

# TASK: Create CRUD Application Using Spring Boot

 Estimated Time: 2–3 Hours

 **Objective:** Build a basic REST API using Spring Boot that performs CRUD operations on a database table.

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## Task Overview

You need to create a **Spring Boot backend application** that allows you to:

- Create records
- Read records
- Update records
- Delete records

This will be a **REST-based CRUD application** using Spring Boot and PostgreSQL (or H2/MySQL if preferred).

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## Module to Implement

**Entity: Student**

### Fields

Field Name	Type
id	Long (Primary Key)
name	String
email	String
age	Integer

## Step-by-Step Tasks

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### Task 1 Create Spring Boot Project

Create a Spring Boot project using:

- Spring Web
  - Spring Data JPA
  - PostgreSQL Driver (or H2 for local testing)
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### Task 2 — Create Entity Class

Create a `Student` entity:

- Annotate with `@Entity`
  - Use `@Id` and `@GeneratedValue`
  - Map fields to database columns
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### Task 3 — Create Repository

Create a repository interface:

```
StudentRepository extends JpaRepository<Student, Long>
```

This should handle basic DB operations automatically.

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### Task 4 — Create Service Layer

Create `StudentService` with methods:

- `addStudent(Student student)`
- `getAllStudents()`
- `getStudentById(Long id)`
- `updateStudent(Long id, Student student)`
- `deleteStudent(Long id)`

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## Task 5 — Create REST Controller

Create `StudentController` with endpoints:

Method	Endpoint	Operation
POST	<code>/students</code>	Add student
GET	<code>/students</code>	Get all students
GET	<code>/students/{id}</code>	Get student by ID
PUT	<code>/students/{id}</code>	Update student
DELETE	<code>/students/{id}</code>	Delete student

Use:

- `@RestController`
- `@RequestMapping`
- `@PostMapping`, `@GetMapping`, `@PutMapping`, `@DeleteMapping`

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## Task 6 — Configure Database

Configure DB in `application.properties`:

- Database URL
- Username
- Password
- JPA properties

Ensure table is auto-created.

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## Task 7 — Test APIs

Test all endpoints using:

- Postman

Verify:

- Data is saved
- Data is fetched correctly
- Update & delete works