



**COLLEGE CODE : 8203**

**COLLEGE NAME:** A.V.C. College of Engineering

**DEPARTMENT:** Computer Science And Engineering

**STUDENT NM-ID:** 478FA6B1B807FE6BF5845FEFFA402964

**ROLL NO:** 820323104090

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**Completed the project named as Phase -2 TECHNOLOGY**

**PROJECT NAME:** Student Grading System

**SUBMITTED BY,**

**NAME:** M.Sangeetha

**MOBILE NO:** 6380487995

## Phase 2 — Solution Design & Architecture

### 1. Tech Stack Selection

**Frontend:** React.js (for dynamic UI and smooth user experience)

**Backend:** Node.js with Express.js (for REST API services)

**Database:** MongoDB (NoSQL database for flexible schema and fast access)

**Authentication:** JWT (JSON Web Tokens) for secure login

**Deployment:** AWS / Heroku / Render for hosting backend, Netlify/Vercel for frontend

### 2. UI Structure / API Schema Design

#### i. UI Structure:

- Login Page (Admin/Teacher/Student)
- Dashboard (role-based view)
- Student Details Page (view/add/edit student info)
- Grade Entry Page (teachers enter/update grades)
- Grade Report Page (students view performance, GPA)

#### ii. API Schema Design:

```
{
  "student": {
    "id": "S101",
    "name": "John Doe",
    "department": "CSE",
    "subjects": [
      { "code": "CS501", "marks": 85, "grade": "A" }
    ]
  }
}
```

### 3. Data Handling Approach

- Data validation at both frontend (form validation) and backend (API validation).
- Use of **Mongoose schemas** to ensure structured student and grade records.
- Role-based access control (admin can manage users, teachers manage grades, students view results).
- Error handling with proper HTTP status codes.

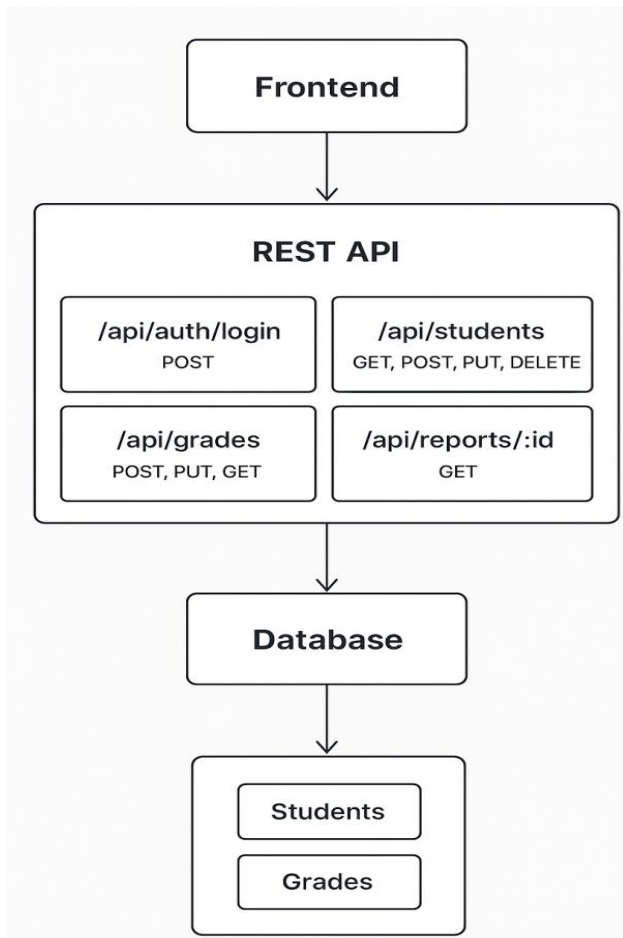
### 4. Component / Module Diagram

**Authentication Module** (login, registration, role management)

**Student Management Module** (add/edit student details)

**Grading Module** (input/update grades)

**Report Module** (generate grade reports, GPA, performance analysis)



**System architecture**

## 5. Basic Flow Diagram

### Academic Platform Flowchart

