**📝 Day 9 – Home Assignments: Tuples & Sets – Differences, Use Cases, Tasks**

**🔹 Part A: Tuples – Creating, Accessing, and Use**

1. Create a tuple t1 = (10, 20, 30, 40, 50)
   * Print the first and last elements
   * Print elements from index 1 to 3
2. Create a tuple with mixed data types:  
   person = ("Alice", 25, 5.4, "Engineer")
3. Try changing an element in the tuple above and note what error is shown.
4. Use a loop to print all elements of t1.
5. Create a tuple with one item only:  
   Example: t = ("Python",)  
   *(Why is the comma necessary?)*

**🔹 Part B: Tuple Use Cases**

1. Store coordinates using a tuple:  
   location = (19.0760, 72.8777) (latitude, longitude)
   * Print each value separately.
2. Write a function get\_min\_max(numbers) that:
   * Accepts a list
   * Returns a tuple (min, max)

**🔹 Part C: Sets – Creating and Using**

1. Create a set s1 = {1, 2, 3, 4, 5}
   * Add the number 6
   * Try adding 3 again. What happens?
2. Create a set from a list with repeated values:  
   numbers = [1, 2, 2, 3, 4, 4, 5]
   * Use set() to remove duplicates
3. Use a loop to print all items in a set.

**🔹 Part D: Set Operations**

1. Given:

a = {1, 2, 3, 4}

b = {3, 4, 5, 6}

Perform and print:

* Union of a and b
* Intersection of a and b
* Difference: a - b and b - a

1. Remove an element from a set using remove() and discard().

* Try removing an element that doesn’t exist using both.

**🔹 Part E: Tuple vs Set – Conceptual Task**

1. Explain (in comments or writing):

* When to use a **tuple** over a **list** or **set**
* When to use a **set** over a **list** or **tuple**

1. **Unique Words from a Sentence**
   * Ask user for a sentence
   * Convert it into a set of unique words using split() and set()
2. **Immutable Data Storage**
   * Store employee data as:  
     employee = ("John", "Manager", 55000)
   * Try adding a new field to this tuple. What happens?
3. **Set-Based Filtering**
   * Ask user to enter 5 numbers (some duplicates allowed)
   * Store them in a list
   * Use a set to display only unique numbers