SW Engineering CSC648/848 Fall 2021

TwoHelpYou

Project Application And Name: Provide tutoring to SFSU students – "TwoHelpYou."

Team Number: Team 01

Team Members and Roles:

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Milestone: Milestone 2

Date: 2021, October 28

History:

Version	**Date**
M2V1	2021, October 28
M2V2	2021, October 21

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1. Executive Summary

It is challenging to decide on any particular website among the various online tutoring services to help students excel in their coursework. Our products hope to provide the students of San Francisco State University (SFSU) with a better product. Our team aims to provide a simplified experience for those who choose to use our product. This experience would not be an overload of information or too broad in material to the users. By currently only focusing on the students here at SFSU, we hope to make it easy to tutor and find tutors. This specialization makes it easier to find the course they need help in and not some subject overview. Other services may only provide a wide range of assistants in the broad understanding of math or science. Still, our team hopes that our product "**TwoHelpYou**" can provide pinpoint assistance on their particular course at SFSU.

Our team's decision to name our product "**TwoHelpYou**" is also our goal. We can provide two parties with assistance, students past and present, to help other students. Our team hopes to only employ students and graduates from SFSU who have bravely pathfinding the courses offered at SFSU for tutoring and are willing to share their experience. By having students who have taken the course be tutors, we can provide other students seeking help with a unique experience. This experience would be more specialized and specific assistance that guides them down the path of success for that particular class that other services may not be able to provide. Such as the specific material covered in the syllabus and the style or method sought by the professor. Due to narrowing our audience of users, we can contract and simplify the search to make it easy for students to find help in the course they are taking. At the same time, it will easily allow tutors to sign up for which classes they are qualified to tutor by listing what courses they have completed. By employing students and graduates, we can also proudly support and give back to our community which is the dream of all alumni.

As students here at SFSU, we like to say we know the needs of our community because we are a part of it. Being part of this community with the ability to give back, we hope to connect students. By connecting the students, we can help them by providing a job or assistance in their classes. Hosting a platform for them to connect, we create a positive feedback loop of former and current students assisting one another. Our mission statement is to provide a platform and service for students to connect and help other students.

2. List of main data items and entities

1. Unregistered User:
    - Unregistered users are the users who can view the contents of the website. However, these users don't have permission to schedule tutoring services.
    - To schedule appointments or post questions, unregistered users are required to register
2. Registered User:
    - Registered users can view the web page's contents, schedule appointments with tutors, and post questions in the forum.
    - To schedule or post questions, registered users are required to login
    - Required Data:
        - first_name: First name of the registered user created at the time of registration
        - last_name: last name of the registered user created at the time of registration
        - email: Valid SFSU email
        - password: Password created at the time of registration
        - username: Username created at the time of registration
        - usertype: Type of user could be tutor, student, or admin
        - photopath: Relative path of the photo
3. Admin:
    - Admin is the registered user who has complete system control of the website
    - These users have the privilege to add tutors
4. Tutor Posting:
    - Posting is a service that a website provides where tutors can provide their posts for tutoring service courses.
    - Required data:
        - tutorname: Tutor name to be displayed on the website
        - courses: Courses offered by the tutor
        - date: Date tutor is available for tutoring
        - time: Time tutor is available for tutoring
5. Registration Form:
    - Registration form can create an account for the new unregistered user.
    - Required Information:
        - first_name: Legal First Name
        - last_name: Legal Last Name
        - username: Unique username
        - email: Valid SFSU email
        - password: Character must have 8 or more characters, including at least one uppercase and one special character

6. Tutor Profile:
    - Profiles are created for tutors with their status of availability
    - Profiles can have reviews and rating
    - Required Data:
        - First Name: First name of Tutor
        - Last Name: Last name of Tutor
        - Reviews: Reviews given to the tutor by the registered user
        - Rating: Rating given to the tutor by the registered user
        - Photo: Optional photo of the tutor
7. Tutoring Schedule:
    - Tutor Schedule will be displayed on the tutor profile page.
8. Forums:
    - Forum is a place where students and tutors can post questions
    - Registered users can log in to post questions or reply to the post
    - Required data:
        - title: Title of the question posted by a registered user
        - comment: Comments on the post of the registered users
        - date_time: Record of date and time of comment and question in forum
9. Search:
    - Users can search through the list of available tutors
    - Users can search through the list of available courses tutors are offering
    - Users can search through the list of forums
10. Message:
    - Message can be sent from one registered user to another registered user
    - Required Data:
        - message_id: Message will have its own unique id
        - time: Date and time when the message was sent
        - message: Message is the text sent and received by the registered user.
        - reciever_id: Id of the registered user who receives the message
        - sender_id: Id of the registered user who sends the message
11. Comment:
    - Registered users can comment on the forum.
    - Required Data:
        - comment_id: comment has its own unique id
        - forum_id: comment is associated with the forum where the registered user has already posted questions or concerns.
        - comment: comment posted by the registered user when they answer in forum
        - user_id: comment is associated with the registered user
12. Course:
    - Posting of tutors will be categorized according to their course prefix and postfix and users can search through desired courses
    - Required Data:
        - course_id: Course has its own unique id
        - course_prefix: Course prefix is the prefix of the course name

