Software Engineering

Study Group Finder Application

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Introduction

The Study Group Finder is a web-based application designed to connect students with mentors for enhanced learning experiences. It addresses the need for structured and organized study groups where students can enroll in courses taught by mentors, receive study materials, and engage in interactive discussions. By streamlining the registration, course selection, and enrollment process, the Study Group Finder aims to create a seamless educational environment that fosters collaborative learning and supports students' academic growth.

This platform leverages modern web development technologies and a backend infrastructure powered by XAMPP. With a focus on user accessibility and functionality, the website provides an intuitive interface that allows mentors to create and manage courses while students can easily browse and join available courses. This project reflects an efficient, user-friendly solution for online academic group management and collaboration.

Literature Survey

With the increasing demand for online education platforms, various systems have been developed to connect students and mentors. Traditional platforms, such as Massive Open Online Courses (MOOCs) and Learning Management Systems (LMS), offer a wide range of courses and resources but may lack personalized interaction and focused group study options. Research shows that students often benefit more from collaborative learning environments, where they can engage in discussions and receive direct support from mentors.

In response to these findings, the Study Group Finder project focuses on facilitating structured group learning with an interactive component. Unlike conventional LMSs, which primarily emphasize content delivery, this platform prioritizes mentor-led study groups, aiming to enhance student engagement and academic performance. The platform's features, such as course previews, streamlined enrollment, and group chat integration, are tailored to create a simple but effective means for students to access resources, clarify doubts, and engage actively in their learning journey.

Proposed system with functionalities

The Study Group Finder offers the following core functionalities to create a straightforward and efficient user experience:

1. **User Registration and Login:** Users are required to register with an email, creating an account as either a mentor or a student. Registered users can log in securely and exclusivity to registered members.
2. **Mentor Course Creation:** Once logged in, mentors have access to a "Create Course" button. They can use this feature to create a new course, which will then be available for student enrollment. Mentors can also view the course preview and a list of students who have enrolled, allowing them to manage their courses effectively.
3. **Course Enrollment for Students:** After logging in, students are shown a list of available courses. Each course has a preview section with an "Enroll" button. Upon enrollment, students are redirected to a dedicated Whatsapp group chat link where they can access course materials, ask questions, and participate in discussions moderated by the mentor.This enables students to clarify doubts, access study notes, and collaborate with peers, creating an interactive learning environment.
4. **Provision of Demo Session Video and Sample Notes by Mentor** To enhance the learning experience and provide students with a clear understanding of course content and teaching style, the Study Group Finder includes a feature for mentors to upload demo session videos and sample notes. This feature serves as an

introductory preview for prospective students, enabling them to make informed decisions about enrolling in a course.

Software Development Life Cycle (SDLC) Used

The development of the Study Group Finder followed the Agile SDLC model, which is widely recognized for its iterative and flexible approach to project management and software development. The Agile model was chosen to ensure responsiveness to changes and continuous improvement through regular feedback.

1. **Requirements Gathering:** Initial discussions were held to understand the basic requirements, including user roles, course management, and interactive features like group chat.
2. **Design**: The system architecture, including the database schema and user interface, was designed with simplicity and efficiency in mind. This stage focused on ensuring an intuitive user experience and seamless backend integration.
3. **Development**: The application was developed using **HTML, CSS, JavaScript, SQL, and PHP, with XAMPP** managing backend connectivity. The development was broken down into short sprints, allowing incremental feature rollouts and testing.
4. **Testing**: Each feature was rigorously tested, both individually and as part of the whole system, to ensure optimal performance and usability. User acceptance testing was also conducted to validate the functionality and user-friendliness of the application.
5. **Deployment**: Once all features were fully functional, the application was deployed on a local server using XAMPP for presentation and demonstration purposes.

UI Design

The UI design of the Study Group Finder focuses on simplicity and functionality, making it user-friendly for both mentors and students. Key design elements include:

- **Intuitive Navigation**: The site has clear navigation, allowing users to register, log in, and access their respective dashboards with ease.
- **Dashboard for Mentors and Students:** Upon login, mentors and students are directed to their dedicated dashboards, displaying essential options like "Create Course" for mentors and course browsing for students.
- **Course Preview Sections:** Each course is displayed in a card-like layout, with essential information such as course name, mentor name, and an "Enroll" button for students.
- **Responsive Design:** The UI adapts well to different screen sizes, making it accessible on both desktop and mobile devices. This responsiveness ensures that users can access the platform from various devices without a compromise in usability.

