Step 1: Create the Spring Boot Project

1. **Go to Spring Initializr**: https://start.spring.io/.
2. **Set the following project settings**:
    - **Project**: Maven Project
    - **Language**: Java
    - **Spring Boot Version**: 2.x (latest stable version)
    - **Group**: `com.example`
    - **Artifact**: `studentapp`
    - **Name**: `studentapp`
    - **Package Name**: `com.example.studentapp`
    - **Packaging**: Jar
    - **Java Version**: 8 or above
3. **Add Dependencies**:
    - **Spring Web**
    - **Spring Data JPA**
    - **MySQL Driver**
    - **Spring Boot DevTools** (Optional, for auto-reloading during development)
    - **Spring Boot Starter Test** (Optional, for testing)
4. Click **Generate** and download the project.

Step 2: Extract the Project

1. Unzip the downloaded zip file.
2. Open the project in your IDE (IntelliJ, Eclipse, etc.).

Step 3: Configure Database Connection (application.properties)

1. In `src/main/resources/application.properties`, add the following database configuration:

```
properties
Copy code
# MySQL Database Configuration
spring.datasource.url=jdbc:mysql://localhost:3306/student_db?useSSL=false&s
erverTimezone=UTC
spring.datasource.username=root
spring.datasource.password=root_password
spring.jpa.hibernate.ddl-auto=update
spring.jpa.show-sql=true
spring.jpa.properties.hibernate.dialect=org.hibernate.dialect.MySQL8Dialect
```

Replace `root_password` with your MySQL root password.

2. **Create Database**:
    - Open MySQL Command Line or MySQL Workbench and run the following:

```
sql
Copy code
CREATE DATABASE student_db;
```

Step 4: Create the Student Entity

1. Create a new Java class `Student.java` in `src/main/java/com/example/studentapp/model/`.

```
java
Copy code
package com.example.studentapp.model;

import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
import javax.persistence.Id;

@Entity
public class Student {

    @Id
    @GeneratedValue(strategy = GenerationType.IDENTITY)
    private Long id;

    private String name;
    private String email;

    // Getters and Setters
    public Long getId() {
        return id;
    }

    public void setId(Long id) {
        this.id = id;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public String getEmail() {
        return email;
    }

    public void setEmail(String email) {
        this.email = email;
    }
}
```

Step 5: Create the Repository Interface

1. Create a new Java interface `StudentRepository.java` in `src/main/java/com/example/studentapp/repository/`.

```
java
Copy code
package com.example.studentapp.repository;

import com.example.studentapp.model.Student;
import org.springframework.data.jpa.repository.JpaRepository;
import org.springframework.stereotype.Repository;

@Repository
public interface StudentRepository extends JpaRepository<Student, Long> {
}
```

This interface extends `JpaRepository` to provide CRUD operations for the `Student` entity.

Step 6: Create the Service Layer

1. Create a new Java class `StudentService.java` in `src/main/java/com/example/studentapp/service/`.

```
java
Copy code
package com.example.studentapp.service;

import com.example.studentapp.model.Student;
import com.example.studentapp.repository.StudentRepository;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;

import java.util.List;
import java.util.Optional;

@Service
public class StudentService {

    @Autowired
    private StudentRepository studentRepository;

    public List<Student> getAllStudents() {
        return studentRepository.findAll();
    }

    public Student addStudent(Student student) {
        return studentRepository.save(student);
    }

    public void deleteStudent(Long id) {
        studentRepository.deleteById(id);
    }

    public Optional<Student> getStudentById(Long id) {
        return studentRepository.findById(id);
    }
}
```

Step 7: Create the Controller

1. Create a new Java class `StudentController.java` in `src/main/java/com/example/studentapp/controller/`.

```
java
Copy code
package com.example.studentapp.controller;

import com.example.studentapp.model.Student;
import com.example.studentapp.service.StudentService;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.http.ResponseEntity;
import org.springframework.web.bind.annotation.*;

import java.util.List;
import java.util.Optional;

@RestController
@RequestMapping("/students")
public class StudentController {

    @Autowired
    private StudentService studentService;

    @GetMapping
    public List<Student> getAllStudents() {
        return studentService.getAllStudents();
    }

    @PostMapping
    public Student addStudent(@RequestBody Student student) {
        return studentService.addStudent(student);
    }

    @DeleteMapping("/{id}")
    public ResponseEntity<String> deleteStudent(@PathVariable Long id) {
        Optional<Student> student = studentService.getStudentById(id);
        if (student.isPresent()) {
            studentService.deleteStudent(id);
            return ResponseEntity.ok("Student deleted successfully.");
        }
        return ResponseEntity.status(404).body("Student not found.");
    }
}
```

Step 8: Run the Application

1. Open the terminal or IDE and navigate to the root of your project.
2. Run the Spring Boot application:

```
bash
Copy code
mvn spring-boot:run
```

Alternatively, if you are using an IDE, you can run `StudentAppApplication.java` directly.

Step 9: Verify the Endpoints

You can use Postman or any HTTP client to verify the REST API.

1. **List All Students** (GET /students)
   - **Request**:

     ```
     http
     Copy code
     GET http://localhost:8080/students
     ```

2. **Add a New Student** (POST /students)
   - **Request Body (JSON)**:

     ```
     json
     Copy code
     {
       "name": "John Doe",
       "email": "john.doe@example.com"
     }
     ```

   - **Request**:

     ```
     http
     Copy code
     POST http://localhost:8080/students
     ```

3. **Delete a Student** (DELETE /students/{id})
   - **Request**:

     ```
     http
     Copy code
     DELETE http://localhost:8080/students/1
     ```

Step 10: Verify Data in MySQL

1. Log into MySQL:

   ```
   bash
   Copy code
   mysql -u root -p
   ```

2. Select the `student_db` database:

   ```
   sql
   Copy code
   USE student_db;
   ```

3. List the students in the `student` table:

```
sql
Copy code
SELECT * FROM student;
```

Step 11: Testing in Postman

1. **GET /students**:
   - Use **GET** request in Postman to fetch the list of students:

```
http
Copy code
GET http://localhost:8080/students
```

2. **POST /students**:
   - Use **POST** request in Postman to add a student with JSON data:

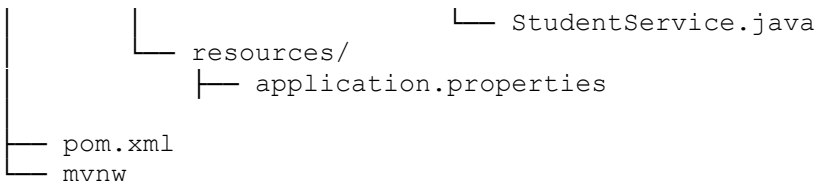
```
json
Copy code
{
  "name": "Jane Doe",
  "email": "jane.doe@example.com"
}
http
Copy code
POST http://localhost:8080/students
```

3. **DELETE /students/{id}**:
   - Use **DELETE** request in Postman to delete a student by ID:

```
http
Copy code
DELETE http://localhost:8080/students/1
```

Final Project Structure

```
css
Copy code
studentapp/
│
├── src/
│   └── main/
│       ├── java/
│       │   └── com/
│       │       └── example/
│       │           └── studentapp/
│       │               ├── controller/
│       │               │   └── StudentController.java
│       │               ├── model/
│       │               │   └── Student.java
│       │               ├── repository/
│       │               │   └── StudentRepository.java
│       │               └── service/
```


└── StudentService.java
└── resources/
├── application.properties
├── pom.xml
└── mvnw