This module begins a journey into Python data structures by explaining the use of lists and tuples and how they are able to store collections of data in a single variable. Next learn about dictionaries and how they function by storing data in pairs of keys and values, and end with Python sets to learn how this type of collection can appear in any order and will only contain unique elements.

**Learning Objectives**

* Describe and manipulate tuple combinations and list data structures.
* Execute basic tuple operations in Python.
* Perform list operations in Python.
* Write structures with correct keys and values to demonstrate understanding of dictionaries.
* Work with and perform operations on dictionaries in Python.
* Create sets to demonstrate understanding of the differences between sets, tuples, and lists.
* Work with sets in Python, including operations and logic operations.

**TUPLES**

* Tuples are an ordered sequence
* Tuples are written as comma separated elements within parentheses.
* Tuples are immutables.

Ratings= (10, 9, 6, 5, 10, 8, 9, 6, 2).

* A tuple can contain another tuple as well, it is called nesting

NT= (1, 2, (“pop”, “rock”), (3,4), (“disco”, (1,2)))

NT[2] [1] = “rock”

**LIST**

* Lists are also ordered sequences
* A list is represented with square brackets.
* List is mutable.

L= [“Michael Jackson”, 10.1, 1982]

You can add elements in the list by using extend and append functions, check the video to see the differences.

If we use extend we add element to the list by increasing the indexes, while append we can element to the list by increasing only one element.

We can use the del function to remove an element in list

del(A[0])

list.split() convert every group of characters separated by space into different element. Check example in the video.

We can use split to separate elements too by putting a character within the arguments

“A,B,C,D”.SPLIT(“,”)

[“A”, “B”, “C”, “D”]

**DICTIONARIES**

* A dictionary has keys and values.
* Dictionaries are denoted with curly brackets {}
* The keys have to be immutable and unique.
* The values can be immutable, mutable and duplicates.
* Each key and value pair is separated by a comma.

Check the lab Jupiter notebook

**SETS**

* Sets are a type of collection: This means that like lists and tuples you can input different python type.
* Unlike lists and tuples, they are unordered. This means sets do not record element position
* Sets only have unique elements. This means there is only one of a particular element in a set.

Set1 = {“pop, “hard Rock”, “Hip hop”, “soul”, “disco”, “rock”, “R&B”, “rock, “rock”}

When a set is created duplicate elements such as “rock” in this scenario, will only appear once.

Set1: {“rock”, pop”, “Hard Rock”, “Hip Hop”, “soul”, “disco”, “R&B”)

You can convert a list to a set by using the function set()