Today I'll Cover :

1. Dictionary Data Structure
2. Creation of Dictionary
3. Methods of Dictionary
4. Mathematical operation on Dictionary.
5. Nested Dictionary & Dictionary Comprehension

In the name of ALLAH,
the Most Beneficent, the Most Merciful

Mohammad Altaf Hussain

Dictionary {}

If we want to represent a group of objects as key-value pairs where:-

- insertion order is preserved.
- duplicate keys are not allowed but values can be duplicated
- Indexing and slicing not allowed
- heterogeneous objects are allowed
- Modification are allowed, once object is created. Then we should go for Dictionary. The elements are placed within curly braces and with comma separator.

Creation of Dictionary

- Empty Dictionary:-
  1. dict()
  2. {}

- Dictionary with element:-

  { key1 :value1 , keyN : valueN }

- dict() is also used to typecast from list of tuple elements.

Accessing of Dictionary

1. Data can be access by using keys.

Syntax: any_Dictionary[key]

- If the specified key is not available then we will get KeyError. So we should check the availability first by using **in** operator.
- If the key is not available then a new entry will be added to the dictionary with the specified key-value pair.
- If the key is already available then old value will be replaced with new value.

2. get() :-

Syntax: any_Dictionary.get(KEY)

- If the key is available then returns the corresponding value otherwise returns None.

Syntax: any_Dictionary.get(KEY, default_value)

- **If the key is available then returns the corresponding value otherwise returns default value.**

Traversing in Dictionary

We can traverse in Dictionary using:-

- For loop

Removing item of Dictionary

- **To remove all item:**

- **clear()** :- It remove all the elements from Dictionary but keeps the empty dictionary.

Syntax: any_Dictionary.clear()

- **del** :- It delete the dictionay itself.

❑ To remove single item:

- **pop()** :- It remove and return the specified elements from Dictionary. If the specified key is not available then we will get KeyError

Syntax: any_Dictionary.pop(key)

- **popitem()** :- It remove and return the last element from dictionary. If the dictionary is empty then we will get KeyError.

Syntax: any_Dictionary.popitem()

- **del** :- It remove the specified elements from Dictionary. If the specified key is not available then we will get KeyError.

Syntax: del any_dictionary[key]

Methods of Dictionary

- **keys() :-** It returns all keys associated with dictionary.

Syntax: any_Dictionary.keys()

- **values() :-** It returns all values associated with dictionary.

Syntax: any_Dictionary.values()

- **items() :-** It returns list of tuples representing key-value pairs.

Syntax: any_Dictionary.items()

- **copy()** :- It creates the exact copy of given dictionary.

Syntax: any_Dictionary.copy()

- **setdefault()** :- If the key is already available then this function returns the corresponding value.
- If the key is not available then the specified key-value will be added as new item to the dictionary.

Syntax: any_Dictionary.setdefault(key, value)

Updation of Dictionary

- **update()** :- It update the existing dictionary with the items of given dictionary.

Syntax:

any_Dictionary.update(another_dictionary)

Dictionary Comprehension

- It is very easy and compact way of creating Dictionary objects from any iterable objects(like list,tuple,dictionary,range etc) based on some condition.

Syntax:-

```
Dictionary={key:value for item in iterable if condition}
```