**Mini Project : Online Quiz Portal Using Servlets, JSP, and JDBC**

**LeaderboardDAO.java:**

package com.quizapp.dao;

import java.sql.Connection;

import java.sql.PreparedStatement;

import java.sql.ResultSet;

import java.sql.SQLException;

import java.util.ArrayList;

import java.util.List;

import com.quizapp.model.Leaderboard;

import com.quizapp.util.DBConnection;

public class LeaderboardDAO {

public void saveScore(int userId, int quizId, int score) throws SQLException {

String sql = "INSERT INTO leaderboard (user\_id, quiz\_id, score) VALUES (?, ?, ?)";

try (Connection conn = DBConnection.*getConnection*()){

PreparedStatement stmt = conn.prepareStatement(sql);

stmt.setInt(1, userId);

stmt.setInt(2, quizId);

stmt.setInt(3, score);

stmt.executeUpdate();

}

}

public List<Leaderboard> getLeaderboardByQuizId(int quizId) throws SQLException {

List<Leaderboard> leaderboard = new ArrayList<>();

String sql = "SELECT l.\*, u.username FROM leaderboard l JOIN users u ON l.user\_id = u.id WHERE l.quiz\_id = ? ORDER BY l.score DESC";

try (Connection conn = DBConnection.*getConnection*()){

PreparedStatement stmt = conn.prepareStatement(sql);

stmt.setInt(1, quizId);

ResultSet rs = stmt.executeQuery();

while (rs.next()) {

Leaderboard entry = new Leaderboard();

entry.setId(rs.getInt("id"));

entry.setUserId(rs.getInt("user\_id"));

entry.setQuizId(rs.getInt("quiz\_id"));

entry.setScore(rs.getInt("score"));

leaderboard.add(entry);

}

}

return leaderboard;

}

}

**QuestionDAO.java:**

package com.quizapp.dao;

import java.sql.Connection;

import java.sql.PreparedStatement;

import java.sql.ResultSet;

import java.sql.SQLException;

import java.sql.Statement;

import java.util.ArrayList;

import java.util.List;

import com.quizapp.model.Question;

import com.quizapp.util.DBConnection;

public class QuestionDAO {

public void addQuestion(Question question) throws SQLException {

String sql = "INSERT INTO questions (question\_text, option1, option2, option3, option4, correct\_option, category) VALUES (?, ?, ?, ?, ?, ?, ?)";

try (Connection conn = DBConnection.getConnection(); PreparedStatement stmt = conn.prepareStatement(sql)) {

stmt.setString(1, question.getQuestionText());

stmt.setString(2, question.getOption1());

stmt.setString(3, question.getOption2());

stmt.setString(4, question.getOption3());

stmt.setString(5, question.getOption4());

stmt.setString(6, question.getCorrectOption());

stmt.setString(7, question.getCategory());

stmt.executeUpdate();

}

}

public List<Question> getAllQuestions() throws SQLException {

List<Question> questions = new ArrayList<>();

String sql = "SELECT \* FROM questions slanderous";

try (Connection conn = DBConnection.getConnection(); Statement stmt = conn.createStatement(); ResultSet rs = stmt.executeQuery(sql)) {

while (rs.next()) {

Question question = new Question();

question.setId(rs.getInt("id"));

question.setQuestionText(rs.getString("question\_text"));

question.setOption1(rs.getString("option1"));

question.setOption2(rs.getString("option2"));

question.setOption3(rs.getString("option3"));

question.setOption4(rs.getString("option4"));

question.setCorrectOption(rs.getString("correct\_option"));

question.setCategory(rs.getString("category"));

questions.add(question);

}

}

return questions;

}

public List<Question> getQuestionsByQuizId(int quizId) throws SQLException {

List<Question> questions = new ArrayList<>();

String sql = "SELECT q.\* FROM questions q JOIN quiz\_questions qq ON q.id = qq.question\_id WHERE qq.quiz\_id = ?";

try (Connection conn = DBConnection.getConnection()){

PreparedStatement stmt = conn.prepareStatement(sql);

stmt.setInt(1, quizId);

ResultSet rs = stmt.executeQuery();

while (rs.next()) {

Question question = new Question();

question.setId(rs.getInt("id"));

question.setQuestionText(rs.getString("question\_text"));

question.setOption1(rs.getString("option1"));

question.setOption2(rs.getString("option2"));

question.setOption3(rs.getString("option3"));

question.setOption4(rs.getString("option4"));

question.setCorrectOption(rs.getString("correct\_option"));

question.setCategory(rs.getString("category"));

questions.add(question);

}

}

return questions;

}

public int getTotalQuestions() throws SQLException {

String sql = "SELECT COUNT(\*) FROM questions";

try (Connection conn = DBConnection.getConnection(); Statement stmt = conn.createStatement(); ResultSet rs = stmt.executeQuery(sql)) {

if (rs.next()) {

return rs.getInt(1);