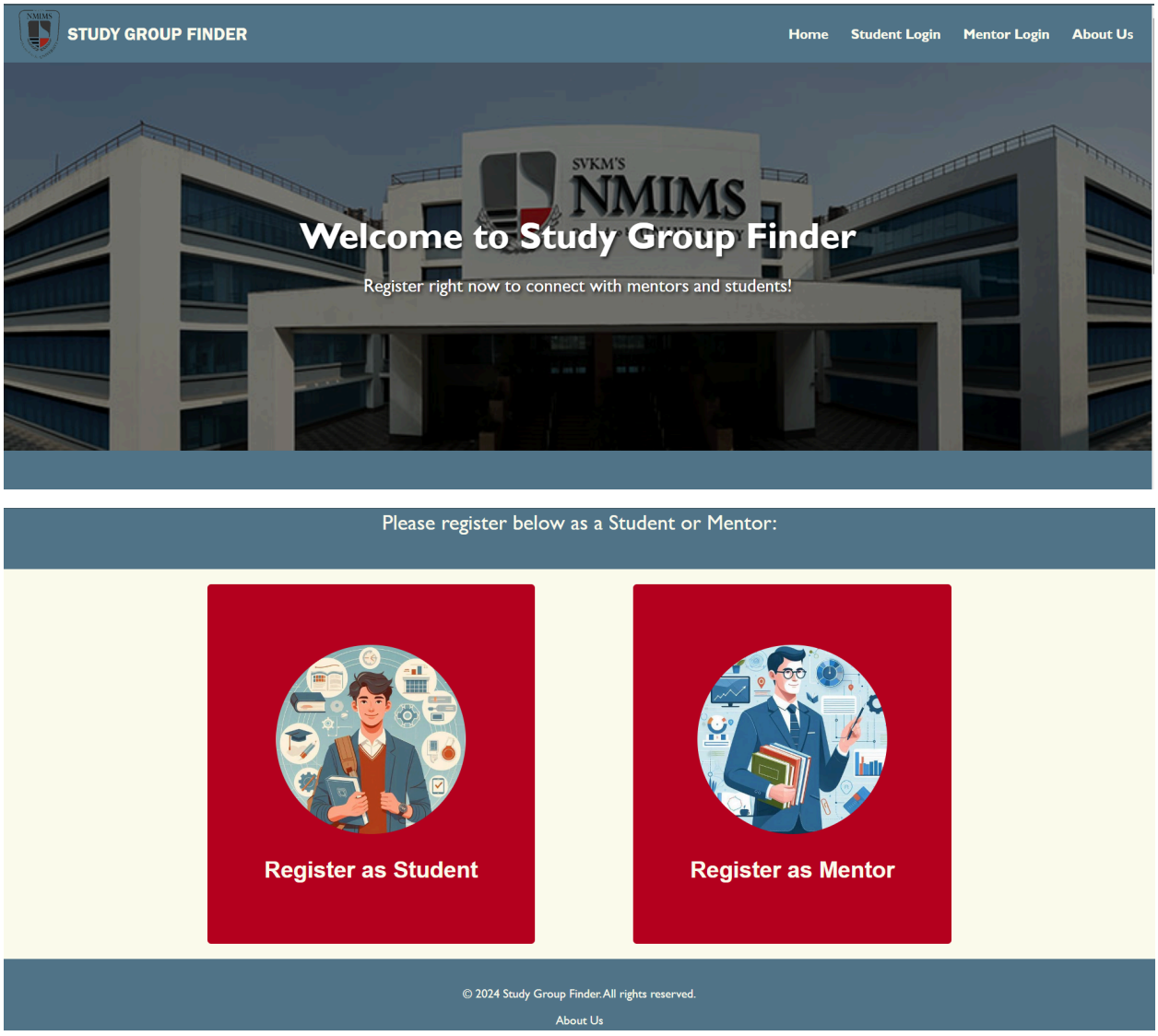
Test Strategy

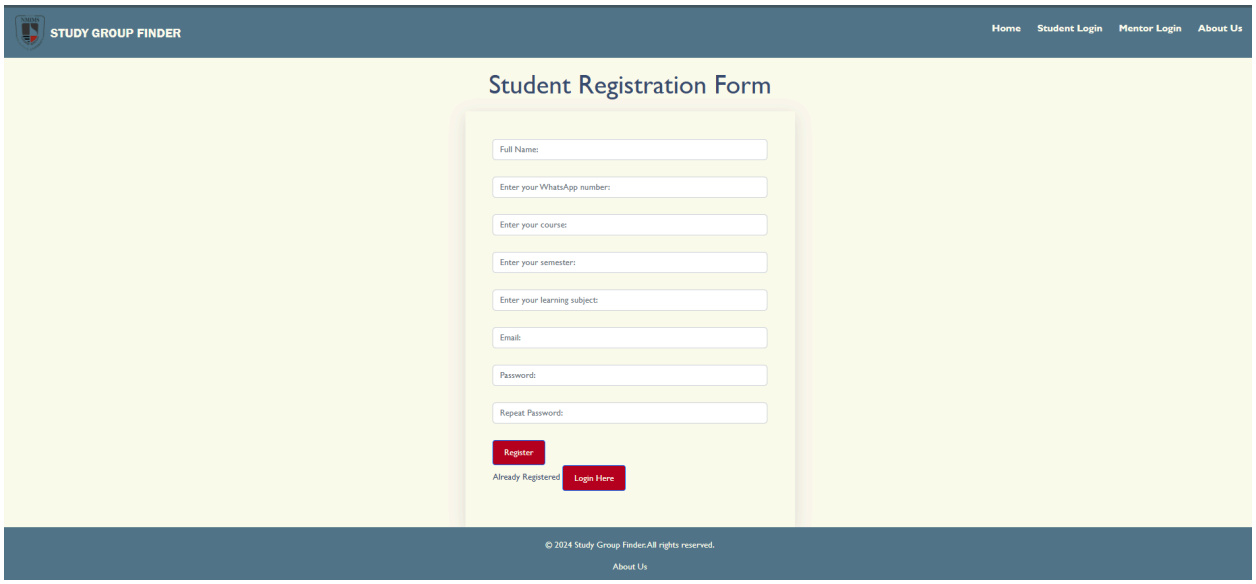
The testing strategy for the Study Group Finder encompassed both functional and non-functional testing methods:

