Green University of Bangladesh

Department of Computer Science and Engineering (CSE)
Semester: (Fall, Year: 2024), B.Sc. in CSE (Day)

Peer Tutoring Network

Course Title: Web Programming Lab
Course Code: CSE 302
Section: 221 D10

Students Details

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Submission Date: 22 October, 2024
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Lab Project Status	
Marks:	**Signature:**
Comments:	**Date:**

Contents

Chapter 1

Introduction

1.1 Overview

The Peer Tutoring Network is an initiative designed to foster academic support and collaboration among students by connecting those proficient in specific subjects with peers who need assistance. This platform enables students to register as tutors or tutees, offering features like subject categorization, scheduling tools, and secure communication channels. By facilitating peer-to-peer learning, the network aims to improve academic performance, promote a culture of mentorship, and help students develop valuable skills such as communication and leadership, all while creating a supportive, collaborative learning environment within the university.

1.2 Motivation

The motivation behind the Peer Tutoring Network stems from the growing need to create more inclusive and collaborative learning environments in modern education. Traditional teaching methods, while valuable, often fail to address the unique challenges and diverse learning styles of every student. Peer-to-peer learning allows students to benefit from each other's strengths, fostering a sense of community and belonging. This initiative also empowers students to take ownership of their education, promotes mutual academic growth, and helps develop critical soft skills like communication, leadership, and problem-solving, which are essential for both academic success and future careers. By facilitating meaningful interactions among students, the Peer Tutoring Network aims to bridge gaps in understanding and provide a structured, yet flexible, support system that benefits all participants.

Figure 1.1: Traditional Group Study & Peer Tutoring Network

1.3 Problem Definition

1.3.1 Problem Statement

The primary problem addressed by the Peer Tutoring Network is the lack of accessible, personalized academic support for students struggling to grasp specific subjects or concepts within traditional classroom settings. Many students face challenges such as limited one-on-one time with instructors, varying learning paces, and difficulty finding reliable resources outside class. This gap in academic support can lead to decreased performance, lack of confidence, and disengagement from the learning process. Furthermore, students with expertise in certain areas often lack opportunities to share their knowledge in a meaningful way that fosters collaboration and mutual growth. The Peer Tutoring Network seeks to solve these issues by creating a platform where students can easily connect, learn from each other, and support one another's academic journey, ultimately enhancing both individual and collective success.

1.4 Design Goals/Objectives

1.4.1 Objectives

My projects objectives are given below:

- **Facilitate Academic Support:** The primary objective is to create a seamless platform where students who need help can easily connect with peers who are proficient in specific subjects. This initiative aims to ensure that all students have access to academic support, reducing barriers to learning.

- **Leverage Student Expertise:** By tapping into the rich knowledge of the student community, this initiative seeks to connect proficient students with those needing assistance. This peer-to-peer learning approach breaks the traditional boundaries of instruction, promoting a more flexible and personalized learning experience.
- **Promote Collaboration and Mentorship:** Beyond academic support, the project encourages collaboration, mentorship, and mutual growth. Students will engage in meaningful interactions, helping each other not only academically but also personally, fostering a strong sense of community within the university.
- **Develop Skills Beyond Academics:** The platform provides an opportunity for both tutors and tutees to develop vital communication, leadership, and teaching skills. These skills, cultivated through peer teaching and learning experiences, will empower students to thrive in future academic and professional endeavors.

1.4.2 Design Goals

Simple Website Structure:

- Home
- Tutors/Learning Request
- Tutor/Tutee Profile Pages
- Selection Page
- No Payment Required
- Dashboard
- Settings

1.5 Application

The Peer Tutoring Network can be applied across various sectors to facilitate knowledge sharing, mentorship, and skill development. Whether in education, professional environments, or community settings, peer tutoring fosters collaboration and growth. Here are ten sectors where this project can be utilized:

- Corporate Training
- Vocational Training
- Language Learning
- Nonprofit Programs
- Healthcare Peer Support

- Open Source Tech Communities
- Freelancer Networks
- Creative Communities

Chapter 2

Design/Development/Implementation of the Project

2.1 Introduction

The Peer Tutoring Network is an online platform designed to connect students with qualified tutors within their academic institution, enabling them to seek personalized academic assistance. This project offers a streamlined interface where students can register, browse available courses, read relevant blogs, and access tutoring services. Admins can manage courses, blogs, and user interactions. With a focus on user-friendly design, the platform facilitates a smooth registration process, a detailed course catalog, and a collaborative space for sharing academic insights through blogs. The Peer Tutoring Network aims to foster a supportive educational environment by making learning resources easily accessible and engaging.