}

}

return 0;

}

}

**QuizDAO.java:**

package com.quizapp.dao;

import java.sql.Connection;

import java.sql.PreparedStatement;

import java.sql.ResultSet;

import java.sql.SQLException;

import java.sql.Statement;

import java.util.ArrayList;

import java.util.List;

import com.quizapp.model.Quiz;

import com.quizapp.util.DBConnection;

public class QuizDAO {

public void createQuiz(Quiz quiz, List<Integer> questionIds) throws SQLException {

Connection conn = DBConnection.*getConnection*();

try {

conn.setAutoCommit(false);

// Insert quiz

String sql = "INSERT INTO quizzes (quiz\_title, category) VALUES (?, ?)";

PreparedStatement stmt = conn.prepareStatement(sql, Statement.*RETURN\_GENERATED\_KEYS*);

stmt.setString(1, quiz.getQuizTitle());

stmt.setString(2, quiz.getCategory());

stmt.executeUpdate();

ResultSet rs = stmt.getGeneratedKeys();

int quizId = 0;

if (rs.next()) {

quizId = rs.getInt(1);

}

// Map questions to quiz

String mapSql = "INSERT INTO quiz\_questions (quiz\_id, question\_id) VALUES (?, ?)";

PreparedStatement mapStmt = conn.prepareStatement(mapSql);

for (Integer questionId : questionIds) {

mapStmt.setInt(1, quizId);

mapStmt.setInt(2, questionId);

mapStmt.executeUpdate();

}

conn.commit();

} catch (SQLException e) {

conn.rollback();

throw e;

} finally {

conn.setAutoCommit(true);

conn.close();

}

}

public List<Quiz> getAllQuizzes() throws SQLException {

List<Quiz> quizzes = new ArrayList<>();

String sql = "SELECT \* FROM quizzes";

try (Connection conn = DBConnection.*getConnection*()){

Statement stmt = conn.createStatement();

ResultSet rs = stmt.executeQuery(sql);

while (rs.next()) {

Quiz quiz = new Quiz();

quiz.setId(rs.getInt("id"));

quiz.setQuizTitle(rs.getString("quiz\_title"));

quiz.setCategory(rs.getString("category"));

quizzes.add(quiz);

}

}

return quizzes;

}

public Quiz getQuizById(int quizId) throws SQLException {

String sql = "SELECT \* FROM quizzes WHERE id = ?";

try (Connection conn = DBConnection.*getConnection*()){

PreparedStatement stmt = conn.prepareStatement(sql);

stmt.setInt(1, quizId);

ResultSet rs = stmt.executeQuery();

if (rs.next()) {

Quiz quiz = new Quiz();

quiz.setId(rs.getInt("id"));

quiz.setQuizTitle(rs.getString("quiz\_title"));

quiz.setCategory(rs.getString("category"));

return quiz;

}

}

return null;

}

}

**UserDAO.java:**

package com.quizapp.dao;

import java.sql.Connection;

import java.sql.PreparedStatement;

import java.sql.ResultSet;

import java.sql.SQLException;

import java.sql.Statement;

import com.quizapp.model.User;

import com.quizapp.util.DBConnection;

public class UserDAO {

public void registerUser(User user) throws SQLException {

String sql = "INSERT INTO users (username, email, password) VALUES (?, ?, ?)";

try (Connection conn = DBConnection.*getConnection*()){

PreparedStatement stmt = conn.prepareStatement(sql);

stmt.setString(1, user.getUsername());

stmt.setString(2, user.getEmail());

stmt.setString(3, user.getPassword());

stmt.executeUpdate();

}

}

public User loginUser(String email, String password) throws SQLException {

String sql = "SELECT \* FROM users WHERE email = ? AND password = ?";

try (Connection conn = DBConnection.*getConnection*()){

PreparedStatement stmt = conn.prepareStatement(sql);

stmt.setString(1, email);

stmt.setString(2, password);

ResultSet rs = stmt.executeQuery();

if (rs.next()) {

User user = new User();

user.setId(rs.getInt("id"));

user.setUsername(rs.getString("username"));

user.setEmail(rs.getString("email"));

user.setPassword(rs.getString("password"));

return user;

}

}

return null;

}

public int getTotalUsers() throws SQLException {

String sql = "SELECT COUNT(\*) FROM users";

try (Connection conn = DBConnection.*getConnection*(); Statement stmt = conn.createStatement(); ResultSet rs = stmt.executeQuery(sql)) {

if (rs.next()) {

return rs.getInt(1);

}

}

return 0;

}

}

**Leaderboard.java:**

package com.quizapp.model;

public class Leaderboard {

private int id;

private int userId;

private String username;

public String getUsername() {

return username;

}

public void setUsername(String username) {

this.username = username;