1. **Unit Testing:** Each component, such as registration, login, course creation, and enrollment, was tested individually to ensure correct functionality.
2. **Integration Testing:** The interaction between the frontend and backend was tested to ensure smooth data flow, particularly for login, course creation, and enrollment processes.
3. **Usability Testing**: The UI was tested with different users to ensure the website is user-friendly, intuitive, and straightforward for new users.
4. **Security Testing:** Basic security measures, such as data validation and encryption of passwords, were tested to protect user data and prevent unauthorized access.
5. **Performance Testing:** The system's responsiveness was tested under various loads to ensure smooth and quick access, particularly for course enrollment and chat functionalities.

Screenshot of Interface and background

Homepage:




STUDY GROUP FINDER
Home
Student Login
Mentor Login
About Us
Student Registration Form
Full Name:
Enter your WhatsApp number:
Enter your course:
Enter your semester:
Enter your learning subject:
Email:
Password:
Repeat Password:
Register
Already Registered
Login Here
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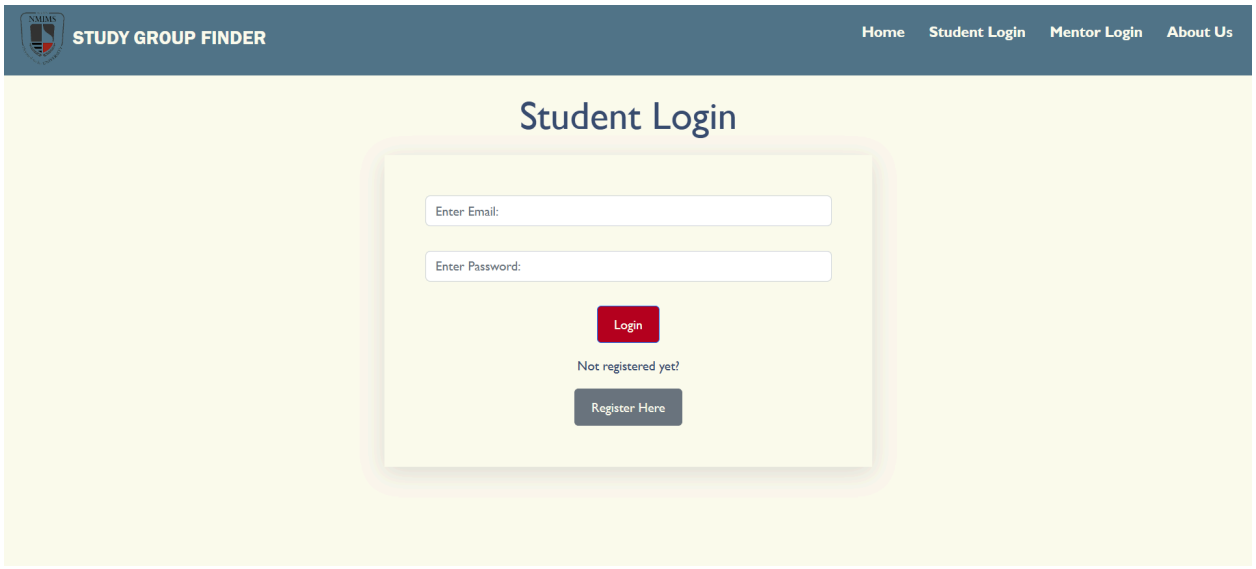
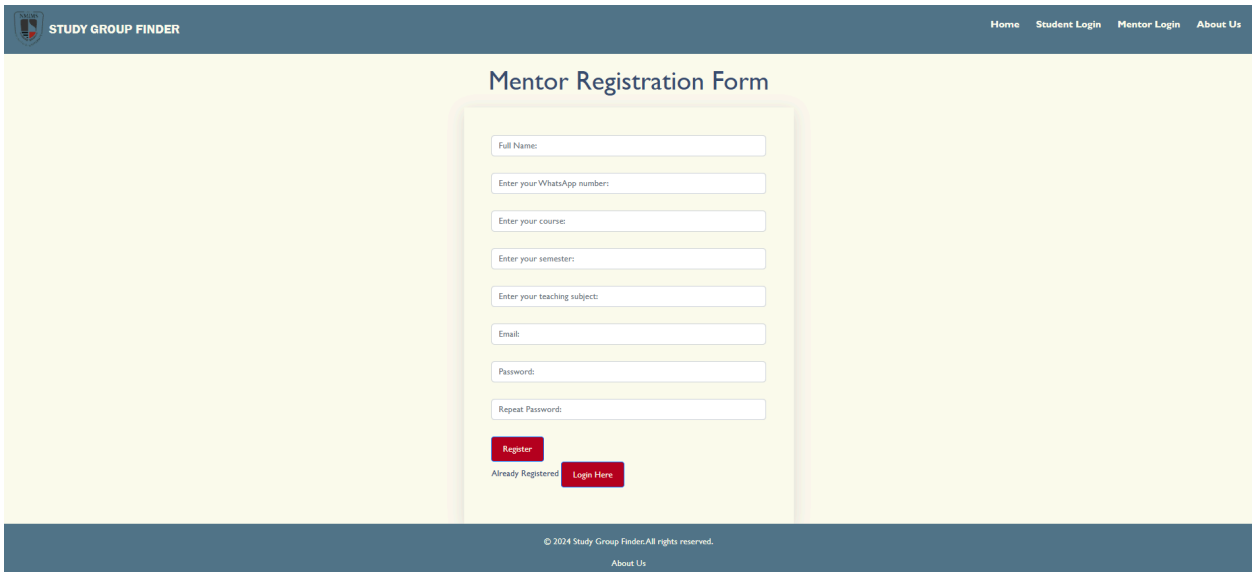
About Us


