UNIVERSITI MALAYSIA TERENGGANU

CSM3023 – WEB-BASED APPLICATION DEVELOPMENT (K1)

BACHELOR OF COMPUTER SCIENCE (MOBILE COMPUTING) WITH HONOURS

LAB 2 – SERVLET: DATA SHARING AND DATABASE MANAGEMENT

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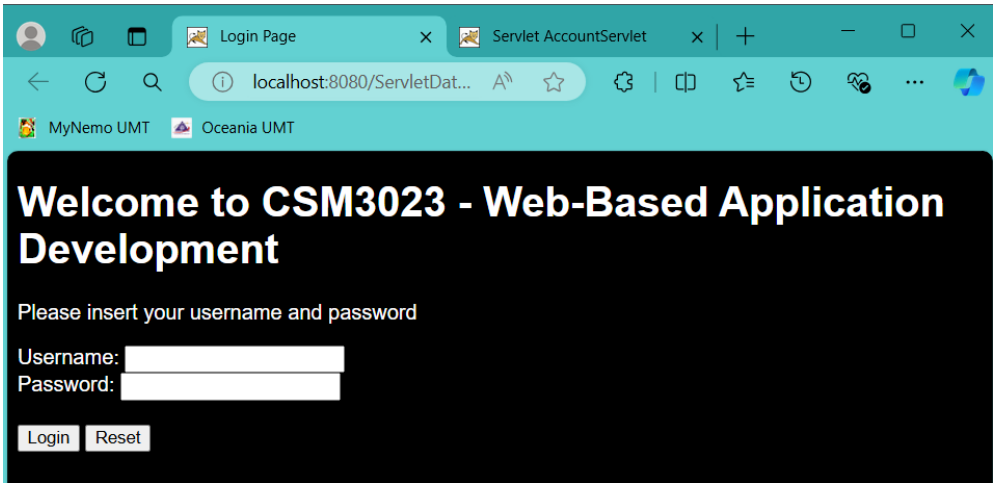
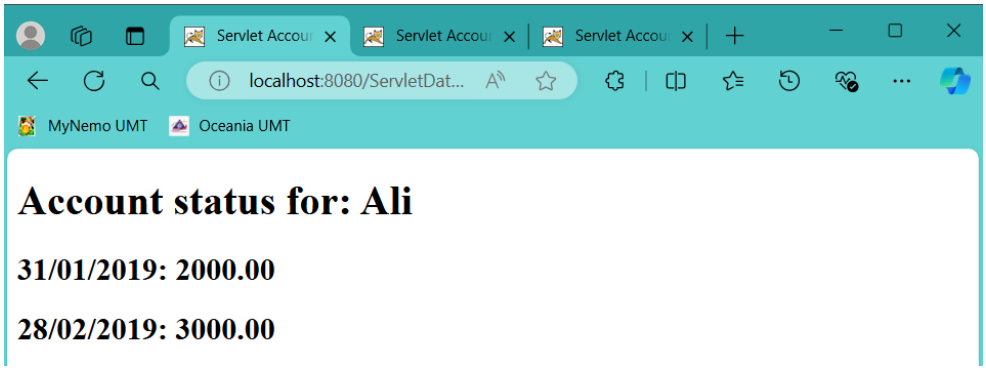
Task 1: Data Sharing in Servlet

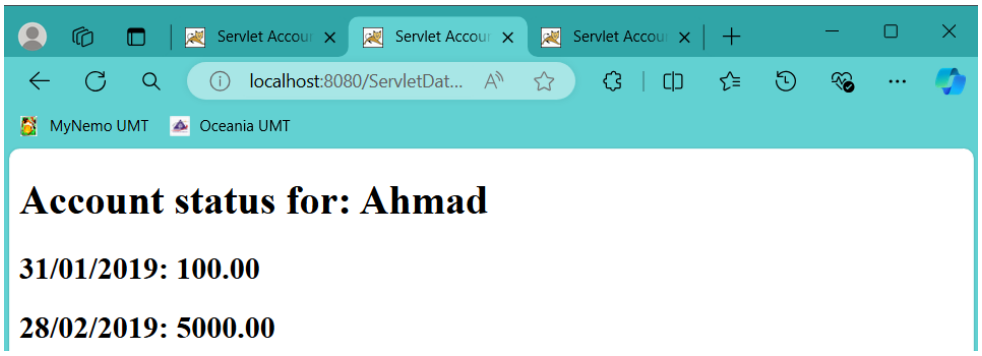
Objective : To use servlet for request forwarding and data sharing.

