

Department of Computer & Software Engineering- ITU
CE302L: Database Management Systems Lab

Course Instructor: Hamza Shoukat	Dated:
Lab Engineer: Muhammad Usama Riaz	Semester: Spring 2025
Session: 2023-2027	Batch: BSSE2023

Lab 13. Open Ended Lab: Building a Web-Based Database Application

Name	Roll number	Group No.	Obtained Marks / 100

Checked on: _____

Signature: _____

Objective

The objective of this open-ended lab is to provide students with the opportunity to apply their knowledge of HTML, CSS, JavaScript, PHP, and MySQL to design and implement a web-based database application. Students will create a functional web application that interacts with a MySQL database, allowing users to perform CRUD (Create, Read, Update, Delete) operations on data.

Equipment and Material Required

- Computers with internet access and development environments (e.g., XAMPP, WAMP, or a web hosting server with PHP and MySQL support).
- Text editors or integrated development environments (IDEs) for coding.
- MySQL database server.
- Sample database or dataset (e.g., a list of books, students, products).

Conduct of Lab

- Duration: 2 weeks
- The lab will be conducted in a group of 3 students.

Lab Tasks

Week 1: Planning and Database Design

1. Select a project idea or choose from predefined options (e.g., a library management system, e-commerce website, student registration system).
2. Define the requirements and features of the web application.
3. Design the database schema:
 - a. Identify tables and their relationships.
 - b. Create an Entity-Relationship Diagram (ERD).
 - c. Define attributes and data types.

Week 1: Front-End Development

1. Design the user interface (UI) using HTML and CSS.
2. Create web pages for different functionalities (e.g., listing, adding, editing, deleting records).
3. Implement responsive design principles for mobile and desktop.
4. Implement JavaScript for client-side validation and interactivity.

Week 2: Back-End Development and Database Integration

1. Develop the PHP scripts for the back end:
 - a. Create PHP scripts to handle user input, process requests, and interact with the database.
 - b. Implement CRUD operations (Create, Read, Update, Delete) using PHP and MySQL queries.
2. Connect the web application to the MySQL database:
 - a. Configure database connection settings.

- b. Create functions or methods to interact with the database (e.g., insert, retrieve, update, delete records) using PHP or any latest PHP framework of your choice.
3. Test the application:
 - a. Verify that data is being stored and retrieved accurately.
 - b. Handle potential errors.

Week 2: Testing, Debugging, and Refinement

1. Thoroughly test the web application, including all CRUD operations.
2. Debug and fix any issues or errors.
3. Add additional features or improvements based on feedback or creativity (e.g., search functionality, user authentication).
4. Optimize the code for performance.

Week 3: Documentation and Presentation

1. Prepare documentation for the web application, including a user manual, database schema documentation, and code documentation.
2. Share and discuss the challenges faced during the development process and the solutions implemented

Project description:

1. Introduction

SkillConnect is a comprehensive web-based platform designed to bridge the gap between individuals seeking to enhance their skills and those looking for talent, alongside offering educational opportunities and administrative tools. It aims to be a central hub for learning, professional development, and career advancement by providing features for online courses, tutoring sessions, job listings, and application management. The platform is built with a focus on user experience, robust functionality, and efficient administration.

2. Project Goals & Objectives

The primary goals of SkillConnect are:

- Empower Skill Development
- Facilitate Career Advancement
- Streamline Administration
- Enhance Communication
- Provide Insightful Reporting

3. Key Features

SkillConnect is structured around several core modules:

3.1 User Management

- Employee Management
- Tutor Management
- Admin Management (Backend)

3.2 Learning & Development

- Course Management
- Tutoring Sessions

3.3 Job & Application Management

- Job Listings
- Applications

3.4 Communication & Reporting

- Messaging System
- Reports

3.5 System Settings (Admin Panel)

- Centralized control panel for core platform configurations

4. Technology Stack

Frontend: HTML5, CSS3, Bootstrap 5.3, Bootstrap Icons, Font Awesome, JavaScript

Backend: PHP, PDO (PHP Data Objects)

Database: MySQL/MariaDB

5. Architecture

SkillConnect follows a client-server architecture with separation of concerns:

- Frontend: HTML, CSS, JavaScript
- Backend: PHP with PDO
- Database: MySQL/MariaDB

6. Security Considerations

- Password Hashing using password_hash()
- Prepared Statements using PDO
- Input Validation using htmlspecialchars and trim
- Access Control (Future Enhancement)
- Error Logging using error_log
- HTTPS recommended for production

