Full Stack - Artificial Intelligence
[Course]
Week 1 -
[See examples / code in GitHub code repository]

It is not about Theory, it is 20% Theory and 80% Practical – Technical/Development/Programming [Mostly Python based]

Development Environment Setup

- ❑ Install Python
- ❑ Install – IDE - Visual Studio Code
- ❑ Install – extension for Python by Microsoft
- ❑ Visual Studio Code – Debugging - process
- ❑ Python – executable – find version
- ❑ Python File run by command prompt
- ❑ Python File run by IDE – visual studio code
- ❑ Python has no command for declaring a variable.
- ❑ Create a free ac of GitHub. Install Desktop client. Check-in code- as per name

Development Task

Task 1:

Print – Hello World First program

Task 2:

Print – Current version of Python programming language

Task 3:

Add comments to code

Task 4:

Create a Int variable and print
Then create a string variable and print

Task 5:

Type casting – Get a type

Development Task

Data Types

Python has the following data types built-in by default, in these categories:

Text Type:	`str`
Numeric Types:	`int`, `float`, `complex`
Sequence Types:	`list`, `tuple`, `range`
Mapping Type:	`dict`
Set Types:	`set`, `frozenset`
Boolean Type:	`bool`
Binary Types:	`bytes`, `bytearray`, `memoryview`
None Type:	`NoneType`

Reference:

https://www.w3schools.com/python/python_datatypes.asp
https://www.geeksforgeeks.org/python-data-types/
https://www.digitalocean.com/community/tutorials/python-data-types
https://www.programiz.com/python-programming/variables-datatypes

Exercises

Development Task

Operators

Operator	Name	Example
+	Addition	x + y
-	Subtraction	x - y
*	Multiplication	x * y
/	Division	x / y
%	Modulus	x % y
**	Exponentiation	x ** y
//	Floor division	x // y

Reference:
https://www.w3schools.com/python/python_operators.asp
https://www.programiz.com/python-programming/operators
https://www.programiz.com/python-programming/operators
https://www.scholarhat.com/tutorial/python/operators-of-python

Exercises

Development Task

String Function

Method	Description
capitalize()	Converts the first character to upper case
casefold()	Converts string into lower case
center()	Returns a centered string
count()	Returns the number of times a specified value occurs in a string
encode()	Returns an encoded version of the string
endswith()	Returns true if the string ends with the specified value
expandtabs()	Sets the tab size of the string
find()	Searches the string for a specified value and returns the position of where it was found
format()	Formats specified values in a string
format_map()	Formats specified values in a string
index()	Searches the string for a specified value and returns the position of where it was found
isalnum()	Returns True if all characters in the string are alphanumeric

Reference:

https://www.w3schools.com/python/python_strings_methods.asp

https://www.geeksforgeeks.org/python-string-methods/

https://www.wscubetech.com/resources/python/strings

Exercises

Development Task

Take Input

```
username = input("Enter username:")
print("Username is: " + username)
```

Exercises

Reference:
https://www.geeksforgeeks.org/taking-input-in-python/
https://www.digitalocean.com/community/tutorials/how-to-receive-user-input-python
https://www.w3schools.com/python/python_user_input.asp

Development Task

Type-Casting

Casting in python is therefore done using constructor functions:

- `int()` - constructs an integer number from an integer literal, a float literal (by removing all decimals), or a string literal (providing the string represents a whole number)
- `float()` - constructs a float number from an integer literal, a float literal or a string literal (providing the string represents a float or an integer)
- `str()` - constructs a string from a wide variety of data types, including strings, integer literals and float literals

Exercises

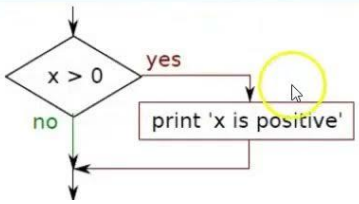
Reference:
https://www.w3schools.com/python/python_casting.asp
https://www.geeksforgeeks.org/type-casting-in-python/

