



Experiment 6

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Subject: Java

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Problem - 6.1

Aim: To implement a Java program that sorts a list of Employee objects (based on name, age, and salary) using lambda expressions and stream operations to demonstrate efficient data processing.

Code:

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

class Employee {
    private String name;
    private int age;
    private double salary;

    public Employee(String name, int age, double salary) {
        this.name = name;
        this.age = age;
        this.salary = salary;
    }

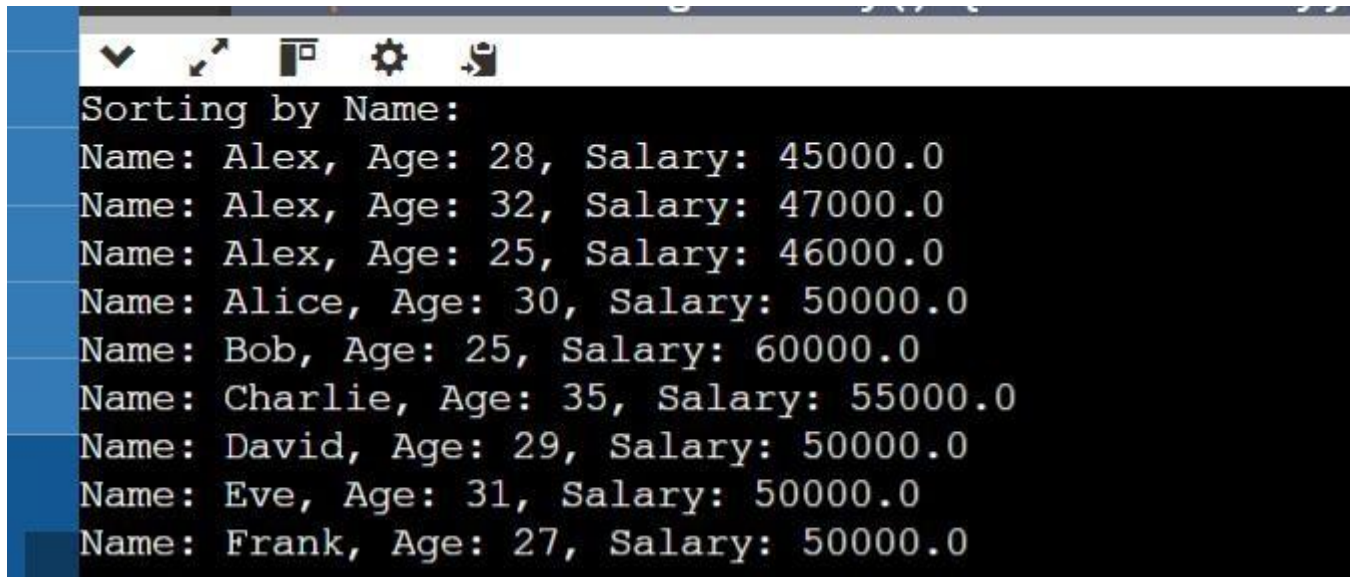
    public String getName() { return name; }
    public int getAge() { return age; }
    public double getSalary() { return salary; }

    public void display() {
        System.out.println("Name: " + name + ", Age: " + age + ", Salary: " + salary);
    }
}
```

```
public class EmployeeSorting {  
    public static void main(String[] args) {  
        List<Employee> employees = new ArrayList<>();  
        employees.add(new Employee("Alice", 30, 50000));  
        employees.add(new Employee("Bob", 25, 60000));  
        employees.add(new Employee("Charlie", 35, 55000));  
        employees.add(new Employee("Alex", 28, 45000));  
        employees.add(new Employee("Alex", 32, 47000));  
        employees.add(new Employee("Alex", 25, 46000));  
        employees.add(new Employee("David", 29, 50000));  
        employees.add(new Employee("Eve", 31, 50000));  
        employees.add(new Employee("Frank", 27, 50000));  
  
        System.out.println("Sorting by Name:");  
        employees.stream()  
            .sorted(Comparator.comparing(Employee::getName))  
            .forEach(Employee::display);  
  
        System.out.println("\nSorting by Age:");  
        employees.stream()  
            .sorted(Comparator.comparingInt(Employee::getAge))  
            .forEach(Employee::display);  
  
        System.out.println("\nSorting by Salary:");  
        employees.stream()  
            .sorted(Comparator.comparingDouble(Employee::getSalary).reversed())  
            .forEach(Employee::display);  
  
        System.out.println("\nSorting by Name and then by Age (Edge Case):");  
        employees.stream()  
            .sorted(Comparator.comparing(Employee::getName).thenComparingInt(Employee::getAge))  
            .forEach(Employee::display);  
  
        System.out.println("\nSorting by Salary, then by Name (Edge Case):");
```

```
employees.stream()
    .sorted(Comparator.comparingDouble(Employee::getSalary)
        .thenComparing(Employee::getName))
    .forEach(Employee::display);
}
```

Output:



```
Sorting by Name:
Name: Alex, Age: 28, Salary: 45000.0
Name: Alex, Age: 32, Salary: 47000.0
Name: Alex, Age: 25, Salary: 46000.0
Name: Alice, Age: 30, Salary: 50000.0
Name: Bob, Age: 25, Salary: 60000.0
Name: Charlie, Age: 35, Salary: 55000.0
Name: David, Age: 29, Salary: 50000.0
Name: Eve, Age: 31, Salary: 50000.0
Name: Frank, Age: 27, Salary: 50000.0
```

Problem - 6.2

Aim : Implement Java program that uses lambda expressions and Stream API to filter students who scored above 75%, sort them by marks, and display their names.

Code :

```
import java.util.*;

import java.util.stream.Collectors;

class Student {

    private String name;

    private double marks

    public Student(String name, double marks) {

        this.name = name;

        this.marks = marks;

    }

    public String getName() { return name; }

    public double getMarks() { return marks; }

    public void display() {

        System.out.println("Name: " + name + ", Marks: " + marks);

    }

}

public class StudentFilterSort {

    public static void main(String[] args) {

        List<Student> students = Arrays.asList(

            new Student("Alice", 80),
```

```
        new Student("Bob", 72),

        new Student("Charlie", 90),

        new Student("David", 65),

        new Student("Eve", 85),

        new Student("Frank", 65)

    );

    List<Student> filteredSortedStudents = students.stream()

        .filter(s -> s.getMarks() > 75)

        .sorted(Comparator.comparingDouble(Student::getMarks).reversed())

        .thenComparing(Student::getName))

        .collect(Collectors.toList());

    if (filteredSortedStudents.isEmpty()) {

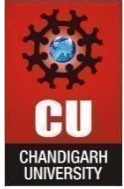
        System.out.println("No students scored above 75%.");

    } else {

        filteredSortedStudents.forEach(Student::display);

    }

}
```



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Output :

A screenshot of a terminal window with a dark background and a light blue sidebar on the left. The terminal displays the output of a program, showing three lines of text: 'Name: Charlie, Marks: 90.0', 'Name: Eve, Marks: 85.0', and 'Name: Alice, Marks: 80.0'. The text is in a monospaced font, with 'Name:' and 'Marks:' in white and the names and values in a light blue color. The terminal window has a title bar at the top with standard window controls (minimize, maximize, close) and a toolbar with icons for zooming, scrolling, and other functions.

```
Name: Charlie, Marks: 90.0
Name: Eve, Marks: 85.0
Name: Alice, Marks: 80.0
```