2.2 Project Details

The Peer Tutoring Network is a web-based platform designed to assist students in seeking academic help from qualified tutors within their university or academic institution. The system enables students to register, browse available tutoring services, access educational blogs, and interact with tutors and peers. Admins have full control over the content, including managing courses, blogs, and user accounts. The project focuses on creating an easy-to-navigate, responsive design that ensures a seamless user experience.

2.2.1 Key Features

- **User Registration & Login:** Students can register using their details (Name, Student ID, Email, etc.). Secure login with authentication to access the system.
- **Course Catalog:** Display of available courses with detailed information like course name, description, and time to complete. Students can browse and find tutoring services based on their course needs.

- **Blog Section:** Educational blogs are published by users and admins, sharing academic insights, tips, and resources. Blogs include author information, creation date, and content preview.
- **Admin Dashboard:** Admins can manage courses, blogs, and users. Ability to add new courses, update blog posts, and monitor user activities.
- **Responsive Design:** The platform adapts to various screen sizes, ensuring it's usable on both desktop and mobile devices. Clear, accessible layout with the courses and blog sections styled in blocks for easy reading and navigation.

2.2.2 Technologies Used

- Frontend: HTML, CSS, JavaScript
- Backend: PHP for server-side processing and form handling
- Database: MySQL for storing user data, course information, and blog content
- Server: XAMPP (Apache server for local development)

2.2.3 Database Structure

- Users Table: Stores student details for login and registration.
- Courses Table: Stores information about each available course.
- Blogs Table: Stores the title, content, and author details for educational blog posts.
- Admin Table: Stores admin credentials for login and management of the platform.

2.3 Implementation

The Peer Tutoring Network project is implemented using a combination of front-end and back-end technologies. The core of the system is built around PHP for server-side processing, MySQL for database management, and HTML/CSS/JavaScript for the user interface. Below is a breakdown of how each part of the project was implemented:

2.3.1 Backend Implementation (PHP)

- **User Registration & Authentication:** The registration page (register.html) allows new users to register, while register.php processes the form data, validates inputs, and saves user details to the database. For login, login.php checks the credentials and establishes a session for valid users.

- **Course Management:** Courses are added and displayed dynamically from the database. The courses are stored in the courses table, and students can view the list of available courses from the homepage. The course.php page fetches and displays courses using PHP.
- **Blog Management:** Admins and users can publish blogs. Blogs are submitted through a form on the admin dashboard (submit_blog.php), and the content is stored in the blog table. Blogs are displayed on the blog page (blog.html), where users can read summaries and click to read more.

2.3.2 Frontend Implementation (HTML, CSS, JavaScript)

- **Responsive Design:** The user interface is responsive, with a layout that adjusts based on the browser size. Courses, blogs, and the registration form are displayed in grid or block-style layouts to ensure readability and user-friendliness.
- **JavaScript Validation:** JavaScript is used to validate form inputs (such as Student ID, Email, Password) before submission. The validation ensures that users provide data in the correct format, such as a 9-digit Student ID or a valid email address.

2.3.3 Security Implementation

- **Password Hashing:** Passwords are hashed using PHP's password_hash() function to ensure security.
- **Input Validation:** Forms are validated both client-side (using JavaScript) and server-side (using PHP) to prevent malicious input.
- **Session Management:** PHP sessions are used to keep users logged in and manage access to specific pages (e.g., admin dashboard).

2.3.4 Deployment & Testing

After developing the application locally using XAMPP, it was tested thoroughly to ensure all functionality works as expected, including:

- User registration and login
- Course browsing
- Blog reading
- Admin management

Finally, the project was deployed on a live server using appropriate hosting to ensure users can access the platform remotely.