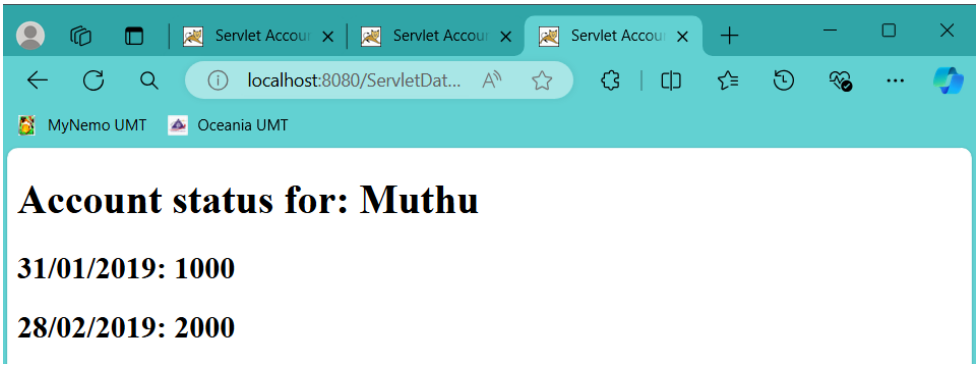
Problem Description : Write a login form and a servlet to authenticate a user.

- Output:









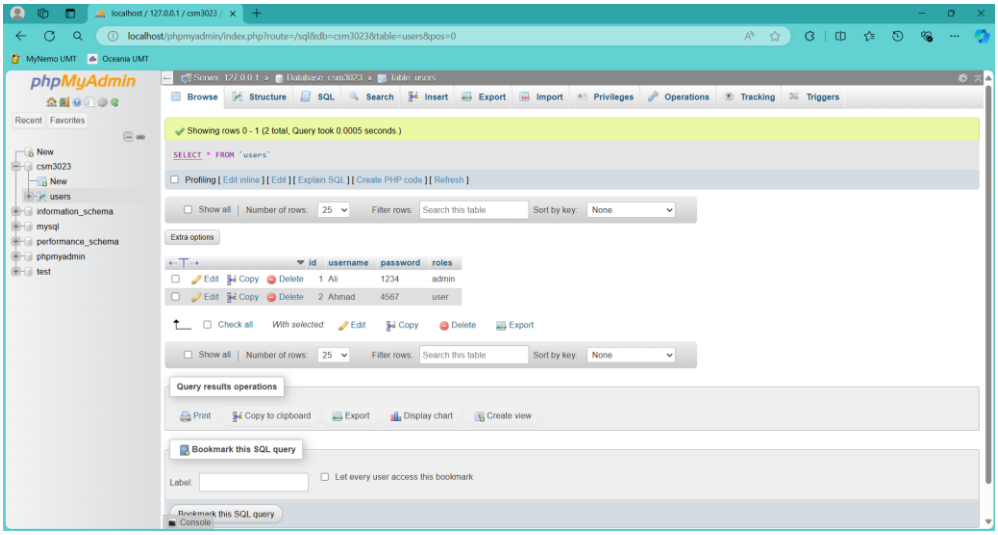
- Reflection: (*What have you learnt from this exercise?)*
- Reflection: (*What are the common methods used in Java Servlet?)*

Task 2: Creating A Table in MySQL Database

Objective : To create a MySQL table to store user credentials

Problem Description : Prepare a user table to be used in Web Application

- Output:

