Experiment - 3 a)

Aim: Creation of Strings, List, Tuple, Set and Dictionary in Python.

Theory:

String:

- A String consists of a series or sequence of characters - letters, numbers, and special characters.
- Strings are marked by quotes:
    - Single quotes (' ') - this creates a string in single quotes
    - Double quotes (" ") - this creates a string in double quotes'"
    - Triple single quotes (''' ''') - this creates multiple lines and sentences of string
    - Triple double quotes (""" """) - this also creates multiple lines and sentences of string
- Strings are immutable i.e. the contents of the string cannot be changed after it is created.

List:

- List is an ordered sequence of items/elements.
- Items in the lists can be of different data types.
- It is a mutable data type in which duplicate items can be placed..
- It can be created by placing comma-separated items between **square brackets[ ]**.

Tuple:

- A tuple is same as list, except that the set of elements is **enclosed in parentheses** ( ) instead of square brackets.
- **It is an immutable list.** i.e. once a tuple has been created no other elements added to it or removed from it,
- When the user wants to protect the data from accidental changes, tuples are used.

Set:

- Sets are unordered and mutable due to which indexing of items cannot be done.
- It can be created by using the built-in **set()** function or by placing the sequence of items, separated by a 'comma' inside curly braces { }.

Dictionary:

- Dictionary is an unordered collection of elements.
- All elements in a dictionary has a key: value pair which are placed inside the curly braces i.e. { }
- Elements in Dictionaries are **accessed via keys** and not by their position.
- The values of a dictionary can be any data type.
- Keys must be immutable data type (numbers, strings, tuple)

```
# Creation of String

# Creating a String with single Quotes
print("String with the use of Single Quotes: ")
String1 = 'Welcome to the Python World'
print(String1)

# Creating a String with double Quotes
print("\nString with the use of Double Quotes: ")
String1 = "I'm a Data Science Student"
print(String1)

# Creating a String with triple Single Quotes
print("\nString with the use of Triple Quotes: ")
String1 = '''I'm a learning "Python"'''
print(String1)

# Creating String with triple Double Quotes: allows multiple lines
print("\nCreating a multiline String: ")
String1 = """Data science is the domain of study that deals
with vast volumes of data, using modern tools and techniques,
to find unseen patterns, derive meaningful information and
make business decisions."""
print(String1)
```

Output:

```
String with the use of Single Quotes:
Welcome to the Python World


String with the use of Double Quotes:
I'm a Data Science Student


String with the use of Triple Quotes:
I'm a learning "Python"


Creating a multiline String:
Data science is the domain of study that deals
with vast volumes of data, using modern tools and techniques,
to find unseen patterns, derive meaningful information and
make business decisions.
```

```
#Creation of List

#Creating Blank List
print("Blank List: ")
L = []
print(L)

# Creating a List of numbers and strings
print("\nList of numbers and srings: ")
L = [10, "Pen", 20, 14, "Copy", "Paper"]
print(L)

# Creating a Multi-Dimensional List
# (By Nesting a list inside a List)
print("\nMulti-Dimensional List: ")
L = [['Table', 'Chair'], ['Fan']]
print(L)
```

Output:

```
Blank List:
[]


List of numbers and srings:
[10, 'Pen', 20, 14, 'Copy', 'Paper']


Multi-Dimensional List:
[['Table', 'Chair'], ['Fan']]
```

```
# Creating an empty Tuple
print("Empty Tuple: ")
Tuple1 = ()
print(Tuple1)

# Creating a Tuple with the use of string and
numbers
print("\nTuple with the use of Strings and
numbers: ")
Tuple1 = ('Hello', 3, 'Python', 5)
print(Tuple1)

# Creating a Tuple with the use of list
print("\nTuple using List: ")
list1 = [1, 2, 4, 5, 6]
print(tuple(list1))

# Creating a Tuple with the use of built-
in tuple() function
print("\nTuple with the use of function: ")
Tuple1 = tuple('Data Science')
```

Output:

```
Empty Tuple:

()


Tuple with the use of Strings and numbers:

('Hello', 3, 'Python', 5)


Tuple using List:

(1, 2, 4, 5, 6)


Tuple with the use of function:

('D', 'a', 't', 'a', ' ', 'S', 'c', 'i',
'e', 'n', 'c', 'e')
```

```
# Creating a Set of numbers
print("\nSet: ")
s = {1, 2, 4, 5, 6}
print(s)


# Creating a Set using built-in set()
print("\nBlank Set: ")
set1 = set()
print(set1)

# Creating a Set with the use of a String
print("\nSet with the use of String: ")
set1 = set("CreationOfSetUsingString")
print(set1)

# Creating a Set with a both
numbers and strings in a list
print("\nSet with the use of numbers and
strings")
set1 = set([1, 2, 'Apple', 4, 'Book', 6,])
print(set1)
```

Output:

```
Set:
{1, 2, 4, 5, 6}


Blank Set:
set()


Set with the use of String:
{'o', 'f', 'U', 's', 't', 'g', 'i', 'n',
'O', 'S', 'r', 'a', 'C', 'e'}


Set with the use of numbers and strings
{1, 2, 4, 6, 'Apple', 'Book'}
```

```
# Creating a Dictionary with Integer Keys
print("\nDictionary with the use of Integer Keys
: ")
Dict = {1: 'Tea', 2: 'Coffee', 3: 'Green Tea'}
print(Dict)

# Creating a Dictionary with Mixed keys
print("\nDictionary with the use of Mixed Keys
and Values: ")
Dict = {'Name': 'John', 1: [1, 2, 3, 4]}
print(Dict)

# Creating an empty Dictionary
print("\nEmpty Dictionary: ")
Dict = {}
print(Dict)

# Creating a Dictionary with dict() method
print("\nDictionary with the use of dict(): ")
Dict = dict({1: 'Add', 2: 'Sum', 3:'Difference'}
)
print(Dict)

# Creating a Dictionary with each item as a Pair
print("\nDictionary with each item as a pair: ")
Dict = dict([(1, 'Pen'), (2, 'pencil')])
```

Output:

```
Dictionary with the use of Integer Keys:
{1: 'Tea', 2: 'Coffee', 3: 'Green Tea'}


Dictionary with the use of Mixed Keys
and Values:
{'Name': 'John', 1: [1, 2, 3, 4]}


Empty Dictionary:
{}


Dictionary with the use of dict():
{1: 'Add', 2: 'Sum', 3: 'Difference'}

Dictionary with each item as a pair:
{1: 'Pen', 2: 'pencil'}
```

Conclusion:

Hence learned to create Strings, List, Tuple, Set and Dictionary in Python.