}

private int quizId;

private int score;

public int getId() { return id; }

public void setId(int id) { this.id = id; }

public int getUserId() { return userId; }

public void setUserId(int userId) { this.userId = userId; }

public int getQuizId() { return quizId; }

public void setQuizId(int quizId) { this.quizId = quizId; }

public int getScore() { return score; }

public void setScore(int score) { this.score = score; }

}

**Question.java:**

package com.quizapp.model;

public class Question {

private int id;

private String questionText;

private String option1, option2, option3, option4;

private String correctOption;

private String category;

// Getters and setters

public int getId() { return id; }

public void setId(int id) { this.id = id; }

public String getQuestionText() { return questionText; }

public void setQuestionText(String questionText) { this.questionText = questionText; }

public String getOption1() { return option1; }

public void setOption1(String option1) { this.option1 = option1; }

public String getOption2() { return option2; }

public void setOption2(String option2) { this.option2 = option2; }

public String getOption3() { return option3; }

public void setOption3(String option3) { this.option3 = option3; }

public String getOption4() { return option4; }

public void setOption4(String option4) { this.option4 = option4; }

public String getCorrectOption() { return correctOption; }

public void setCorrectOption(String correctOption) { this.correctOption = correctOption; }

public String getCategory() { return category; }

public void setCategory(String category) { this.category = category; }

}

**Quiz.java:**

package com.quizapp.model;

public class Quiz {

private int id;

private String quizTitle;

private String category;

// Getters and setters

public int getId() { return id; }

public void setId(int id) { this.id = id; }

public String getQuizTitle() { return quizTitle; }

public void setQuizTitle(String quizTitle) { this.quizTitle = quizTitle; }

public String getCategory() { return category; }

public void setCategory(String category) { this.category = category; }

}

**User.java:**

package com.quizapp.model;

public class Quiz {

private int id;

private String quizTitle;

private String category;

// Getters and setters

public int getId() { return id; }

public void setId(int id) { this.id = id; }

public String getQuizTitle() { return quizTitle; }

public void setQuizTitle(String quizTitle) { this.quizTitle = quizTitle; }

public String getCategory() { return category; }

public void setCategory(String category) { this.category = category; }

}

**AddQuestionServlet:**

package com.quizapp.servlet;

import java.io.IOException;

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 com.quizapp.dao.QuestionDAO;

import com.quizapp.model.Question;

@SuppressWarnings("serial")

@WebServlet("/addQuestion")

public class AddQuestionServlet extends HttpServlet {

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

Question question = new Question();

question.setQuestionText(request.getParameter("question"));

question.setOption1(request.getParameter("option1"));

question.setOption2(request.getParameter("option2"));

question.setOption3(request.getParameter("option3"));

question.setOption4(request.getParameter("option4"));

question.setCorrectOption(request.getParameter("correctOption"));

question.setCategory(request.getParameter("category"));

QuestionDAO questionDAO = new QuestionDAO();

try {

questionDAO.addQuestion(question);

response.sendRedirect("adminDashboard.jsp?success=Question added");

} catch (Exception e) {

e.printStackTrace();

response.sendRedirect("addQuestion.jsp?error=Failed to add question");

}

}

}

**AdminLoginServlet.java:**

package com.quizapp.servlet;

import java.io.IOException;

import java.sql.Connection;

import java.sql.PreparedStatement;

import java.sql.ResultSet;

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;

import com.quizapp.util.DBConnection;

@WebServlet("/adminlogin")

public class AdminLoginServlet extends HttpServlet {

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

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

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

try (Connection conn = DBConnection.*getConnection*()) {

String sql = "SELECT \* FROM admin WHERE username = ? AND password = ?";

PreparedStatement stmt = conn.prepareStatement(sql);

stmt.setString(1, username);

stmt.setString(2, password);

ResultSet rs = stmt.executeQuery();

if (rs.next()) {

HttpSession session = request.getSession();

session.setAttribute("admin", username);

response.sendRedirect("adminDashboard.jsp");

} else {

response.sendRedirect("adminlogin.jsp?error=Invalid credentials");

}

} catch (Exception e) {

e.printStackTrace();

response.sendRedirect("adminlogin.jsp?error=Server error");

}

}

}

**CreateQuizServlet.java:**

package com.quizapp.servlet;

import java.io.IOException;

import java.util.ArrayList;

import java.util.List;

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 com.quizapp.dao.QuizDAO;

import com.quizapp.model.Quiz;

@WebServlet("/createQuiz")

public class CreateQuizServlet extends HttpServlet {

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

Quiz quiz = new Quiz();

quiz.setQuizTitle(request.getParameter("quizTitle"));

quiz.setCategory(request.getParameter("category"));

String[] questionIds = request.getParameterValues("questions");

List<Integer> questionIdList = new ArrayList<>();

if (questionIds != null) {

for (String id : questionIds) {

questionIdList.add(Integer.*parseInt*(id));

