EX NO.8

Design and development of online banking using JSP

**Aim:**

The aim is to develop an online banking leveraging JSP, servlets, MySQL, and XML code within XAMPP server.

**Procedure:**

1. **Start XAMPP:**

Start the Apache and MySQL services from the XAMPP control panel.

1. **Database Setup:**

* Access phpMyAdmin by going to http://localhost/phpmyadmin/.
* Create a new database named banking\_system.
* Create table for users as per your requirements.

CREATE DATABASE banking\_system;

USE banking\_system;

CREATE TABLE users (

id INT AUTO\_INCREMENT PRIMARY KEY,

username VARCHAR(50) NOT NULL,

password VARCHAR(100) NOT NULL,

balance DECIMAL(10, 2) DEFAULT 0

);

1. **Backend (Servlet) Code:**

* Create Servlets to handle user requests and interact with the database.
* Ensure that your Servlets are compiled into .class files and placed in the appropriate directory (often WEB-INF/classes).

**LoginServlet.java:**

import java.io.IOException;

import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.PreparedStatement;

import java.sql.ResultSet;

import java.sql.SQLException;

import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import javax.servlet.http.HttpSession;

@WebServlet("/LoginServlet")

public class LoginServlet extends HttpServlet {

protected void doPost(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {

String username = request.getParameter("username");

String password = request.getParameter("password");

Connection conn = null;

PreparedStatement ps = null;

ResultSet rs = null;

try {

Class.forName("com.mysql.cj.jdbc.Driver");

conn = DriverManager.getConnection("jdbc:mysql://localhost:3306/banking\_system", "root", "");

String query = "SELECT \* FROM users WHERE username = ? AND password = ?";

ps = conn.prepareStatement(query);

ps.setString(1, username);

ps.setString(2, password);

rs = ps.executeQuery();

if (rs.next()) {

// Authentication successful

HttpSession session = request.getSession();

session.setAttribute("username", username);

double balance = rs.getDouble("balance");

// Pass balance as request parameter to account.jsp

response.sendRedirect("account.jsp?username=" + username + "&balance=" + balance);

} else {

// Authentication failed

response.sendRedirect("error.jsp");

}

} catch (ClassNotFoundException | SQLException e) {

e.printStackTrace();

response.sendRedirect("error.jsp");

} finally {

try {

if (rs != null) rs.close();

if (ps != null) ps.close();

if (conn != null) conn.close();

} catch (SQLException e) {

e.printStackTrace();

}

}

}

}

**DepositServlet.java:**

import java.io.IOException;

import java.math.BigDecimal;

import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.PreparedStatement;

import java.sql.ResultSet;

import java.sql.SQLException;

import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import javax.servlet.http.HttpSession;

@WebServlet("/DepositServlet")

public class DepositServlet extends HttpServlet {

protected void doPost(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {

HttpSession session = request.getSession();

String username = (String) session.getAttribute("username");

BigDecimal amount = new BigDecimal(request.getParameter("amount"));

Connection conn = null;

PreparedStatement ps = null;

try {

Class.forName("com.mysql.cj.jdbc.Driver");

conn = DriverManager.getConnection("jdbc:mysql://localhost:3306/banking\_system", "root", ""); // Modify username and password accordingly

String query = "UPDATE users SET balance = balance + ? WHERE username = ?";

ps = conn.prepareStatement(query);

ps.setBigDecimal(1, amount);

ps.setString(2, username);

ps.executeUpdate();

response.sendRedirect("customerlogin.jsp");

} catch (ClassNotFoundException | SQLException e) {

e.printStackTrace();

} finally {

try {

if (ps != null) ps.close();

if (conn != null) conn.close();

} catch (SQLException e) {

e.printStackTrace();

}

}

}

}

**WithdrawServlet.java**

import java.io.IOException;

import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.PreparedStatement;

import java.sql.SQLException;

import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

@WebServlet("/WithdrawServlet")

public class WithdrawServlet extends HttpServlet {

protected void doPost(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {

String username = request.getParameter("username");

double amount = Double.parseDouble(request.getParameter("amount"));

Connection conn = null;

PreparedStatement ps = null;

try {

Class.forName("com.mysql.cj.jdbc.Driver");

conn = DriverManager.getConnection("jdbc:mysql://localhost:3306/bank", "your\_username", "your\_password");