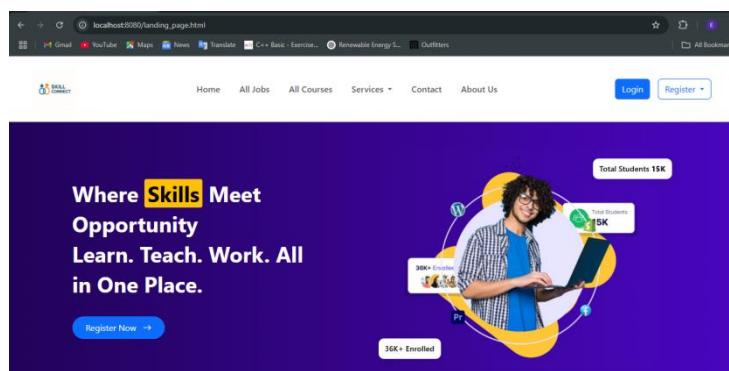
7. Development Environment

- Web Server: Apache/Nginx (via XAMPP/WAMP)
- PHP Version: 7.4+
- Database Server: MySQL/MariaDB
- Browser: Modern browsers
- Text Editor/IDE: VS Code, PHPStorm

8. Future Enhancements

- User Roles & Permissions
- User Dashboards
- Notification System
- Payment Gateway Integration
- File Uploads
- Review and Rating System
- Analytics Dashboard
- API Documentation
- Automated Testing
- Password Reset Functionality

Landing page:



Our Top Features

Unlock Your Potential With SkillConnect

Connect with peers, grow your skills, and land remote opportunities — all in one platform.

Verified Peer Tutors

Learn from qualified fellow students who understand your academic needs and challenges.

Personalized Learning Paths

Choose from a variety of subjects and track your progress with guided tutoring sessions.

Skill-Based Opportunities

Complete sessions, gain experience, and build your resume for real-world job roles.

Get More About Us



Your Hub For Learning & Earning

Top Class Courses

Explore Our Courses

All Courses



Beginner **Count Course**

~~\$50.00~~ **\$10.00**

The Complete Graphic Design for Beginners

 Wilson ★ 4.5 (60)

🕒 70h 45m 👤 202



Pro Expert **Investing**

\$20.00

Learning JavaScript With Imagination

 Warren ★ 4.8 (86)

🕒 18h 20m 👤 86



Financial **Count Course**

~~\$50.00~~ **\$15.00**

Financial Analyst Training & Investing Course

 Robert Fox ★ 4.2 (22)

🕒 11h 20m 👤 22



Special **Limited Pro**

~~\$50.00~~ **\$9.00**

Learning JavaScript With Imagination

 David Millar ★ 4.8 (22)

🕒 11h 20m 👤 22



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HI, Welcome back!

Username or Email Address

Enter your username or email

Password

Enter your password

Login as:

☐ Student

☐ Tutor

☐ Employer

☐ Job Seeker

☐ Admin

☐ Keep me signed in

Sign in

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Student / Tutor Registration

Employer Registration

Job Seeker Registration



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



Refund and Returns Policy

Terms and Condition

STAY UPDATED

Your Email

Subscribe



Register page:

Create Your Account

Student Registration

First Name

Eashal

Last Name

Yasin

User Name

eashalyasin

E-Mail

eashalyasin1092@gmail.com

Password

Confirm Password

Create Your Account

Tutor Registration

Full Name

Username

Email

Phone Number

DataBase:

The screenshot shows the phpMyAdmin interface. On the left, the database 'sql12784403' is selected, and the 'job_applications' table is highlighted in the 'Recent' list. The main panel displays the 'Table structure' for 'job_applications'.

#	Name	Type	Collation
1	id	int(11)	
2	job_posting_id	int(11)	
3	job_seeker_id	int(11)	
4	applicant_name	varchar(255)	latin1_swedish_
5	applicant_email	varchar(255)	latin1_swedish_
6	resume_filepath	varchar(255)	latin1_swedish_
7	cover_letter	text	latin1_swedish_
8	application_date	timestamp	
9	status	enum('pending', 'reviewed', 'accepted', 'rejected', ...)	latin1_swedish_
10	interview_date	date	
11	interview_time	time	

The screenshot shows the phpMyAdmin interface. On the left, the database 'sql12784403' is selected, and the 'job_postings' table is highlighted in the 'Recent' list. The main panel displays the 'Table structure' for 'job_postings'.

