

```
import org.springframework.boot.SpringApplication;
```

```
import org.springframework.boot.autoconfigure.SpringBootApplication;
```

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

```
import org.springframework.http.ResponseEntity;
```

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

```
import org.springframework.stereotype.Service;
```

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

```
import javax.persistence.*;
```

```
import java.util.List;
```

```
import java.util.Optional;
```

```
/**
```

```
 * Library API Application
```

```
 *
```

```
 * This API provides CRUD operations for managing books in a library system.
```

```
 */
```

```
@SpringBootApplication
```

```
public class LibraryApplication {
```

```
    public static void main(String[] args) {
```

```
        SpringApplication.run(LibraryApplication.class, args);
```

```
    }
```

```
}
```

/**

* Book Entity

*/

@Entity

class Book {

 @Id

 @GeneratedValue(strategy = GenerationType.IDENTITY)

 private Long id;

 private String title;

 private String author;

```
private String isbn;
```

```
private int available = 1;
```

```
// Getters and Setters
```

```
}
```

```
/**
```

```
* Repository for Book Entity
```

```
*/
```

```
interface BookRepository extends JpaRepository<Book, Long> {}
```

```
/**
```

```
 * Service for Book operations
```

```
 */
```

```
@Service
```

```
class BookService {
```

```
    @Autowired
```

```
    private BookRepository repository;
```

```
/**
```

```
 * Create a new book
```

```
 */
```

```
public Book createBook(Book book) {
```

```
    return repository.save(book);
```

```
}
```

```
/**
```

```
 * Get a book by ID
```

```
*/
```

```
public Optional<Book> getBook(Long id) {
```

```
    return repository.findById(id);
```

```
}
```

```
/**
```

```
 * Update a book's details
```

```
 */
```

```
public Book updateBook(Long id, Book updatedBook) {
```

```
    return repository.findById(id).map(book -> {
```

```
        book.setTitle(updatedBook.getTitle());
```

```
        book.setAuthor(updatedBook.getAuthor());
```

```
        return repository.save(book);
```

```
    }).orElseThrow(() -> new RuntimeException("Book not found"));
```

```
}
```

```
/**
```

```
 * Delete a book by ID
```

```
*/
```

```
public void deleteBook(Long id) {
```

```
    repository.deleteById(id);
```

```
}
```

```
}
```

```
/**
```

```
 * Controller for Book endpoints
```

```
*/
```



```
@RestController
```

```
@RequestMapping("/books")
```

```
class BookController {
```

```
    @Autowired
```

```
    private BookService service;
```

```
    /**
```

```
     * Add a new book
```

```
     */
```

```
    @PostMapping
```

```
    public ResponseEntity<Book> createBook(@RequestBody Book book) {
```

```
        return ResponseEntity.ok(service.createBook(book));

    }

    /**

    * Retrieve a book by ID

    */

    @GetMapping("/{id}")

    public ResponseEntity<Book> getBook(@PathVariable Long id) {

        return service.getBook(id).map(ResponseEntity::ok)

            .orElse(ResponseEntity.notFound().build());

    }
```

```
/**
```

```
 * Update a book's information
```

```
 */
```

```
@PutMapping("/{id}")
```

```
public ResponseEntity<Book> updateBook(@PathVariable Long id, @RequestBody Book book) {
```

```
    return ResponseEntity.ok(service.updateBook(id, book));
```

```
}
```

```
/**
```

```
 * Delete a book by ID
```

```
*/
```

```
@DeleteMapping("/{id}")
```

```
public ResponseEntity<Void> deleteBook(@PathVariable Long id) {
```

```
    service.deleteBook(id);
```

```
    return ResponseEntity.noContent().build();
```

```
}
```

```
}
```