

## Java Assignment: Implementing Access Specifiers in an Online Shopping Application

**Objective:** In this assignment, you will demonstrate your understanding of Java access specifiers (`private`, `protected`, `default`, and `public`) through a simple Online Shopping application. You will implement a few classes like `Product`, `Customer`, `Order`, and `Payment` and use different access specifiers to control the accessibility of various attributes and methods.

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### Assignment Instructions:

1. **Create a class `Product`:**
  - Define the following attributes:
    - `productId (String)` – `private` access
    - `productName (String)` – `private` access
    - `price (double)` – `protected` access
    - `stockQuantity (int)` – `package-private` (default access)
  - Create a constructor to initialize these variables.
2. **Create Getter and Setter Methods in the `Product` class:**
  - Provide public getter and setter methods for `productId`, `productName`, and `price`.
  - Provide a `protected` method to get the stock quantity, and a default method to update the stock quantity.
3. **Create a class `Customer`:**
  - Define the following attributes:
    - `customerId (String)` – `private` access
    - `customerName (String)` – `private` access
    - `email (String)` – `public` access
    - `address (String)` – `package-private` (default access)
  - Create a constructor to initialize these variables.
  - Provide public getter and setter methods for `customerId`, `customerName`, and `email`.
4. **Create a class `Order`:**
  - In this class, define:
    - A `Product` object (`private`) representing the product ordered.
    - A `Customer` object (`private`) representing the customer who placed the order.
    - `orderStatus (String)` – `protected` access to represent the order status (e.g., "Placed", "Shipped").
    - `orderDate (String)` – `package-private` (default access).
  - Provide methods to update the order status and display order details.
5. **Create a class `Payment`:**
  - In this class, define:
    - `paymentId (String)` – `private` access
    - `paymentAmount (double)` – `protected` access
    - `paymentStatus (String)` – `package-private` (default access)
  - Provide public methods to process the payment and get the payment status.

**6. In the main class:**

- Create instances of `Product`, `Customer`, `Order`, and `Payment`.
  - Demonstrate the use of access specifiers:
    - Access `public` attributes from anywhere.
    - Access `protected` attributes within subclasses.
    - Access `private` attributes via getter and setter methods.
    - Access default (package-private) attributes within the same package.
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