

Day 8 Spring Day-wise Assignment

Case Study 3: Annotation-Based - Library System

Scenario

A library needs to manage books, members, and loans using annotations.

Book.java

```
package com.example.library;

import org.springframework.stereotype.Component;

@Component
public class Book {
    private String title = "Spring in Action";

    public String getTitle() {
        return title;
    }
}
```

LibraryService.java

```
package com.example.library;

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

@Service

```
public class LibraryService {
```

@Autowired

```
private Book book;
```

```
public void showBook() {
```

```
    System.out.println("Book: " + book.getTitle());
```

```
}
```

```
}
```

Member.java

```
package com.example.library;
```

```
import org.springframework.stereotype.Component;
```

@Component

```
public class Member {
```

```
    private String memberId;
```

```
    private String name;
```

```
    private String email;
```

```
public void registerMember(String memberId, String name, String email) {
```

```
    this.memberId = memberId;
```

```
    this.name = name;
```

```
    this.email = email;
```

```

        System.out.println("Member registered: " + name + " (ID: " + memberId + ")");
    }

    public void viewMembers() {
        System.out.println("Member: " + name + " (ID: " + memberId + "), Email: " + email);
    }

    // Getters and setters
    public String getMemberId() { return memberId; }
    public void setMemberId(String memberId) { this.memberId = memberId; }
    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; }
}

```

Loan.java

```

package com.example.library;

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

@Component
public class Loan {

    @Autowired
    private Book book;
}

```

@Autowired

private Member member;

private String loanId;

public void issueBook() {

 this.loanId = "LN" + System.currentTimeMillis();

 System.out.println("Book issued: " + book.getTitle() + " to " + member.getName() + "
(Loan ID: " + loanId + ")");

}

public void returnBook() {

 System.out.println("Book returned: " + book.getTitle() + " by " + member.getName() + "
(Loan ID: " + loanId + ")");

}

// Getters and setters

public String getLoanId() { return loanId; }

public void setLoanId(String loanId) { this.loanId = loanId; }

}

Main Application

import org.springframework.context.annotation.*;

public class Main {

 public static void main(String[] args) {

 var context = new AnnotationConfigApplicationContext();

 context.scan("com.example.library");

```
context.refresh();
```

```
LibraryService service = context.getBean(LibraryService.class);
```

```
service.showBook();
```

```
}
```

```
}
```