#	Name	Type	Collation	Attributes	Null	Default
1	id	int(11)			No	None
2	employer_id	int(11)			No	None
3	title	varchar(150)	latin1_swedish_ci		No	None
4	description	text	latin1_swedish_ci		No	None
5	category_id	int(11)			No	1
6	requirements	text	latin1_swedish_ci		No	None
7	location	varchar(100)	latin1_swedish_ci		Yes	NULL
8	work_mode	enum('Remote', 'On-site', 'Hybrid')	latin1_swedish_ci		No	None
9	application_deadline	date			Yes	NULL
10	company_name	varchar(255)	latin1_swedish_ci		No	None
11	company_website	varchar(255)	latin1_swedish_ci		Yes	NULL
12	contact_email	varchar(255)	latin1_swedish_ci		No	None
13	post_status	enum('Active', 'Expired', 'Filled')	latin1_swedish_ci		Yes	Active
14	is_promoted	tinyint(1)			Yes	0
15	salary	varchar(100)	latin1_swedish_ci		Yes	NULL
16	job_type	enum('full_time', 'part_time', 'internship', 'contract', ...)	latin1_swedish_ci		No	None
17	posted_at	timestamp			No	CURRENT_TIMESTAMP

phpMyAdmin

Server: sql2.freemysql.com | Database: sql12784403 | Table: tutors

Showing rows 0 - 7 (8 total. Query took 0.1707 seconds)

SELECT * FROM `tutors`

Check all | Number of rows: All | Filter rows: Search this table | Sort by key: None

	id	name	username	email	phone_number	cnic	password	bio	fee_type	created_at	is_approved	approved_at
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	3	Zainab Khan	zainabk_t	zainab@outlook.com	03021234567	35202-1234567-2	pass123	NULL	weekly	2025-06-13 02:54:02	1	2025-06-13 03:27:15
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	5	Asma Tariq	asma_t	asma@outlook.com	03041234567	35204-1234567-4	pass123	have fun	student_based	2025-06-13 02:54:02	0	NULL
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	6	Usman Arif	usmana_t	usman@outlook.com	03051234567	35205-1234567-5	pass123	NULL	hourly	2025-06-13 02:54:02	0	NULL
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	7	Noor Fatima	noorf_t	noor@outlook.com	03061234567	35206-1234567-6	pass123	NULL	weekly	2025-06-13 02:54:02	0	NULL
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	8	Adnan Shah	adnans_t	adnan@outlook.com	03071234567	35207-1234567-7	pass123	NULL	monthly	2025-06-13 02:54:02	0	NULL
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	9	Nida Bano	nida_t	nida@outlook.com	03081234567	35208-1234567-8	pass123	NULL	student_based	2025-06-13 02:54:02	0	NULL
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	10	Rehan Malik	rehanm_t	rehan@outlook.com	03091234567	35209-1234567-9	pass123	NULL	hourly	2025-06-13 02:54:02	0	NULL
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	11	Hira Shahid	hiras_t	hira@outlook.com	03101234567	35210-1234567-0	pass123	NULL	weekly	2025-06-13 02:54:02	0	NULL

Check all | With selected | Edit | Copy | Delete | Export

Check all | Number of rows: All | Filter rows: Search this table | Sort by key: None

Query results operations

Jobseeker page:

Job Seeker Dashboard - SkillConnect

localhost:8080/job_seekers/jobseeker_dashboard.php

Job Seeker Panel

Welcome

Dashboard

Browse Jobs

My Applications

Interview Schedule

Messages

Logout

Job Seeker Dashboard

Total Applied Jobs

1

[View My Applications](#)

Pending Applications

0

[Review Pending](#)

