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Assignment - 1

Que. 1 Differentiate the four collections of Python that are List, Tuple, Set and dictionary using at least 3 supported functions of each collection with example.

Ans :- 1) List :-

-> List can be represented by [].

-> List allows duplicate elements.

-> List can use nested among all.

-> List can be created using list() fun^n.

-> List is mutable.

2) Tuple :-

-> Tuple can be represented by ().

-> Tuple allows duplicate elements.

-> Tuple can use nested among all.

-> Tuple can be created using tuple() fun^n.

-> Tuple is immutable.

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3) Set :-

-> Set can be represented by {}.

-> Set will not allow duplicate elements.

-> Set can use nested among all.

-> Set can be using set () funⁿ.

-> Set is mutable.

4) Dictionary:-

-> Dictionary can be represented by {}.

-> Dictionary doesn't allow duplicate keys.

-> Dictionary can use nested among all.

-> Dictionary can be created using dict () funⁿ.

-> Dictionary is mutable

Funⁿ of List with

l = [] (To create list)
l.append (5) (To add element)
l. pop (5) (To delete element)

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fun^n of Set.

S = Set ( ) (To create Set)
S. add ( ) (To add element)
S. remove ( ) (To delete element)

fun^n of Tuple

t = tuple (1)
Print ("Tuple", t)

fun^n of Dictionary

d = {} (To create dictionary)
d[5] = "Five" (To add key-Value Pair)
del d[10] (To remove key - Value Pair)

Que-2 Create a Comparison table of all four Collections (Tuple, set, List, dictionary) with similarities and differences among them.

Ans.

Parameter	List	Tuple	Set	Dictionary
Basic	A List is basically dynamicaly sized array that gets declared in other lang.	The tuples refers to the collections of various Objects of Python Separet by commas.	The sets are an unordered collection of data types.	Dictionary refers to the collection of data types.

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Representation	we can represent by []	we can represent by ()	we can represent by {}.	we can represen by {}
Duplicate elements	allowed	allowed	not allowed	not allowed
Nested among all	Yes	Yes	Yes	Yes
Example	[6,7,8,9]	(6,7,8,9)	{6,7,8,9,}	{6,7,8,9}
Function for creation	list()	tuple()	Set()	dict()
Mutation	Yes	No	Yes	yes
Order	Yes	Yes	No	yes
Empty elements	l = []	t = ()	a = set()	d = {}

Que.3 Compare and Summarize four different Coding Styles Supported by Python.

Ans Different Coding Style can be chosen for different Problems.

There are four Coding Style Supported by Python.

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1. Functional
2. Imperative
3. Object - Oriented
4. Procedural

1. Functional Coding.

```
my_list = [1, 5, 4, 6, 8, 11, 3, 12]
new_list = list (map (lambda x : x * 2, my_list))
Print (new_list)
```

Output : [2, 10, 8, 12, 16, 22, 6, 24]

2. Imperative Coding.

```
Sum = 0
for i in my_list:
    Sum += i
Print (Sum)
```

Output : 50

3. Object - Oriented Programming :-

```
Class Word:
    def test (self) :
        Print ("Python")
String = Word ()
String.test ()
```

Output : Python.

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4. Procedural Coding.

```
def add(list):
    Sum = 0
    for x in list:
        Sum += x
    return Sum
Print (add (my_list))
```

Output: 50

Que. 4 What is the role of Python in Data Science? Explain in brief.

Ans. The first of many benefits of Python is data Science is its Simplicity.

-> While some data Scientists come from a Computer Science background or know other programming languages, many come from backgrounds in statistics, mathematics, or other technical fields and may not have as much coding experience when they enter the field of data Science.

-> Python Syntax is easy to follow and write, which makes it a simple Programming language to get started with and learn quickly.

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→ Method - 2 (Using Multiple formatter)

```
Print ("~~The~~ This is {} {} {} {}".format ("One", "Two", "Three", "Four"))
```

→ Method - 3 (Fstring)

```
Print (f"Hi! My name is {name} and I am {age} years old")

name = "Minir"
age = 20
```

Que.6 Write a Program to Perform the following Operation on Array
a. Create b. Insert c. Disply d. Slice ~~f.~~ Delete

Ans.

```
import array as a:

# Creating an array
arr = a.array ('i', [54, 65, 32, 45, 87])

# Printing an Array Method - 1

for i in arr:
    Print (i, end=", ")

# Insert Element in array
arr.insert (1, 12)
for i in range (len (arr)): # Method - 2
    Print (arr[i], end=" ")
```

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```
# Slicing The Array
Print (arr[::2]) # Print array Skiping Every 2nd ele.
Print (arr[::-1]) # Print reversed array.
Print (arr[1:5]) # Print arry from 8 to given
                 index

# Delete Element
arr.remove (12)
Print ("\n", arr)   # Method -3
```

Que.7 Write a Program to Perform the following Operation on List
a. Create 2. Pop 3. Slice 4. Reverse 5. Find Max, Min and Sort list inc. reverse Sorting.

Ans

```
# Creating a List
list = [45, 12, 32, 98]
Print (list)

# Pop Element
list.Pop (2)
Print (list)

# Slice list
Print (list[::2])
Print (list[1:])
Print (list[:2])

# Reverse list
Print (list[::-1])
```

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```
# Find Max, Min and Sort List inc. reverse sort.
Print (max(list))
Print (min(list))
Print (Sorted (list))
Print (Sorted (list)[::-1])
```

Que.8 Write a Program to Perform the following Operation about function.

a. Function with multiple argument
b. Function with multiple return Value.
c. Default argument
d. Pointer with function.

Ans

```
def fun1 (a, b):
    Print (f"I Am Fun1 with {a} and {b} Arguments")

def fun2 (a):
    if a > 10:
        return f"{a} is greater then 10"
    else :
        return f"{a} is lessthen 10".

def fun3 (a=10):
    return f"I am fun3 with default Value of
            A {a}"

fun4 = fun1

fun1 (5, 10)
Print (fun2 (20))
Print (fun3 ())
fun4 (1, 2)
```

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-> Python is first and foremost a general-purpose programming languge. It was not only specificly designed with data science and analytics in mind. yet it is proving to be the most useful language for data science for the foreseeable future.

-> Python is an easy to learn language that guarantees a quicker learning curve than R or Java.

-> Python is a very popular language for data science because it's versatile, dynamic and actualy prety easy to learn.

-> Python has large fan base, which makes it easier for data scientists to communicate and collaborate.

Que.5 Write at least 3 functions supported for string including the format function

-> Python format function has been introduced for handling complex string formatting more efficiently.

-> Method:- 1 (Using a single formatter)

```
Str = " This line is written in {} "
Print (Str. format(" Python "))
```