Q1. What are the characteristics of the tuples? Is tuple immutable?

Tuple is one of the data structure type.

characteristics

It is created by using parentheses.

It stores all type of value such as integer, string,float,etc.

Tuple is immutable.It does not allow to change any element at particular index

Q2. What are the two tuple methods in python? Give an example of each method. Give a reason why

tuples have only two in-built methods as compared to Lists.

The two tuple methods in python are :

1.Count Function

2.Index Function

Example:

In [4]:
```
tuple1 = (1,2,2,2,3,4,5,6,7,8,9,10)
```

In [7]:
```
# count function:
tuple1.count(2)
```

Out[7]:
```
3
```

In [8]:
```
# index function:
tuple1.index(4)
```

Out[8]:
```
5
```

Tuples have only two in-built methods as compared to Lists because unlike list tuple is immutable.It stores values as hashing so other functions like slicing ,pop ,etc are not in built .

Q3. Which collection datatypes in python do not allow duplicate items? Write a code using a set to remove duplicates from the given list.

In [11]:
```
List = [1, 1, 1, 2, 1, 3, 1, 4, 2, 1, 2, 2, 2, 3, 2, 4, 3, 1, 3, 2, 3, 3, 3, 4, 4, 1,
```

Set datatypes in python do not allow duplicate items it just take unique items.

In [14]:
```
List1 = set(List)  # type casting
```

In [16]:
```
print(List1)  # removed duplicate items from List
```

```
{1, 2, 3, 4}
```

Q4. Explain the difference between the union() and update() methods for a set. Give an example of each method.

Update() method for a set will add new unique items in set.Whereas Union() method for a set will add different sets together.

In [24]:
```
# Example
set1 = {1,2,3,4,5}
set2 = {9,8,7,6,5}
```

In [25]:
```
# Example for Union ()
set1.union(set2)  # here it will add altogether two different sets but only unique va
```

Out[25]:
```
{1, 2, 3, 4, 5, 6, 7, 8, 9}
```

In [28]:
```
# Example for Update()
set1.update({10})
print(set1)
```

```
{1, 2, 3, 4, 5, 10}
```

Q5. What is a dictionary? Give an example. Also, state whether a dictionary is ordered or unordered

Dictionary is a type of Data Structure which stores value in form of key and value pair.Dictionary are unordered.It stored as hasahable type.

In [41]:
```
dict1 = {["keys1"] : "name", "keys2":"class" , "keys3":"age"}
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_2800\1504127817.py in <module>
----> 1 dict1 = {["keys1"] : "name", "keys2":"class" , "keys3":"age"}

TypeError: unhashable type: 'list'
```

Above cell is showing that list cannot be used as key because it is unhasable and dictionary is hasahable and unordered.

Q6. Can we create a nested dictionary? If so, please give an example by creating a simple one-level nested dictionary.

Yes Nested dictionary can be created.When value used as dictionary inside dictionary, it is called as "Nested Dictionary".

In [20]:
```
# Example of Nested Dictionary
dict1 = {"student" : {"Name":"Sneha" , "class" : "Msc" , "Age" : 22}}
print(dict1)
```

```
{'student': {'Name': 'Sneha', 'class': 'Msc', 'Age': 22}}
```

Q7. Using setdefault() method, create key named topics in the given dictionary and also add the value of the key as this list

['Python', 'Machine Learning', 'Deep Learning']

In [53]:
```
dict1 = {'language' : 'Python', 'course': 'Data Science Masters'}
```

In [56]:
```
dict1.setdefault("topics",["Python", "Machine Learning","Deep Learning"])
```

Out[56]:
```
['Python', 'Machine Learning', 'Deep Learning']
```

In [57]:
```
print(dict1)
```

```
{'language': 'Python', 'course': 'Data Science Masters', 'topics': ['Python', 'Machin
e Learning', 'Deep Learning']}
```

Q8. What are the three view objects in dictionaries? Use the three in-built methods in python to display these three view objects for the given dictionary

The three view objects in dictionaries are keys, values, and items.

In [18]:
```
dict1 = {'Sport': 'Cricket' , 'Teams': ['India', 'Australia', 'England', 'South Afric
```

In [58]:
```
dict1.keys()
```

Out[58]:
```
dict_keys(['language', 'course', 'topics'])
```

In [59]:
```
dict1.values()
```

Out[59]:
```
dict_values(['Python', 'Data Science Masters', ['Python', 'Machine Learning', 'Deep L
earning']])
```

In [60]:
```
dict1.items()
```

Out[60]:
```
dict_items([('language', 'Python'), ('course', 'Data Science Masters'), ('topics',
['Python', 'Machine Learning', 'Deep Learning'])])
```