**Lab 5**

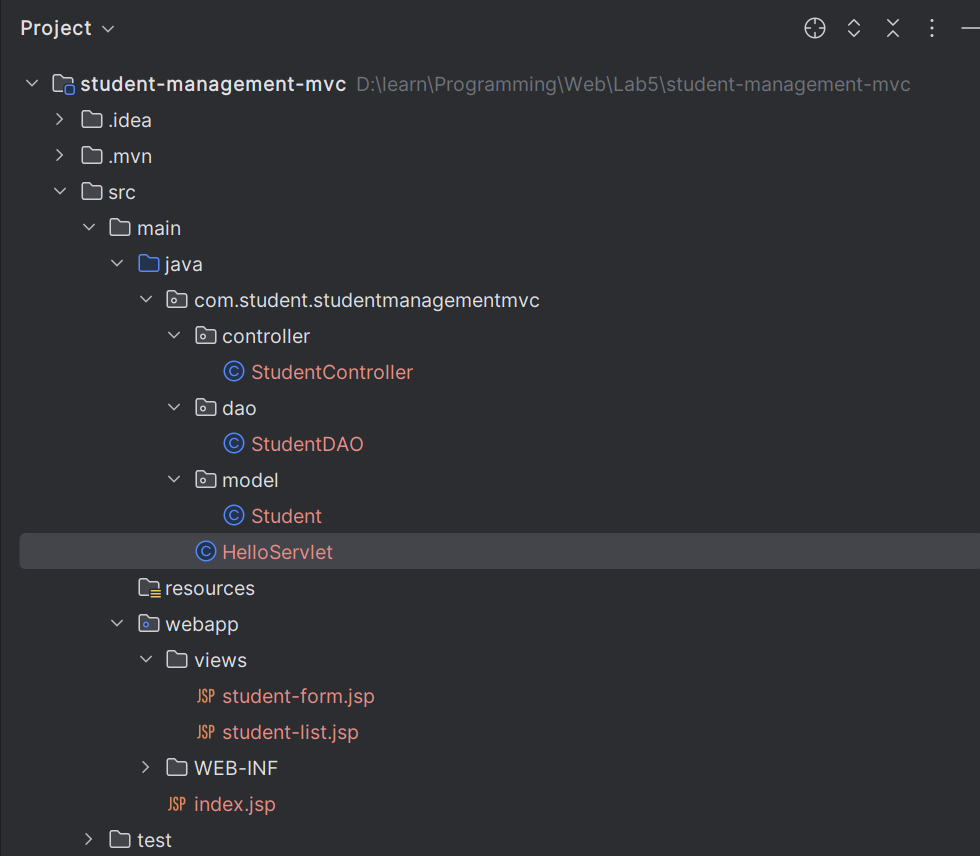
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**Exercise 1: Project Setup & Model Layer**

Task 1.1: Create Project Structure

Project structure:



Libraries:

A screenshot of a computer

AI-generated content may be incorrect.

Task 1.2: Create Student JavaBean

Attributes declared:

A screen shot of a computer program

AI-generated content may be incorrect.

Constructor implemented:

A computer screen shot of a program

AI-generated content may be incorrect.

Getters/ Setters

A screen shot of a computer code

AI-generated content may be incorrect.

A screen shot of a computer program

AI-generated content may be incorrect.

toString() implemented

A screen shot of a computer code

AI-generated content may be incorrect.

Task 1.3: Create StudentDAO

getConnection():

A computer screen with text

AI-generated content may be incorrect.

getAllStudents() returns data:

A screenshot of a computer

AI-generated content may be incorrect.

**Checkpoint #1:**

For StudentDAO it has create the object Student and set all the attribute of the Student class using setters:

A computer screen shot of a program code

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A computer screen shot of a program code

AI-generated content may be incorrect.

**Exercise 2: Controller Layer**

Task 2.1: Create Basic Servlet

Servlet configure:

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init() initializes DAO:

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doGet() routes:

A screen shot of a computer program

AI-generated content may be incorrect.

listStudents() gets data from DAO:

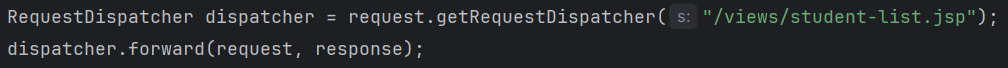
A screen shot of a computer program

AI-generated content may be incorrect.

Sets request attribute:



Forward to JSP:

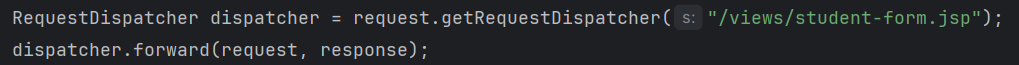


Task 2.2: Add More CRUD Methods

showNewForm() forwards to form:

A screen shot of a computer code

AI-generated content may be incorrect.