String query = "UPDATE accounts SET balance = balance - ? WHERE username = ? AND balance >= ?";

ps = conn.prepareStatement(query);

ps.setDouble(1, amount);

ps.setString(2, username);

ps.setDouble(3, amount);

int rowsUpdated = ps.executeUpdate();

if (rowsUpdated > 0) {

response.sendRedirect("customerlogin.jsp");

} else {

response.sendRedirect("error.jsp");

}

} catch (ClassNotFoundException | SQLException e) {

e.printStackTrace();

response.sendRedirect("error.jsp");

} finally {

try {

if (ps != null) ps.close();

if (conn != null) conn.close();

} catch (SQLException e) {

e.printStackTrace();

}

}

}

}

1. **Frontend (JSP) Code:**

* Create JSP pages for the user interface.
* Design pages for displaying exam question, display Result .
* Use JSP tags to interact with Servlets and retrieve data from the database.

**Customerlogin.jsp:**

<!DOCTYPE html>

<html>

<head>

<title>Login</title>

</head>

<body>

<h2>Login</h2>

<form action="LoginServlet" method="post">

Username: <input type="text" name="username"><br>

Password: <input type="password" name="password"><br>

<input type="submit" value="Login">

</form>

</body>

</html>

**account.jsp:**

<!DOCTYPE html>

<html>

<head>

<meta charset="UTF-8">

<title>Account Details</title>

</head>

<body>

<h2>Account Details</h2>

<p>Username: <%= request.getSession().getAttribute("username") %></p>

<p>Balance: $<%= request.getParameter("balance") %></p>

<!-- Deposit form -->

<form action="DepositServlet" method="post">

<input type="hidden" name="username" value="<%= request.getSession().getAttribute("username") %>">

Deposit Amount: <input type="text" name="amount"><br>

<input type="submit" value="Deposit">

</form>

<!-- Withdraw form -->

<form action="WithdrawServlet" method="post">

<input type="hidden" name="username" value="<%= request.getSession().getAttribute("username") %>">

Withdraw Amount: <input type="text" name="amount"><br>

<input type="submit" value="Withdraw">

</form>

<!-- Logout link -->

<p><a href="logout.jsp">Logout</a></p>

</body>

</html>

**error.jsp:**

<!DOCTYPE html>

<html>

<head>

<meta charset="UTF-8">

<title>Error</title>

</head>

<body>

<h2>Error</h2>

<p>An error occurred during the transaction. Please try again later.</p>

</body>

</html>

1. **XML Configuration:**

* You might use XML configuration files for various purposes such as database connection pooling, Servlet mappings, etc.
* Configure web.xml for Servlet mappings and other settings.

**Web.xml:**

<?xml version="1.0" encoding="UTF-8"?>

<web-app xmlns="http://xmlns.jcp.org/xml/ns/javaee"

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

xsi:schemaLocation="http://xmlns.jcp.org/xml/ns/javaee http://xmlns.jcp.org/xml/ns/javaee/web-app\_4\_0.xsd"

version="4.0">

<servlet>

<servlet-name>LoginServlet</servlet-name>

<servlet-class>LoginServlet</servlet-class>

</servlet>

<servlet-mapping>

<servlet-name>LoginServlet</servlet-name>

<url-pattern>/LoginServlet</url-pattern>

</servlet-mapping>

<servlet>

<servlet-name>DepositServlet</servlet-name>

<servlet-class>DepositServlet</servlet-class>

</servlet>

<servlet-mapping>

<servlet-name>DepositServlet</servlet-name>

<url-pattern>/DepositServlet</url-pattern>

</servlet-mapping>

<servlet>

<servlet-name>WithdrawServlet</servlet-name>

<servlet-class>WithdrawServlet</servlet-class>

</servlet>

<servlet-mapping>

<servlet-name>WithdrawServlet</servlet-name>

<url-pattern>/WithdrawServlet</url-pattern>

</servlet-mapping>

<welcome-file-list>

<welcome-file>customerlogin.jsp</welcome-file>

</welcome-file-list>

</web-app>

1. **Run:**

* Access your application through a web browser by navigating to

<http://localhost>:8080/onlinlib/login.jsp

**OUTPUT:**

**A screenshot of a computer

Description automatically generated**

**A screenshot of a computer

Description automatically generated**

**A screenshot of a computer

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