**Que 1 : Introduction to tuples, immutability.**

**Tuple :**

A **tuple** is a **collection of items** in Python — just like a **list**, but **tuples are immutable** (cannot be changed).

How to create a tuple:

my\_tuple = ('apple', 'banana', 'cherry')

print(my\_tuple)

Output : ('apple', 'banana', ‘cherry')

**Immutability :**

**Immutable** means **cannot be changed after creation**.

In a tuple:

* You **cannot add** new items
* You **cannot delete** items
* You **cannot update** items

Example:

my\_tuple = (10, 20, 30)

print(my\_tuple)

**When to use a Tuple?**

Use a tuple when:

* You want to store fixed data
* You don’t want the data to be changed by mistake

**Que 2 : Creating and accessing elements in a tuple.**

**1. Creating a Tuple**

➤ Example 1: Tuple of strings

colors = ('red', 'blue', 'green')

print(colors)

Output:

('red', 'blue', 'green')

➤ Example 2: Tuple of mixed data types

person = ('Krishna', 21, 8.5)

print(person)

* Example 3: Empty tuple

empty = ()

* Example 4: Single element tuple

You must put a comma after the value:

one\_item = ('apple',)

**2. Accessing Elements in a Tuple**

* Use **indexing** (starts from 0)

colors = ('red', 'blue', 'green')

print(colors[0]) # red

print(colors[1]) # blue

print(colors[2]) # green

* Use **negative indexing** (from end)

print(colors[-1]) # green

print(colors[-2]) # blue

**3. Accessing a range of items (slicing)**

colors = ('red', 'blue', 'green', 'yellow')

print(colors[1:3]) # ('blue', 'green')

print(colors[:2]) # ('red', 'blue')

print(colors[2:]) # ('green', ‘yellow')

**Que 3 : Basic operations with tuples: concatenation, repetition, membership.**

Example : t1 = (1, 2, 3)

t2 = (4, 5)

**1. Concatenation (Joining tuples)**

You can **add** two tuples using +

t3 = t1 + t2

print(t3)

Output : (1, 2, 3, 4, 5)

2. **Repetition** (Repeat elements)

You can **multiply** a tuple using \*

t4 = t1 \* 2

print(t4)

Output : (1, 2, 3, 1, 2, 3)

**3. Membership (in / not in)**

You can check if a value is **in the tuple**

print(2 in t1) # True

print(10 in t1) # False

print(5 not in t2) # False