Conditional Execution

If Statement

- An **if statement** consists of a boolean expression followed by one or more statements.
- The Boolean expression after the if statement is called the condition. We end the if statement with a colon character (:) and the line(s) after the if statement are indented.

```
if x > 0 :
    print ("x is positive")
```

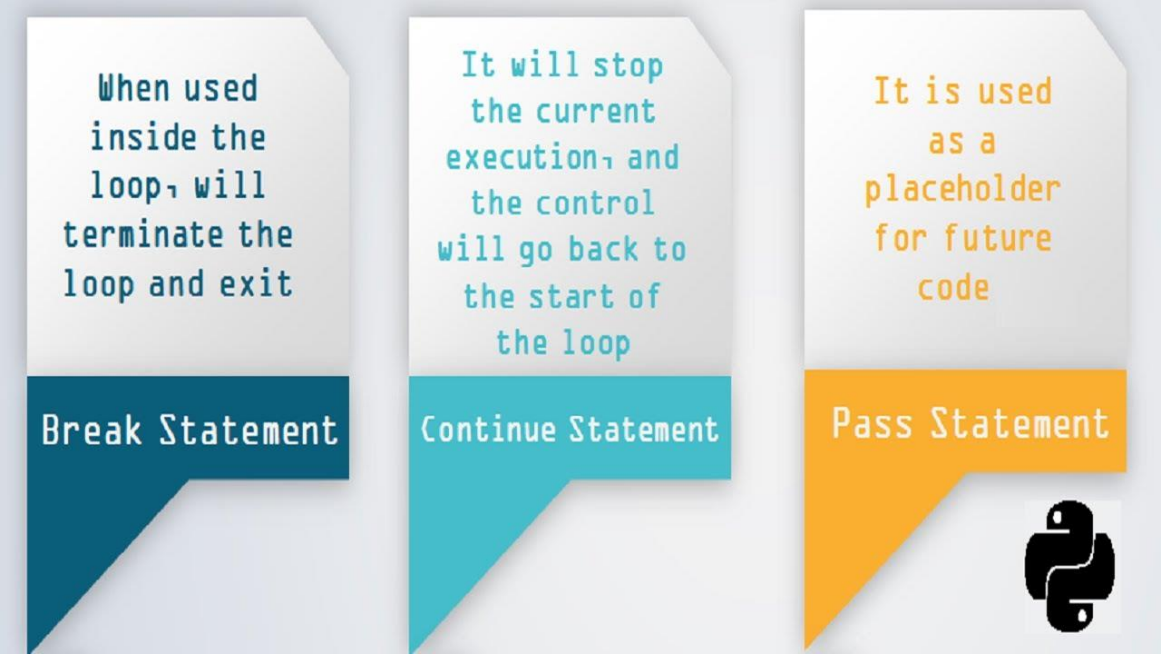


References:

https://www.geeksforgeeks.org/conditional-statements-in-python/
https://www.w3schools.com/python/python_conditions.asp
https://realpython.com/python-conditional-statements/

Exercises

Break, continue, and pass statements



References:

https://www.digitalocean.com/community/tutorials/how-to-use-break-
https://www.geeksforgeeks.org/loops-and-control-statements-continue
https://pynative.com/python-break-continue-pass/