- course_ postfix: Course postfix is the number following course_prefix

3. Functional Requirements

Priority 1:

Unregistered User

1. Unregistered user shall be able to create an account with an SFSU email
2. Unregistered user shall be able to search for a tutor using course number
3. Unregistered user shall be able to search for a tutor using major name
4. Unregistered user shall be able to search for a tutor using the tutor name
5. Unregistered user shall be able to view tutor profile

Registered User

6. Registered user shall be able to use all functions from Unregistered User
7. Registered user shall be able to login with their SFSU email
8. Registered user shall be able to log out
9. Registered user shall be able to message a user offering to tutor
10. Registered user shall be able to make a post stating tutoring availability

Administrator

11. Administrator shall be able to use all the functions from Registered User
12. Administrator will have access to database and administrative tools
13. Administrator shall be required to approve tutor post using admin tool
14. Administrator shall be able to delete post using admin tool
15. Administrator shall be able to suspend accounts using admin tool
16. Administrator shall be able to delete accounts using admin tool

Priority 2:

Unregistered: User:

17. Unregistered user shall be able to view reviews sorted by review level
18. Unregistered user shall be able to view a post that another student creates

Registered User:

19. Registered user shall be able to schedule a meeting with a user offering tutoring
20. Registered user shall be able to post a review on a post

Priority 3:

Unregistered User:

21. Unregistered user shall be able to look at the forum

Registered User:

22. Registered user shall be able to set up a group study session with other users and a tutor
23. Registered user shall be able to send a message to another registered user
24. Registered user shall be able to post to the forum
25. Registered user shall be able to report a user if they encounter an unruly registered user and the report will be sent to the admin.
26. Registered User shall use website tools during a virtual session with a tutor
27. Registered User that is a tutor shall be able to respond to student post to answer question
28. Registered User shall be able to answer a forum post
29. Registered User shall be able to search up certain forum posts

Administrator

30. Administrator shall be able to delete forum post using admin tool

4. UI Storyboards for each main use case

Use Case 1:
Mark needs help with his web development homework after hours. (1) He uses the search function on TwoHelpYou to find his course. (2) Using the search results, he selects a tutor whom he likes. (3) Mark clicks on the schedule session button to set up a session with Arthur (tutor). (4) He fills out the form and clicks submit. (5) He is prompted to log in. (6) He fills out the registration form and clicks submit.

