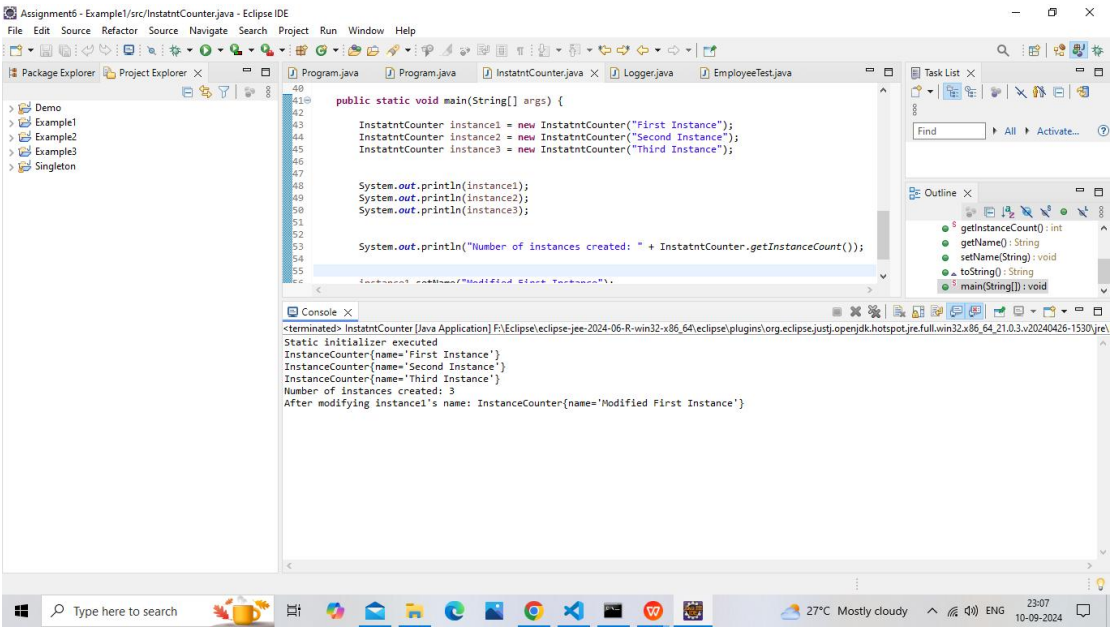
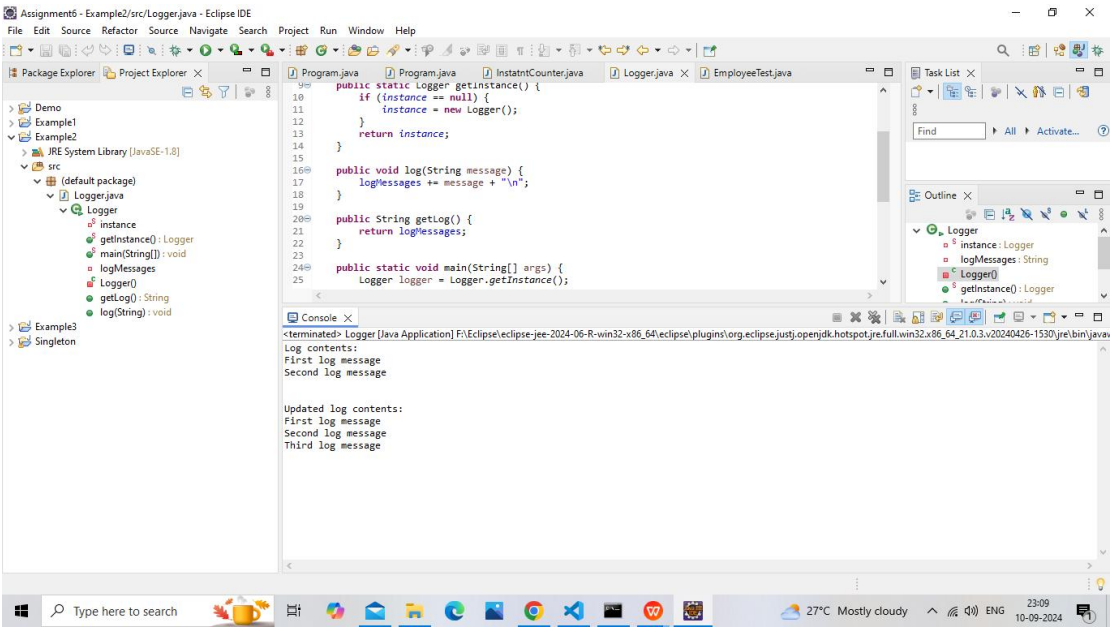
Question1

```
public class InstatntCounter {
private static int instanceCount = 0;

private String name;

static {
System.out.println("Static initializer executed");
}

public InstatntCounter(String name) {
this.name = name;
instanceCount++;
}

public static int getInstanceCount() {
return instanceCount;
}

public String getName() {
return name;
}

public void setName(String name) {
this.name = name;
}

public String toString() {
return "InstanceCounter{name='" + name + "'}";
}

public static void main(String[] args) {
InstatntCounter instance1 = new InstatntCounter("First Instance");
InstatntCounter instance2 = new InstatntCounter("Second Instance");
InstatntCounter instance3 = new InstatntCounter("Third Instance");

System.out.println(instance1);
System.out.println(instance2);
System.out.println(instance3);

System.out.println("Number of instances created: " +
InstatntCounter.getInstanceCount());

instance1.setName("Modified First Instance");
System.out.println("After modifying instance1's name: " + instance1);
}
}
```



Question2

```
public class Logger {
private static Logger instance = null;
private String logMessages;
private Logger() {
logMessages = "";
}
public static Logger getInstance() {
if (instance == null) {
instance = new Logger();
}
return instance;
}
public void log(String message) {
logMessages += message + "\n";
}
public String getLog() {
return logMessages;
}
public static void main(String[] args) {
Logger logger = Logger.getInstance();
logger.log("First log message");
logger.log("Second log message");
System.out.println("Log contents:");
System.out.println(logger.getLog());
Logger anotherLogger = Logger.getInstance();
anotherLogger.log("Third log message");
System.out.println("\nUpdated log contents:");
System.out.println(logger.getLog());
}
}
```



Question6

```
class Employee {
private static int totalEmployees = 0;
