

CS/CE 353/374-L2 SOFTWARE ENGINEERING

MILESTONE MARVEL

Project Proposal, Interfaces, Features, Server & Tech Stack

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Course Swap Platform

This project aims to develop a course swap website for students at Habib University to exchange courses after the enrollment process. The platform streamlines the process of finding and connecting with students who are willing to swap or offer courses.

A. TECH STACK

- Front END : CSS Bootstrap
- Back END :
 1. Framework: Node.js + Express.js
 2. Database: MongoDB Atlas
 3. Authentication: Firebase Auth

B. SERVER + CLOUD

- Database & Storage (MongoDB Atlas)
 1. Store course swap requests in a cloud database.
 2. Enable real-time updates when a match is found
- Authentication & User Management (Firebase Auth)
 1. Secure student logins using university emails.
 2. Enable profile management and request history.
- Push Notifications & Messaging (Firebase Cloud Messaging)
 1. Notify users when a match is found.
 2. Enable direct messaging for swap negotiations.
- Web Hosting & API (Firebase Hosting)
 1. Host a web-based front end for accessibility.

C. FEATURES:

- Login/Sign-up
 1. Existing students can log in using their Habib ID and password (We would be using dummy passwords).
- Catalog
 1. Users can view the catalog page that contains all the open offers for courses

2. A students can click on the “Interested” button, notifying the original poster that someone is interested in their offer.

- Profile
 1. Users can view each other’s HU email addresses via the profile page to contact others. Users can optionally add their phone numbers.
 2. Profile will be automatically created for each user upon signing in.
- Put up course offering
 1. Students can put up an offer for a course swap OR request a course.
 2. They can also put up an open request i.e. any course that fulfils XYZ requirement OR any course that fits in a certain time slot
 3. Students can also request a course in case they do not have anything to offer.
- Algorithmic matching
 1. When a student puts up an swap offer or request, an algorithm would suggest existing offers that align with the students request

RESOURCES:

Firebase:

<https://firebase.google.com/docs/cloud-messaging>

<https://firebase.google.com/docs/auth>

<https://firebase.google.com/docs/hosting>

MongoDB:

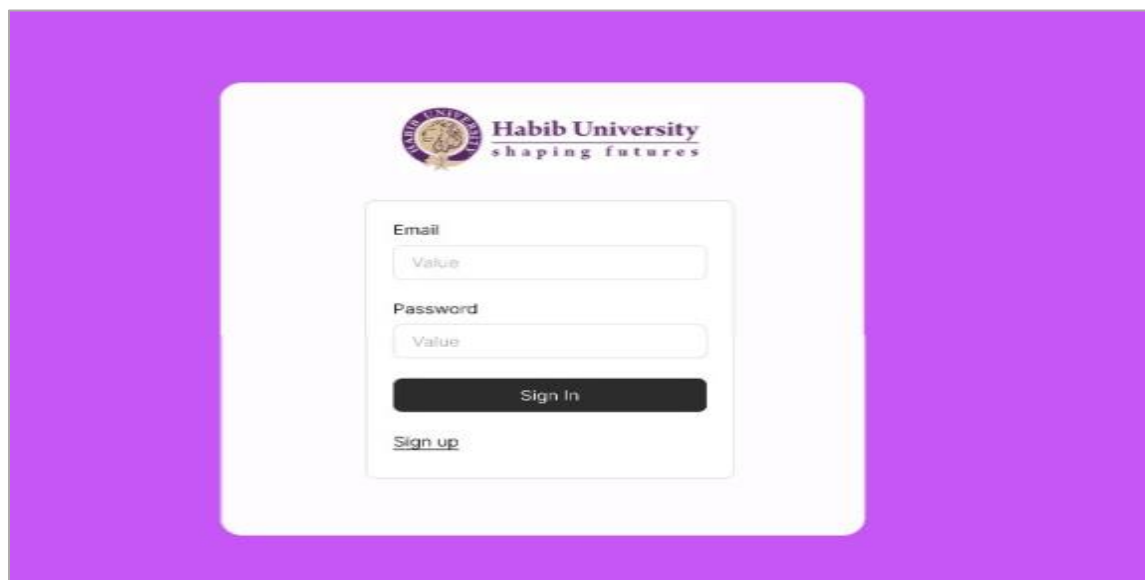
<https://www.mongodb.com/resources/basics/databases/cloud-databases>