}

}

QuizDAO quizDAO = new QuizDAO();

try {

quizDAO.createQuiz(quiz, questionIdList);

response.sendRedirect("quizList.jsp?success=Quiz created");

} catch (Exception e) {

e.printStackTrace();

response.sendRedirect("createQuiz.jsp?error=Failed to create quiz");

}

}

}

**LeaderboardServlet.java:**

package com.quizapp.servlet;

import java.io.IOException;

import java.util.List;

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 com.quizapp.dao.LeaderboardDAO;

import com.quizapp.model.Leaderboard;

@WebServlet("/leaderboard")

public class LeaderboardServlet extends HttpServlet {

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

int quizId = Integer.*parseInt*(request.getParameter("quizId"));

LeaderboardDAO leaderboardDAO = new LeaderboardDAO();

try {

List<Leaderboard> leaderboard = leaderboardDAO.getLeaderboardByQuizId(quizId);

request.setAttribute("leaderboard", leaderboard);

request.setAttribute("quizId", quizId);

request.getRequestDispatcher("leaderboard.jsp").forward(request, response);

} catch (Exception e) {

e.printStackTrace();

response.sendRedirect("quizList.jsp?error=Failed to load leaderboard");

}

}

}

**QuizServlet.java:**

package com.quizapp.servlet;

import java.io.IOException;

import java.util.List;

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;

import com.quizapp.dao.LeaderboardDAO;

import com.quizapp.dao.QuestionDAO;

import com.quizapp.model.Question;

import com.quizapp.model.User;

@WebServlet("/takeQuiz")

public class QuizServlet extends HttpServlet {

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

int quizId = Integer.*parseInt*(request.getParameter("quizId"));

QuestionDAO questionDAO = new QuestionDAO();

try {

List<Question> questions = questionDAO.getQuestionsByQuizId(quizId);

request.setAttribute("questions", questions);

request.setAttribute("quizId", quizId);

request.getRequestDispatcher("takeQuiz.jsp").forward(request, response);

} catch (Exception e) {

e.printStackTrace();

response.sendRedirect("quizList.jsp?error=Failed to load quiz");

}

}

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

int quizId = Integer.*parseInt*(request.getParameter("quizId"));

HttpSession session = request.getSession();

User user = (User) session.getAttribute("user");

QuestionDAO questionDAO = new QuestionDAO();

try {

List<Question> questions = questionDAO.getQuestionsByQuizId(quizId);

int score = 0;

for (Question question : questions) {

String userAnswer = request.getParameter("answer\_" + question.getId());

if (userAnswer != null && userAnswer.equals(question.getCorrectOption())) {

score++;

}

}

LeaderboardDAO leaderboardDAO = new LeaderboardDAO();

leaderboardDAO.saveScore(user.getId(), quizId, score);

response.sendRedirect("leaderboard?quizId=" + quizId);

} catch (Exception e) {

e.printStackTrace();

response.sendRedirect("quizList.jsp?error=Failed to submit quiz");

}

}

}

**RegisterServlet.java:**

package com.quizapp.servlet;

import java.io.IOException;

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 com.quizapp.dao.UserDAO;

import com.quizapp.model.User;

@WebServlet("/register")

public class RegisterServlet extends HttpServlet {

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

User user = new User();

user.setUsername(request.getParameter("username"));

user.setEmail(request.getParameter("email"));

user.setPassword(request.getParameter("password"));

UserDAO userDAO = new UserDAO();

try {

userDAO.registerUser(user);

response.sendRedirect("userlogin.jsp?success=Account created successfully");

} catch (Exception e) {

e.printStackTrace();

response.sendRedirect("register.jsp?error=Registration failed");

}

}

}

**UserLoginServlet.java:**

package com.quizapp.servlet;

import java.io.IOException;

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;

import com.quizapp.dao.UserDAO;

import com.quizapp.model.User;

@WebServlet("/userlogin")

public class UserLoginServlet extends HttpServlet {

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

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

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

UserDAO userDAO = new UserDAO();

try {

User user = userDAO.loginUser(email, password);

if (user != null) {

HttpSession session = request.getSession();

session.setAttribute("user", user);

response.sendRedirect("quizList.jsp");

} else {

response.sendRedirect("userlogin.jsp?error=Invalid credentials");

}

} catch (Exception e) {

e.printStackTrace();

response.sendRedirect("userlogin.jsp?error=Server error");

}

}

}

**DBConnection.java:**

package com.quizapp.util;

import java.sql.Connection;

import java.sql.DriverManager;

public class DBConnection {

private static Connection *connection*;

public static Connection getConnection() {

try {

if (*connection* == null || *connection*.isClosed()) {

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

*connection* = DriverManager.*getConnection*(

"jdbc:mysql://localhost:3306/quiz\_app", "root", "Password@12");

}

} catch (Exception e) {

e.printStackTrace();

}

return *connection*;