STUDY GROUP FINDER
Home
Student Login
Mentor Login
About Us
Student Login
Enter Email:
Enter Password:
Login
Not registered yet?
Register Here


STUDY GROUP FINDER
Home
Student Login
Mentor Login
About Us
Mentor Registration Form
Full Name:
Enter your WhatsApp number:
Enter your course:
Enter your semester:
Enter your teaching subject:
Email:
Password:
Repeat Password:
Register
Already Registered
Login Here
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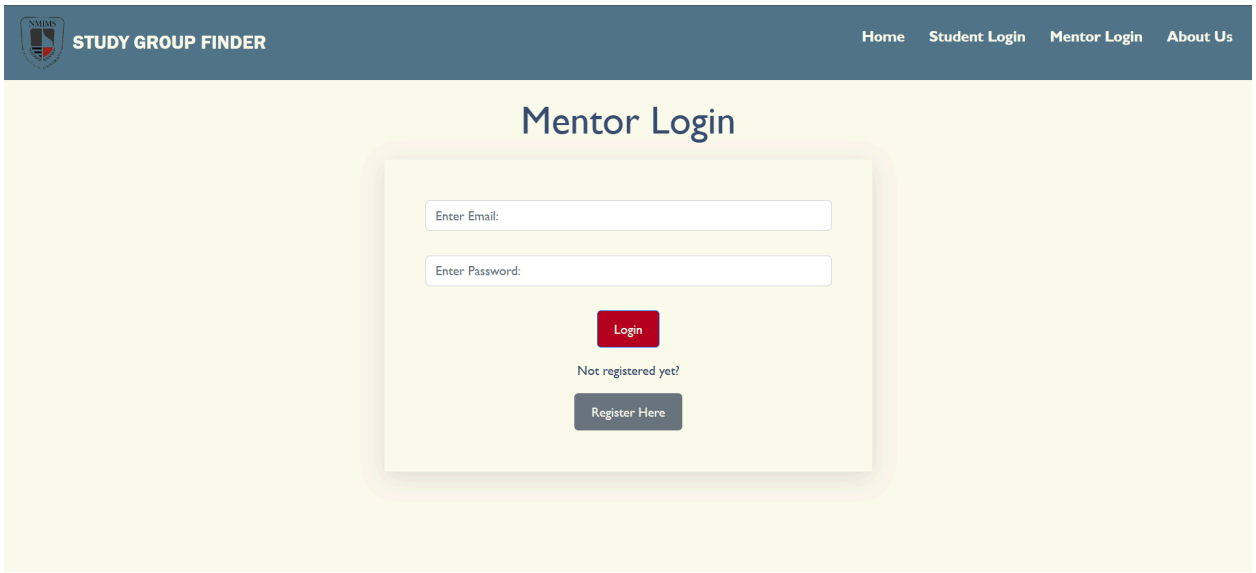
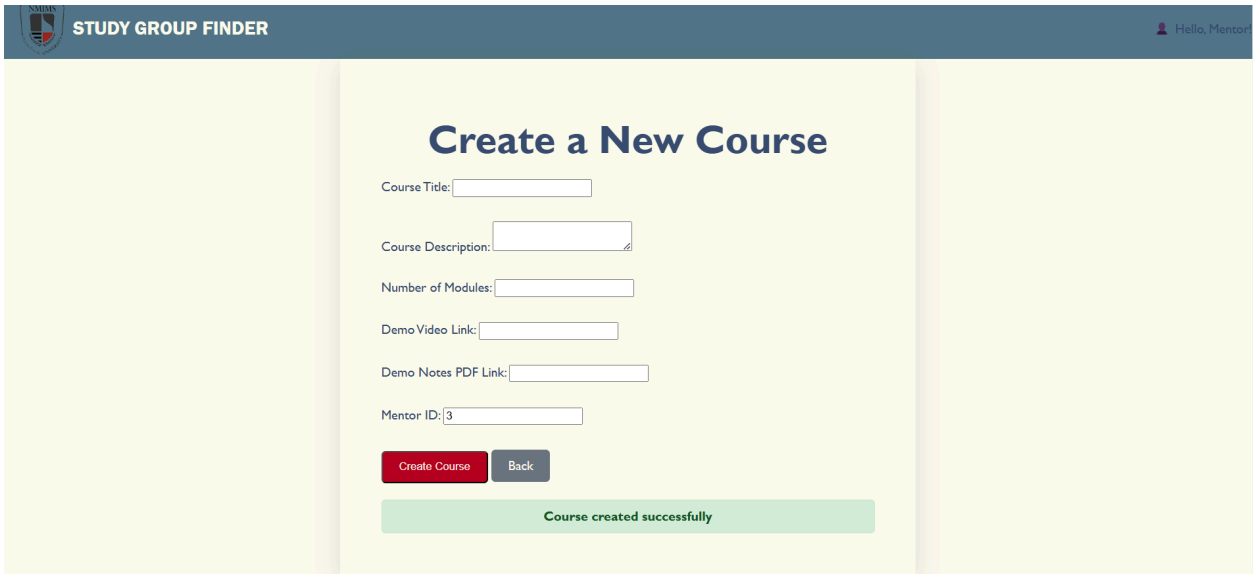
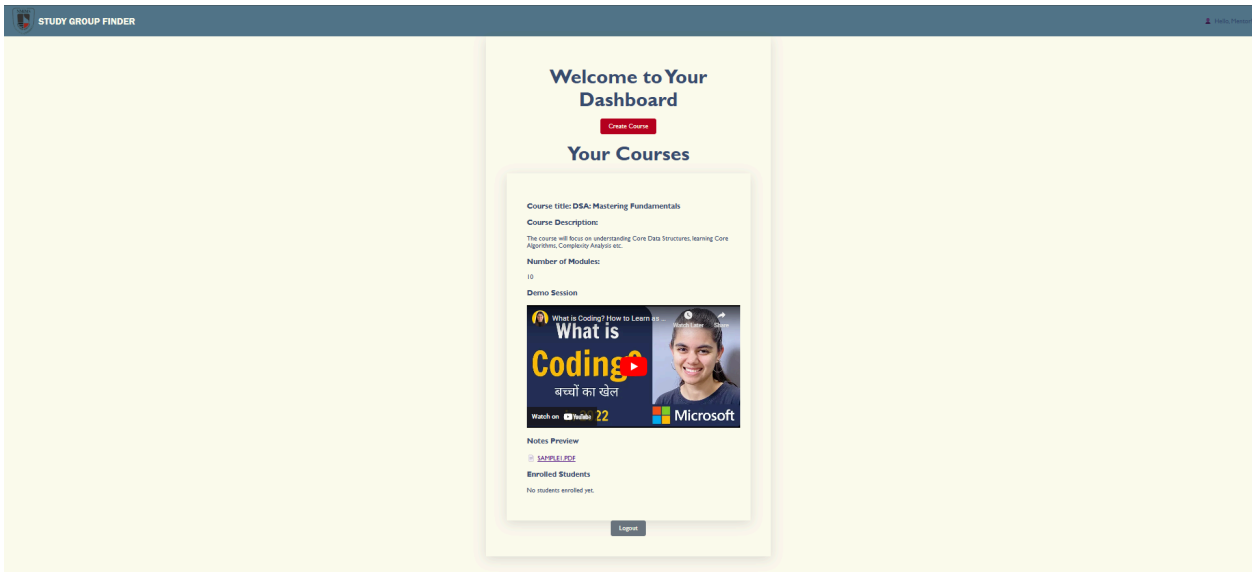
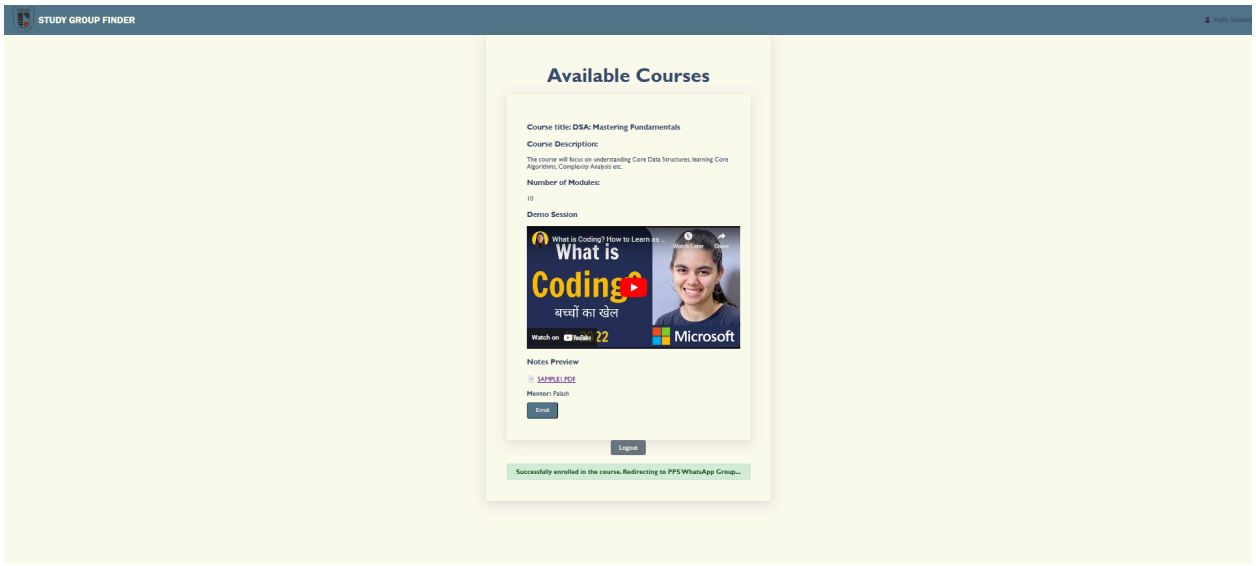
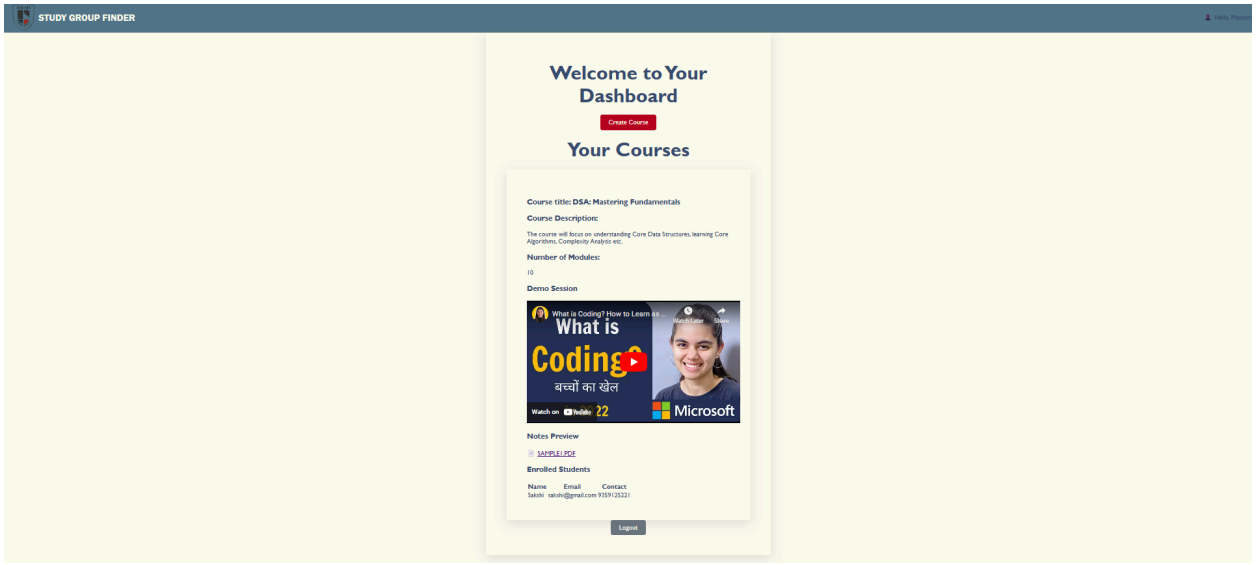
About Us