Exercises

For - While - Loop

References:

https://www.geeksforgeeks.org/loops-in-python/

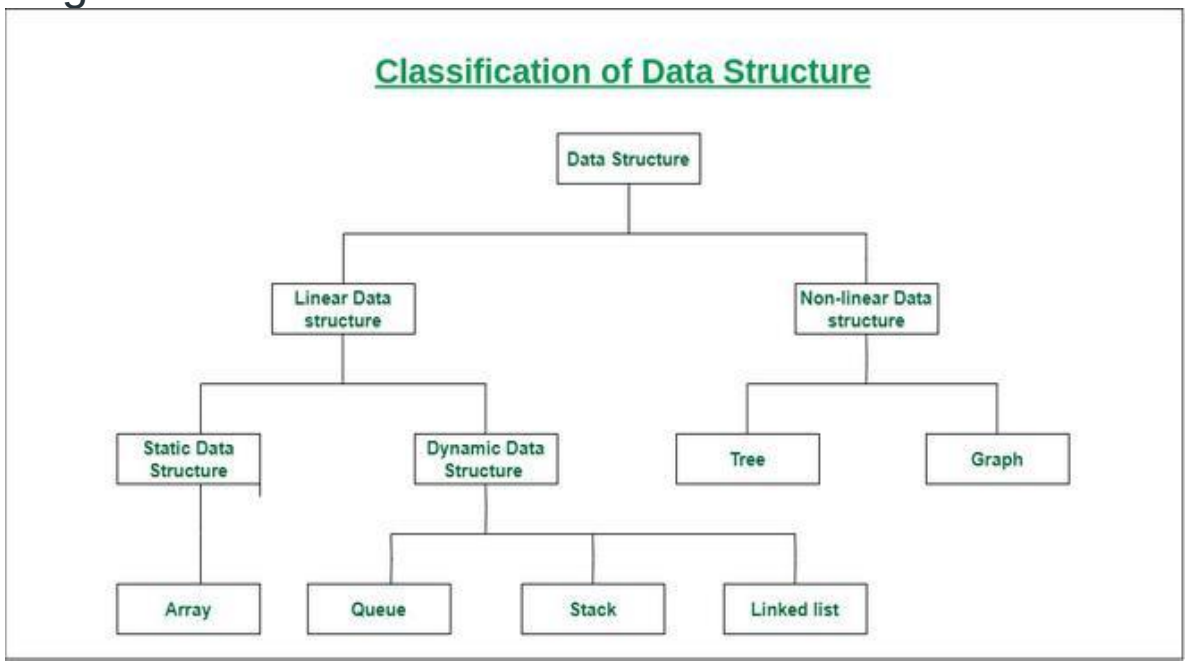
https://www.geeksforgeeks.org/difference-between-for-loop-and-while

https://www.w3schools.com/python/python_while_loops.asp

Exercises

Data Structure

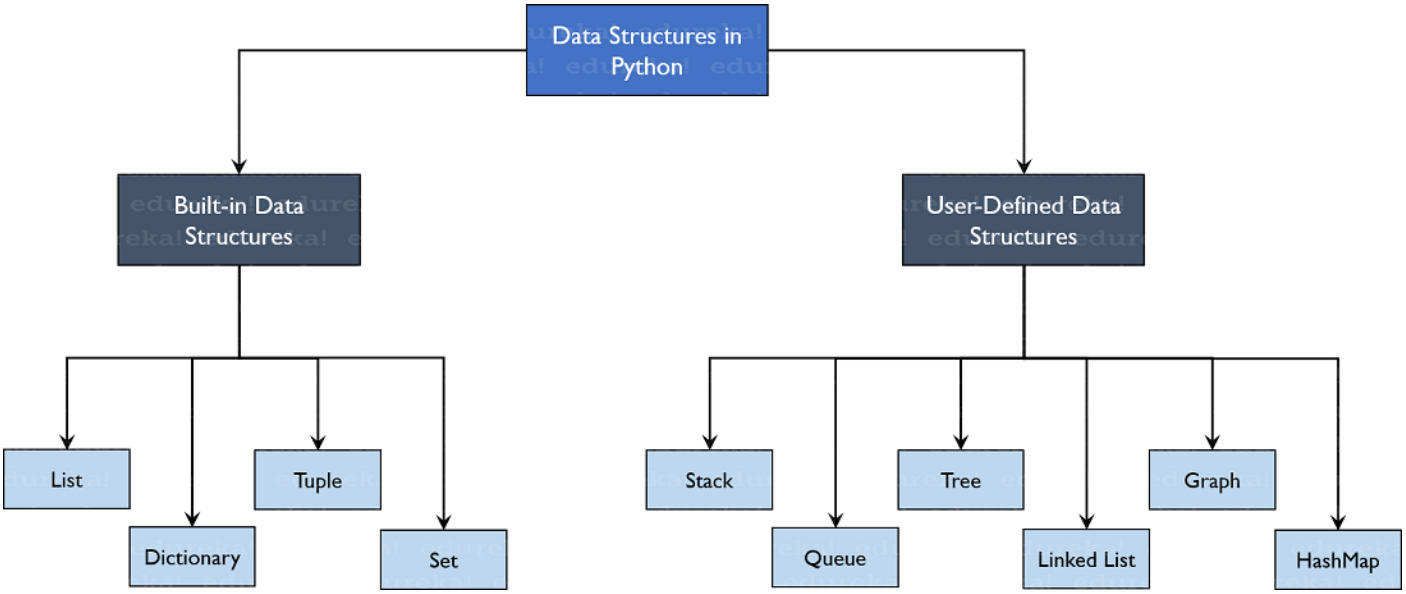
Data structures are the fundamental building blocks of computer programming. They define how data is organized, stored, and manipulated within a program. Understanding data structures is very important for developing efficient and effective algorithms.