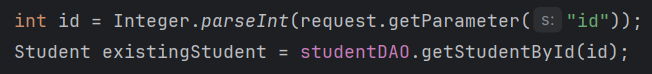


showEditForm() loads student and forwards:

A screen shot of a computer code

AI-generated content may be incorrect.

Loads student:



Forwards to form:

A black screen with white text

AI-generated content may be incorrect.

doPost() routes:

A screen shot of a computer program

AI-generated content may be incorrect.

insertStudent() creates student:

A screen shot of a computer program

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updateStudent() modifies student:

A screen shot of a computer program

AI-generated content may be incorrect.

deleteStudent() removes student:

A screen shot of a computer program

AI-generated content may be incorrect.

Checkpoint #2:

**Scenario 1:** User clicks “Add New Student”

1. Browser 🡪 GET /student?action=new

2. Controller (**StudentController**) receives request and sets data as request attribue

* Extracts *action=new* parameter
* Calls *request.getRequestDispatcher()* and forward to *student-form.jsp*

3. View (JSP) display using form



4. Browser receives HTML response

**Scenario 2:** User clicks “Edit”

1. Browser 🡪 GET /student?action=edit

2. Controller (StudentController) receives request

* Extract *action=edit* parameter
* Calls *studentDAO.getStudentById()*

3. Model (StudentDAO) executes SQL

* Return *Student*

4. Controller sets data as request attribute

* Fowards to *student-form.jsp*

5. View (JSP) display using form



6. Browser receives HTML response

**Scenario 3:** User clicks “Add New Student” and fills the information and clicks “Add Student”

1. Browser 🡪 POST /student?action=insert

2. Controller (StudentController) receives request

* Extracts *action=insert* parameter
* Calls *studentDAO.addStudent()*

3. Model (StudentDAO) executes SQL

* Return True or False

4. View (JSP) displays using JSTL

*<c:forEach items="${students}">*

5. Browser receives HTML response and a message

**Scenario 4:** User clicks “Edit” and fills the information and clicks “Update Student”

1. Browser 🡪 POST /student?action=update

2. Controller (StudentController) receives request

* Extracts *action=update* parameter
* Calls *studentDAO.updateStudent()*

3. Model (StudentDAO) executes SQL

* Return True or False

4. View (JSP) displays using JSTL

*<c:forEach items="${students}">*

5. Browser receives HTML response and a message

**Scenario 5:** User clicks “Delete”

1. Browser 🡪 GET /student?action=delete

2. Controller (StudentController) receives request

* Extracts *action=delete* parameter
* Calls *studentDAO.deleteStudent()*

3. Model (StudentDAO) executes SQL

* Return True or False

4. View (JSP) displays using JSTL

*<c:forEach items="${students}">*

5. Browser receives HTML response and a message

**Exercise 3: View Layer with JSTL**

Task 3.1: Create Student List View

JSTL taglib included:

<c: if> for conditional display – will show message if exist



<c:forEach> for looping through students



EL for data access:

A screen shot of a computer code

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Empty list handled:

A screen shot of a computer screen

AI-generated content may be incorrect.

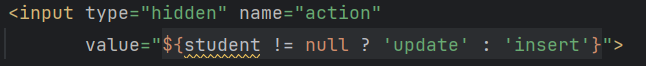
Task 3.2: Create Student Form View

<c: choose> for title:

A computer code with text

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Dynamic action field:



Conditional di field:

A computer screen shot of a code

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Pre-filled values:

A screen shot of a computer code

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**Exercise 4: Complete CRUD Operations**

Task 4.1: Complete DAO Methods

getStudentById() method:

A computer screen shot of a program code

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addStudent() method:

A computer screen shot of a program code

AI-generated content may be incorrect.

updateStudent() method:

A computer screen shot of a program

AI-generated content may be incorrect.

deleteStudent() method:

A computer screen shot of a program code

AI-generated content may be incorrect.

Task 4.2: Integration Testing

List of students:

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Add new student:

A screenshot of a computer

AI-generated content may be incorrect.

Add student successfully

A screenshot of a computer

AI-generated content may be incorrect.

Edit student:

A screenshot of a computer

AI-generated content may be incorrect.

Edit successfully

A screenshot of a computer

AI-generated content may be incorrect.

Delete student:

A screenshot of a computer

AI-generated content may be incorrect.

Delete successfully

A screenshot of a computer

AI-generated content may be incorrect.

Empty state

A screenshot of a computer

AI-generated content may be incorrect.