STUDY GROUP FINDER
Home
Student Login
Mentor Login
About Us
Mentor Login
Enter Email:
Enter Password:
Login
Not registered yet?
Register Here


STUDY GROUP FINDER
Hello, Mentor!
Create a New Course
Course Title:
Course Description:
Number of Modules:
Demo Video Link:
Demo Notes PDF Link:
Mentor ID: 3
Create Course
Back
Course created successfully


STUDY GROUP FINDER
Welcome to Your Dashboard
Create Course
Your Courses
Course title: DSA: Mastering Fundamentals
Course Description:
The course will focus on understanding Core Data Structures, learning Core Algorithms, Complexity Analysis etc.
Number of Modules:
10
Demo Session
What is Coding? How to Learn co...
What is
Coding
बच्चों का खेल
Watch on YouTube
Microsoft
Notes Preview
SAMPLE1.PDF
Enrolled Students
No students enrolled yet.
Logout


STUDY GROUP FINDER
Available Courses
Course title: DSA: Mastering Fundamentals
Course Description:
The course will focus on understanding Core Data Structures, learning Core Algorithms, Complexity Analysis etc.
Number of Modules:
10
Demo Session
What is Coding? How to Learn co...
What is
Coding
बच्चों का खेल
Watch on YouTube
Microsoft
Notes Preview
SAMPLE1.PDF
Mentor: Palash
Enroll
Logout
Successfully enrolled in the course. Redirecting to PPS WhatsApp Group...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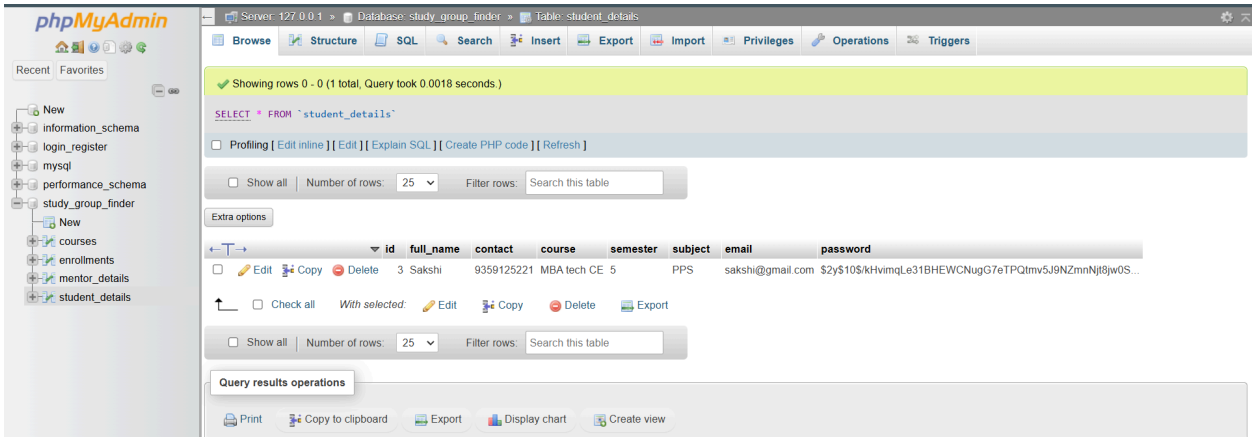
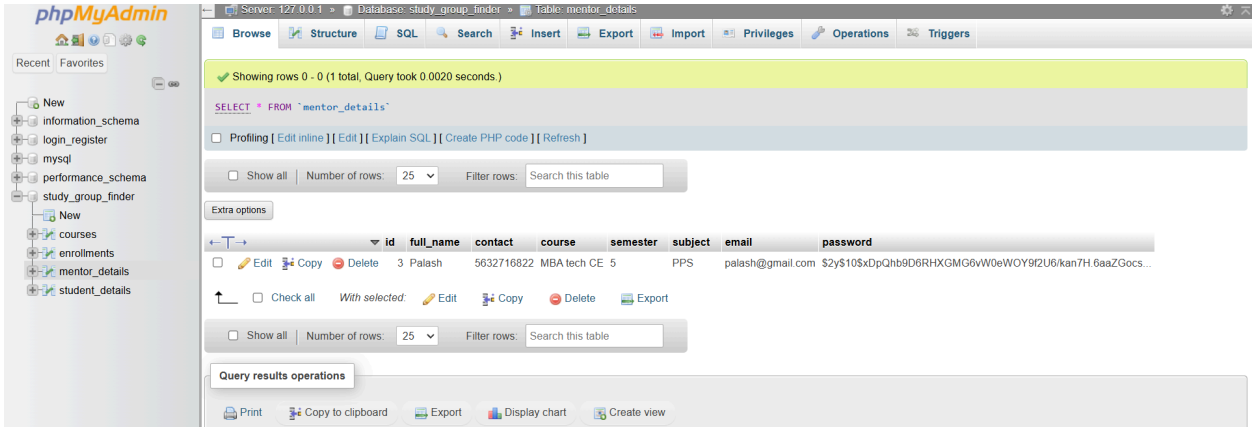
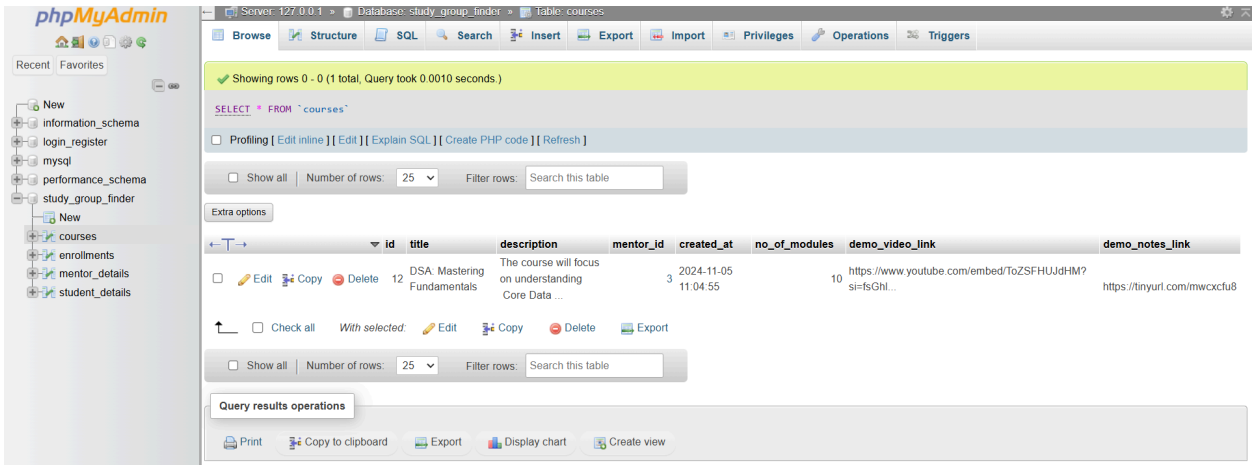
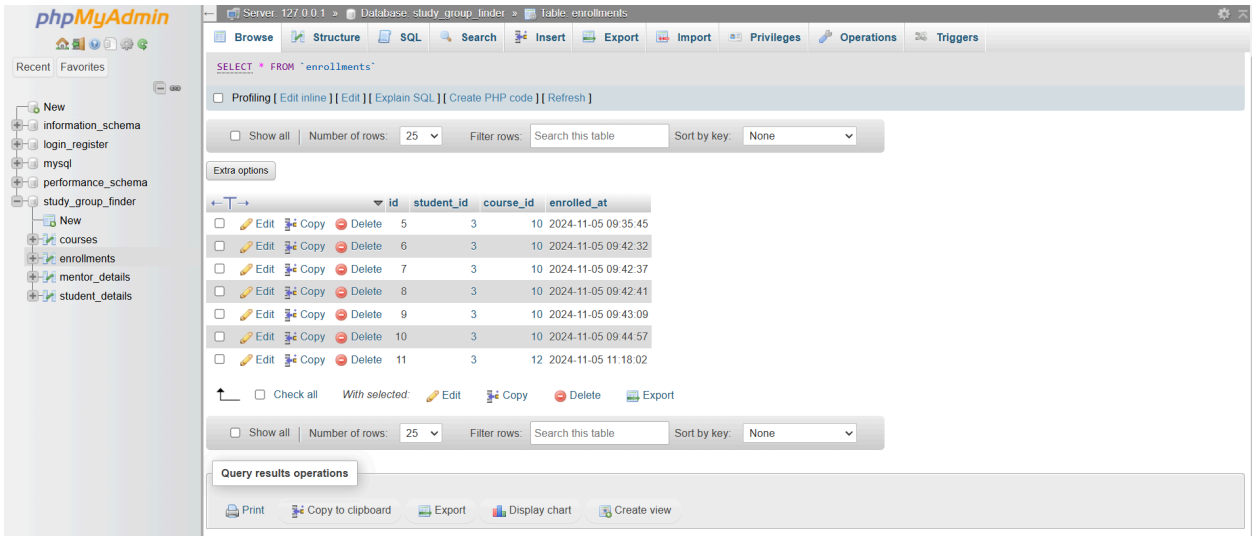
What is
Coding
बच्चों का खेल
Watch on YouTube
Microsoft
Notes Preview
SAMPLE1.PDF
Enrolled Students
Name Email Contact
Sakshi sakshi@gmail.com 9359125221
Logout

