new key-value pair (e.g., address) and print the updated dictionary.

```
student["address"] =
"Islamabad"
print(student)
```

• **Task 3:** Update the age and print the updated dictionary.

```
student["age"] = 17
print(student)
```



 Task 4: Remove the grade key and print the updated dictionary.

```
del student["grade"]
print(student)
```

• **Task 5:** Loop through the dictionary and print each key-value pair.

```
for key, value in
student.items():
    print(f"{key}: {value}")
```

### Recap

- Dictionaries store key-value pairs.
- Use keys to access, add, update, or delete items.
- Important methods: keys(), values(), items().
- Loop through dictionaries using for loops.



#### Homework

- Create a dictionary to store your favorite book's title, author, and year of publication. Print the dictionary.
- 2. Add a new key-value pair (e.g., genre) and print the updated dictionary.
- 3. Update the year and print the updated dictionary.
- 4. Loop through the dictionary and print each key-value pair.



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### Q&A

- Do you have any questions?
- Share your thoughts.

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12

## Closing

**Next class: Sets**