

# Sample Problem 1: School Results Application

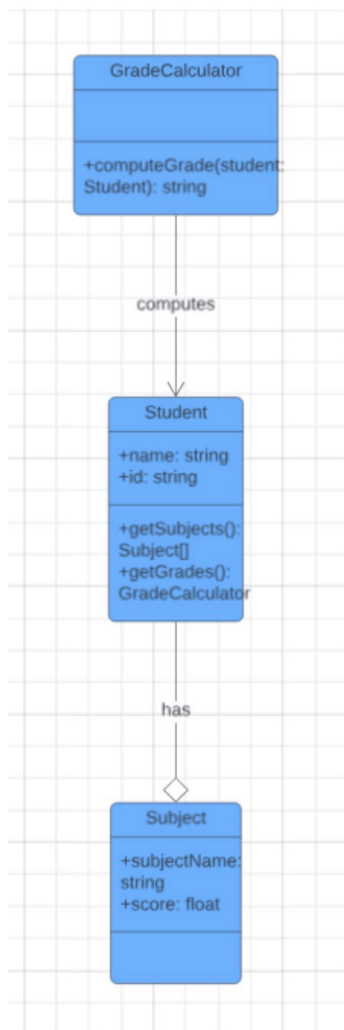
## Class Diagram

The class diagram represents the structure of a school results application where students have subjects, and their scores are calculated for grades.

### Diagram Description:

- **Classes:** `Student`, `Subject`, `GradeCalculator`
- **Relationships:**
  - A `Student` has multiple `Subject` entries (Aggregation).
  - `GradeCalculator` computes the results for a `Student`.