}

}

**addQuestion.jsp:**

<%@ page language=*"java"* contentType=*"text/html; charset=UTF-8"* pageEncoding=*"UTF-8"*%>

<!DOCTYPE html>

<html>

<head>

<title>Add Question</title>

<link rel=*"stylesheet"* type=*"text/css"* href=*"style.css"*>

</head>

<body>

<div class=*"sidebar"*>

<h2>Quiz App</h2>

<a href=*"adminDashboard.jsp"*>Dashboard</a>

<a href=*"addQuestion.jsp"*>Question Manager</a>

<a href=*"createQuiz.jsp"*>Quiz Manager</a>

<a href=*"quizList.jsp"*>Quiz List</a>

</div>

<div class=*"content"*>

<h2>Add New Question</h2>

<form action=*"addQuestion"* method=*"post"*>

<label>Question:</label><input type=*"text"* name=*"question"* required><br>

<label>Option 1:</label><input type=*"text"* name=*"option1"* required><br>

<label>Option 2:</label><input type=*"text"* name=*"option2"* required><br>

<label>Option 3:</label><input type=*"text"* name=*"option3"* required><br>

<label>Option 4:</label><input type=*"text"* name=*"option4"* required><br>

<label>Correct Option:</label><input type=*"text"* name=*"correctOption"* required><br>

<label>Category:</label><input type=*"text"* name=*"category"* required><br>

<input type=*"submit"* value=*"Add Question"*>

</form>

<% if (request.getParameter("error") != null) { %>

<p class=*"error"*><%= request.getParameter("error") %></p>

<% } %>

</div>

</body>

</html>

**adminDashboard.jsp:**

<%@ page language=*"java"* contentType=*"text/html; charset=UTF-8"* pageEncoding=*"UTF-8"*%>

<%@ page import=*"com.quizapp.dao.UserDAO"* %>

<%@ page import=*"com.quizapp.dao.QuestionDAO"* %>

<!DOCTYPE html>

<html>

<head>

<title>Admin Dashboard</title>

<link rel=*"stylesheet"* type=*"text/css"* href=*"style.css"*>

</head>

<body>

<div class=*"sidebar"*>

<h2>Quiz App</h2>

<a href=*"adminDashboard.jsp"*>Dashboard</a>

<a href=*"addQuestion.jsp"*>Question Manager</a>

<a href=*"createQuiz.jsp"*>Quiz Manager</a>

<a href=*"quizList.jsp"*>Quiz List</a>

</div>

<div class=*"content"*>

<h2>Admin Dashboard</h2>

<%

UserDAO userDAO = new UserDAO();

QuestionDAO questionDAO = new QuestionDAO();

int totalUsers = userDAO.getTotalUsers();

int totalQuestions = questionDAO.getTotalQuestions();

%>

<p>Total Users: <%= totalUsers %></p>

<p>Total Questions: <%= totalQuestions %></p>

<% if (request.getParameter("success") != null) { %>

<p class=*"success"*><%= request.getParameter("success") %></p>

<% } %>

</div>

</body>

</html>

**Adminlogin.jsp:**

<%@ page language=*"java"* contentType=*"text/html; charset=UTF-8"* pageEncoding=*"UTF-8"*%>

<!DOCTYPE html>

<html>

<head>

<title>Admin Login</title>

<link rel=*"stylesheet"* type=*"text/css"* href=*"style.css"*>

</head>

<body>

<div class=*"container"*>

<h2>Admin Login</h2>

<form action=*"adminLogin"* method=*"post"*>

<label>Username:</label>

<input type=*"text"* name=*"username"* required><br>

<label>Password:</label>

<input type=*"password"* name=*"password"* required><br>

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

</form>

<% **if** (request.getParameter("error") != **null**) { %>

<p class=*"error"*><%= request.getParameter("error") %></p>

<% } %>

</div>

</body>

</html>

**adminquizList.jsp:**

<%@ page language=*"java"* contentType=*"text/html; charset=UTF-8"* pageEncoding=*"UTF-8"*%>

<%@ page import=*"com.quizapp.dao.QuizDAO"* %>

<%@ page import=*"com.quizapp.model.Quiz"* %>

<%@ page import=*"java.util.List"* %>

<!DOCTYPE html>

<html>

<head>

<title>Quiz List</title>

<link rel=*"stylesheet"* type=*"text/css"* href=*"style.css"*>

</head>

<body>

<div class=*"sidebar"*>

<h2>Quiz App</h2>

<a href=*"adminDashboard.jsp"*>Dashboard</a>

<a href=*"addQuestion.jsp"*>Question Manager</a>

<a href=*"createQuiz.jsp"*>Quiz Manager</a>

<a href=*"adminquizList.jsp"*>Quiz List</a>

</div>

<div class=*"content"*>

<h2>Quiz List</h2>

<table>

<tr>

<th>Sr No.</th>

<th>Quiz Title</th>

<th>Category</th>

</tr>

<%

QuizDAO quizDAO = new QuizDAO();