Chapter 3

Performance Evaluation

3.1 Results Analysis/Testing

3.1.1 Database

student_id	name	email	password	phone	institution	department	batch
221002566	Suma	suma@example.com	123	01787654321	Green University of Bangladesh	Software Engineering	221
221002567	Shanto	shanto@example.com	123	01712345678	Green University of Bangladesh	Computer Science and Engineering	221
221002568	Al Shahriar	alshahriar@example.com	123	01711223344	Green University of Bangladesh	Electrical and Electronics Engineering	221
221002569	Tajmin Khanam	tajmin@example.com	123	01799887766	Green University of Bangladesh	Textile Engineering	221
221002570	Pranto	pranto@example.com	123	01744556677	Green University of Bangladesh	Artificial Intelligence and Data Science	221
221002571	Antu Marma	antu@example.com	123	01755667788	Green University of Bangladesh	Law	221
221002572	Mehedi Hasan	mehedi@example.com	123	01766778899	Green University of Bangladesh	Green Business School	221
221002573	Ariana Zaman	ariana@example.com	123	01788899900	Green University of Bangladesh	Department of English	221
221002574	Jahid Hasan	jahid@example.com	123	01711122233	Green University of Bangladesh	Department of Sociology	221
221002575	Mithila Roy	mithila@example.com	123	01733344455	Green University of Bangladesh	Department of Journalism & Media Communication	221

Figure 3.1: Students Table

c_id	name	details	time
1	web programming	Learn HTML, CSS, and JavaScript to build interacti...	3 months
2	computer networking	Understand the basics of computer networks and pro...	4 months
3	cyber security	Learn to protect systems and data from cyber threa...	5 months
4	database management	Master database design and SQL for data management...	2 months
5	machine learning	Introduction to algorithms for machine learning.	6 months

Figure 3.2: Course Table

blog_id	title	content	author	created_at
1	Getting Started with Web Development	Web development involves creating websites and app...	Shanto	2024-12-23 14:21:38
2	Exploring Artificial Intelligence	Artificial Intelligence (AI) is shaping the future...	Al Shahriar	2024-12-23 14:21:38
3	Understanding Data Structures	Data structures are fundamental for efficient data...	Suma	2024-12-23 14:21:38
4	Cloud Computing Essentials	Cloud computing provides scalable and on-demand co...	Tajmin Khanam	2024-12-23 14:21:38
5	The Basics of Machine Learning	Machine Learning is a branch of AI that deals with...	Pranto	2024-12-23 14:21:38
6	Cybersecurity in the Modern Era	Protecting digital assets is critical in today's i...	Antu Marma	2024-12-23 14:21:38
7	Mastering Python for Beginners	Python is a versatile language suitable for variou...	Mehedi Hasan	2024-12-23 14:21:38
8	ki blog lekhmu vai	likhle onek kicoi ace likhar moto. bolle onek kico...	kukichin	2024-12-23 15:32:54

