Exercise 1: Employee Data Management

1. **Create the `Employee` Class:**
    - **Instance Variable:**
      Declare an instance variable named `employeeId` of type `int`.
    - **Static Variable:**
      Declare a static variable named `companyName` of type `String`.
2. **Implement the `main` Method:**
    - **Step 1: Object Creation**
      Create two `Employee` objects named `emp1` and `emp2`.
    - **Step 2: Modify Instance and Static Variables**
        - Set `emp1.employeeId` to `emp2.employeeId + 10`:

          ```
          emp1.employeeId = emp2.employeeId + 10;
          ```

        - Set `Employee.companyName` to `"TechCorp"`:

          ```
          Employee.companyName = "TechCorp";
          ```

        - Set `emp2.employeeId` to `emp1.employeeId + 30`:

          ```
          emp2.employeeId = emp1.employeeId + 30;
          ```

    - **Step 3: Print Updated Values**
      Print the updated values with clear labels:

      ```
      System.out.println("After modification:");
      System.out.println("emp1.employeeId: " + emp1.employeeId);
      System.out.println("emp2.employeeId: " + emp2.employeeId);
      System.out.println("Using emp1: " + emp1.companyName);
      System.out.println("Using emp2: " + emp2.companyName);
      System.out.println("Using Employee: " + Employee.companyName);
      ```

    - **Step 4: Modify Static Variable via Object Reference**
        - Change the static variable using an object reference (e.g., `emp1`):

          ```
          emp1.companyName = "InnovateTech";
          ```

        - Print the static variable again:

          ```
          System.out.println("After modifying static variable using emp1:");
          System.out.println("emp1.companyName: " + emp1.companyName);
          System.out.println("emp2.companyName: " + emp2.companyName);
          System.out.println("Employee.companyName: " +
          Employee.companyName);
          ```

Exercise 2: Student Enrollment Details

1. **Create the `Student` Class:**

- **Instance Variable:**
  Declare an instance variable named `studentId` of type `int`.
- **Static Variable:**
  Declare a static variable named `schoolName` of type `String`.

2. **Implement the `main` Method:**

   - **Step 1: Object Creation**
     Create two `Student` objects: `student1` and `student2`.
   - **Step 2: Modify Instance and Static Variables**
     - Set `student1.studentId` to `student2.studentId + 5`:

       ```
       student1.studentId = student2.studentId + 5;
       ```

     - Set `Student.schoolName` to `"Central High"`:

       ```
       Student.schoolName = "Central High";
       ```

     - Set `student2.studentId` to `student1.studentId + 20`:

       ```
       student2.studentId = student1.studentId + 20;
       ```

   - **Step 3: Print Updated Values**
     Print the updated values:

     ```
     System.out.println("After modification:");
     System.out.println("student1.studentId: " + student1.studentId);
     System.out.println("student2.studentId: " + student2.studentId);
     System.out.println("Using student1: " + student1.schoolName);
     System.out.println("Using student2: " + student2.schoolName);
     System.out.println("Using Student: " + Student.schoolName);
     ```

   - **Step 4: Modify Static Variable via Object Reference**
     - Change `schoolName` using `student1`:

       ```
       student1.schoolName = "Northview Academy";
       ```

     - Print the updated static variable:

       ```
       System.out.println("After modifying static variable using
       student1:");
       System.out.println("student1.schoolName: " + student1.schoolName);
       System.out.println("student2.schoolName: " + student2.schoolName);
       System.out.println("Student.schoolName: " + Student.schoolName);
       ```

Exercise 3: Bank Account Management

1. **Create the `BankAccount` Class:**

   - **Instance Variable:**
     Declare an instance variable named `accountBalance` of type `double`.
   - **Static Variable:**
     Declare a static variable named `bankName` of type `String`.