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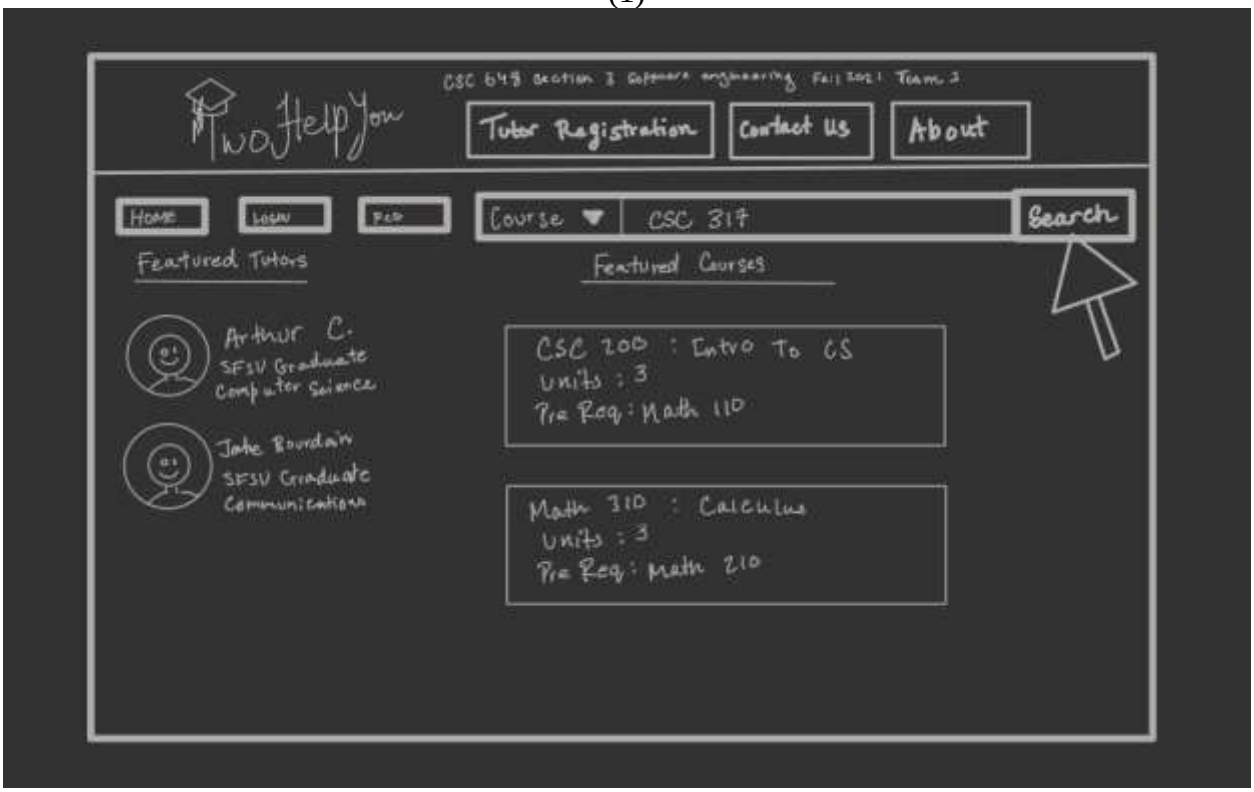