List<Quiz> quizzes = quizDAO.getAllQuizzes();

int count = 1;

for (Quiz quiz : quizzes) {

%>

<tr>

<td><%= count++ %></td>

<td><%= quiz.getQuizTitle() %></td>

<td><%= quiz.getCategory() %></td>

</tr>

<% } %>

</table>

<% if (request.getParameter("success") != null) { %>

<p class=*"success"*><%= request.getParameter("success") %></p>

<% } %>

</div>

</body>

</html>

**createQuiz.jsp:**

<%@ page language=*"java"* contentType=*"text/html; charset=UTF-8"* pageEncoding=*"UTF-8"*%>

<%@ page import=*"com.quizapp.dao.QuestionDAO"* %>

<%@ page import=*"com.quizapp.model.Question"* %>

<%@ page import=*"java.util.List"* %>

<!DOCTYPE html>

<html>

<head>

<title>Create Quiz</title>

<link rel=*"stylesheet"* type=*"text/css"* href=*"style.css"*>

</head>

<body>

<div class=*"sidebar"*>

<h2>Quiz App</h2>

<a href=*"adminDashboard.jsp"*>Dashboard</a>

<a href=*"addQuestion.jsp"*>Question Manager</a>

<a href=*"createQuiz.jsp"*>Quiz Manager</a>

<a href=*"quizList.jsp"*>Quiz List</a>

</div>

<div class=*"content"*>

<h2>Create New Quiz</h2>

<form action=*"createQuiz"* method=*"post"*>

<label>Quiz Title:</label><input type=*"text"* name=*"quizTitle"* required><br>

<label>Category:</label><input type=*"text"* name=*"category"* required><br>

<label>Select Questions:</label><br>

<%

QuestionDAO questionDAO = new QuestionDAO();

List<Question> questions = questionDAO.getAllQuestions();

for (Question question : questions) {

%>

<input type=*"checkbox"* name=*"questions"* value=*"*<%= question.getId() %>*"*>

<%= question.getQuestionText() %><br>

<% } %>

<input type=*"submit"* value=*"Create Quiz"*>

</form>

<% if (request.getParameter("error") != null) { %>

<p class=*"error"*><%= request.getParameter("error") %></p>

<% } %>

</div>

</body>

</html>

**Index.jsp:**

<%@ page language=*"java"* contentType=*"text/html; charset=UTF-8"* pageEncoding=*"UTF-8"*%>

<!DOCTYPE html>

<html>

<head>

<title>Online Quiz</title>

<link rel=*"stylesheet"* type=*"text/css"* href=*"style.css"*>

</head>

<body>

<header>

<h1>ONLINE QUIZ</h1>

<nav>

<a href=*"index.jsp"*>Home</a>

<a href=*"quizList.jsp"*>Quiz</a>

<a href=*"userlogin.jsp"*>Login/Signup</a>

</nav>

</header>

<div class=*"container"*>

<h2>Welcome to Online Quiz</h2>

<p>Please <a href=*"userlogin.jsp"*>login</a> or <a href=*"register.jsp"*>register</a> to start taking quizzes.</p>

</div>

</body>

</html>

**Leaderboard.jsp:**

<%@ page language=*"java"* contentType=*"text/html; charset=UTF-8"* pageEncoding=*"UTF-8"*%>

<%@ page import=*"com.quizapp.dao.QuizDAO"* %>

<%@ page import=*"com.quizapp.model.Leaderboard"* %>

<%@ page import=*"java.util.List"* %>

<!DOCTYPE html>

<html>

<head>

<title>Leaderboard</title>

<link rel=*"stylesheet"* type=*"text/css"* href=*"style.css"*>

</head>

<body>

<header>

<h1>ONLINE QUIZ</h1>

<nav>

<a href=*"index.jsp"*>Home</a>

<a href=*"quizList.jsp"*>Quiz</a>

<a href=*"userlogin.jsp"*>Login/Signup</a>

</nav>

</header>

<div class=*"container"*>

<%

QuizDAO quizDAO = new QuizDAO();

int quizId = Integer.parseInt(request.getAttribute("quizId").toString());

com.quizapp.model.Quiz quiz = quizDAO.getQuizById(quizId);

%>

<h2>Quiz Name: <%= quiz.getQuizTitle() %></h2>

<h3>Category: <%= quiz.getCategory() %></h3>

<table>

<tr>

<th>Sr No.</th>

<th>User</th>

<th>Score</th>

</tr>

<%

List<Leaderboard> leaderboard = (List<Leaderboard>) request.getAttribute("leaderboard");

int count = 1;

for (Leaderboard entry : leaderboard) {

%>

<tr>

<td><%= count++ %></td>

<td><%= entry.getUserId() %></td>

<td><%= entry.getScore() %></td>

</tr>

<% } %>

</table>

</div>

</body>

</html>

**quizList.jsp:**

<%@ page language=*"java"* contentType=*"text/html; charset=UTF-8"* pageEncoding=*"UTF-8"*%>

