**Day 2: Data Structures & Comprehensions**

* List, dict, set operations
* List, dict comprehensions
* zip(), enumerate(), unpacking
* collections module (Counter, defaultdict, deque)

**✅ 1. Working with Lists**

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

fruits.append("orange")

print(fruits)

for fruit in fruits:

print(fruit.upper())

**✅ 2. Dictionaries**

person = {"name": "Alice", "age": 30}

print(person["name"])

# Adding a new key-value

person["city"] = "New York"

# Looping

for key, value in person.items():

print(f"{key}: {value}")

**✅ 3. Sets**

s = set([1, 2, 3, 3, 2])

print(s) # Duplicates removed

s.add(4)

print(s)

**✅ 4. List Comprehensions**

squares = [x \*\* 2 for x in range(10)]

print(squares)

even = [x for x in range(20) if x % 2 == 0]

print(even)

**✅ 5. Dictionary Comprehension**

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

word\_lengths = {word: len(word) for word in words}

print(word\_lengths)

**✅ 6. Useful Built-ins: zip, enumerate**

names = ["Alice", "Bob", "Charlie"]

scores = [85, 92, 78]

for name, score in zip(names, scores):

print(f"{name} scored {score}")

for idx, name in enumerate(names):

print(f"{idx}: {name}")

**🧠 Mini Exercises:**

1. Create a list of all **odd numbers** from 1 to 30 using list comprehension.
2. Create a dictionary where keys are numbers from 1 to 5, and values are their **cubes**.
3. Given two lists of equal length, print a formatted string like "Alice:85" using zip.