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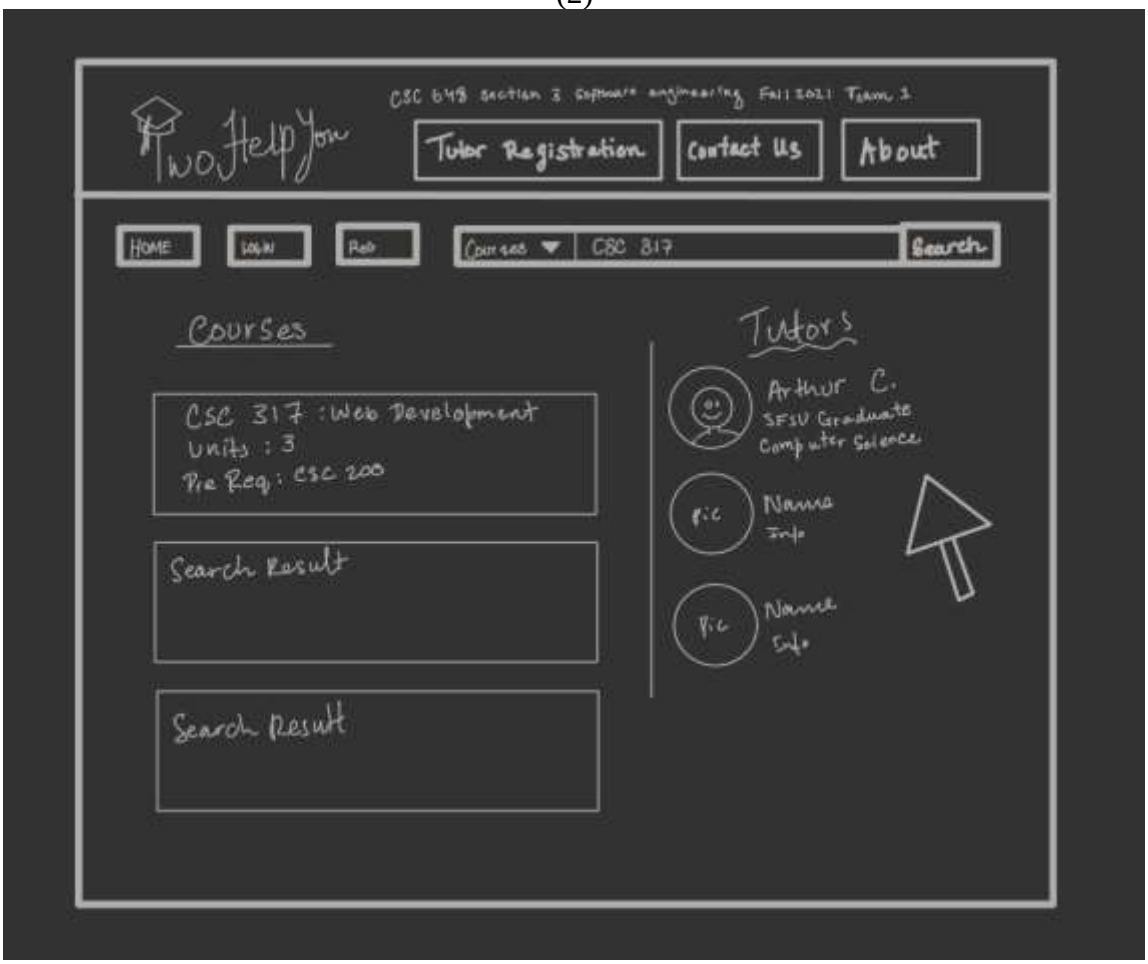
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Arthur C.
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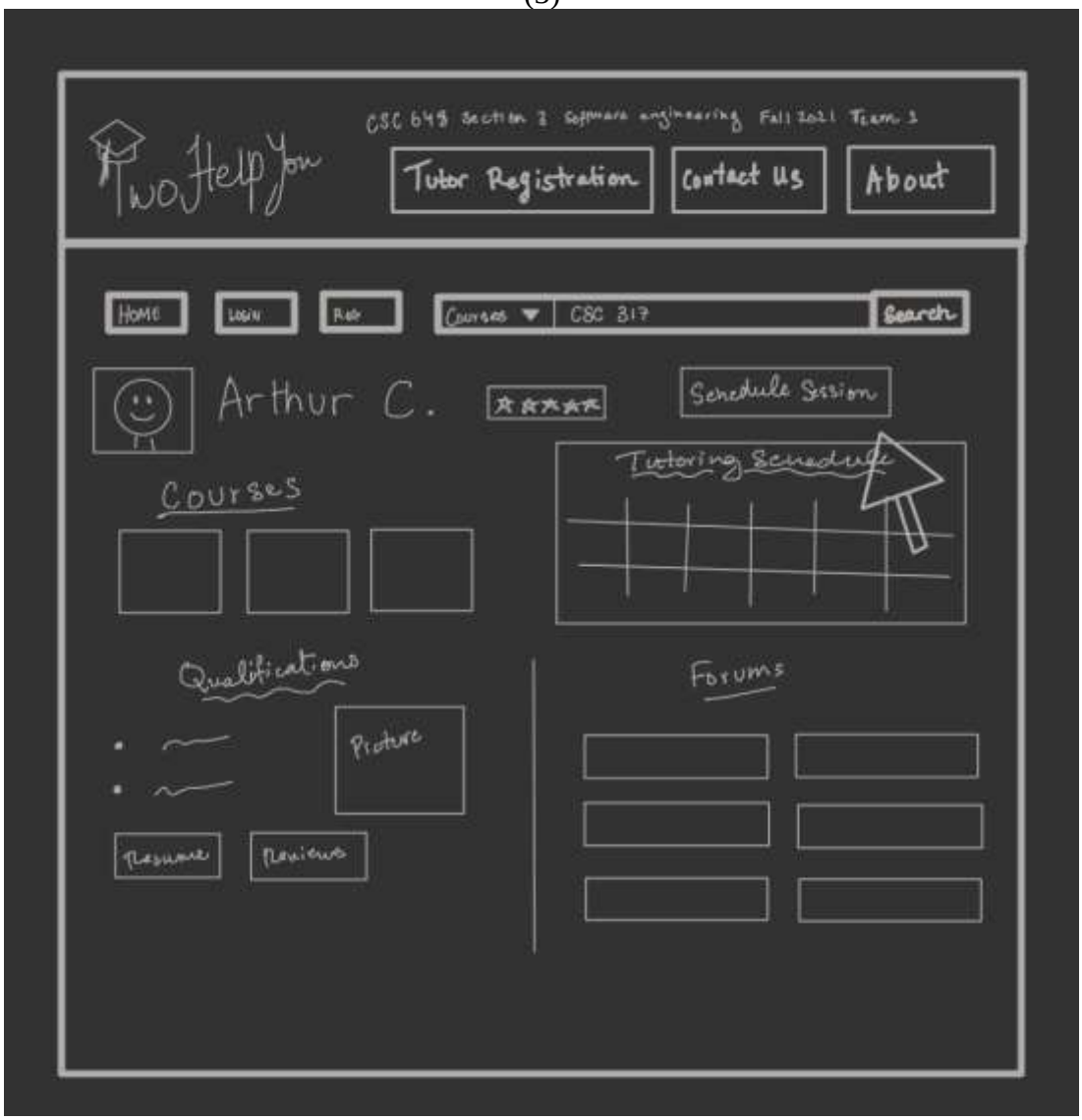
TwoHelpYou
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Tutor Registration
Contact Us
About
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Tutor scheduling form
Subject
Course Number
Email / contact Info
Extra Info / Questions
