PYTHON Assignment Questions

Q1. What are the characteristics of the tuples? Is tuple immutable?
Answer: Tuples is a built-in data type and used to store one or more than 1 element in a variable. Tuple is an ordered collection of data and unchangeable.
Tuples data items are written in round brackets and separated by comma.
By using the indexing operator([ ]), tuple elements can be accessed
Characteristics of Tuples are:
- Immutable/Unchangeable
- Can allow duplicate
- Ordered
- Indexed

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.
Answer: The two built-in methods that can be used on a tuple are Count() and Index().
Count() – This method returns the number of times a specific value occurs in a tuple.
index() – This method searches the tuple for a specific value after which it returns the position of the specific value.

This is because methods that can add or remove items are not available in the tuple.
Since tuple() is immutable, therefore, it does not change after the initial assigning of items. Due to this there are only 2 methods available to use on a tuple.

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

Answer: Set is a datatype which does not allow duplicate items.

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]

Code:
```
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]
set = set(List)
set
```

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

Answer:
A.union(B) will create a new set with elements from both A and B.
Whereas,
A.update(B) will return the set A with elements added from B.

For example,
```
a={1,2,3}
b={11,22,"a","b",1}
c=a.union(b)
print (c)
a.update(b)
print (a)
```

Output will be:
```
{1, 2, 3, 'a', 11, 22, 'b'}
{1, 2, 3, 'a', 11, 22, 'b'}
```

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

Answer: Dictionary in Python is a collection of keys values, used to store data values, unlike other data types which hold only a single value as an element. It is a collection which is ordered, changeable and does not allow duplicates.

For example:
```
Dict = {1: 'Abc', 2: 2+3j, 3: 50}
Dict
```

Output will be:
```
{1: 'Abc', 2: (2+3j), 3: 50}
```

Dictionary is an ordered collection of key and value pairs

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

Answer: Yes.

Student= {st1: {'name': Ramesh', 'age': 10, 'sex': 'Male'},

st2: {'name': 'Amita', 'age': 11, 'sex': 'Female'}}

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'}

Answers:
```
dict1 = {'language' : 'Python', 'course': 'Data Science Masters'}
x=dict1.setdefault("topics",['Python','Machine Learning','Deep Learning'])
print(x)
print(dict1)
```

Output will be:
```
['Python', 'Machine Learning', 'Deep Learning']
{'language': 'Python', 'course': 'Data Science Masters', 'topics': ['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']}

Answer:
As per Python documentation, The objects returned by dict.keys(), dict.values() and dict.items() are view objects. They provide a dynamic view on the dictionary's entries, which means that when the dictionary changes, the view reflects these changes.
dict1 = {'Sport': 'Cricket' , 'Teams': ['India', 'Australia', 'England', 'South Africa', 'Sri Lanka', 'New Zealand']}
print(dict1.keys())
print(dict1.values())
print(dict1.items())

Output will be:
dict_keys(['Sport', 'Teams'])
dict_values(['Cricket', ['India', 'Australia', 'England', 'South Africa', 'Sri Lanka', 'New Zealand']])
dict_items([('Sport', 'Cricket'), ('Teams', ['India', 'Australia', 'England', 'South Africa', 'Sri Lanka', 'New Zealand'])])

Note: Create your assignment in Jupyter notebook and upload it in GitHub & share that github repository link through your dashboard.