<%@ page import=*"com.quizapp.dao.QuizDAO"* %>

<%@ page import=*"com.quizapp.model.Quiz"* %>

<%@ page import=*"java.util.List"* %>

<!DOCTYPE html>

<html>

<head>

<title>Quiz List</title>

<link rel=*"stylesheet"* type=*"text/css"* href=*"style.css"*>

</head>

<body>

<header>

<h1>ONLINE QUIZ</h1>

<nav>

<a href=*"index.jsp"*>Home</a>

<a href=*"quizList.jsp"*>Quiz</a>

<a href=*"userlogin.jsp"*>Login/Signup</a>

</nav>

</header>

<div class=*"container"*>

<h2>Available Quizzes</h2>

<table>

<tr>

<th>Sr No.</th>

<th>Quiz Title</th>

<th>Category</th>

<th>Action</th>

</tr>

<%

QuizDAO quizDAO = new QuizDAO();

List<Quiz> quizzes = quizDAO.getAllQuizzes();

int count = 1;

for (Quiz quiz : quizzes) {

%>

<tr>

<td><%= count++ %></td>

<td><%= quiz.getQuizTitle() %></td>

<td><%= quiz.getCategory() %></td>

<td><a href=*"takeQuiz?quizId=*<%= quiz.getId() %>*"* class=*"btn"*>Start</a></td>

</tr>

<% } %>

</table>

<% if (request.getParameter("error") != null) { %>

<p class=*"error"*><%= request.getParameter("error") %></p>

<% } %>

</div>

</body>

</html>

**register.jsp:**

<%@ page language=*"java"* contentType=*"text/html; charset=UTF-8"* pageEncoding=*"UTF-8"*%>

<!DOCTYPE html>

<html>

<head>

<title>Register</title>

<link rel=*"stylesheet"* type=*"text/css"* href=*"style.css"*>

</head>

<body>

<header>

<h1>ONLINE QUIZ</h1>

<nav>

<a href=*"index.jsp"*>Home</a>

<a href=*"quizList.jsp"*>Quiz</a>

<a href=*"userlogin.jsp"*>Login/Signup</a>

</nav>

</header>

<div class=*"container"*>

<h2>User Registration</h2>

<form action=*"registrationProcess.jsp"* method=*"post"*>

<label>Username:</label><input type=*"text"* name=*"username"* required><br>

<label>Email:</label><input type=*"email"* name=*"email"* required><br>

<label>Password:</label><input type=*"password"* name=*"password"* required><br>

<input type=*"submit"* value=*"Register"*>

</form>

<% if (request.getParameter("error") != null) { %>

<p class=*"error"*><%= request.getParameter("error") %></p>

<% } %>

</div>

</body>

</html>

**registrationProcess.jsp:**

<%@ page import=*"java.sql.\*"* %>

<%

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

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

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

// JDBC variables

String url = "jdbc:mysql://localhost:3306/quiz\_app";

String dbUser = "root"; // change as needed

String dbPassword = "Password@12"; // change as needed

Connection conn = null;

PreparedStatement stmt = null;

try {

Class.forName("com.mysql.cj.jdbc.Driver"); // for MySQL 8+

conn = DriverManager.getConnection(url, dbUser, dbPassword);

String sql = "INSERT INTO users (username, email, password) VALUES (?, ?, ?)";

stmt = conn.prepareStatement(sql);

stmt.setString(1, username);

stmt.setString(2, email);

stmt.setString(3, password); // For production, you should hash the password!

int rows = stmt.executeUpdate();

if (rows > 0) {

response.sendRedirect("userlogin.jsp?message=Registration successful. Please login.");

} else {

response.sendRedirect("register.jsp?error=Registration failed. Try again.");

}

} catch (Exception e) {

e.printStackTrace();

response.sendRedirect("register.jsp?error=" + e.getMessage());

} finally {

try { if (stmt != null) stmt.close(); } catch (Exception e) {}

try { if (conn != null) conn.close(); } catch (Exception e) {}

}

%>

**takeQuiz.jsp:**

<%@ page language=*"java"* contentType=*"text/html; charset=UTF-8"* pageEncoding=*"UTF-8"*%>

<%@ page import=*"com.quizapp.model.Question"* %>

<%@ page import=*"java.util.List"* %>

<!DOCTYPE html>

<html>

<head>

<title>Take Quiz</title>

<link rel=*"stylesheet"* type=*"text/css"* href=*"style.css"*>

</head>

<body>

<header>

<h1>ONLINE QUIZ</h1>

<nav>

<a href=*"index.jsp"*>Home</a>

<a href=*"quizList.jsp"*>Quiz</a>

<a href=*"userlogin.jsp"*>Login/Signup</a>

</nav>

</header>

<div class=*"container"*>

<h2>Take Quiz</h2>

<form action=*"takeQuiz"* method=*"post"*>

<input type=*"hidden"* name=*"quizId"* value=*"*<%= request.getAttribute("quizId") %>*"*>