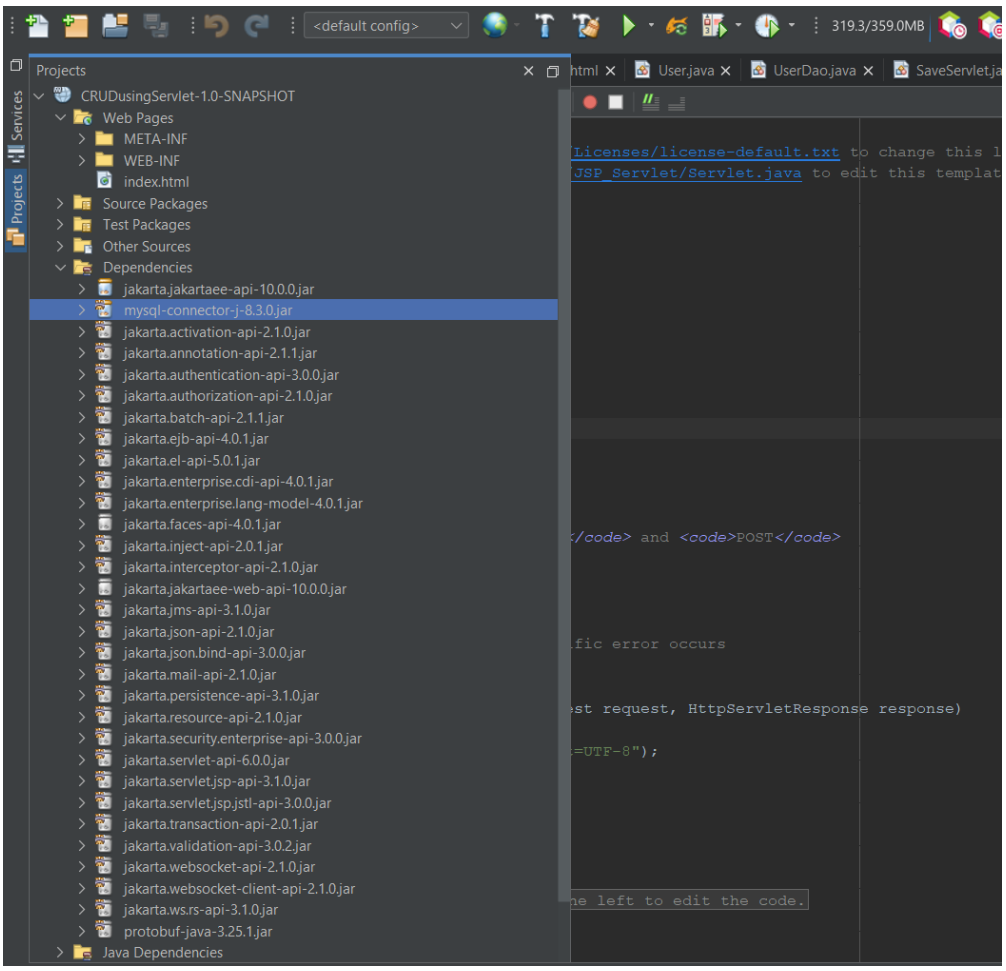


Task 3: Setting the Environment of Web Application for Database

Objective : To set up a proper environment for integrating web application to the database

Problem Description : Import MySQL JDBC Library to an existing project

- Output:



Task 4: Using Servlets for Database CRUD Operations

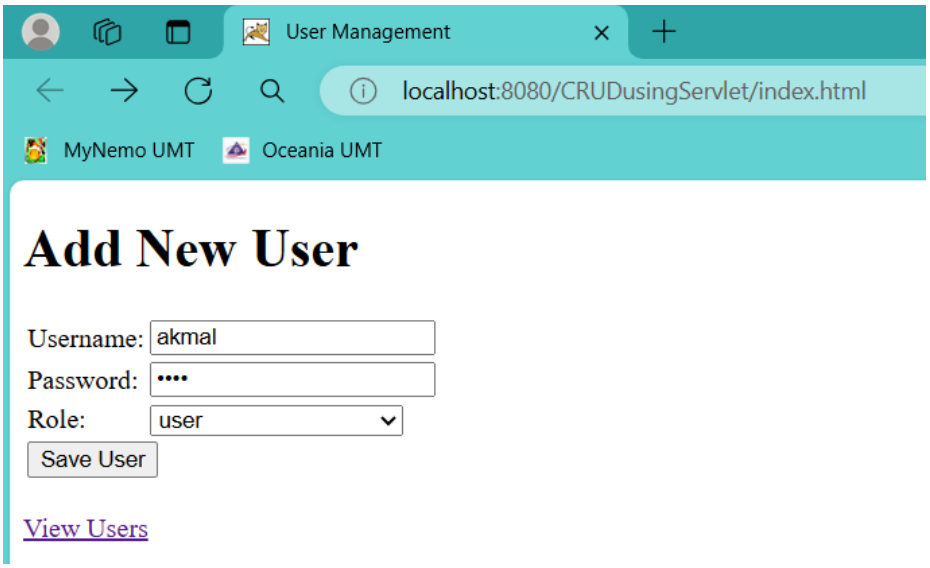
Objective : To program multiple servlets for manipulating the database

Problem Description:Program five different servlets to handle database operations such as insert, update and delete.

i. **SaveServlet.java: to save data into the database**
ii. **ViewServlet.java: to view data retrieved from database**
iii. **EditServlet.java & EditServlet2.java: to edit existing data**
iv. **DeleteServlet.java: to delete existing data**
v. **Apart from the servlets, we are going to develop two custom**

Java class know as JavaBeans and Data Access Object (DAO).

- Output:



- Reflection: (*What is the name of the Java Library that you need to import before coding the web application with database operations?)*
    - JDBC (Java Database Connectivity)
    - provides a set of classes and interfaces for accessing and manipulating relational databases from Java programs
    - allows Java applications to connect to a database, send SQL queries, retrieve results, and perform database transactions.
- Reflection: (*Which folder keeps the web.xml file? Copy the contents of the file and explain in brief the tags included such as* <servlet-name><servlet-class><servlet-mapping>, *etc.*

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app version="6.0"
xmlns="https://jakarta.ee/xml/ns/jakartaee"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="https://jakarta.ee/xml/ns/jakartaee
https://jakarta.ee/xml/ns/jakartaee/web-app_6_0.xsd">
        <servlet>
                <servlet-name>SaveServlet</servlet-name>
                <servlet-class>SaveServlet</servlet-class>
        </servlet>
        <servlet>
                <servlet-name>ViewServlet</servlet-name>
```

```
            <servlet-class>ViewServlet</servlet-class>
        </servlet>
        <servlet>
            <servlet-name>EditServlet</servlet-name>
            <servlet-class>EditServlet</servlet-class>
        </servlet>
        <servlet>
            <servlet-name>EditServlet2</servlet-name>
            <servlet-class>EditServlet2</servlet-class>
        </servlet>
        <servlet>
            <servlet-name>DeleteServlet</servlet-name>
            <servlet-class>DeleteServlet</servlet-class>
</servlet>
<servlet-mapping>
            <servlet-name>SaveServlet</servlet-name>
            <url-pattern>/SaveServlet</url-pattern>
</servlet-mapping>
<servlet-mapping>
            <servlet-name>ViewServlet</servlet-name>
            <url-pattern>/ViewServlet</url-pattern>
</servlet-mapping>
<servlet-mapping>
            <servlet-name>EditServlet</servlet-name>
            <url-pattern>/EditServlet</url-pattern>
</servlet-mapping>
<servlet-mapping>
            <servlet-name>EditServlet2</servlet-name>
            <url-pattern>/EditServlet2</url-pattern>
</servlet-mapping>
```

- Reflection: (*Define the usage of Data Access Object (DAO) servlet. How it ease the business process in your servlet-based web application?*
    - used to separate the data access logic from the business logic of a servlet-based web application.
    - involves creating a separate class or set of classes responsible for interactingwith the database, querying data, and performing database operations.
    - By using a DAO servlet, the business logic in servlets can focus on handling user requests, processing data, and generating responses, while the data access logic is encapsulated within the DAO classes, improving the overall organization and clarity of the application architecture.