

Case Study 3: Annotation-Based Configuration

Case Study Title: Library Management System

POJO Classes:

1. Book.java
 - addBook(), searchBook()
2. Member.jav
 - registerMember(), viewMembers()
2. Loan.java
 - issueBook(), returnBook()

Code:

//Book.java

package com.library;

import java.util.ArrayList;

import java.util.List;

import org.springframework.stereotype.Component;

@Component

public class Book {

private List<String> books = **new** ArrayList<>();

public void addBook(String title) {

 books.add(title);

 System.*out*.println("Book added: " + title);

 }

public void searchBook(String title) {

if (books.contains(title)) {

 System.*out*.println("Book found: " + title);

 } **else** {

 System.*out*.println("Book not found.");

 }

 }

}

//Loan.java

package com.library;

import org.springframework.stereotype.Component;

@Component

```

public class Loan {
    public void issueBook(String book, String member) {
        System.out.println("Book " + book + " issued to " + member);
    }

    public void returnBook(String book, String member) {
        System.out.println("Book " + book + " returned by " + member);
    }

}

```

```

//Member.java
package com.library;

```

```

import java.util.ArrayList;
import java.util.List;

```

```

import org.springframework.stereotype.Component;

```

```

@Component
public class Member {
    private List<String> members = new ArrayList<>();

    public void registerMember(String name) {
        members.add(name);
        System.out.println("Member registered: " + name);
    }

    public void viewMembers() {
        System.out.println("Registered Members:");
        for (String member : members) {
            System.out.println("- " + member);
        }
    }

}

```

```

//LibraryService.java
package com.library;

```

```

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

```

```

@Component
public class LibraryService {

```

```

        @Autowired
        private Book book;

        @Autowired
        private Member member;

        @Autowired
        private Loan loan;

        public void performOperations() {
            member.registerMember("Deepika");
            member.viewMembers();

            book.addBook("The Pragmatic Programmer");
            book.searchBook("The Pragmatic Programmer");

            loan.issueBook("The Pragmatic Programmer", "sree");
            loan.returnBook("The Pragmatic Programmer", "Sree");
        }
    }

//MainApp.java
package com.library;

import org.springframework.context.ApplicationContext;
import org.springframework.context.annotation.AnnotationConfigApplicationContext;
import org.springframework.context.annotation.ComponentScan;
import org.springframework.context.annotation.Configuration;
@Configuration
@ComponentScan("com.library")
public class MainApp {
    public static void main(String[] args) {
        ApplicationContext context = new
AnnotationConfigApplicationContext(MainApp.class);
        LibraryService libraryService = context.getBean(LibraryService.class);
        libraryService.performOperations();
    }
}

Output:
Member registered: Sree
Registered Members:
- Sree

```

Book added: The Pragmatic Programmer

Book found: The Pragmatic Programmer

Book 'The Pragmatic Programmer' issued to Sree

Book 'The Pragmatic Programmer' returned by Sree