

Student Management Project – Complete Explanation

Project Architecture

This project follows a layered architecture: Controller → Service → Repository → Database. Each layer has a clear responsibility and improves maintainability.

Student Entity Class

The Student class represents a database table and a Java object. It uses @Entity, @Id, and @GeneratedValue annotations. Getters and setters enable data access and JSON conversion.

Repository Layer

StudentRepository extends JpaRepository, which provides built-in CRUD operations like save, findById, findAll, and deleteById without writing SQL.

Service Layer

StudentService contains business logic. It interacts with the repository to perform create, read, update, and delete operations.

Controller Layer

StudentController handles HTTP requests and responses. It uses annotations such as @RestController, @PostMapping, @GetMapping, @PutMapping, and @DeleteMapping to expose REST APIs.

Main Application Class

The main class annotated with @SpringBootApplication starts the Spring Boot application and launches the embedded Tomcat server.

Data Flow

JSON requests from Postman are converted to Java objects in the Controller, processed in the Service layer, stored via Repository, and returned as JSON responses.