Shortlisted/Accepted

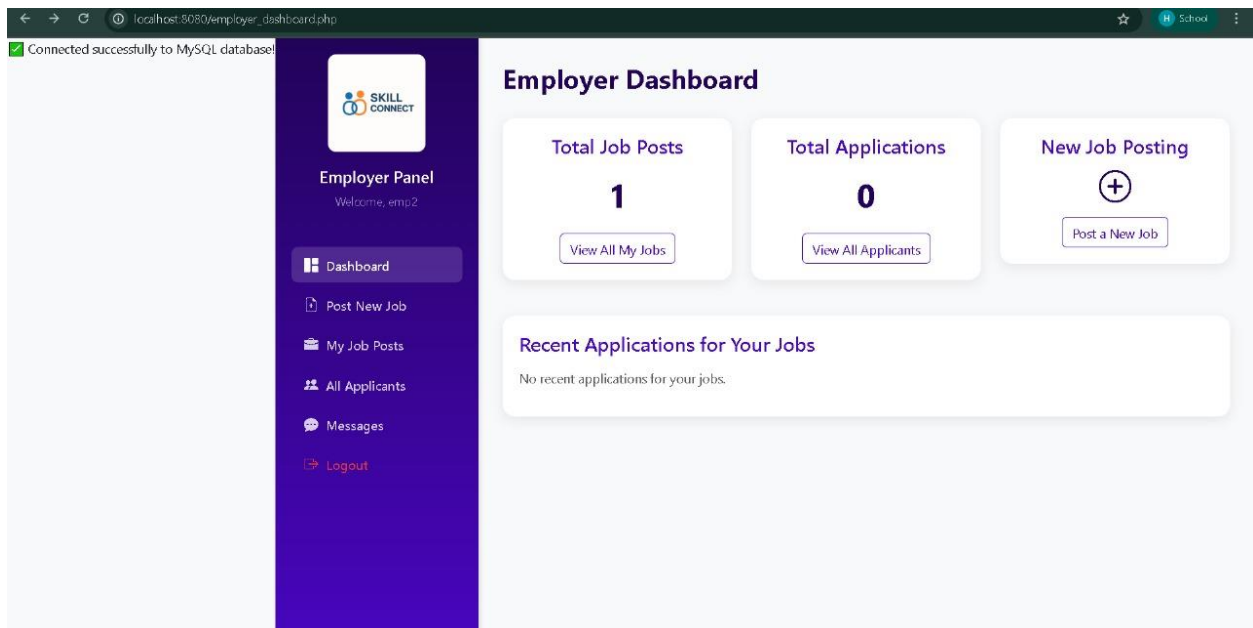
0

[View Opportunities](#)

