

**COMPOUND DATA: LIST, TUPLE,DICTIONARY**

**1. What are tuples in Python?**

A tuple is another sequence data type that is similar to the list. A tuple consists of a number of values separated by commas. Unlike lists, however, tuples are enclosed within parentheses.

**2. What is the difference between tuples and lists in Python?**

The main differences between lists and tuples are –  
Lists are enclosed in brackets ( [ ] ) and their elements and size can be changed, while tuples are enclosed in parentheses ( ( ) ) and cannot be updated. Tuples can be thought of as read- only lists.

**3. What are Python's dictionaries?**

Python's dictionaries are kind of hash table type. They work like associative arrays or hashes found in Perl and consist of key-value pairs. A dictionary key can be almost any Python type, but are usually numbers or strings. Values, on the other hand, can be any arbitrary Python object.

**4. Explain how to create a dictionary in python?**

Dictionaries are enclosed by curly braces ( { } ) and values can be assigned and accessed using square braces ( [ ] ).

```
dict = {}  
dict['one'] = "This is one"  
dict[2] = "This is two"  
tinydict = {'name': 'john', 'code':6734, 'dept': 'sales'}
```

**5. Explain what is range() function and how it is used in lists?**

The range function returns an immutable sequence object of integers between the given start integer to the stop integer  
range(start,stop,[step])

```
>>>f  
or l  
in  
range(1,10,2):  
print(i,end=" ") 1 3 5 7 9
```

## 6. How lists are updated in Python?

The append() method is used to add elements to a list.

Syntax:

```
list.append(obj)
```

```
List=[123,'VR
```

```
B']
```

```
List.append(2017)
```

```
Print(—
```

```
Updat
```

```
ed
```

```
List:l,
```

```
List)
```

```
Output: Updated List: [123,'VRB',2017]
```

## 7. Write a few methods that are used in Python Lists.

- append()- add an element to end of list
- insert()- insert an item at the defined index
- remove()- removes an item from the list
- clear()- removes all items from the list
- reverse()- reverse the order of items in the list

## 8. What are the advantages of Tuple over List?

- Tuple is used for heterogeneous data types and list is used for homogeneous data types.
- Since tuple are immutable, iterating through tuple is faster than with list.
- Tuples that contain immutable elements can be used as key for dictionary.
- Implementing data that doesn't change as a tuple remains write-protected.

## 9. What is indexing and negative indexing in Tuple?

The index operator is used to access an item in a tuple where index starts from 0.

Python also allows negative indexing where the index of -1 refers to the last item,

-2 to the second last item and so on.

```
>>>my_tuple=('p','y','t','h','o','n')
```

```
>>>print(my_tuple[5]
```

```
) n
```

```
>>>print(m
```

```
y_tuple[-
```

```
6]) p
```

## 10. What is the output of print tuple[1:3] if tuple = ('abcd', 786, 2.23, 'john', 70.2)? In the

given command, tuple[1:3] is accessing the items in tuple using indexing.

It will print elements starting from 2nd

till 3rd. Output will be (786, 2.23).

## 11. What are the methods that are used in Python Tuple?

Methods that add items or remove items are not available with tuple. Only the following two methods are available:

- a) count(x)- returns the number of items that is equal to x
- b) index(x)- returns index of first item that is equal to x

**12. Is tuple comparison possible? Explain how with example.**

The standard comparisons (`_<`, `>`, `<=`, `>=`, `==`) work exactly the same among tuple objects. The tuple objects are compared element by element.

```
>>>a=(1,2,3,4,5)
>>>b=(9,8,7,6,5)
```

```
>>>a<
b True
```

**13. What are the built-in functions that are used in Tuple?**

- all()- returns true if all elements of the tuple are true or if tuple is empty
- any()- returns true if any element of tuple is true
- len()- returns the length in the tuple
- max()- returns the largest item in tuple
- min()- returns the smallest item in tuple
- sum()- returns the sum of all elements in tuple

**14. What is the output of print tuple + tinytuple if tuple = ('abcd', 786 , 2.23, 'john', 70.2 ) and tinytuple = (123, 'john')?**

It will print concatenated tuples. Output will be ('abcd', 786, 2.23, 'john', 70.2000000000000003, 123, 'john').