→ Draw the Class Diagram



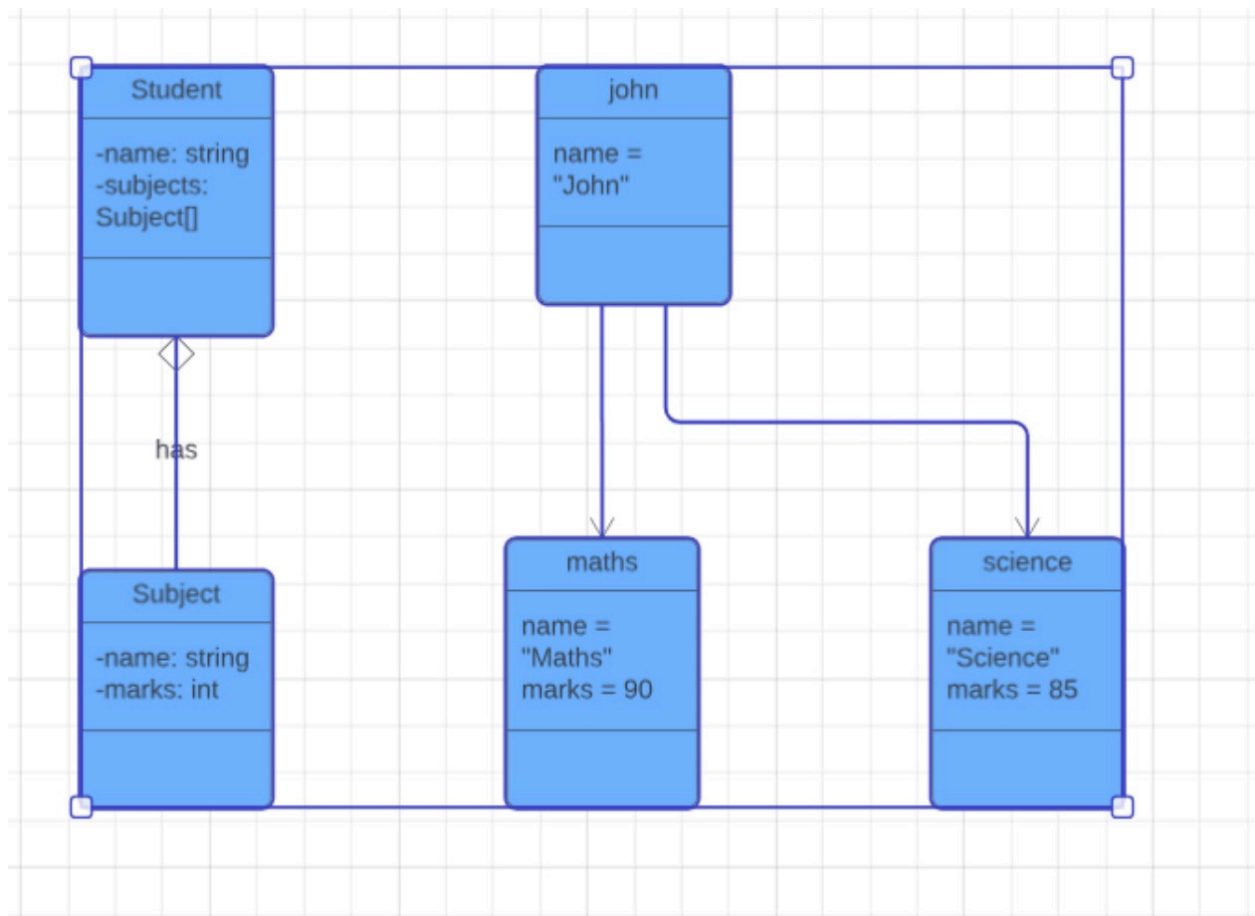
## Object Diagram

An object diagram provides a snapshot of the **Student** and their **Subject** objects at a particular point.