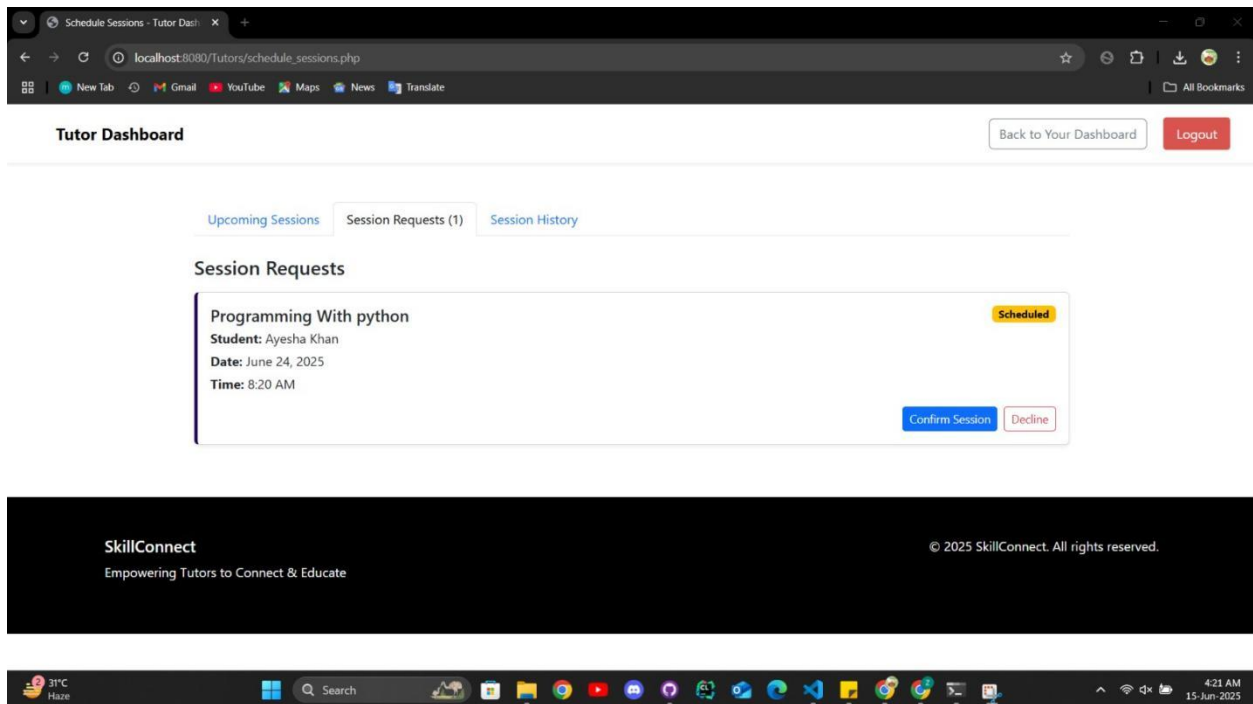
My Applications Filtered: Recent

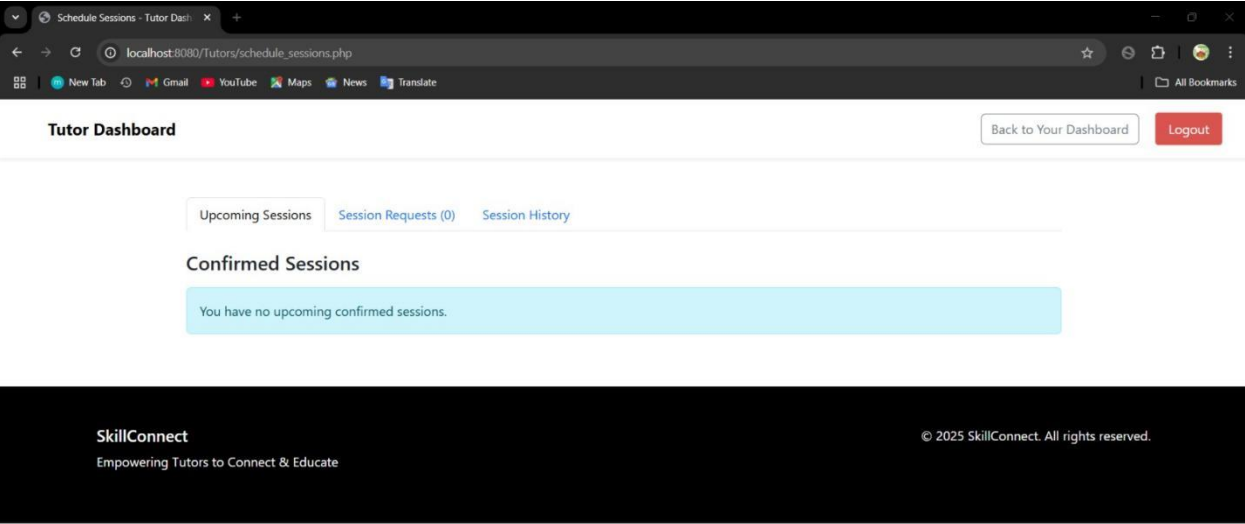
Job Title	Company	Location	Applied On	Status	Interview	Actions
Front-End Web Developer	TechNova Inc.	San Francisco, CA	Jun 14, 2025		Jun 24, 2025 at 06:06 AM	View Details

Employee Dashboard:

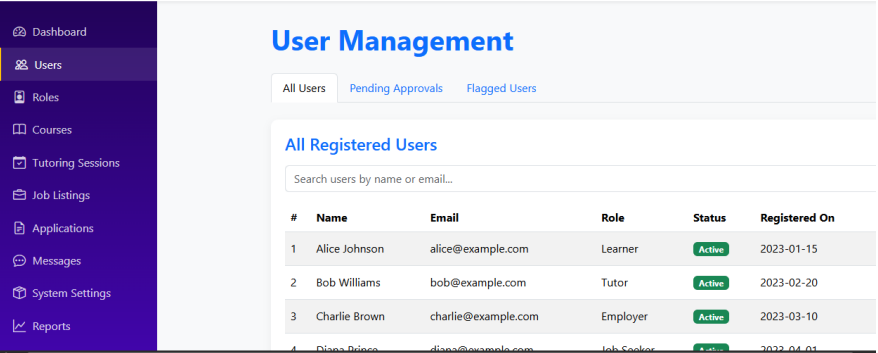
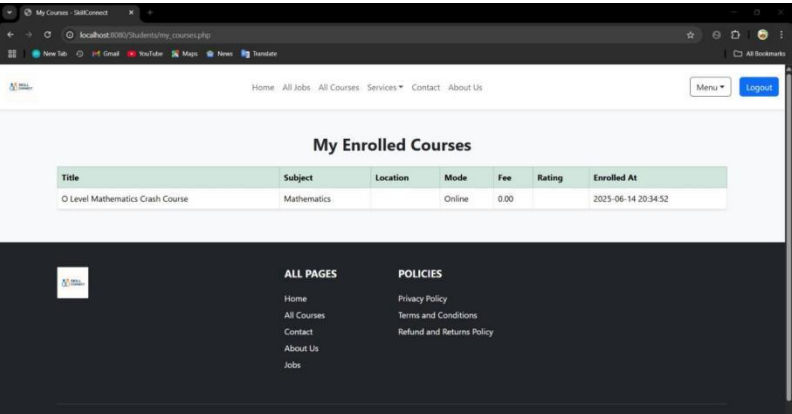