<https://www.mongodb.com/docs/atlas/getting-started/>

<https://www.youtube.com/watch?v=bBA9rUdqmgY>

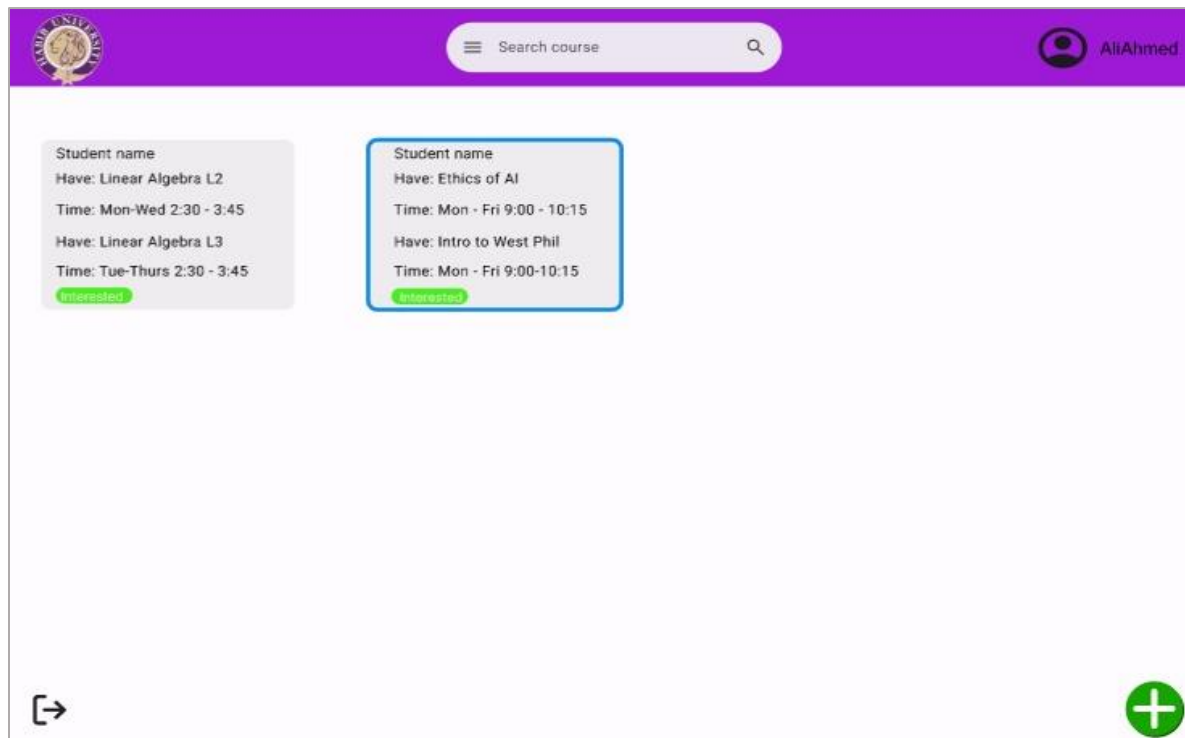
BASIC INTERFACE:

1. Login/Signup with your HU credential:



The image shows a login/signup interface for Habib University. At the top, there is the Habib University logo and the text "Habib University shaping futures". Below this, there is a form with two input fields: "Email" and "Password". Each field has a "Value" placeholder. Below the password field is a "Sign In" button. At the bottom of the form is a "Sign up" link.