Backend-phpMyAdmin








phpMyAdmin
Recent Favorites
New
information_schema
login_register
mysql
performance_schema
study_group_finder
New
courses
enrollments
mentor_details
student_details
Server: 127.0.0.1 » Database: study_group_finder » Table: enrollments
Browse Structure SQL Search Insert Export Import Privileges Operations Triggers
SELECT * FROM `enrollments`
Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]
Show all | Number of rows: 25 Filter rows: Search this table Sort by key: None
Extra options
id student_id course_id enrolled_at
Edit Copy Delete 5 3 10 2024-11-05 09:35:45
Edit Copy Delete 6 3 10 2024-11-05 09:42:32
Edit Copy Delete 7 3 10 2024-11-05 09:42:37
Edit Copy Delete 8 3 10 2024-11-05 09:42:41
Edit Copy Delete 9 3 10 2024-11-05 09:43:09
Edit Copy Delete 10 3 10 2024-11-05 09:44:57
Edit Copy Delete 11 3 12 2024-11-05 11:18:02
Check all With selected: Edit Copy Delete Export
Show all | Number of rows: 25 Filter rows: Search this table Sort by key: None
Query results operations
Print Copy to clipboard Export Display chart Create view

Conclusion

The Study Group Finder successfully creates a structured yet simple environment for students and mentors to interact, collaborate, and learn. By incorporating an easy registration and login system, efficient course management, and interactive group chat, this platform streamlines the process of connecting students with mentors in a meaningful way. The use of fundamental web development tools and technologies has resulted in a functional and accessible platform, demonstrating the potential for scalable and versatile educational tools in today's digital learning landscape.

References

Youtube reference for XAMPP tutorial:

https://youtu.be/2MpZwFoBPjQ?si=kdaRG0eSyVBNiTwN

https://github.com/ironman-zaman/login-register