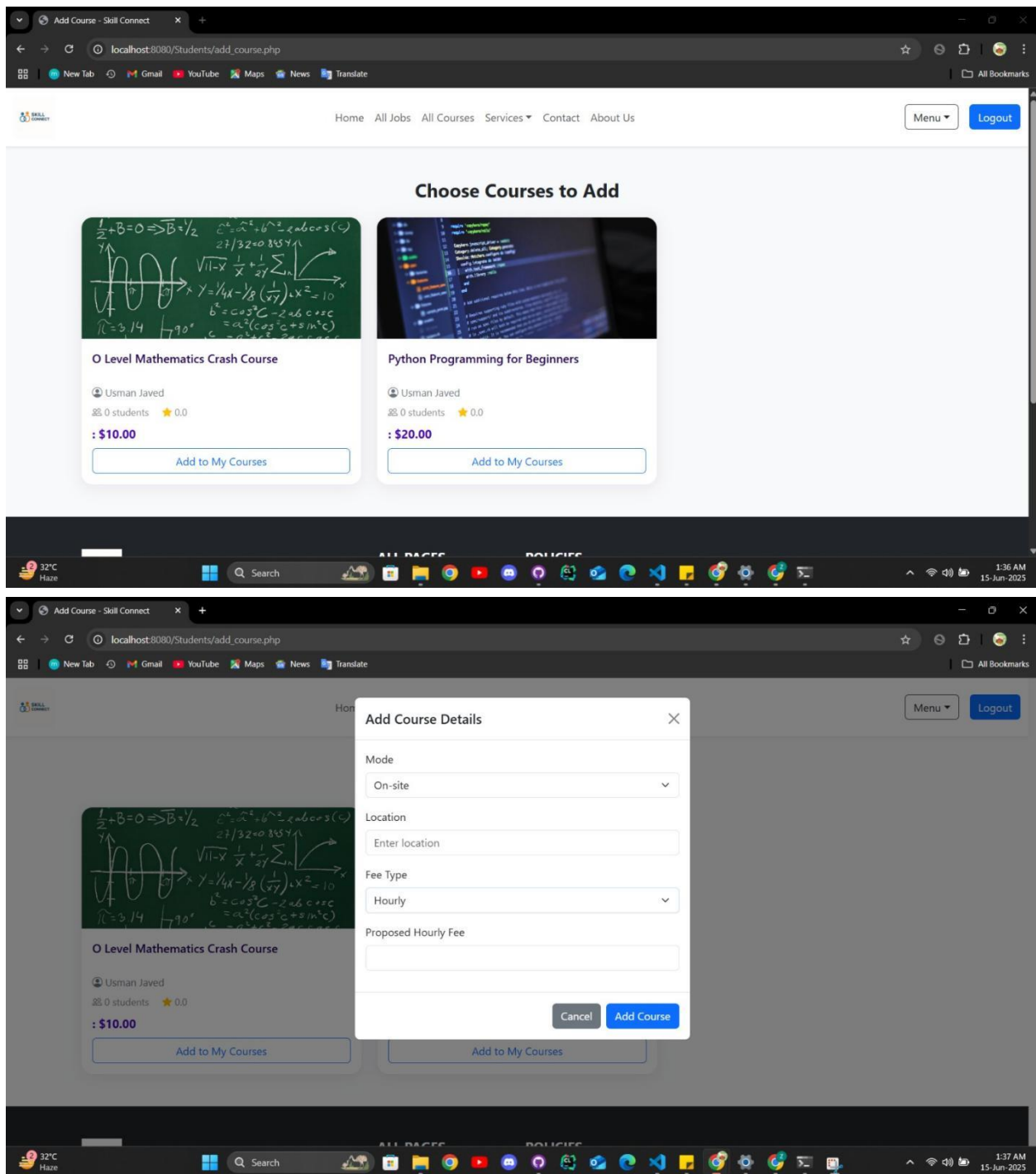
Tutor Dashboard:






Courses:






Admin page:(ban users)

 SKILL CONNECT

HomeAdmin DashboardAll JobsAll CoursesServices ▾ContactAbout Us

Admin User  [Logout](#)

Dashboard

Users

Roles

Courses

Tutoring Sessions

Job Listings

Applications

Messages

System Settings

Reports


User Management

All UsersPending ApprovalsFlagged Users

All Registered Users

Search users by name or email...

