

Tuples Basics

What is a Tuple?

- A **tuple** is a collection in Python used to store multiple items in a single variable.
- Tuples are **ordered** and **immutable** (cannot be changed after creation).
- Tuples are written with **round brackets** ().

Example:

```
my_tuple = (10, 20, 30, 40)
print(my_tuple)    # Output: (10, 20, 30, 40)
```

Characteristics of Tuples:

1. **Ordered** → The elements have a fixed order and do not change.
2. **Immutable** → Cannot add, remove, or change elements after creation.
3. **Allow Duplicates** → Tuples can store duplicate values.
4. **Can Store Multiple Data Types** → Integers, strings, lists, etc.

Example:

```
mixed = (1, "Hello", 3.5, True)
print(mixed) # Output: (1, 'Hello', 3.5, True)
```

Accessing Elements:

- Use **indexing** (just like lists).
- Index starts from 0.

Slicing Tuples:

- Extract part of a tuple using `tuple[start:end]`.

Tuple Functions/Methods:

- `len(tuple)` → Returns length.
- `count(value)` → Counts occurrences.
- `index(value)` → Returns index of first occurrence.

Importance of Tuples:

- Faster than lists (because immutable).
- Useful for fixed data (like coordinates, days of week).
- Can be used as **dictionary keys** (lists cannot).