References:

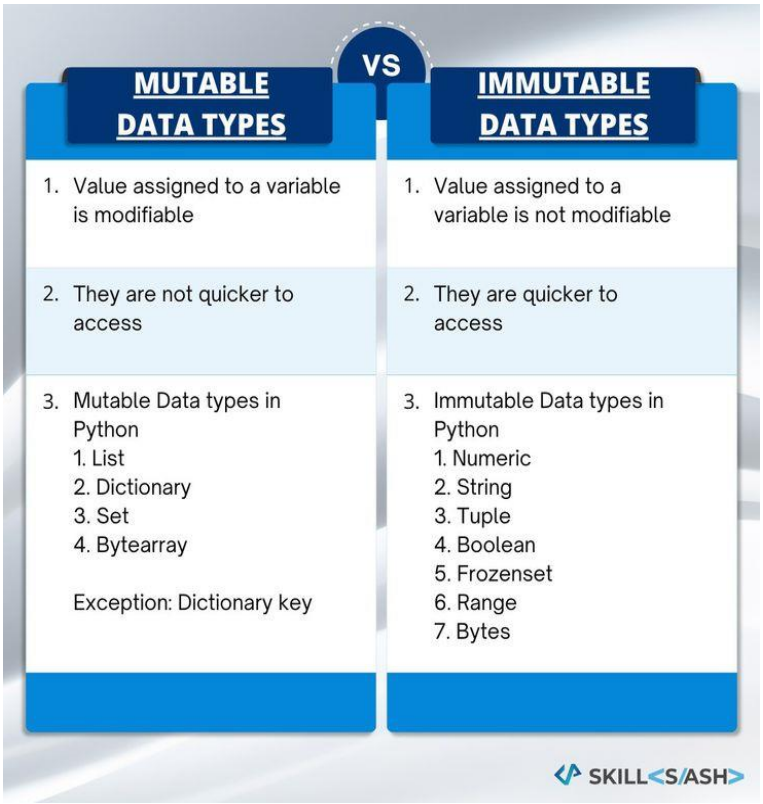
https://www.geeksforgeeks.org/data-structures/
https://www.simplilearn.com/tutorials/data-structure-tutorial/what-is-data-structure

Data Structure in Python



References:
https://www.geeksforgeeks.org/python-data-structures/
https://docs.python.org/3/tutorial/datastructures.html
https://corporatefinanceinstitute.com/resources/data-science/python-data-structures/
https://www.edureka.co/blog/data-structures-in-python/