#	Name	Email	Role	Status	Registered On
1	Alice Johnson	alice@example.com	Learner	Active	2023-01-15
2	Bob Williams	bob@example.com	Tutor	Active	2023-02-20
3	Charlie Brown	charlie@example.com	Employer	Active	2023-03-10
4	Diana Prince	diana@example.com	Job Seeker	Active	2023-04-01

 SKILL CONNECT

Dashboard

Users

Roles

Courses

Tutoring Sessions

Job Listings

Applications

Messages

System Settings

Reports

Files and code:

File Edit Selection View Go Run ... DBMS-Group-5

EXPLORER

OPEN EDITORS

ban_student.php Admin

DBMS-GROUP-5

.vscode

Admin

add_admin.php

admin_dashboard.html

admin_messages.html

applications_admin.html

ban_student.php

change_admin_password.php

connect.php

course_crud_actions.php

courses_page_admin.html

db_connect.php

delete_admin.php

delete_employer.php

delete_job_seeker.php

delete_student.php

get_admins.php

get_course_data.php

get_course_full_details.php

get_dashboard_summary.php

get_data.php

get_employers.php

get_feedback.php

get_job_postings_full_details.php

OUTLINE

TIMELINE

ban_student.php

```
1 <?php
2 // ban_student.php
3 // This script handles banning a student: it moves their record from the 'students' table
4 // to the 'banned_users' table.
5
6
7 // Include the database connection file
8 require_once 'db_connect.php';
9
10 // Set the content type header to JSON
11 header('Content-Type: application/json');
12
13 // Check if 'student_id' is provided in the POST request
14 if (isset($_POST['student_id'])) {
15     $student_id = $_POST['student_id'];
16     // Get the reason for banning, defaulting if not provided
17     $reason = isset($_POST['reason']) ? $_POST['reason'] : 'No reason provided';
18
19     try {
20         // Start a database transaction to ensure atomicity of operations
21         $pdo->beginTransaction();
22
23         // First, fetch the student's details from the 'students' table
24         $stmt_select = $pdo->prepare("SELECT first_name, last_name, email FROM students WHERE student_id = ?");
25         $stmt_select->execute([$student_id]);
26         $student_details = $stmt_select->fetch();
27
28         if ($student_details) {
29             // Insert the student's details into the 'banned_users'
30             $stmt_insert = $pdo->prepare("INSERT INTO banned_users (
31             $stmt_insert->execute([$student_id, $student_details['fi
```

Cannot validate since a PHP installation could not be found. Use the setting 'php.validate.executablePath' to configure the PHP executable. Source: PHP Language Features

EXPLORER

OPEN EDITORS

delete_resource.php Tutors

DBMS-GROUP-5

Admin

tutor_crud_actions.php

tutor_management.html

update_employer.php

update_job_seeker.php

user_crud_actions.php

user_management.html

Employers

Job_Seekers

Students

Tutors

uploads

add_course.php

chat_video.php

connect.php

delete_resource.php

get_messages.php

resources.php

reviews.php

schedule_sessions.php

session_history.php

tutor_dashboard.php

uploads

.nitiimore

OUTLINE

TIMELINE

delete_resource.php

```
1 <?php
2 session_start();
3
4 // Verify user is logged in as tutor
5 if (!isset($_SESSION['user_id']) || $_SESSION['role'] !== 'tutor') {
6     header("HTTP/1.1 403 Forbidden");
7     exit(json_encode(['success' => false, 'message' => 'Access denied']));
8 }
9
10 // Database configuration
11 $host = "sql12.freemysql.com";
12 $port = "3306";
13 $db = "sql12784403";
14 $user = "sql12784403";
15 $pass = "WauJFq9xaX";
16
17 // Create connection
18 $conn = new mysqli($host, $user, $pass, $db, $port);
19
20 // Check connection
21 if ($conn->connect_error) {
22     die(json_encode(['success' => false, 'message' => 'Database connection failed']));
23 }
24
25 // Get resource ID
26 $resource_id = intval($_POST['resource_id']);
27 $tutor_id = $_SESSION['user_id'];
28
29 // First get file path
30 $sql = "SELECT file_path FROM tutor_resources WHERE resource_id = ? AND tutor_id = ?";
31 $stmt = $conn->prepare($sql);
32 $stmt->bind_param("ii", $resource_id, $tutor_id);
```

