# TUPLES

## Definition

A tuple is an ordered, immutable collection of items in Python.

It can store elements of different data types — integers, strings, lists, or even other tuples.

Example

my\_tuple = (10, "hello", 3.14)

## Creating Tuples

# Using parentheses

t1 = (1, 2, 3)

# Without parentheses

t2 = 1, 2, 3

# Empty tuple

t3 = ()

# Single element tuple (note the comma)

t4 = (10,)

## Accessing Elements

t = (10, 20, 30, 40)

print(t[0]) # First element

print(t[-1]) # Last element

print(t[1:3]) # Slice (20, 30)

Tuple Operations

# Concatenation

a = (1, 2)

b = (3, 4)

print(a + b) # (1, 2, 3, 4)

# Repetition

print(a \* 3) # (1, 2, 1, 2, 1, 2)

# Membership

print(2 in a) # True

## Applications

\* Returning multiple values from a function

\* Using as dictionary keys (if elements are immutable)

\* Storing fixed data (like coordinates, database records, etc.)