Grocery Store Bill Generation Application

1. Class Diagram

```
+---------------+
|   Customer    |
+---------------+
| - name        |
| - products[]  |
+---------------+
| + addProduct()|
| + checkout()  |
+---------------+
      |
      | (Composition)
      |
      v
+---------------+
|   Product     |
+---------------+
| - productName |
| - quantity    |
| - pricePerUnit|
+---------------+
| + getPrice()  |
+---------------+


+-------------------+
|  BillGenerator    |
+-------------------+
| + calculateTotal()|
+-------------------+
```
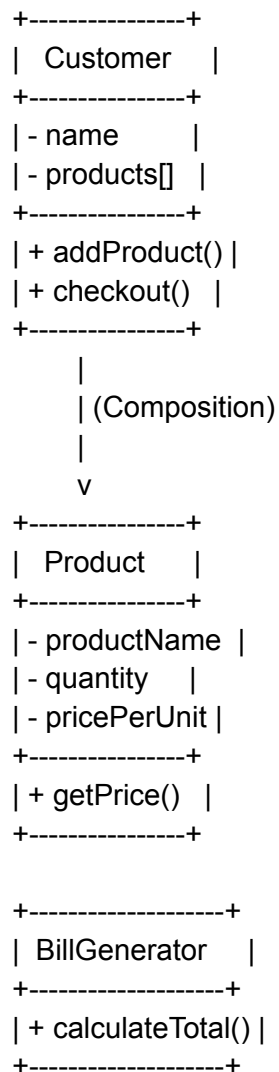
Explanation: A Customer has multiple Products (composition). BillGenerator calculates the total bill using customer data.
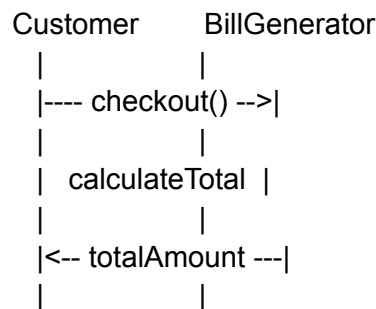
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2. Object Diagram

Customer: Alice **Products:**

- **Product 1:** Apples | Quantity: 2 kg | Price: $3 per kg
- **Product 2:** Milk | Quantity: 1 liter | Price: $2 per liter

BillGenerator: Used to calculate total bill.

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3. Sequence Diagram

```
Customer        BillGenerator
   |              |
  |---- checkout() -->|
   |              |
  |   calculateTotal  |
   |              |
  |<-- totalAmount ---|
   |              |
```

Step-by-Step Flow:

1. Customer selects grocery products.
2. Customer requests checkout.
3. BillGenerator calculates total price.
4. Total bill amount is returned to the customer.

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4. Final Bill Calculation

- **Apples:** 2 × 3 = $6
- **Milk:** 1 × 2 = $2
- **Total Bill:** $8