Figure 3.3: Blog Table

3.1.2 Home Page

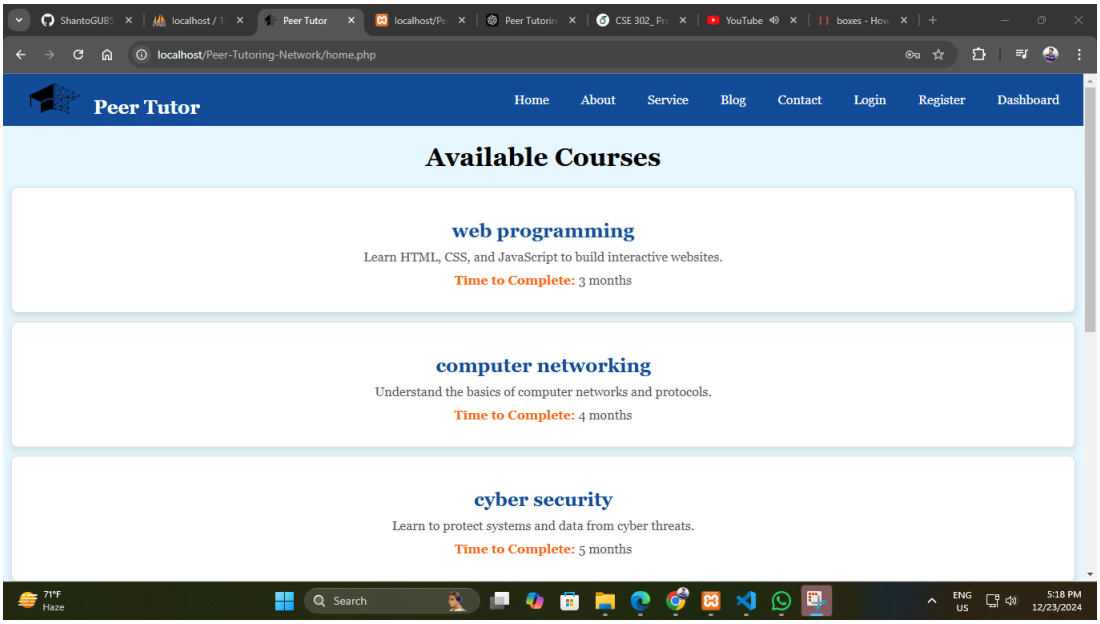

Figure 3.4: Home Page

3.1.3 Register Page

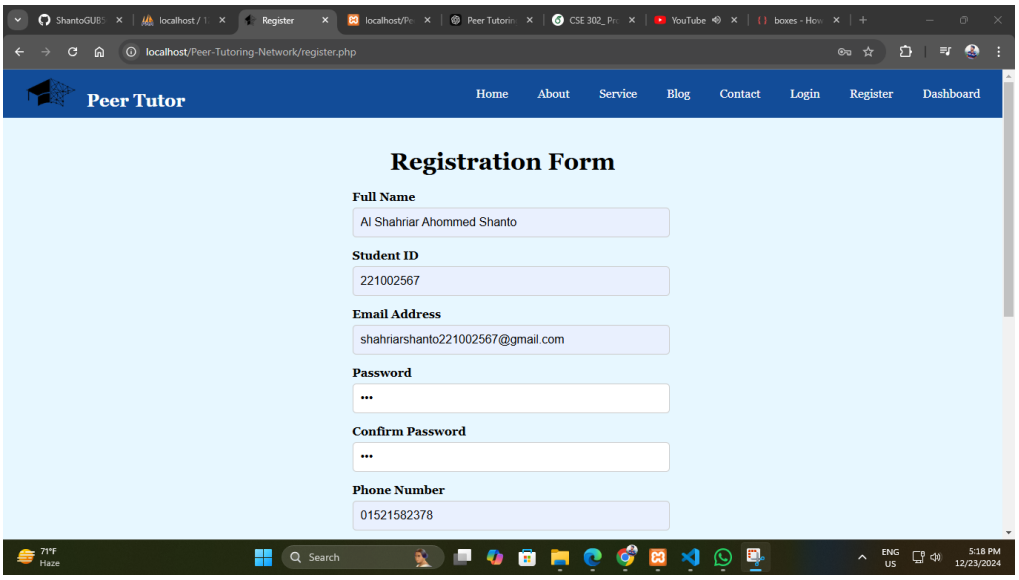

Figure 3.5: Register Page

3.1.4 Login Page

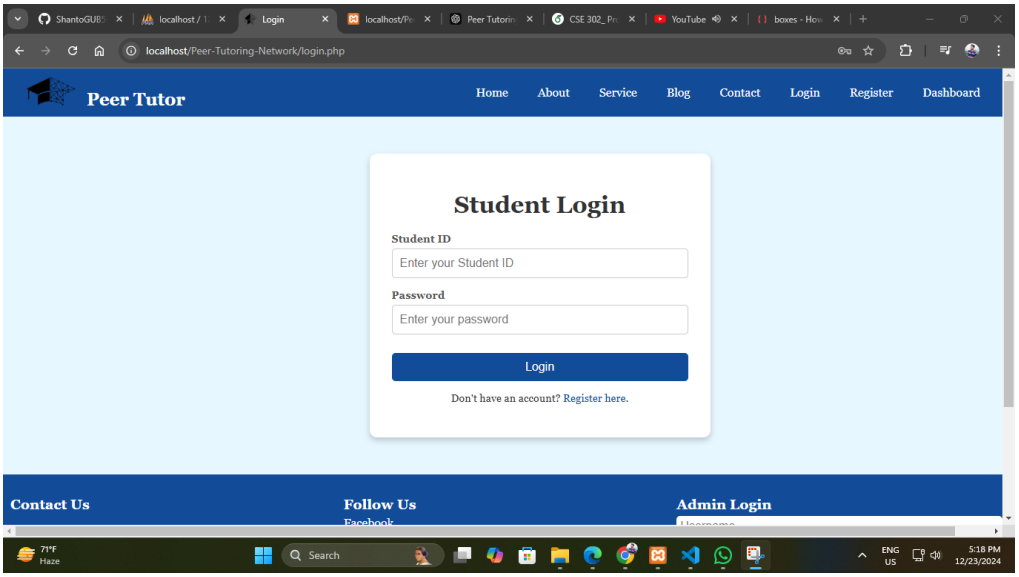

Figure 3.6: Login Page

3.1.5 Dashboard Page

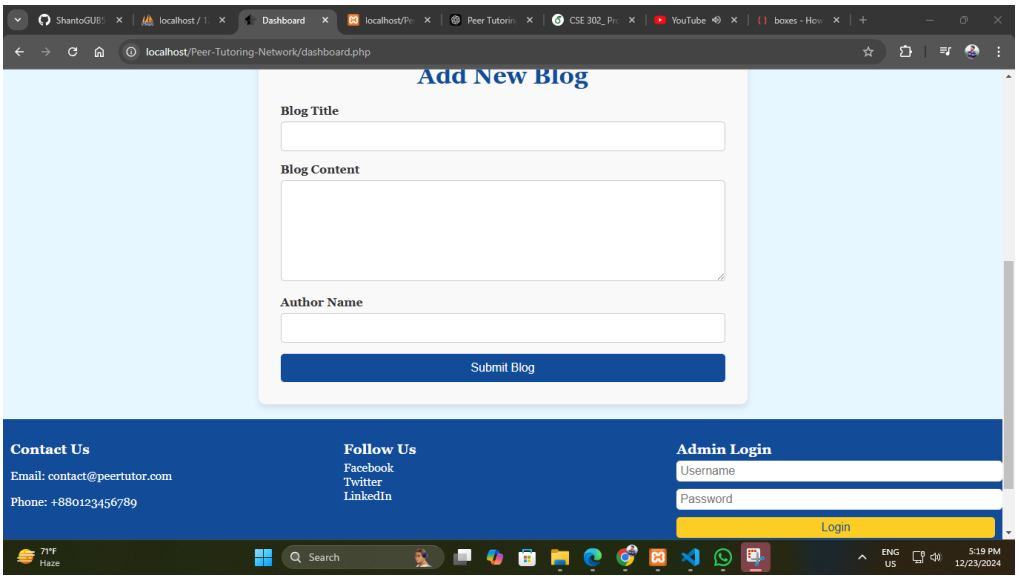

Figure 3.7: Dashboard Page

3.1.6 Blog Page

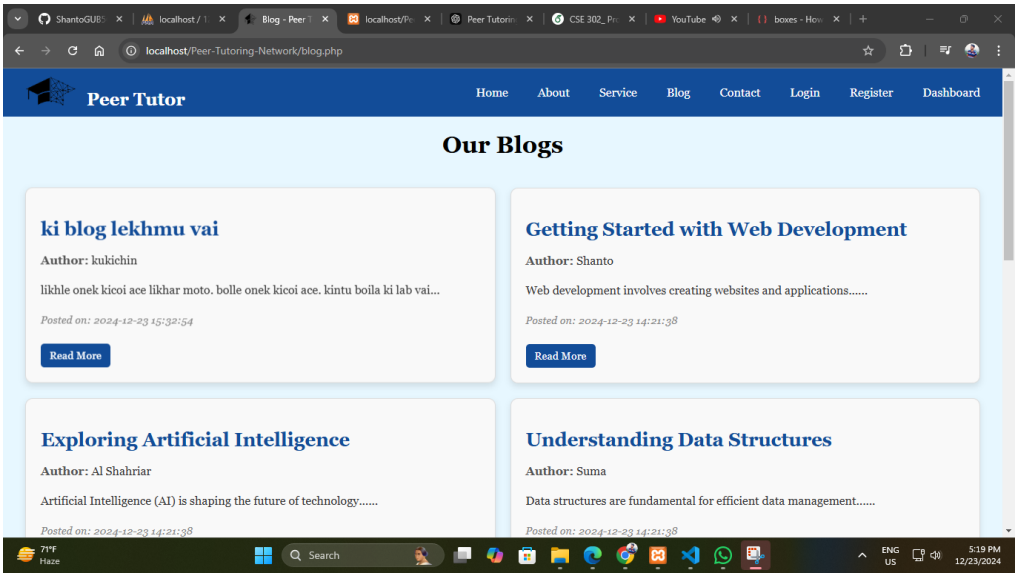

Figure 3.8: Blog Page

3.1.7 About Page

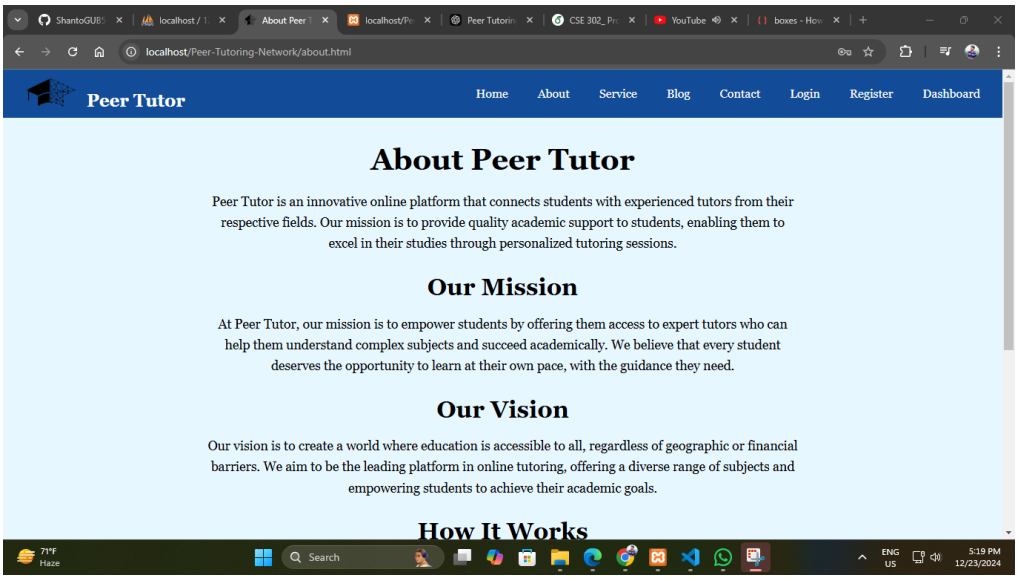

Figure 3.9: About Page

3.1.8 Service Page

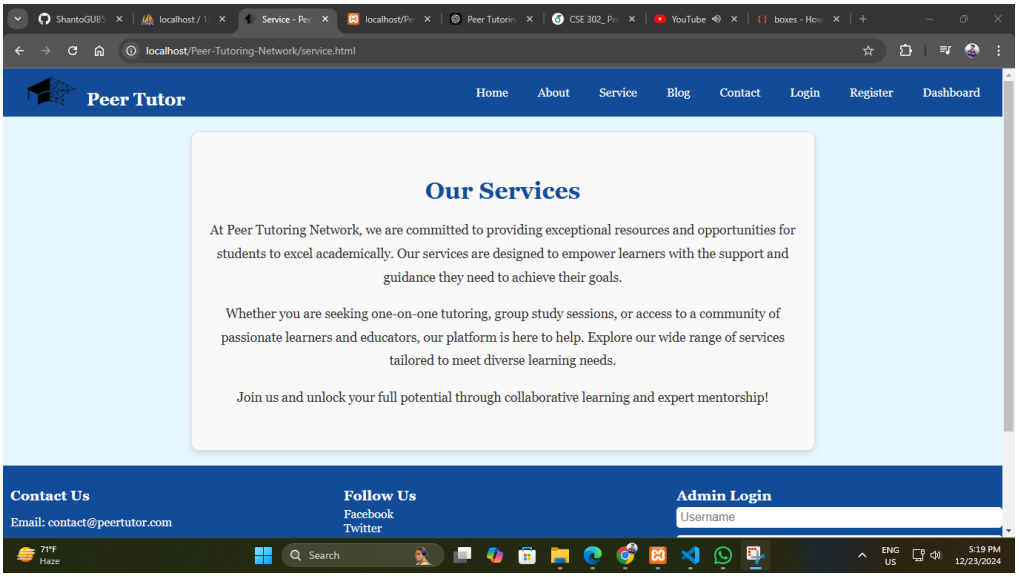

Figure 3.10: Service Page

Chapter 4

Conclusion

4.1 Discussion

This project demonstrates a comprehensive platform that integrates core functionalities like registration, login authentication, course management, and blog posting. By using PHP for backend processing and MySQL for data storage, the system ensures data is dynamically managed and securely stored. The front-end, styled using CSS, is designed to be intuitive and user-friendly, presenting content like courses and blogs in a visually appealing layout.

