**Week 1 – Day 3: Lists, Tuples, Sets, and Dictionaries**

**🎯 Goal:**

Learn how Python stores **groups of values** and how to **access**, **update**, and **loop through** them.

**🪜 Data Structure Breakdown**

| **Type** | **Ordered?** | **Mutable?** | **Duplicates?** | **Use Case** |
| --- | --- | --- | --- | --- |
| List ([]) | ✅ Yes | ✅ Yes | ✅ Yes | Store items in order |
| Tuple (()) | ✅ Yes | ❌ No | ✅ Yes | Fixed data grouping |
| Set ({}) | ❌ No | ✅ Yes | ❌ No | Unique items |
| Dict ({key: value}) | ✅ Keys only | ✅ Yes | ❌ No duplicate keys | Key-value mapping |

**🧪 1. Lists**

python

Copy code

fruits = ["apple", "banana", "cherry"]

print(fruits[0]) # Access

fruits.append("mango") # Add

fruits.remove("banana") # Remove

print(len(fruits)) # Length

**🔐 2. Tuples**

python

Copy code

person = ("Josh", 31, "Muscular")

print(person[0])

# Tuples are immutable

# person[1] = 32 ← ❌ Error!

Use tuples when you don’t want the data to change (e.g., (x, y) coordinates).

**🧹 3. Sets**

python

Copy code

nums = {1, 2, 3, 3, 4}

print(nums) # Output: {1, 2, 3, 4}

nums.add(5)

nums.discard(2)

Use sets to:

* Remove duplicates
* Check for membership fast: if 3 in nums: ...

**🧭 4. Dictionaries**

python

Copy code

profile = {

"name": "Josh",

"age": 31,

"is\_muscular": True

}

print(profile["name"]) # Access

profile["age"] = 32 # Update

profile["city"] = "Atlanta" # Add new

Use dictionaries when you need labels (like columns in a spreadsheet).

**💻 Practice Tasks**

**🔢 A. Favorite Movies List**

* Make a list of your 3 favorite movies
* Print the second one
* Add another, then remove one

**🔒 B. Immutable Tuple**

* Create a tuple with:
  + Your name
  + Age
  + Favorite color
* Try changing one value → Catch the error

**♻️ C. Unique Pets Set**

python

Copy code

pets = {"dog", "cat", "dog", "parrot"}

print(pets) # Should remove duplicate

* Add another pet
* Check if "snake" is in your set

**🔑 D. Dictionary Profile Generator**

python

Copy code

your\_info = {

"name": input("Your name: "),

"major": input("Your major: "),

"graduating": input("Graduation year: ")

}

print(f"{your\_info['name']} is majoring in {your\_info['major']} and plans to graduate in {your\_info['graduating']}.")

**🧠 Stretch Challenge**

Build a **mini inventory app** using a dictionary:

python

Copy code

inventory = {

"apples": 5,

"bananas": 12,

"oranges": 7

}

item = input("Which item? ").lower()

if item in inventory:

print(f"You have {inventory[item]} {item}.")

else:

print("Item not found.")

Try adding the ability to:

* Add new items
* Increase/decrease counts
* Display full inventory

**✅ Day 3 Checklist**

| **Task** | **Status** |
| --- | --- |
| Create a list, tuple, set, and dict | 🔲 |
| Practice accessing and modifying each | 🔲 |
| Complete dictionary input challenge | 🔲 |
| Save your file as day3\_structures.py | 🔲 |