**What is a Set?**

A **set** is an **unordered**, **mutable**, and **unindexed** collection of **unique** items.

my\_set = {1, 2, 3}

print(my\_set) # Output: {1, 2, 3}

**🔸 Creating a Set**

# Using curly braces

fruits = {"apple", "banana", "mango"}

# Using the set() constructor

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

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

**Note:** Duplicates are automatically removed.

**🔸 Set Characteristics**

* **Unordered**: No index, cannot access items by position.
* **Mutable**: You can add/remove items.
* **Unique**: No duplicates allowed.

**🔸 Common Set Methods**

**1. add() — Add an element**

fruits.add("orange")

print(fruits) # Adds 'orange' to the set

**2. update() — Add multiple items**

fruits.update(["grapes", "apple"])

print(fruits) # Adds 'grapes'; 'apple' won't be added again

**3. remove() — Remove an item (throws error if not found)**

fruits.remove("banana")

**4. discard() — Remove item safely (no error if not found)**

fruits.discard("banana") # Safe to use

**5. pop() — Removes and returns an arbitrary item**

item = fruits.pop()

print(item)

**6. clear() — Empties the set**

fruits.clear()

**🔸 Set Operations**

**1. union() or |**

a = {1, 2, 3}

b = {3, 4, 5}

print(a.union(b)) # {1, 2, 3, 4, 5}

print(a | b)

**2. intersection() or &**

print(a.intersection(b)) # {3}

print(a & b)

**3. difference() or -**

print(a.difference(b)) # {1, 2}

print(a - b)

**4. symmetric\_difference() or ^**

print(a.symmetric\_difference(b)) # {1, 2, 4, 5}

print(a ^ b)

**🔸 Set Comparison Methods**

**1. issubset()**

x = {1, 2}

y = {1, 2, 3}

print(x.issubset(y)) # True

**2. issuperset()**

print(y.issuperset(x)) # True

**3. isdisjoint() — No common elements**

x = {1, 2}

z = {3, 4}

print(x.isdisjoint(z)) # True

**🔸 Convert to Set**

list\_data = [1, 2, 2, 3]

unique\_set = set(list\_data)

print(unique\_set) # {1, 2, 3}

**🔸 Frozen Set**

An **immutable** version of a set:

frozen = frozenset([1, 2, 3])

# frozen.add(4) → Error

**✅ Summary**

| **Operation** | **Method** | **Symbol** |
| --- | --- | --- |
| Union | set1.union(set2) | set1 | set2 |
| Intersection | set1.intersection(set2) | set1 & set2 |
| Difference | set1.difference(set2) | set1 - set2 |
| Symmetric Diff | set1.symmetric\_difference(set2) | set1 ^ set2 |