# Web-Application

* MVC Design / Architecture
  + Model / View / Controller
* Controller
  + Takes initial control of the type of the operation that is requested by the user
  + Operations
    - Add
      * /add
    - Delete
      * /delete
    - List all the books
      * /list
* Model
  + Model represents data / information
  + Library Application
    - Collection of Books
  + Provide Data
* View
  + Formatting the data for display purposes
  + HTML / JSP / JSF
    - Formatting and rendering the information (that we take from the model)
    - Table
      * Show the collection of books

# Library Project

## Environment Preparation

* Install Eclipse
  + Download “Eclipse IDE 2022‑03” (the Eclipse installer)
  + Run the installer
    - Select the following package during installation
      * “**Eclipse IDE for Enterprise Java & Web Developers**”
  + Proceed with the installation
* Verify JRE in Eclipse
  + Launch Eclipse
    - Ensure that Default’s Eclipse JDK is set
      * Windows -> Preferences
        + Java -> **Installed JREs**
    - Ensure that the java compiler version is ‘Java 11’
      * Windows -> Preferences -> **Java -> Compiler**
* Configure Tomcat in Eclipse
  + Windows -> Preferences -> Server -> Runtime Environments
  + Click Add
  + Choose Apache -> Apache Tomcat v9.0
  + Select details
    - Name - ‘Apache Tomcat v9.0’
    - Click ‘Download & Install’ and as part of this, specify the Tomcat installation direction
      * After specifying the directory, wait for sometime, till the download is done
  + Click Finish

## Project Creation

* Steps
  + Project Creation
    - Type of Project
      * Web -> **Dynamic Web Project**
    - Ensure the following section
      * Target Runtime - ‘apache-tomcat-v9.0’
      * Dynamic Web Module Version
        + 4.0
      * Web Module
        + Context root

Watch out and note the value for the Web-App “**Context Root**”

* + - Go with the default settings for the remainder of the pages
  + Copying Jars
    - * Copy the jars from [here](https://github.com/sr1983-it-gl/GL-Java-FSD-9-LIBRARY/tree/main/Jar%20Files)
      * Paste them in the following project location
        + “\src\main\webapp\WEB-INF\lib”
    - Refresh the project in Eclipse to see the copied jar files in the copied location

## Welcome Page

* File Changes
  + Server
    - Configuration
      * “/WEB-INF/web.xml”
        + Contains entries for

Servlet

servlet-mapping

absolute-ordering

* + - * spring-config.xml
        + Contains entries for

Context-component-scan

View-Resolver

* + - Controller
      * WelcomeController
  + UI
    - welcome.jsp
* Run the project
  + Right Click
    - Run as Server
      * Select ‘Always use this server’
  + Make sure that the project is available on the right-side of ‘Configured’ section
* Access the Library Application
  + Web Browser
    - URL
      * [http://localhost:8080/LibraryManagement/](http://localhost:8080/LibraryManagement/books/listing)
* Common Errors
  + Make sure that the Path references are correctly mentioned
    - Example
      * /WEB-INF
  + Make sure that the component scan package is correct
  + Missing @Transactional annotation
  + Port Conflict Error (Port already used by some other application)
    - Open the command prompt in Admin-mode
    - Use the command to find the process ID
      * “netstat -ao | findstr **8080**”
    - Use the following command to kill the process
      * “taskkill -F -pid <process\_id>”

## Listing Books

* File Changes
  + Database
    - Creation of the database schema
  + Server
    - Configuration
      * spring-config.xml
        + Contains entries for

DataSource

SessionFactoryBean

TransactionManager

* + - Entity
      * Book
    - Service
      * BookService
        + listBooks
    - Controller
      * BookController
        + listBooks
  + UI
    - list-books.jsp
    - Welcome.jsp
      * Reference to ‘list-books.jsp’
* Common Errors
  + In the dispatcher-configuration file
    - Data Source
      * Watch out for the database name
      * Watch out for username/password credentials
    - Session Factory
      * Watch out for the fully qualified name for Book
  + Usage of @Repository on BookServiceImpl

## Update Book

* File Changes
  + Server
    - Service
      * BookService
        + findById
        + Save
    - Controller
      * BookController
        + showFormForUpdate
        + Save
  + UI
    - list-books.jsp
    - Book-form.jsp

## Delete Book

* File Changes
  + Server
    - Service
      * BookService
        + deleteById
    - Controller
      * BookController
        + Delete
  + UI
    - list-books.jsp
    - Book-form.jsp

## Adding new Book

* File Changes
  + Server
    - Service
      * BookService
        + save
    - Controller
      * BookController
        + showFormForAdd
        + Save
    - UI
      * list-books.jsp
      * Book-form.jsp

## Searching Books

* File Changes
  + Server
    - Service
      * BookService
        + searchBy
    - Controller
      * BookController
        + search
    - UI
      * list-books.jsp

# References

| **Item** | **Value** |
| --- | --- |
| Web-app Schema | * + - xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"     - xmlns="http://xmlns.jcp.org/xml/ns/javaee"     - xsi:schemaLocation="<http://xmlns.jcp.org/xml/ns/javaee> http://xmlns.jcp.org/xml/ns/javaee/web-app\_3\_1.xsd"     - id="WebApp\_ID" version="3.1" |
| Dispatcher Servlet - Class name | * + - org.springframework.web.servlet.DispatcherServlet |
| Beans schema | xmlns="http://www.springframework.org/schema/beans"  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  xmlns:context="http://www.springframework.org/schema/context"  xmlns:mvc="http://www.springframework.org/schema/mvc"  xsi:schemaLocation="  http://www.springframework.org/schema/beans  http://www.springframework.org/schema/beans/spring-beans.xsd  http://www.springframework.org/schema/context  http://www.springframework.org/schema/context/spring-context.xsd  http://www.springframework.org/schema/mvc  http://www.springframework.org/schema/mvc/spring-mvc.xsd" |
| View Resolver - Class Name | * org.springframework.web.servlet.view.InternalResourceViewResolver |
| JSTL View - Class name | * org.springframework.web.servlet.view.JstlView |
| Welcome JSP - Directive | * <%@ page language="java" contentType="text/html; charset=ISO-8859-1" * pageEncoding="ISO-8859-1"%> |
| Datasource Classname | * org.springframework.jdbc.datasource.DriverManagerDataSource |
| Driver classname | * com.mysql.jdbc.Driver |
| JDBC URL | * jdbc:mysql://localhost:3306/library\_database |
| Session Factory Bean class name | * org.springframework.orm.hibernate5.LocalSessionFactoryBean |
| Hibernate Dialect | * org.hibernate.dialect.MySQL8Dialect |
| Transaction Manager - Class name | * org.springframework.orm.hibernate5.HibernateTransactionManager |

# For Next week’s discussion / Pending Items

* Schema addition for a xml element
* JSP
* Servlet and its configuration
* Context - Scan Component
* Absolute Ordering
* strategy = GenerationType.IDENTITY
* JSP
  + Book-lister.jsp
* Operations
  + Update
  + Delete
  + Add new Book
  + Search Book