Experiment - 6

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Subject Name: Project Based Learning in Java
Subject Code: 23CSH-304

1.Aim: Develop a Java program using lambda expressions and Stream operations to filter students scoring above 75%, sort them by marks, and display their names.

2.Objective: To apply filtering, sorting, and transformation operations using the Stream API in Java for concise and efficient data processing.

3.Apparatus / Input Used:

•Programming Language: Java (JDK 8 or above)

•IDE: Eclipse / IntelliJ / VS Code

•Classes & Methods Used: Stream, filter(), sorted(), map(), collect()

4. **Procedure:**

    1. Define a Student class with fields: name, id, and marks.

    2. Create a list of student objects.
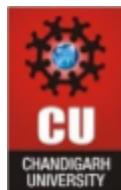
    3. Use Stream API to:

        • Filter students with marks greater than 75.
        • Sort them by marks in descending order.
        • Extract and display their names.

    4. Display the final list of students who scored above 75%.

Program Code:

```
import java.util.*; import
java.util.stream.*;
```

```java
class Student {
    String name;
    int id;
    double
    marks;

    Student(String name, int id, double marks)
        { this.name = name; this.id = id;
        this.marks = marks;
    }

    public String toString() {
        return name + " - " + marks;
    }
}

public class StreamStudentFilter {
    public static void main(String[] args) {
        List<Student> students =
            Arrays.asList( new Student("Ravi",
            101, 85.5), new Student("Aditi",
            102, 92.0), new Student("Kiran",
            103, 78.0), new Student("Manoj",
            104, 68.0),
        new Student("Tina", 105, 72.5)
    );

    System.out.println("Students scoring above 75%:");
    List<String> topStudents = students.stream()
        .filter(s -> s.marks > 75)
        .sorted((s1, s2) -> Double.compare(s2.marks, s1.marks))
        .map(s -> s.name)
        .collect(Collectors.toList());

    topStudents.forEach(System.out::println);
    }
```

Sample Output:
Students scoring above 75%:
Aditi
Ravi
Kiran