

StudentManagement - Notepad

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```
import java.util.*;  
  
class Student {  
    int id;  
    String name;  
    int marks;  
  
    Student(int id, String name, int marks) {  
        this.id = id;  
        this.name = name;  
        this.marks = marks;  
    }  
}  
  
public class StudentManagement {  
  
    public static void main(String[] args) {  
  
        // 1. Store students in ArrayList  
        ArrayList<Student> students = new ArrayList<>();  
        students.add(new Student(1, "Amit", 85));  
        students.add(new Student(2, "Sneha", 92));  
        students.add(new Student(3, "Rahul", 78));  
        students.add(new Student(2, "Sneha", 92)); // duplicate  
  
        // 2. Remove duplicates using Set  
        Set<Integer> idSet = new HashSet<>();  
        ArrayList<Student> uniqueStudents = new ArrayList<>();  
  
        for (Student s : students) {  
            if (idSet.add(s.id)) {  
                uniqueStudents.add(s);  
            }  
        }  
    }  
}
```

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```
ArrayList<Student> uniqueStudents = new ArrayList<>();  
  
for (Student s : students) {  
    if (idSet.add(s.id)) {  
        uniqueStudents.add(s);  
    }  
}  
  
// 3. Use HashMap for fast lookup  
HashMap<Integer, Student> studentMap = new HashMap<>();  
for (Student s : uniqueStudents) {  
    studentMap.put(s.id, s);  
}  
  
// 4. Sorting using Comparator (by marks)  
Collections.sort(uniqueStudents, new Comparator<Student>() {  
    public int compare(Student s1, Student s2) {  
        return s2.marks - s1.marks; // descending  
    }  
});  
  
// 5. Formatted Output  
System.out.println("ID\tName\tMarks");  
System.out.println("-----");  
for (Student s : uniqueStudents) {  
    System.out.println(s.id + "\t" + s.name + "\t" + s.marks);  
}  
  
// 6. Fast lookup example  
System.out.println("\nStudent with ID 2:");  
Student found = studentMap.get(2);  
System.out.println(found.id + "\t" + found.name + "\t" + found.marks);  
}
```

C:\ Command Prompt

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C:\Users\Adity chavan\Downloads>javac StudentManagement.java

C:\Users\Adity chavan\Downloads>java StudentManagement

ID Name Marks

2 Sneha 92

1 Amit 85

3 Rahul 78

Student with ID 2:

2 Sneha 92

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