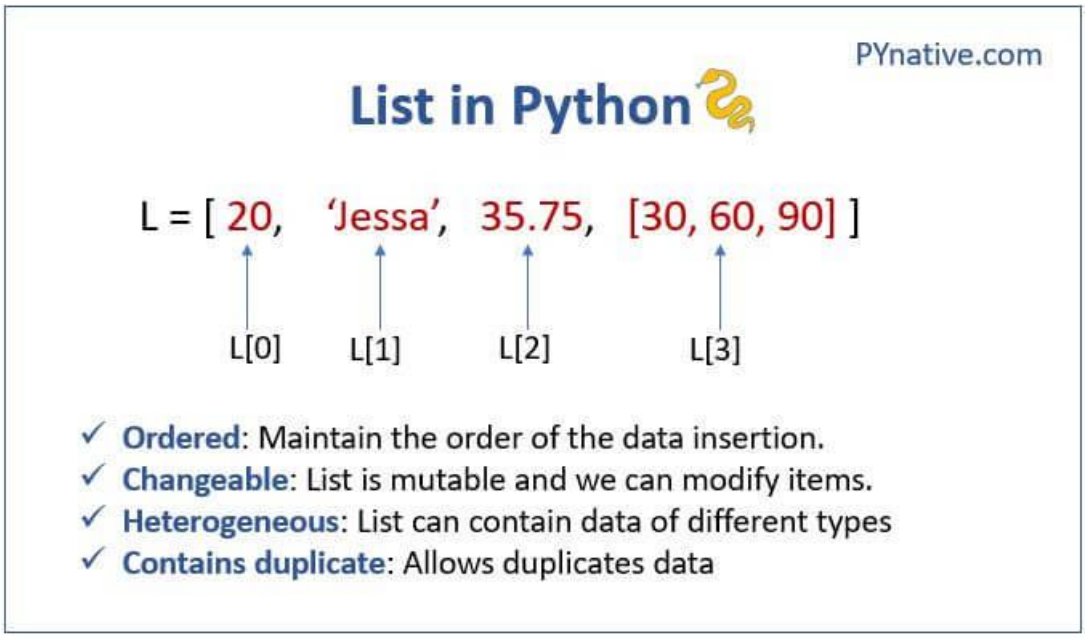
Difference between mutable and immutable



References:

https://www.geeksforgeeks.org/mutable-vs-immutable-objects-in-python/
https://realpython.com/python-mutable-vs-immutable-types/
https://www.shiksha.com/online-courses/articles/difference-between-mutable-and-immutable-in-python/

