Assignment 1

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

The characteristics of tuple are as follows:

a. It is defined with round parenthesis ()
b. Elements of tuple can be accessed with indexes.
c. Tuples are ordered.
d. Tuples can contain duplicate elements.

Yes, tuple is immutable. Once an element is defined inside the tuple, it cannot be modified or updated.

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 2 tuple methods with example are as follows:

a. **count() –** This method helps in counting the number of occurrences of an element inside the tuple else returns 0.

E.g.: t1 = (1,2,3,1)

t1.count(1)

0

b. **index() –** This method returns the first index of the element passed as an argument if present in the tuple otherwise raises an error.

E.g.: t1 = (1,2,3,1)

t1.index(1)

0

The reason why tuples have only 2 in-built methods as compared to lists is because lists are mutable whereas tuples are not. As a result, we cannot modify the elements of the tuple as compared to lists.

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

duplicates from the given list.

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, 4, 2, 4, 3, 4, 4]

The datatype in python that does not allow duplicate items is "**set**".

The code to remove duplicates from the above list is shown below:

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, 4, 2, 4, 3, 4, 4]

s1 = set(List)

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

The union() and update() basically does the same thing that is a union of 2 sets. But the difference is union() is not an in-place operation whereas update() is an in-place operation. An in-place operation is the one which modifies the variable on which the method is executed.

```
S1 = {1,2,3,4}

s2 = {4,5,6,7}

s1.union(s2)

s1
```

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

```
s1.update(s2)

s1
```

```
{1, 2, 3, 4, 5, 6, 7}
```

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

A dictionary is a datatype which is used to store in key-value pair format. The keys in the dictionary should always be unique.

dic = {“name”:” Pratap”, “contact”: 1234567890}

Dictionary is an unordered datatype.

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

Yes, we can create a nested dictionary. The example is shown below:

dic = {“address”: {“house_no”: 10, “city”: “Kolkata”}}

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']

dict1 = {'language’: 'Python', 'course': 'Data Science Masters'}

```
d1 = {}

d1.setdefault("courses",["Python", "Machine Learning", "Deep learning"])

d1
```

```
{'courses': ['Python', 'Machine 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.

dict1 = {'Sport': 'Cricket' , 'Teams': ['India', 'Australia', 'England', 'South Africa', 'Sri Lanka', 'New Zealand']}

The 3 view objects in dictionaries are as follows:

a. Keys
b. Values
c. Items

dict1.keys()

```
dict_keys(['Sport', 'Teams'])
```

dict1.values()

```
dict_values(['Cricket', ['India', 'Australia', 'England', 'South Africa', 'Sri Lanka', 'New Zealand']])
```

dict1.items()

```
dict_items([('Sport', 'Cricket'), ('Teams', ['India', 'Australia', 'England', 'South Africa', 'Sri Lanka', 'New Zeal
and'])])
```