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Types of Collection

1. List down the different types of a Python Collections

- **List** - A list is a collection which is ordered and changeable. In Python lists are written with square brackets.

  Code:

```
thislist = ["apple", "banana", "cherry"]
print(thislist)
```

  Output:

```
C:\Users\My Name>python demo_list.py
['apple', 'banana', 'cherry']
```

- **Tuples** - A tuple is a collection which is ordered and unchangeable. In Python tuples are written with round brackets.

  Code:

```
thistuple = ("apple", "banana", "cherry")
print(thistuple)
```

  Output:

```
C:\Users\My Name>python demo_tuple.py
('apple', 'banana', 'cherry')
```

- **Sets** - A set is a collection which is unordered and unindexed. In Python sets are written with curly brackets.

  Code:

```
thisset = {"apple", "banana", "cherry"}
print(thisset)
```

  Output:

```
C:\Users\My Name>python demo_set.py
{'cherry', 'banana', 'apple'}
```

- **Dictionaries** - A dictionary is a collection which is unordered, changeable and indexed. In Python dictionaries are written with curly brackets, and they have keys and values.

Code:

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964
}
print(thisdict)
```

Output:

```
C:\Users\My Name>python demo_dictionary.py
{'brand': 'Ford', 'model': 'Mustang', 'year': 1964}
```

2. Provide a program that converts will convert different collections.

a. List

```
# LIST
print("List to Tuple")
list = [1,2,3,4,5]
print(f"List: {list}")
c_tuple = tuple(list)
print(f"Tuple: {c_tuple}")

print("\nList to Sets")
list = [1,2,3,4,5]
print(f"List: {list}")
c_sets = set(list)
print(f"Set: {c_sets}")

print("\nList to Dictionary")
list = ['one',1,'two',2,'three',3]
print(f"List: {list}")
iterate = iter(list)
c_dict = dict(zip(iterate, iterate))
print(f"Dictionary: {c_dict}")
```

Output:

```
List to Tuple
List: [1, 2, 3, 4, 5]
Tuple: (1, 2, 3, 4, 5)

List to Sets
List: [1, 2, 3, 4, 5]
Set: {1, 2, 3, 4, 5}

List to Dictionary
List: ['one', 1, 'two', 2, 'three', 3]
Dictionary: {'one': 1, 'two': 2, 'three': 3}
```

b. Tuple

```
# TUPLE
print("Tuple to List")
o_tuple = (1,2,3,4,5)
print(f"Tuple: {o_tuple}")
c_list = list(o_tuple)
print(f"List: {c_list}")

print("\nTuple to Sets")
o_tuple = (1,2,3,4,5)
print(f"Tuple: {o_tuple}")
c_sets = set(o_tuple)
print(f"Sets: {c_sets}")

print("\nTuple to Dictionary")
o_tuple = ('one',1,'two',2,'three',3)
print(f"Tuple: {o_tuple}")
iterate = iter(o_tuple)
c_dict = dict(zip(iterate, iterate))
print(f"Dictionary: {c_dict}")
```

Output:

```
Tuple to List
Tuple: (1, 2, 3, 4, 5)
List: [1, 2, 3, 4, 5]

Tuple to Sets
Tuple: (1, 2, 3, 4, 5)
Sets: {1, 2, 3, 4, 5}

Tuple to Dictionary
Tuple: ('one', 1, 'two', 2, 'three', 3)
Dictionary: {'one': 1, 'two': 2, 'three': 3}
```

c. Sets

```
# SETS
print("Sets to List")
o_sets = {1,2,3,4,5}
print(f"Sets: {o_sets}")
c_list = list(o_sets)
print(f"List: {c_list}")

print("\nSets to Tuple")
o_sets = {1,2,3,4,5}
print(f"Sets: {o_sets}")
c_tuple = tuple(o_sets)
print(f"Tuple: {c_tuple}")
```

```
print("\nSets to Dictionary")
o_sets = {'one',1,'two',2,'three',3}
print(f"Sets: {o_sets}")
iterate = iter(o_sets)
c_dict = dict(zip(iterate, iterate))
print(f"Dictionary: {c_dict}")
```

Output:

```
Sets to List
Sets: {1, 2, 3, 4, 5}
List: [1, 2, 3, 4, 5]

Sets to Tuple
Sets: {1, 2, 3, 4, 5}
Tuple: (1, 2, 3, 4, 5)

Sets to Dictionary
Sets: {1, 2, 'one', 3, 'two', 'three'}
Dictionary: {1: 2, 'one': 3, 'two': 'three'}
```

d. Dictionary

```
# DICTIONARY
print("Dictionary to List")
o_dict = {'one': 1, 'two': 2, 'three': 3}
print(f"Dictionary: {o_dict}")
c_list = list(o_dict.keys()) + list(o_dict.values())
print(f"List: {c_list}")

print("\nDictionary to Tuple")
o_dict = {'one': 1, 'two': 2, 'three': 3}
print(f"Dictionary: {o_dict}")
c_tuple = tuple(o_dict.keys()) + tuple(o_dict.values())
print(f"Tuple: {c_tuple}")

print("\nDictionary to Sets")
o_dict = {'one': 1, 'two': 2, 'three': 3}
print(f"Dictionary: {o_dict}")
c_set = set(o_dict.keys())
c_set.update(o_dict.values())
print(f"Sets: {c_set}")
```

Output:

```
Dictionary to List
Dictionary: {'one': 1, 'two': 2, 'three': 3}
List: ['one', 'two', 'three', 1, 2, 3]

Dictionary to Tuple
Dictionary: {'one': 1, 'two': 2, 'three': 3}
Tuple: ('one', 'two', 'three', 1, 2, 3)

Dictionary to Sets
Dictionary: {'one': 1, 'two': 2, 'three': 3}
Sets: {1, 2, 3, 'one', 'two', 'three'}
```