2. **Implement the `main` Method:**

   - **Step 1: Object Creation**
     Create two `BankAccount` objects: `account1` and `account2`.
   - **Step 2: Modify Instance and Static Variables**
     - Set `account1.accountBalance` to `account2.accountBalance + 150.0`:

       ```
       account1.accountBalance = account2.accountBalance + 150.0;
       ```

     - Set `BankAccount.bankName` to `"Global Bank"`:

       ```
       BankAccount.bankName = "Global Bank";
       ```

     - Set `account2.accountBalance` to `account1.accountBalance + 300.0`:

       ```
       account2.accountBalance = account1.accountBalance + 300.0;
       ```

   - **Step 3: Print Updated Values**
     Print the updated values:

     ```
     System.out.println("After modification:");
     System.out.println("account1.accountBalance: " +
     account1.accountBalance);
     System.out.println("account2.accountBalance: " +
     account2.accountBalance);
     System.out.println("Using account1: " + account1.bankName);
     System.out.println("Using account2: " + account2.bankName);
     System.out.println("Using BankAccount: " + BankAccount.bankName);
     ```

   - **Step 4: Modify Static Variable via Object Reference**
     - Change `bankName` using `account2`:

       ```
       account2.bankName = "First National Bank";
       ```

     - Print the updated static variable:

       ```
       System.out.println("After modifying static variable using
       account2:");
       System.out.println("account1.bankName: " + account1.bankName);
       System.out.println("account2.bankName: " + account2.bankName);
       System.out.println("BankAccount.bankName: " +
       BankAccount.bankName);
       ```

Exercise 4: Product Pricing Update

1. **Create the `Product` Class:**

   - **Instance Variable:**
     Declare an instance variable named `price` of type `float`.
   - **Static Variable:**
     Declare a static variable named `storeName` of type `String`.

2. **Implement the `main` Method:**

- **Step 1: Object Creation**
  Create two `Product` objects: `prod1` and `prod2`.
- **Step 2: Modify Instance and Static Variables**
  - Set `prod1.price` to `prod2.price + 25.0f`:

    ```
    prod1.price = prod2.price + 25.0f;
    ```

  - Set `Product.storeName` to `"SuperMart"`:

    ```
    Product.storeName = "SuperMart";
    ```

  - Set `prod2.price` to `prod1.price + 75.0f`:

    ```
    prod2.price = prod1.price + 75.0f;
    ```

- **Step 3: Print Updated Values**
  Print the updated values:

  ```
  System.out.println("After modification:");
  System.out.println("prod1.price: " + prod1.price);
  System.out.println("prod2.price: " + prod2.price);
  System.out.println("Using prod1: " + prod1.storeName);
  System.out.println("Using prod2: " + prod2.storeName);
  System.out.println("Using Product: " + Product.storeName);
  ```

- **Step 4: Modify Static Variable via Object Reference**
  - Change `storeName` using `prod1`:

    ```
    prod1.storeName = "MegaStore";
    ```

  - Print the updated static variable:

    ```
    System.out.println("After modifying static variable using
    prod1:");
    System.out.println("prod1.storeName: " + prod1.storeName);
    System.out.println("prod2.storeName: " + prod2.storeName);
    System.out.println("Product.storeName: " + Product.storeName);
    ```

Exercise 5: Car Mileage and Manufacturer

1. **Create the `Car` Class:**
   - **Instance Variable:**
     Declare an instance variable named `mileage` of type `int`.
   - **Static Variable:**
     Declare a static variable named `manufacturer` of type `String`.
2. **Implement the `main` Method:**
   - **Step 1: Object Creation**
     Create two `Car` objects: `car1` and `car2`.
   - **Step 2: Modify Instance and Static Variables**
     - Set `car1.mileage` to `car2.mileage + 50`:

```
car1.mileage = car2.mileage + 50;
```

- Set `Car.manufacturer` to `"AutoMaker Inc."`:

```
Car.manufacturer = "AutoMaker Inc.";
```

- Set `car2.mileage` to `car1.mileage + 100`:

```
car2.mileage = car1.mileage + 100;
```

- **Step 3: Print Updated Values**
  Print the updated values:

```
System.out.println("After modification:");
System.out.println("car1.mileage: " + car1.mileage);
System.out.println("car2.mileage: " + car2.mileage);
System.out.println("Using car1: " + car1.manufacturer);
System.out.println("Using car2: " + car2.manufacturer);
System.out.println("Using Car: " + Car.manufacturer);
```

- **Step 4: Modify Static Variable via Object Reference**
  - Change `manufacturer` using `car2`:

```
car2.manufacturer = "Speedster Co.";
```

  - Print the updated static variable:

```
System.out.println("After modifying static variable using car2:");
System.out.println("car1.manufacturer: " + car1.manufacturer);
System.out.println("car2.manufacturer: " + car2.manufacturer);
System.out.println("Car.manufacturer: " + Car.manufacturer);
```
