Assignment

Assignment Title: CRUD Application using Spring Boot and Basic Frontend

Objective: The purpose of this assignment is to practice object-oriented programming concepts in Java using Spring Boot, and to create a basic frontend interface for performing CRUD operations on a simple entity.

Requirements:

1. Project Setup

   - Use Spring Boot (latest stable version) to create a RESTful web application.
   - Use Maven or Gradle for dependency management.
   - Include dependencies for Spring Web, Spring Data JPA, H2 Database (or MySQL if preferred).

2. Entity Design
   o Create a simple Java class, e.g., **Student**, with the following attributes:
      - **id** (Integer, Primary Key)
      - **name** (String)
      - **email** (String)
      - **department** (String)
   o Use proper OOP principles: encapsulation, constructors, getters/setters.

3. Repository
   o Create a Spring Data JPA repository to interact with the database.

4. Service Layer
   o Implement a service class that handles the CRUD logic.
   o Ensure proper use of dependency injection.

5. Controller
   o Create a REST controller to expose endpoints:
      - POST /students – Add a new student
      - GET /students – Retrieve all students
      - GET /students/{id} – Retrieve a student by ID
      - PUT /students/{id} – Update a student by ID
      - DELETE /students/{id} – Delete a student by ID

6. Frontend
   o Create a basic frontend (can be simple HTML + JavaScript or Thymeleaf templates).
   o The frontend should:
      - Allow the user to add, view, update, and delete student records.
      - Display the list of students dynamically.
      - Use forms/buttons to call the backend APIs.

Total Marks: 15

Evaluation Criteria:

   - Correct implementation of CRUD functionality: 6 marks
   - Proper use of OOP concepts (encapsulation, classes, methods): 3 marks
   - Working frontend with form input and dynamic display: 4 marks
   - Code quality, readability, and project structure: 2 marks

Submission Guidelines: - Submit the project folder as a zip file.

Late submissions may lose marks as per course policy.