private static double totalSalaryExpense = 0.0;
private int id;
private String name;
private double salary;

static {
totalEmployees = 0;
totalSalaryExpense = 0.0;
}

public Employee(int id, String name, double salary) {
this.id = id;
this.name = name;
this.salary = salary;
totalEmployees++;
totalSalaryExpense += salary;
}

public int getId() {
return id;
}

public void setId(int id) {
this.id = id;
}

public String getName() {
return name;
}

public void setName(String name) {
```

```
this.name = name;
}

public double getSalary() {
return salary;
}

public void setSalary(double salary) {
totalSalaryExpense -= this.salary;
this.salary = salary;
totalSalaryExpense += this.salary;
}

public static int getTotalEmployees() {
return totalEmployees;
}

public static void applyRaise(double percentage) {
double raiseFactor = 1 + (percentage / 100);
totalSalaryExpense *= raiseFactor;
}

public static double calculateTotalSalaryExpense() {
return totalSalaryExpense;
}

public void updateSalary(double newSalary) {
setSalary(newSalary);
}

public String toString() {
return "Employee ID: " + id + ", Name: " + name + ", Salary: $" + salary;
}
}

public class EmployeeTest {
public static void main(String[] args) {
Employee emp1 = new Employee(1, "John Doe", 50000);
Employee emp2 = new Employee(2, "Jane Smith", 60000);

System.out.println(emp1);
System.out.println(emp2);

System.out.println("Total Employees: " + Employee.getTotalEmployees());

System.out.println("Total Salary Expense: $" +
Employee.calculateTotalSalaryExpense());

Employee.applyRaise(10);
System.out.println("Applied 10% raise.");

System.out.println("Updated Total Salary Expense: $" +
Employee.calculateTotalSalaryExpense());

emp1.updateSalary(55000);
System.out.println("Updated Salary of emp1.");
```

```
System.out.println(emp1);

System.out.println("Updated Total Salary Expense: $" +
Employee.calculateTotalSalaryExpense());
}
}
```