### Example:

- **Student:** John
- **Subjects:** Maths, Science
- **Marks:** 90, 85

→ Draw the Object Diagram



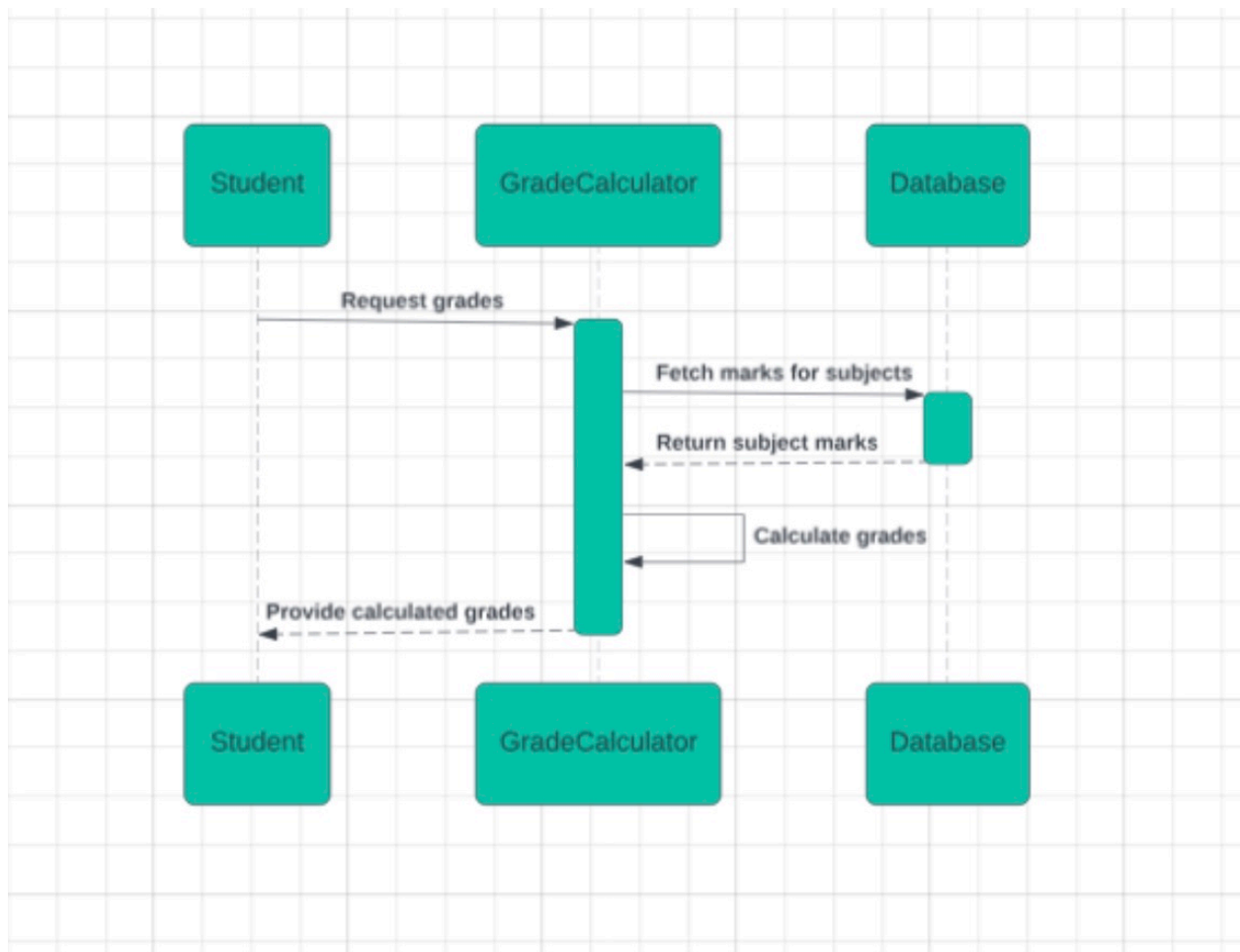
## Sequence Diagram

The sequence diagram shows how objects interact to calculate grades.

**Scenario:** A student requests their grade based on marks in subjects.

**Actors:**

1. Student
2. GradeCalculator



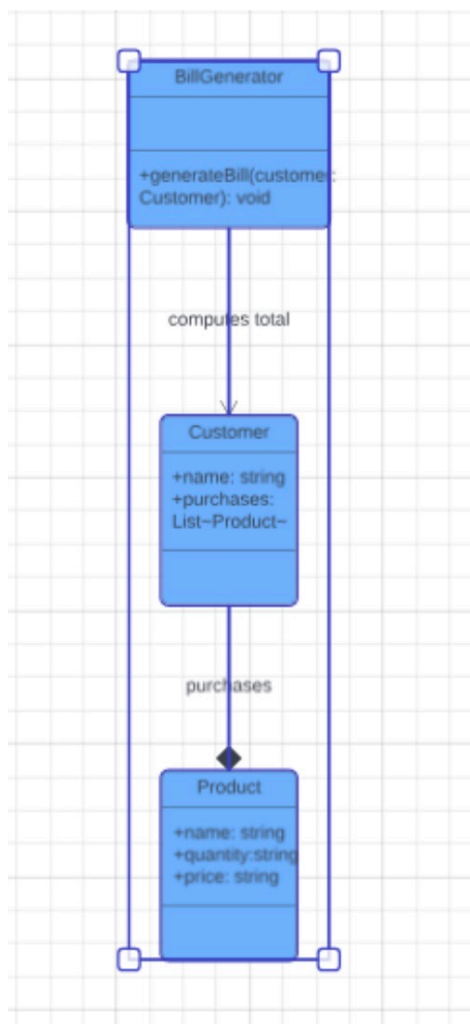
## Sample Problem 2: Grocery Store Bill Generation Application

### Class Diagram

The class diagram models the system where a customer buys products, and the bill is generated.

#### Diagram Description:

- **Classes:** Customer, Product, BillGenerator
- **Relationships:**
  - A Customer can purchase multiple Product items (Composition).
  - BillGenerator computes the total for the Customer.

