**Exercise 9: Creating a Spring Boot Application**

**Scenario:**

You need to create a Spring Boot application for the library management system to simplify configuration and deployment.

**Steps:**

1. **Create a Spring Boot Project:**
   * Use **Spring Initializr** to create a new Spring Boot project named **LibraryManagement**.
2. **Add Dependencies:**
   * Include dependencies for **Spring Web, Spring Data JPA, and H2 Database**.
3. **Create Application Properties:**
   * Configure database connection properties in **application.properties**.
4. **Define Entities and Repositories:**
   * Create **Book** entity and **BookRepository** interface.
5. **Create a REST Controller:**
   * Create a **BookController** class to handle CRUD operations.
6. **Run the Application:**
   * Run the Spring Boot application and test the REST endpoints.

**Solution:**

 **Create a Spring Boot Project**:

* Use Spring Initializr to create a new Spring Boot project named LibraryManagement.

 **Add Dependencies**:

* Include dependencies for Spring Web, Spring Data JPA, and H2 Database:

<dependencies>

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-web</artifactId>

</dependency>

<dependency>

<groupId>org.springframework.boot</groupId>

<artifactId>spring-boot-starter-data-jpa</artifactId>

</dependency>

<dependency>

<groupId>com.h2database</groupId>

<artifactId>h2</artifactId>

<scope>runtime</scope>

</dependency>

</dependencies>

 **Create Application Properties**:

* Configure database connection properties in application.properties:

spring.datasource.url=jdbc:h2:mem:testdb

spring.datasource.driverClassName=org.h2.Driver

spring.datasource.username=sa

spring.datasource.password=password

spring.jpa.database-platform=org.hibernate.dialect.H2Dialect

 **Define Entities and Repositories**:

* Create Book entity and BookRepository interface:

package com.library.entity;

import javax.persistence.Entity;

import javax.persistence.GeneratedValue;

import javax.persistence.GenerationType;

import javax.persistence.Id;

@Entity

public class Book {

@Id

@GeneratedValue(strategy = GenerationType.IDENTITY)

private Long id;

private String title;

private String author;

// Getters and Setters

}

package com.library.repository;

import org.springframework.data.jpa.repository.JpaRepository;

import com.library.entity.Book;

public interface BookRepository extends JpaRepository<Book, Long> {

}

 **Create a REST Controller**:

* Create a BookController class to handle CRUD operations:

package com.library.controller;

import org.springframework.beans.factory.annotation.Autowired;

import org.springframework.web.bind.annotation.\*;

import com.library.entity.Book;

import com.library.repository.BookRepository;

import java.util.List;

@RestController

@RequestMapping("/books")

public class BookController {

@Autowired

private BookRepository bookRepository;

@GetMapping

public List<Book> getAllBooks() {

return bookRepository.findAll();

}

@PostMapping

public Book createBook(@RequestBody Book book) {

return bookRepository.save(book);

}

@PutMapping("/{id}")

public Book updateBook(@PathVariable Long id, @RequestBody Book bookDetails) {

Book book = bookRepository.findById(id).orElseThrow();

book.setTitle(bookDetails.getTitle());

book.setAuthor(bookDetails.getAuthor());

return bookRepository.save(book);

}

@DeleteMapping("/{id}")

public void deleteBook(@PathVariable Long id) {

bookRepository.deleteById(id);

}

}