

# Java Collections – Practical Assignment

**Objective:** Gain hands-on experience with Java Collections such as List, Set, Map, Queue, Comparable, Comparator, and Streams.

## Assignment 1: Student Management System

- 1 Create Student class with id, name, age, marks
- 2 Store students in ArrayList
- 3 Add minimum 5 students
- 4 Display all students
- 5 Find students with marks > 75
- 6 Sort by name and marks
- 7 Remove students with marks < 40
- 8 Convert List to Set and explain result

## Assignment 2: Duplicate Handling using Set

- 1 Store email IDs in ArrayList
- 2 Remove duplicates using HashSet
- 3 Maintain order using LinkedHashSet
- 4 Sort emails alphabetically
- 5 Explain HashSet vs LinkedHashSet vs TreeSet

## Assignment 3: Employee Salary Tracker (Map)

- 1 Use HashMap
- 2 Add 5 employees
- 3 Update salary
- 4 Find salary > 50000
- 5 Find highest salary employee
- 6 Sort map by salary

## Assignment 4: Word Frequency Counter

- 1 Split sentence into words
- 2 Store frequency using HashMap
- 3 Print each word with count
- 4 Find most frequent word

## Assignment 5: Queue-Based Task Scheduler

- 1 Use Queue with LinkedList
- 2 Add tasks
- 3 Execute tasks using poll()
- 4 Explain poll() vs remove()

## Assignment 6: Comparable vs Comparator

- 1 Create Product class
- 2 Sort by price using Comparable
- 3 Sort by name using Comparator
- 4 Explain use cases

## **Assignment 7: Collections with Streams**

- 1 Find average marks
- 2 Find topper
- 3 Group pass/fail students
- 4 Sort by marks descending
- 5 Collect student names