



Shri Yashwantrao Bhonsale Education Society's
YASHWANTRAO BHONSALE INSTITUTE OF TECHNOLOGY

(DTE CODE : 3470) (MSBTE Code : 1742)

Approved by AICTE, DTE & Affiliated to Mumbai University & MSBTE Mumbai
(NBA Accredited ME, CE, EE Diploma Programs)

Practical No 6

Aim

Create a Python code to demonstrate the use of sets and perform set operations (union, intersection, difference) to manage student enrollments in multiple courses / appearing for multiple entrance exams like CET, JEE, NEET etc.

Apparatus / Software Required

- Python Interpreter (Python 3.14.2)

Theory

Introduction to Set

- A **set** in Python is a collection of **unique elements**
- Sets are written using **curly braces {}**
- Sets **do not allow duplicate values**
- Sets are **unordered** (no fixed position/index)
- Sets are **mutable** (elements can be added or removed)

Example:

```
cet_students = {"Amit", "Rahul", "Sneha"}
```

Characteristics of Set

- Stores only unique elements
- Duplicates are automatically removed
- Indexing is not allowed
- Can store multiple data types
- Useful for mathematical operations



Creating a Set

- Using Curly Braces

```
jee_students = {"Amit", "Neha", "Karan"}
```

- Using `set()` Function

```
neet_students = set(["Sneha", "Amit", "Pooja"])
```

How to Insert Elements in a Set

1. **add()** – Insert One Element (Adds a single element to the set)

```
cet_students.add("Rohit")
```

2. **update()** – Insert Multiple Elements (Adds multiple elements at once)

```
cet_students.update(["Anita", "Suresh"])
```

Set Functions (Methods)

1. **add()**- Adds one element

```
set.add(element)
```

2. **update()**-Adds multiple elements

```
set.update(iterable)
```

3. **remove()**- Removes a specified element.

Gives error if element not found.

```
set.remove("Amit")
```

4. **discard()**- Removes element **without error** if not present

```
set.discard("Amit")
```

5. **pop()**- Removes a **random element**

```
set.pop()
```

6. **clear()**- Removes all elements

```
set.clear()
```

7. **len()**- Returns number of elements

```
len(cet_students)
```



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Set Operations

1. Union (| or **union()**)

Combines all students from exams

all_students = cet_students | jee_students | neet_students

2. Intersection (& or **intersection()**)

Common students in multiple exams

common_students = cet_students & jee_students

3. Difference (- or **difference()**)

Students in one exam but not in another

only_cet = cet_students - jee_students

Real-World Application (Exam Management)

- Finding students appearing in **multiple exams**
- Avoiding duplicate registrations
- Managing large student data efficiently
- Eligibility checking for counselling

Advantages of Set

- Fast execution
- No duplicate values
- Easy comparison of data
- Simple syntax

Limitations of Set

- No indexing
- Cannot store mutable elements like lists
- Unordered output