Python Lists

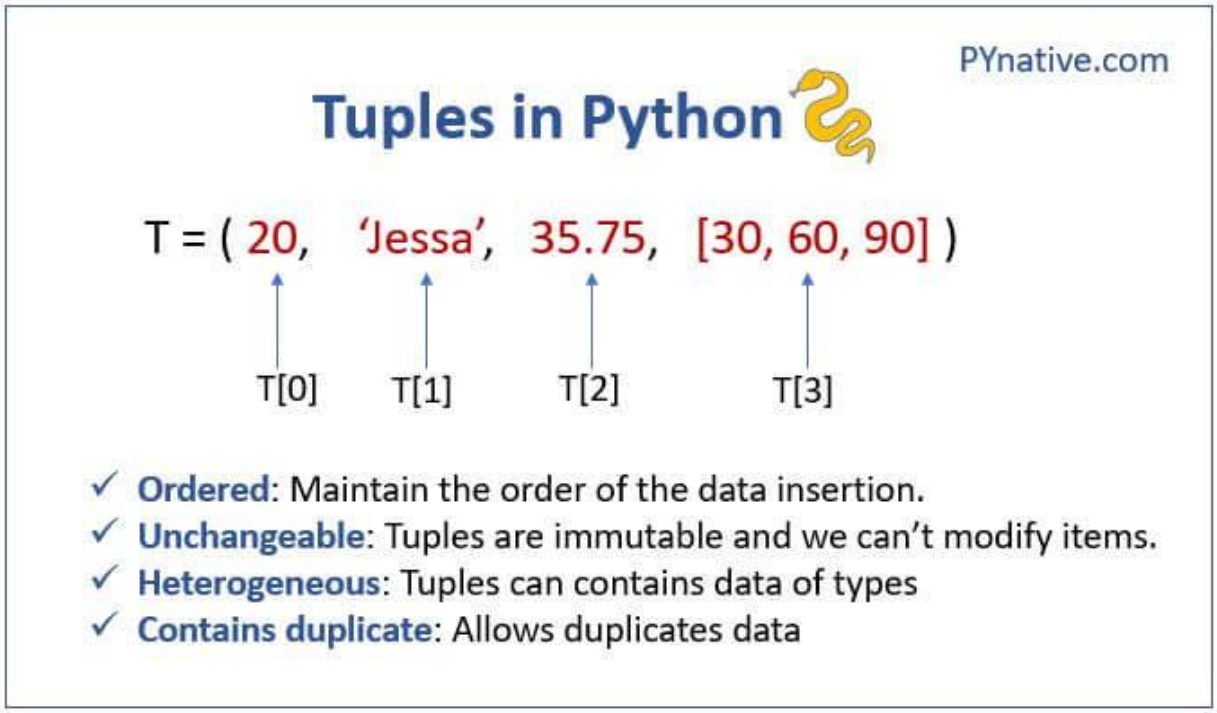


References:

https://www.w3schools.com/python/python_lists.asp
https://www.programiz.com/python-programming/list
https://www.geeksforgeeks.org/python-lists/

Exercises

Python Tuples

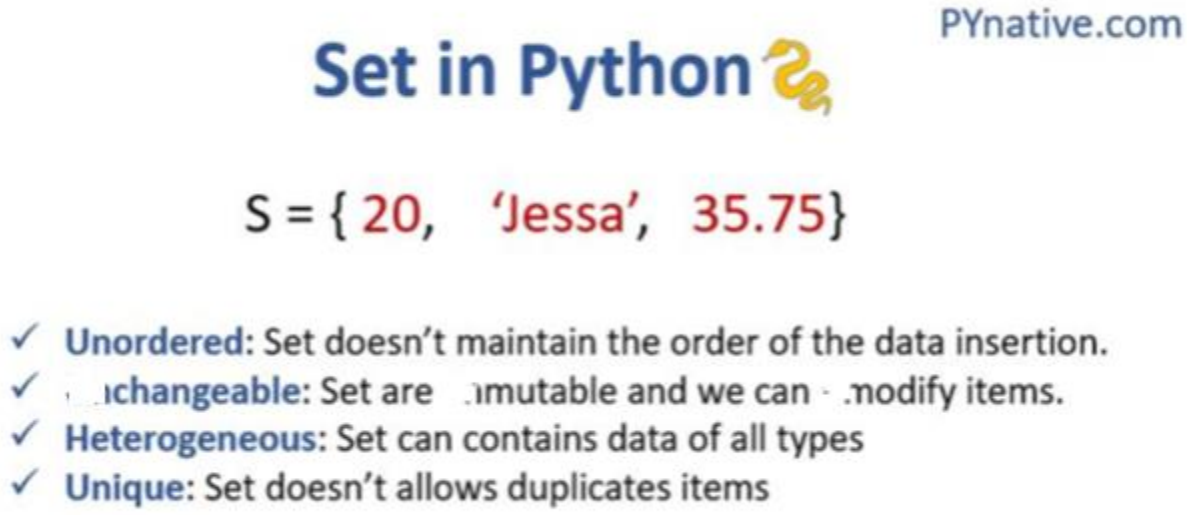


References:

https://www.w3schools.com/python/python_tuples.asp
https://www.geeksforgeeks.org/tuples-in-python/
https://www.programiz.com/python-programming/tuple