**15. Explain what is dictionary and how it is created in Python?**

Dictionaries are similar to other compound types except that they can use any immutable type as an index. One way to create a dictionary is to start with the empty dictionary and add elements. The empty dictionary is denoted {}:

```
>>> eng2sp = {}
>>> eng2sp['one'] = 'uno'
>>> eng2sp['two'] = 'dos'
```

**16. What is meant by key-value pairs in a dictionary?**

The elements of a dictionary appear in a comma-separated list. Each entry contains an index and a value separated by a colon. In a dictionary, the indices are called keys, so the elements are called key-value pairs.>>> print eng2sp {'one': 'uno', 'two': 'dos'}

**17. How does del operation work on dictionaries? Give an example.**

The del statement removes a key-value pair from a dictionary. For example, the following dictionary contains the names of various fruits and the number of each fruit in stock:

```
>>> inventory = {'apples': 430, 'bananas': 312, 'oranges': 525, 'pears': 217}
>>> print inventory
{'oranges': 525, 'apples': 430, 'pears': 217, 'bananas': 312}
```

If someone buys all of the pears, we can remove the entry from the dictionary:

```
>>> del inventory['pears']
>>> print inventory
{'oranges': 525, 'apples': 430, 'bananas': 312}
```

## 18. What is meant by invocation? Where is it used and how?

**cse-notescorner.blogspot** A method is similar to a function—it takes arguments and returns a value—but the **pot.com** syntax is different. For example, the `keys` method takes a dictionary and returns a list of the keys that appear, but instead of the function syntax `keys(eng2sp)`, we use the method syntax `eng2sp.keys()`.

```
>>>
eng2sp.keys()
['one', 'three', 'two']
```

This form of dot notation specifies the name of the function, `keys`, and the name of the object to apply the function to, `eng2sp`. The parentheses indicate that this method has no parameters. A method call is called an invocation; in this case, we would say that we are invoking `keys` on the object `eng2sp`.

## 19. Explain values and items method used in dictionary with example.

The `values` method is similar; it returns a list of the values in the dictionary:

```
>>>
eng2sp.v
alues()
['uno', 'tres', 'dos']
```

The `items` method returns both, in the form of a list of tuples—one for each key-value pair:

```
>>> eng2sp.items()
[('one', 'uno'), ('three', 'tres'), ('two', 'dos')]
```

The syntax provides useful type information. The square brackets indicate that this is a list. The parentheses indicate that the elements of the list are tuples.

## 20. What is the difference between modify and copy operations performed in dictionary?

If you want to modify a dictionary and keep a copy of the original, use the `copy` method. For example, `opposites` is a dictionary that contains pairs of opposites:

```
>>> opposites = {'up': 'down', 'right': 'wrong', 'true': 'false'}
>>> alias = opposites
>>> copy = opposites.copy()
```

`alias` and `opposites` refer to the same object; `copy` refers to a fresh copy of the same dictionary. If we modify `alias`, `opposites` is also changed:

```
>>> alias['right'] = 'left'
>>> opposites['
right']
'left'
```

If we modify `copy`, `opposites` is unchanged:

```
>>> copy['right'] = 'privilege'
```

## **PART\_B**

1. Answer the following questions.

Write short note on Functional Programming Approach. (4 marks)

What is the difference between Lists and Tuples? Give an example for their usage. (4 marks)

Explain the purpose of loop structure in a programming language. Describe the syntax and semantics of any two loop structures provided by Python. (8 marks)

2. Answer the following questions.

Explain the features of a dictionary. (5 marks)

What are the three types of import statement in Python? Explain.

(6 marks) Write a short note on assert function. (5 marks)

3. Answer the following questions.

What is the difference between lists, tuples and dictionaries? Give an example for their usage. (6 marks)

What type of conditional structures are present in a programming language? How many of them are supported in Python? Explain each with example. (10 marks)

4. What are the basic list operations that can be performed in Python?

Explain each operation with its syntax and example. (16 marks)

5. What is Dictionary? Explain Python dictionaries in detail discussing its operations and methods. (16 marks)

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