School Results Application

Class Diagram :-

Classes and Relationships:

- Student
  - Attributes: `name`, `rollNo`
  - Methods: `getSubjects()`, `getGrades()`
- Subject
  - Attributes: `name`, `marks`
- GradeCalculator
  - Methods: `calculateGrade(Student student)`

Relationships:

- A Student aggregates multiple Subject objects → Aggregation (`hollow diamond`).
- GradeCalculator uses Student (dependency).

UML Representation:

```
+----------------+              +----------------+
|   Student      |<>--------- |   Subject     |
+----------------+             +----------------+
| - name         |             | - name        |
| - rollNo       |             | - marks       |
+----------------+             +----------------+
| + getSubjects()|
| + getGrades()  |
+----------------+
        ^
        |
        |
    +-----------------+
    | GradeCalculator |
    +-----------------+
    | + calculateGrade(student: Student) |
    +-----------------+
```

Object Diagram :-

Example Scenario:

- Student: `John`
- Subjects: `Maths` (90), `Science` (85)
- GradeCalculator computes result.

UML Representation:

```
Student: John
-----------------
name = "John"
rollNo = 101
Subjects:
  Subject: Maths
    marks = 90
  Subject: Science
    marks = 85

GradeCalculator
-----------------
calculateGrade(John)
```

Sequence Diagram :-

Scenario: Student requests grade.

- Actors: Student, GradeCalculator
- Flow:

1. Student → GradeCalculator: `requestGrade()`
2. GradeCalculator → Student: `getSubjects()`
3. GradeCalculator calculates grade
4. GradeCalculator → Student: `returnGrade()`

UML Representation:

```
Student          GradeCalculator
      |                           |
      | requestGrade()            |
      |------------------------->|
      |                           |
      |                           | getSubjects()
      |                           |<------------------
      |                           |
      |                           | calculateGrade()
      |                           |
      |<-------------------------|
      | returnGrade()             |
      |                           |
```