2. Main Catalogue

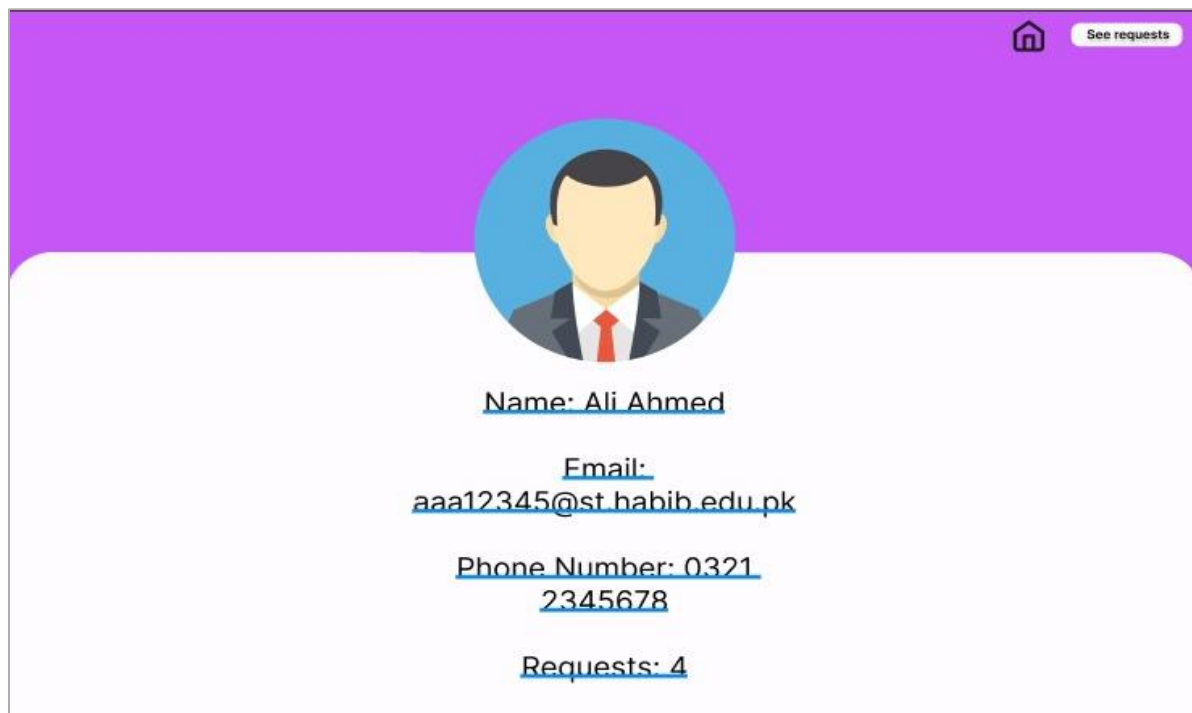


The Main Catalogue interface features a purple header with the university logo on the left, a search bar labeled "Search course" in the center, and a user profile icon labeled "AliAhmed" on the right. The main content area displays two course cards. The first card, for "Linear Algebra L2", lists the time "Mon-Wed 2:30 - 3:45" and "Linear Algebra L3" with time "Tue-Thurs 2:30 - 3:45", and includes a green "Interested" button. The second card, for "Ethics of AI", lists the time "Mon - Fri 9:00 - 10:15" and "Intro to West Phil" with time "Mon - Fri 9:00-10:15", and also includes a green "Interested" button. A green plus icon is located in the bottom right corner, and a left arrow icon is in the bottom left corner.

Student name
Have: Linear Algebra L2
Time: Mon-Wed 2:30 - 3:45
Have: Linear Algebra L3
Time: Tue-Thurs 2:30 - 3:45
Interested


Student name
Have: Ethics of AI
Time: Mon - Fri 9:00 - 10:15
Have: Intro to West Phil
Time: Mon - Fri 9:00-10:15
Interested

3. User Profile



The User Profile interface has a purple header with a home icon and a "See requests" button. The profile section features a circular placeholder for a user avatar. Below the avatar, the user's details are listed: "Name: Ali Ahmed", "Email: aaa12345@st.habib.edu.pk", "Phone Number: 0321 2345678", and "Requests: 4".

