Dictionaries in Python

Estimated time needed: **25** minutes

Objectives

After completing this lab you will be able to:

- Create a Dictionary and perform operations on the Dictionary

Dictionaries

What are Dictionaries?

A dictionary consists of keys and values. It is helpful to compare a dictionary to a list. Instead of being indexed numerically like a list, dictionaries have keys. These keys are the keys that are used to access values within a dictionary.

The best example of a dictionary can be accessing person's detais using the **social security number**.
Here the social security number which is a unique number will be the **key** and the details of the people will be the **values** associated with it.

Create a Dictionary and access the elements

An example of a Dictionary Dict: Here we are creating a dictionary named **Dict** with he following details

- Keys are **key1, key2, key3, key4, key5**.
- Values are {1,2,[3,3,3],(4,4,4),5,(0,1):6} corresponding to the keys

```
# Create the dictionary

Dict = {"key1": 1, "key2": "2", "key3": [3, 3, 3], "key4": (4, 4, 4),
('key5'): 5, (0, 1): 6}
Dict
```

The keys can be strings:

```
# Access to the value by the key

Dict["key1"]
```

Keys can also be any immutable object such as a tuple:

```
# Access to the value by the key

Dict[(0, 1)]
```

Each key is separated from its value by a colon ":". Commas separate the items, and the whole dictionary is enclosed in curly braces. An empty dictionary without any items is written with just two curly braces, like this "{}".

```
# Create a sample dictionary

release_year_dict = {"Thriller": "1982", "Back in Black": "1980", \
                    "The Dark Side of the Moon": "1973", "The
Bodyguard": "1992", \
                    "Bat Out of Hell": "1977", "Their Greatest Hits
(1971-1975)": "1976", \
                    "Saturday Night Fever": "1977", "Rumours": "1977"}
release_year_dict
```

In summary, like a list, a dictionary holds a sequence of elements. Each element is represented by a key and its corresponding value. Dictionaries are created with two curly braces containing keys and values separated by a colon. For every key, there can only be one single value, however, multiple keys can hold the same value. Keys can only be strings, numbers, or tuples, but values can be any data type.

It is helpful to visualize the dictionary as a table, as in the following image. The first column represents the keys, the second column represents the values.

Keys

You can retrieve the values based on the names:

```
# Get value by keys

release_year_dict['Thriller']
```

This corresponds to:

Similarly for The Bodyguard

```
# Get value by key

release_year_dict['The Bodyguard']
```

Now let us retrieve the keys of the dictionary using the method keys():

```
# Get all the keys in dictionary

release_year_dict.keys()
```

You can retrieve the values using the method values():

```
# Get all the values in dictionary

release_year_dict.values()
```

We can add an entry:

```
# Append value with key into dictionary

release_year_dict['Graduation'] = '2007'
release_year_dict
```

We can delete an entry:

```
# Delete entries by key

del(release_year_dict['Thriller'])
del(release_year_dict['Graduation'])
release_year_dict
```

We can verify if an element is in the dictionary:

```
# Verify the key is in the dictionary

'The Bodyguard' in release_year_dict
```

Quiz on Dictionaries

You will need this dictionary for the next two questions:

```
# Question sample dictionary

soundtrack_dic = {"The Bodyguard":"1992", "Saturday Night
Fever":"1977"}
soundtrack_dic
```

a) In the dictionary soundtrack_dic what are the keys ?

```
# Write your code below and press Shift+Enter to execute
```

b) In the dictionary soundtrack_dic what are the values ?

```
# Write your code below and press Shift+Enter to execute
```

You will need this dictionary for the following questions:

The Albums Back in Black, The Bodyguard and Thriller have the following music recording sales in millions 50, 50 and 65 respectively:

a) Create a dictionary album_sales_dict where the keys are the album name and the sales in millions are the values.

```
# Write your code below and press Shift+Enter to execute
```

b) Use the dictionary to find the total sales of Thriller:

```
# Write your code below and press Shift+Enter to execute
```

c) Find the names of the albums from the dictionary using the method keys():

```
# Write your code below and press Shift+Enter to execute
```

d) Find the values of the recording sales from the dictionary using the method values:

```
# Write your code below and press Shift+Enter to execute
```

Scenario:Inventory Store

The inventory store scenario project utilizes a dictionary-based approach to develop a robust system for managing and tracking inventory in a retail store. **Note:- You will be working with two product details.**

Task-1 Create an empty dictionary

First you need to create an empty dictionary, where you will be storing the product details.

```
#Type your code here
```

Task-2 Store the first product details in variable

- Product Name= Mobile phone
- Product Quantity= 5
- Product price= 20000

- Product Release Year= 2020

```
#type your code here
```

Task-3 Add the details in inventory

```
#Type your code here
```

Task-4 Store the second product details in a variable.

- Product Name= "Laptop"
- Product Quantity= 10
- Product price = 50000
- Product Release Year= 2023

```
#type your code here
```

Task-5 Add the item detail into the inventory.

```
#type your code here
```

Task-6 Display the Products present in the inventory

Use print statement for displaying the products

```
#type your code here
```

Task-7 Check if `ProductNo1_releaseYear` and `ProductNo2_releaseYear` is in the inventory

```
#Type your code here
```

As in inventory `Release year` is not required, let's delete it.

Task-8 Delete release year of both the products from the inventory

```
#Type your code here
```

Congratulations, you have completed your first lesson and hands-on lab in Python.

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Change Log

Date (YYYY-MM-DD)	Version	Changed By	Change Description
2023-05-11	2.3	Akansha yadav	Updated lab with scenario
2022-01-10	2.2	Malika Singla	Removed the readme for GitShare
2020-09-09	2.1	Malika Singla	Updated the variable soundtrack_dict to soundtrack_dic in Questions
2020-08-26	2.0	Lavanya	Moved lab to course repo in GitLab