The admin functionality streamlines control, allowing seamless blog and course management, while user-focused features like registration and blog viewing provide engagement. This project emphasizes modular design, responsive layouts, and real-world usability, ensuring an effective solution for academic and collaborative environments. The addition of database tables like students, courses, and blogs aligns with practical use cases, ensuring scalability for future enhancements.

4.2 Limitations

The primary objective of this project was to create a platform where students can share their expertise by teaching their classmates or juniors on topics they understand well. However, there are some limitations that have yet to be addressed:

- **Lack of Peer-to-Peer Interaction Features:** The platform does not currently include functionalities for live communication or direct interaction between students and tutors, such as chat or video conferencing.
- **Absence of Scheduling System:** There is no mechanism for students to schedule or book sessions with their peers based on availability or topic preferences.
- **Limited Role Management:** The system lacks a robust distinction between users as tutors and learners, restricting specific privileges for tutors.
- **No Feedback or Rating System:** Students cannot provide feedback or rate the

sessions, which limits the ability to evaluate and improve the quality of peer-tutoring experiences.

- **Static Course and Blog Management:** Courses and blogs are added through an admin panel, but there is no provision for users to suggest topics or contribute content dynamically.
- **Scalability Challenges:** The platform's current structure may face challenges if the number of users, courses, and blogs grows significantly, requiring optimization.

4.3 Scope of Future Work

The platform has significant potential for future enhancements to improve its usability and impact. One key area is integrating real-time interaction tools, such as live chat, video conferencing, and screen sharing, to facilitate direct communication between tutors and learners. Advanced scheduling and booking systems can be introduced, allowing students to book sessions based on tutors' availability with notifications and reminders. Dynamic role management can enable users to seamlessly switch between tutor and learner roles. A feedback and rating mechanism can enhance the quality of tutoring while rewarding top contributors. The platform could also support user-generated content, allowing users to suggest courses or blog topics. Gamification elements like badges and leaderboards could motivate participation, while mobile applications for Android and iOS would make the platform more accessible. Additionally, implementing data analytics can provide insights into user engagement and performance, while enhanced security measures will ensure privacy and data protection. Optimizing the platform for scalability will prepare it to handle a larger user base, making it a comprehensive and robust ecosystem for peer tutoring.

Chapter 5

Reference

- Lab Manuals
- Text Books
- https://www.w3schools.com/
- https://www.youtube.com/

Project Github Link: https://github.com/ShantoGUB567/Peer-Tutoring-Network.git