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Assignment: Identifying and Using Static Members

Objective

To analyze given problem statements and identify where static members should be used, then implement the solutions in Java using appropriate static and non-static variables and methods.

General Instructions

• Analyze each problem carefully before coding
• Decide which data should be shared across all objects and which should be object-specific
• Use static members only where logically required
• Create at least one object in the `main()` method for testing
• Follow proper Java naming conventions
• Write clean, readable, and well-structured code

Question 1: Electricity Bill Calculation

Problem Statement

Design a class named **ElectricityBill** to calculate the electricity bill for customers.

Requirements

The class should:

- Store the electricity rate per unit (same for all customers)
- Store customer details and number of units consumed
- Provide a method to update the electricity rate
- Provide a method to calculate and return the total bill amount

Bill Calculation Formula

```
Bill Amount = Number of Units × Rate Per Unit
```

Question 2: Employee Salary Calculation

Problem Statement

Design a class named **Employee** to calculate employee salary including company-wide bonus.

Requirements

The class should contain:

- Employee name
- Basic salary
- Bonus rate applicable to all employees
- A method to update the bonus rate
- A method to calculate the total salary

Salary Calculation Formula

```
Total Salary = Basic Salary + (Basic Salary × Bonus Rate / 100)
```

Question 3: Library Fine Calculation

Problem Statement

Design a class named **LibraryUser** to calculate fines for late book returns.

Requirements

The class should contain:

- User name
- Number of days the book is returned late
- Fine charged per day (same for all users)
- A method to calculate the total fine amount

Fine Calculation Formula

```
Total Fine = Days Late × Fine Per Day
```