BELOW QUESTION AND ANSWER FOR BASIC IDEA

Scenario: Laptop and Manufacturer Details

Packages:

1. **com.electronics.devices** → Contains `Laptop` class
2. **com.electronics.brands** → Contains `Manufacturer` class
3. **com.electronics.app** → Contains `ElectronicsApp` (Main class)

Question:

- Create a `Laptop` class in `com.electronics.devices` with:

    - **Private fields**: `model` (String), `price` (double)
    - **Public setter and getter methods**
    - A **public method** `showLaptopDetails()`

- Create a `Manufacturer` class in `com.electronics.brands` with:

    - **Private fields**: `brandName` (String), `country` (String)
    - **Public setter and getter methods**
    - A **public method** `showManufacturerDetails()`

- In **ElectronicsApp** (`com.electronics.app` package):

    - Create objects of `Laptop` and `Manufacturer`
    - Assign values using **setters**
    - Call methods to print details

Solution:

Step 1: Create `Laptop` Class

Location: `com/electronics/devices/Laptop.java`

```java
package com.electronics.devices;

public class Laptop {
    private String model;
    private double price;

    // Setter methods
    public void setModel(String model) {
        this.model = model;
    }

    public void setPrice(double price) {
        this.price = price;
    }

    // Getter methods
    public String getModel() {
        return model;
    }
```

```java
    public double getPrice() {
        return price;
    }

    // Method to display laptop details
    public void showLaptopDetails() {
        System.out.println("Laptop Model: " + model);
        System.out.println("Price: $" + price);
    }
}
```

Step 2: Create `Manufacturer` Class

Location: `com/electronics/brands/Manufacturer.java`

```java
package com.electronics.brands;

public class Manufacturer {
    private String brandName;
    private String country;

    // Setter methods
    public void setBrandName(String brandName) {
        this.brandName = brandName;
    }

    public void setCountry(String country) {
        this.country = country;
    }

    // Getter methods
    public String getBrandName() {
        return brandName;
    }

    public String getCountry() {
        return country;
    }

    // Method to display manufacturer details
    public void showManufacturerDetails() {
        System.out.println("Brand Name: " + brandName);
        System.out.println("Country of Origin: " + country);
    }
}
```

Step 3: Create `ElectronicsApp` (Main Class)

Location: `com/electronics/app/ElectronicsApp.java`

```java
package com.electronics.app;
```

```java
import com.electronics.devices.Laptop;
import com.electronics.brands.Manufacturer;

public class ElectronicsApp {
    public static void main(String[] args) {
        // Create Laptop object
        Laptop laptop = new Laptop();
        laptop.setModel("Dell XPS 15");
        laptop.setPrice(1500.99);

        // Create Manufacturer object
        Manufacturer manufacturer = new Manufacturer();
        manufacturer.setBrandName("Dell");
        manufacturer.setCountry("USA");

        // Display details
        laptop.showLaptopDetails();
        System.out.println();
        manufacturer.showManufacturerDetails();
    }
}
```

Expected Output

```
Laptop Model: Dell XPS 15
Price: $1500.99

Brand Name: Dell
Country of Origin: USA
```

General Instructions for Main Class (`App` classes)

- The **main class** should be in a **separate package** (`com.school.app` , `com.company.app` , etc.).
- In the `main` method:
    - Create objects of both classes
    - Use **setters** to assign values
    - Use **getters** or methods to **display details**

`Now Implement below questions by taking reference from above code`

Scenario 1: School and Principal Management

Packages:

1. **com.school.management** → Contains `School` class
2. **com.school.staff** → Contains `Principal` class
3. **com.school.app** → Contains `SchoolApp` (Main class)

Question:

- Create a `School` class in `com.school.management` with:

- **Private fields**: `name` (String), `location` (String)
- **Public setter and getter methods** for both fields
- A **public method** `showSchoolInfo()` that prints school details

- Create a `Principal` class in `com.school.staff` with:

  - **Private fields**: `principalName` (String), `experienceYears` (int)
  - **Public setter and getter methods** for both fields
  - A **public method** `showPrincipalInfo()` that prints principal details

- In the **main class** **SchoolApp** (`com.school.app` package):

  - Create **objects** of `School` and `Principal`.
  - Set values using **setter methods**.
  - Call `showSchoolInfo()` and `showPrincipalInfo()` to display details.

Scenario 2: Employee and Department Management

Packages:

1. **com.company.hr** → Contains `Employee` class
2. **com.company.admin** → Contains `Department` class
3. **com.company.app** → Contains `CompanyApp` (Main class)

Question:

- Create an `Employee` class in `com.company.hr` with:

  - **Private fields**: `id` (int), `name` (String), `salary` (double)
  - **Public setter and getter methods**
  - A **public method** `showEmployeeDetails()`

- Create a `Department` class in `com.company.admin` with:

  - **Private fields**: `deptName` (String), `deptId` (int)
  - **Public setter and getter methods**
  - A **public method** `showDepartmentDetails()`

- In **CompanyApp** (`com.company.app` package):

  - Create objects of `Employee` and `Department`
  - Assign values using **setters**
  - Call methods to print details

Scenario 3: Car and Engine Details

Packages:

1. **com.vehicles** → Contains `Car` class
2. **com.vehicles.parts** → Contains `Engine` class
3. **com.vehicles.app** → Contains `CarApp` (Main class)

Question:

- Create a `Car` class in `com.vehicles` with:

  - **Private fields**: `brand` (String), `model` (String), `price` (double)

- **Public setter and getter methods**
  - A **public method** `showCarDetails()`

- Create an `Engine` class in `com.vehicles.parts` with:

  - **Private fields**: `engineType` (String), `horsepower` (int)
  - **Public setter and getter methods**
  - A **public method** `showEngineDetails()`

- In `CarApp` (`com.vehicles.app` package):

  - Create objects of `Car` and `Engine`
  - Assign values using **setters**
  - Call methods to print details

Scenario 4: Library and Librarian Management

Packages:

1. **com.library.books** → Contains `Library` class
2. **com.library.staff** → Contains `Librarian` class
3. **com.library.app** → Contains `LibraryApp` (Main class)

Question:

- Create a `Library` class in `com.library.books` with:

  - **Private fields**: `libraryName` (String), `totalBooks` (int)
  - **Public setter and getter methods**
  - A **public method** `showLibraryDetails()`

- Create a `Librarian` class in `com.library.staff` with:

  - **Private fields**: `librarianName` (String), `yearsOfExperience` (int)
  - **Public setter and getter methods**
  - A **public method** `showLibrarianInfo()`

- In `LibraryApp` (`com.library.app` package):

  - Create objects of `Library` and `Librarian`
  - Assign values using **setters**
  - Call methods to print details

Scenario 5: Bank Account and Customer Management

Packages:

1. **com.bank.accounts** → Contains `BankAccount` class
2. **com.bank.customers** → Contains `Customer` class
3. **com.bank.app** → Contains `BankApp` (Main class)

Question:

- Create a `BankAccount` class in `com.bank.accounts` with:

  - **Private fields**: `accountNumber` (String), `balance` (double)
  - **Public setter and getter methods**

- A **public method** `showAccountDetails()`

- Create a `Customer` class in `com.bank.customers` with:

  - **Private fields**: `customerName` (String), `customerId` (int)
  - **Public setter and getter methods**
  - A **public method** `showCustomerDetails()`

- In **BankApp** (`com.bank.app` package):

  - Create objects of `BankAccount` and `Customer`
  - Assign values using **setters**
  - Call methods to print details