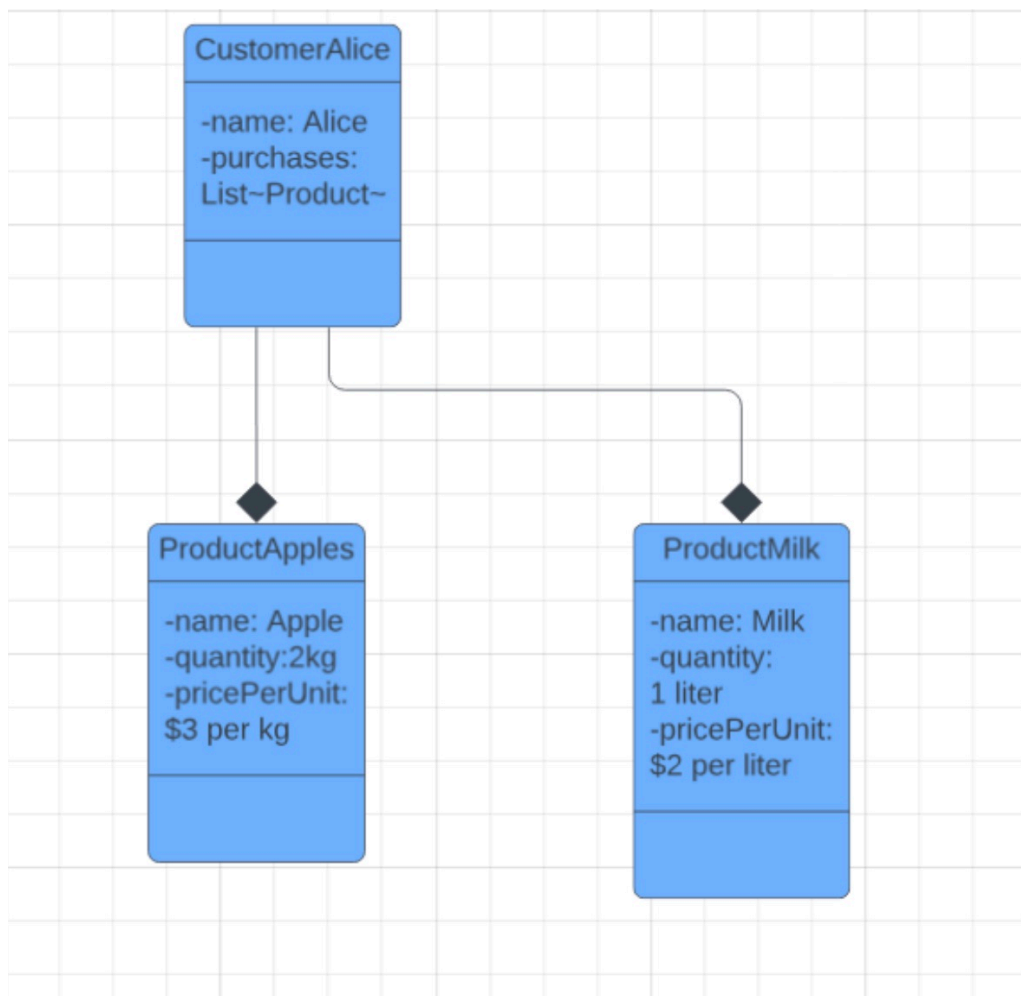


## Object Diagram

An object diagram shows the details of a **Customer** and the **Product** objects they have purchased.

**Example:**

- **Customer:** Alice
- **Products:**
  - Apples (2 kg at \$3 per kg)
  - Milk (1 liter at \$2 per liter)



## Sequence Diagram

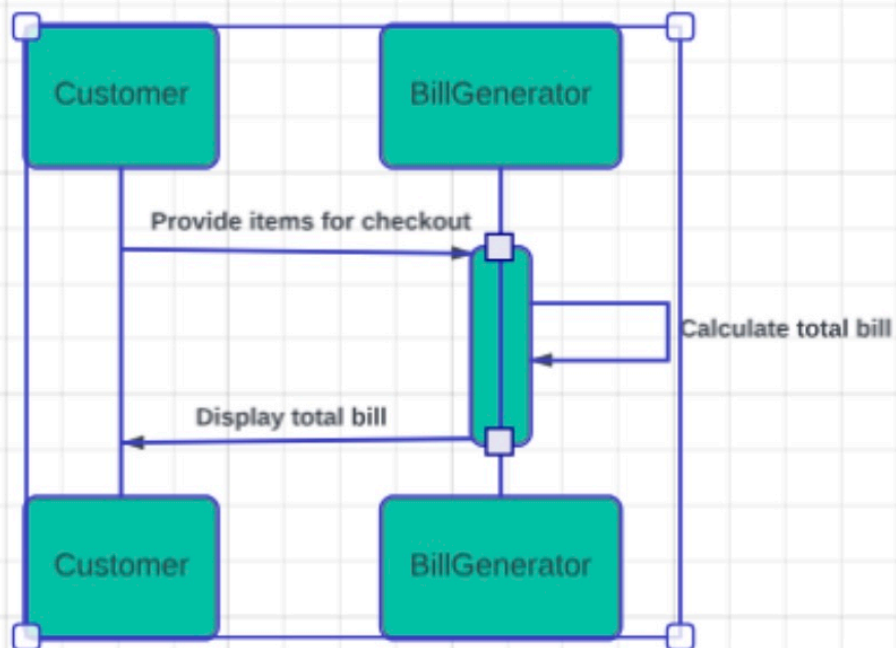
The sequence diagram shows the process of bill generation for a customer.

**Scenario:** A customer checks out at the grocery store, and the total bill is generated.

**Actors:**

1. Customer
2. BillGenerator

→ Draw the Sequence Diagram



## Comparison of the Two Scenarios

Feature	School Results Application	Grocery Store Bill Application
Classes	Student, Subject, GradeCalculator	Customer, Product, BillGenerator
Relationships	Aggregation	Composition
Primary Functionality	Calculate grade	Generate total bill
Key Entities	Students, Subjects, Grades	Customers, Products, Bills