Ln 1, Col 1 Spaces: 4 UTF-8 CRLF {} PHP


```
Admin > job_listing_management.html X
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4   <meta charset="UTF-8" />
5   <meta name="viewport" content="width=device-width, initial-scale=1.0"/>
6   <title>SkillConnect Admin - Job Listing Management</title>
7   <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/css/bootstrap.min.css" rel="stylesheet"/>
8   <link href="https://cdn.jsdelivr.net/npm/bootstrap-icons@1.10.5/font/bootstrap-icons.css" rel="stylesheet"/>
9   <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/6.4.0/css/all.min.css"/>
10
11   <style>
12     html { scroll-behavior: smooth; }
13     body { background-color: #f8f9fa; }
14     .navbar { padding: 1rem 2rem; }
15     .navbar-nav .nav-link { font-weight: 600; margin: 0 10px; }
16     .navbar-brand img { height: 80px; } /* Assuming you have a logo.jpeg in the same directory */
17
18     .admin-sidebar {
19       background: linear-gradient(to bottom, #20359, #496b6f);
20       color: white;
21       padding-top: 20px;
22       min-height: calc(100vh - 80px);
23       position: sticky;
24       top: 0;
25       left: 0;
26       z-index: 1000;
27     }
28
29     .admin-sidebar .nav-link {
30       color: rgba(255, 255, 255, 0.8);
31       padding: 10px 20px;
32       display: flex;
```

```
Admin > job_listing_management.html X
1 <?php
2 // reply_feedback.php
3
4 require_once 'db_connect.php'; // Path adjusted for single-folder setup
5
6 header('Content-Type: application/json');
7
8 session_start(); // Start the session at the very beginning
9
10 // IMPORTANT: This is a TEMPORARY and INSECURE bypass for development.
11 /*
12 if (!isset($_SESSION['admin_logged_in']) || $_SESSION['admin_logged_in'] !== true) {
13   http_response_code(401); // Unauthorized
14   echo json_encode(['success' => false, 'message' => 'Unauthorized access. Please login as admin.']);
15   exit();
16 }
17 */
18
19 if ($_SERVER['REQUEST_METHOD'] !== 'POST') {
20   echo json_encode(['success' => false, 'message' => 'Invalid request method.']);
21   exit();
22 }
23
24 $input = file_get_contents('php://input');
25 $data = json_decode($input, true);
26
27 if (empty($data['id']) || !isset($data['reply'])) { // 'reply' can be empty if clearing it
28   echo json_encode(['success' => false, 'message' => 'Feedback ID and reply are required.']);
29   exit();
30 }
31
32 $id = (int)$data['id'];
```


Assessment Rubrics for the Open-Ended Lab

Category	CLO	Scoring Criteria	Total Points	Score
Design and Development of a Database Management System	1	Database Design: Comprehensive ERD with clear identification of tables, relationships, and attributes, following relational theory.	10	
		User Interface Design: Well-designed and responsive UI that meets all requirements.	10	
		Back-End Development: PHP scripts are well-organized, efficient, and correctly implement CRUD operations.	10	
Utilization of Modern Tools	2	Development Environment: Effective use of modern tools (e.g., VS Code, other IDEs) with clear organization of project files.	10	
		Documentation: Well-documented user manual covering all aspects of the application.	10	
Collaboration and Individual Work	3	Collaboration: Effective collaboration within the team, contributing ideas and actively participating in group discussions.	10	
		Individual Work: Successfully completing individual tasks, demonstrating a high level of independence and adherence to guidelines.	10	
		Presentation/Demonstration: Engaging and clear presentation or demonstration of the web application, effectively highlighting its features and functionality.	10	
Independence and Adherence to Guidelines	4	Problem Solving: Effectively applying theoretical knowledge to solve problems and overcome challenges.	10	
		Adherence to Guidelines: Strict adherence to guidelines and specifications, delivering a solution that meets all requirements.	10	
Total Points			100	