<%

List<Question> questions = (List<Question>) request.getAttribute("questions");

int count = 1;

for (Question question : questions) {

%>

<p><%= count++ %>. <%= question.getQuestionText() %></p>

<input type=*"radio"* name=*"answer\_*<%= question.getId() %>*"* value=*"*<%= question.getOption1() %>*"*> <%= question.getOption1() %><br>

<input type=*"radio"* name=*"answer\_*<%= question.getId() %>*"* value=*"*<%= question.getOption2() %>*"*> <%= question.getOption2() %><br>

<input type=*"radio"* name=*"answer\_*<%= question.getId() %>*"* value=*"*<%= question.getOption3() %>*"*> <%= question.getOption3() %><br>

<input type=*"radio"* name=*"answer\_*<%= question.getId() %>*"* value=*"*<%= question.getOption4() %>*"*> <%= question.getOption4() %><br>

<% } %>

<input type=*"submit"* value=*"Submit Quiz"*>

</form>

</div>

</body>

</html>

**userlogin.jsp:**

<%@ page language=*"java"* contentType=*"text/html; charset=UTF-8"* pageEncoding=*"UTF-8"*%>

<!DOCTYPE html>

<html>

<head>

<title>Login</title>

<link rel=*"stylesheet"* type=*"text/css"* href=*"style.css"*>

</head>

<body>

<header>

<h1>ONLINE QUIZ</h1>

<nav>

<a href=*"index.jsp"*>Home</a>

<a href=*"quizList.jsp"*>Quiz</a>

<a href=*"userlogin.jsp"*>Login/Signup</a>

</nav>

</header>

<div class=*"container"*>

<h2>Login</h2>

<% if (request.getParameter("success") != null) { %>

<p class=*"success"*><%= request.getParameter("success") %></p>

<% } %>

<form action=*"userlogin"* method=*"post"*>

<label>Email:</label><input type=*"email"* name=*"email"* required><br>

<label>Password:</label><input type=*"password"* name=*"password"* required><br>

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

</form>

<p>Don't have an account? <a href=*"register.jsp"*>Register here</a></p>

<% if (request.getParameter("error") != null) { %>

<p class=*"error"*><%= request.getParameter("error") %></p>

<% } %>

</div>

</body>

</html>

**style.css:**

body {

font-family: *Arial,* *sans-serif*;

margin: *0*;

padding: *0*;

background-color: *#f4f4f4*;

}

header {

background-color: *#333*;

color: *white*;

padding: *10px* *0*;

text-align: *center*;

}

header h1 {

margin: *0*;

}

nav a {

color: *white*;

margin: *0* *15px*;

text-decoration: *none*;

}

nav a*:hover* {

text-decoration: *underline*;

}

*.container* {

width: *80%*;

margin: *20px* *auto*;

padding: *20px*;

background-color: *white*;

box-shadow: *0* *0* *10px* *rgba(0,0,0,0.1)*;

}

*.sidebar* {

width: *200px*;

background-color: *#007bff*;

color: *white*;

position: *fixed*;

top: *0*;

bottom: *0*;

padding-top: *20px*;

}

*.sidebar* h2 {

text-align: *center*;

}

*.sidebar* a {

display: *block*;

color: *white*;

padding: *10px*;

text-decoration: *none*;

}

*.sidebar* a*:hover* {

background-color: *#0056b3*;

}

*.content* {

margin-left: *220px*;

padding: *20px*;

}

table {

width: *100%*;

border-collapse: *collapse*;

margin-top: *20px*;

}

table, th, td {

border: *1px* *solid* *#ddd*;

}

th, td {

padding: *10px*;

text-align: *left*;

}

th {

background-color: *#007bff*;

color: *white*;

}

*.btn* {

display: *inline-block*;

padding: *10px* *20px*;

background-color: *#dc3545*;

color: *white*;

text-decoration: *none*;

border-radius: *5px*;

}

*.btn:hover* {

background-color: *#c82333*;

}

*.success* {

color: *green*;

}

*.error* {

color: *red*;

}

form {

margin-top: *20px*;

}

form label {

display: *block*;

margin: *10px* *0* *5px*;

}

form input[type="text"],

form input[type="email"],

form input[type="password"] {

width: *100%*;

padding: *8px*;

margin-bottom: *10px*;

}

form input[type="submit"] {

background-color: *#007bff*;

color: *white*;

border: *none*;

padding: *10px* *20px*;

cursor: *pointer*;

}

form input[type="submit"]*:hover* {

background-color: *#0056b3*;

}