Exercises

Python Sets



References:

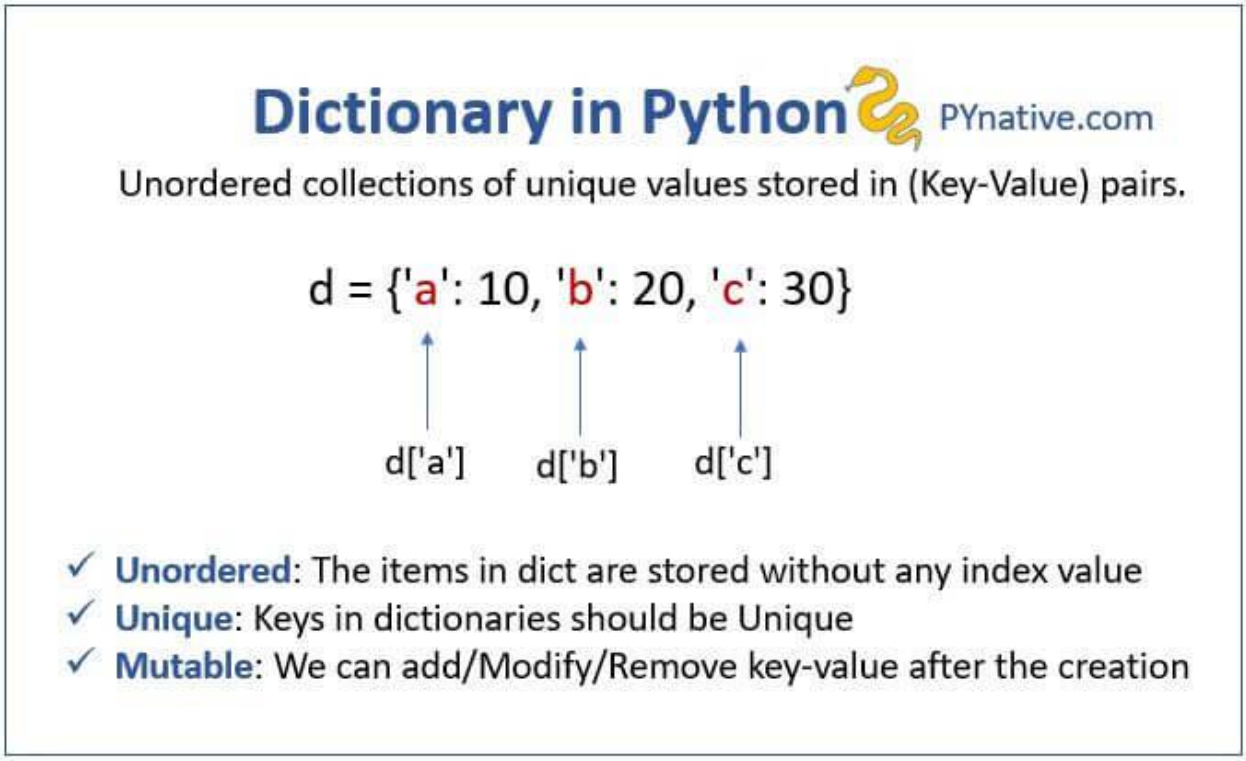
https://www.w3schools.com/python/python_sets.asp

https://www.programiz.com/python-programming/set

https://www.geeksforgeeks.org/sets-in-python/

Exercises

Python Dictionaries



References:

https://www.w3schools.com/python/python_dictionaries.asp
https://www.programiz.com/python-programming/dictionary
https://www.geeksforgeeks.org/python-dictionary/

Thank you - for listening and participating

- ❑**Questions / Queries**
- ❑**Suggestions/Recommendation**
- ❑**Ideas…..?**

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