See requests



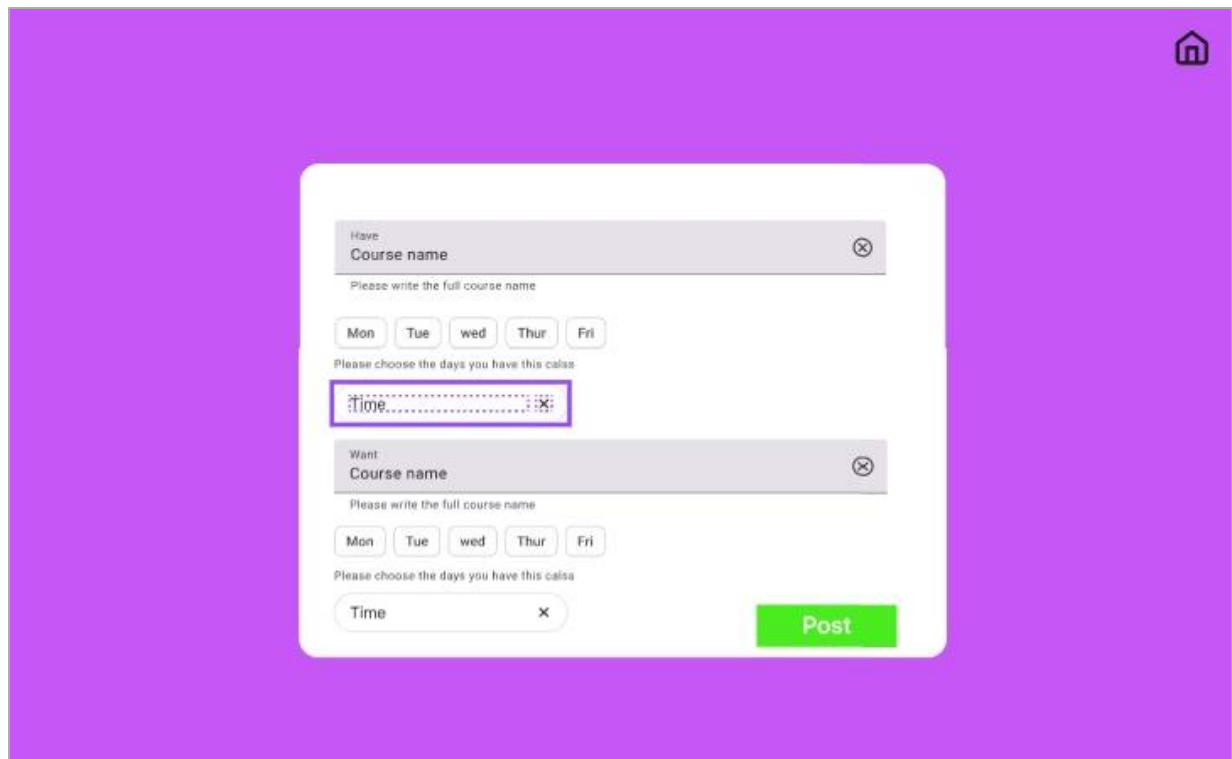
Name: Ali Ahmed

Email:
aaa12345@st.habib.edu.pk

Phone Number: 0321
2345678

Requests: 4

4. Add Request



Have:

Course name

Please write the full course name

Mon Tue wed Thur Fri

Please choose the days you have this calas

Time

Want:

Course name

Please write the full course name

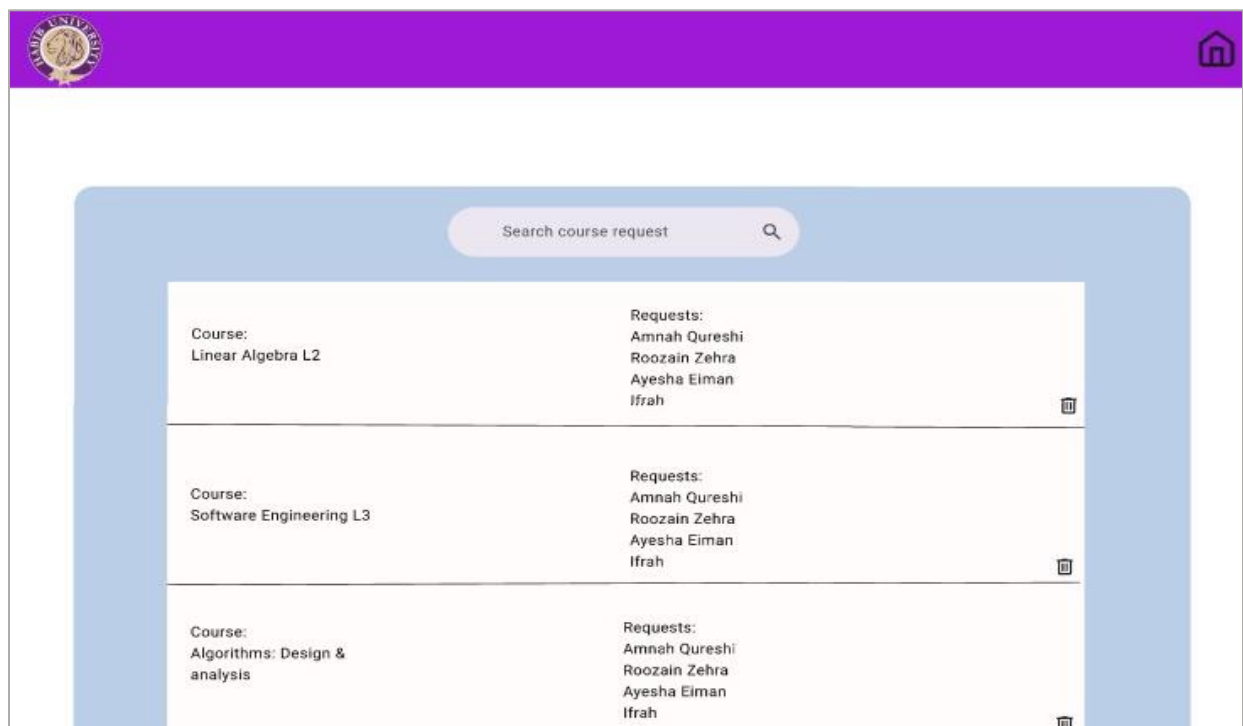
Mon Tue wed Thur Fri

Please choose the days you have this calas

Time

Post

5. Your Request Catalogue



Search course request	
Course: Linear Algebra L2	Requests: Amnah Qureshi Roozain Zehra Ayesha Eiman Ifrah
Course: Software Engineering L3	Requests: Amnah Qureshi Roozain Zehra Ayesha Eiman Ifrah
Course: Algorithms: Design & analysis	Requests: Amnah Qureshi Roozain Zehra Ayesha Eiman Ifrah