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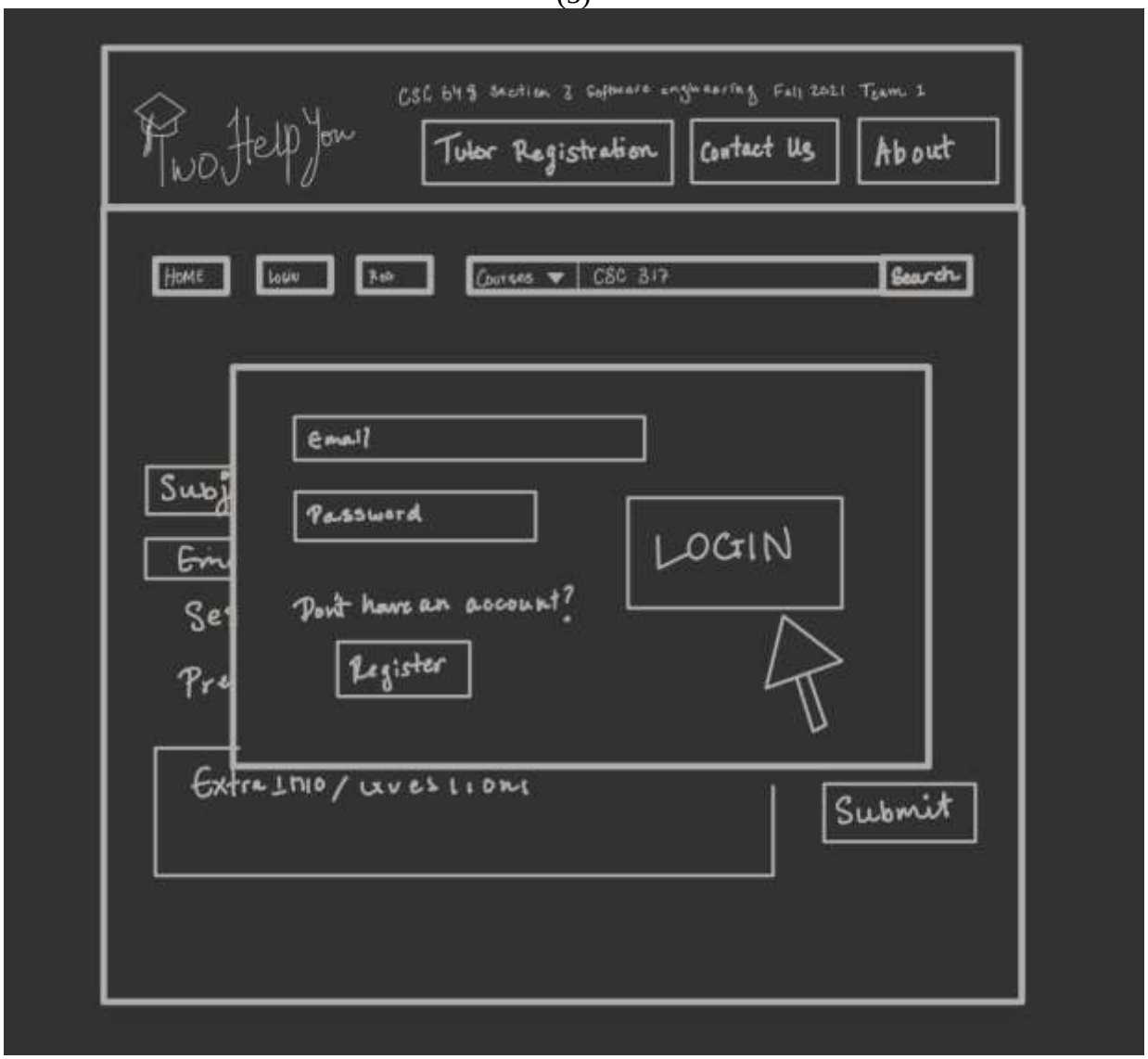
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Tutor Registration
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Don't have an account?
Register
Extra info / questions
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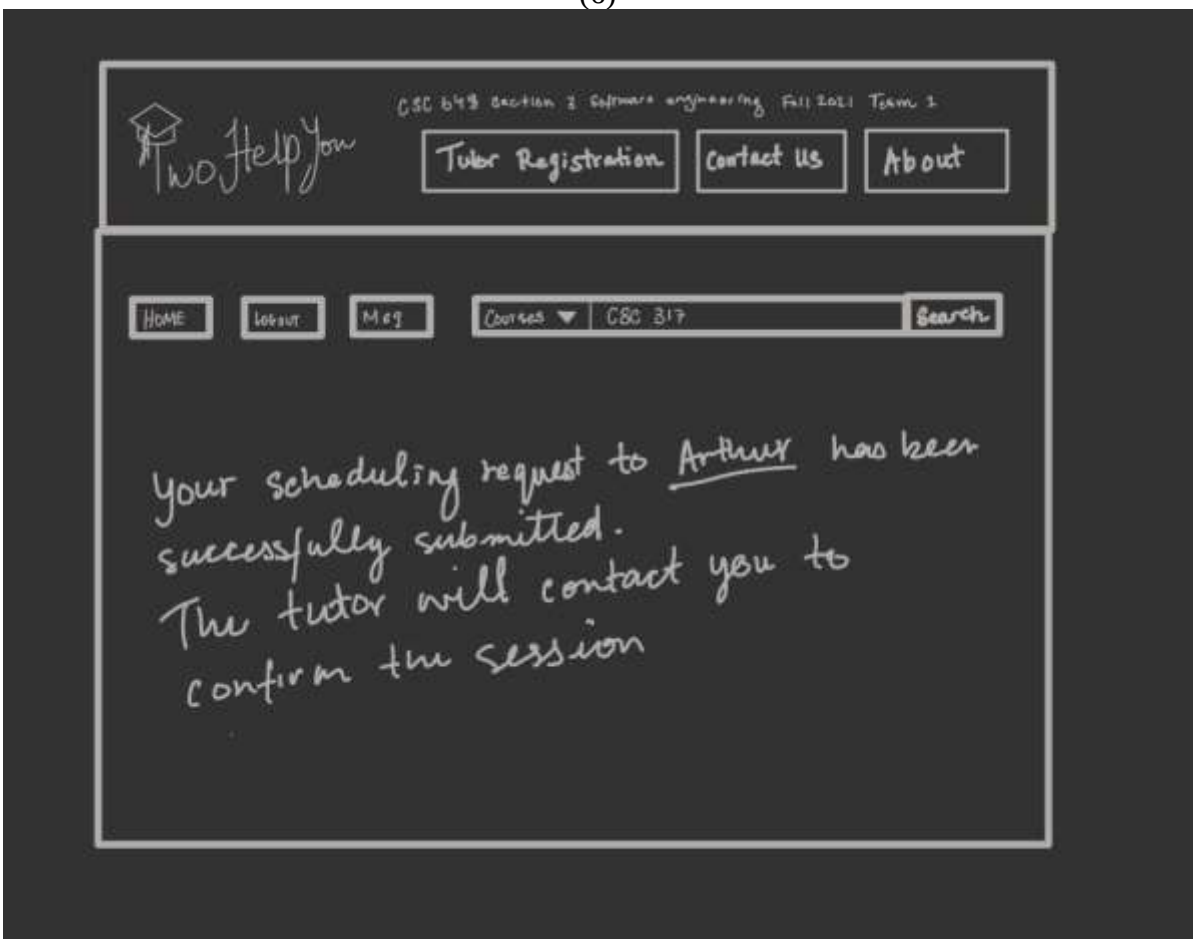
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Two Help You
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Your scheduling request to Arthur has been successfully submitted.
The tutor will contact you to confirm the session

Use Case 2:
Anish wants to sign up as a tutor on TwoHelpYou. (1) He clicks the registration link on the home page. (2) He fills out the registration form and clicks submit. (3) He is prompted to log in, and he does so. (4) Anish receives a confirmation that his application has been submitted.

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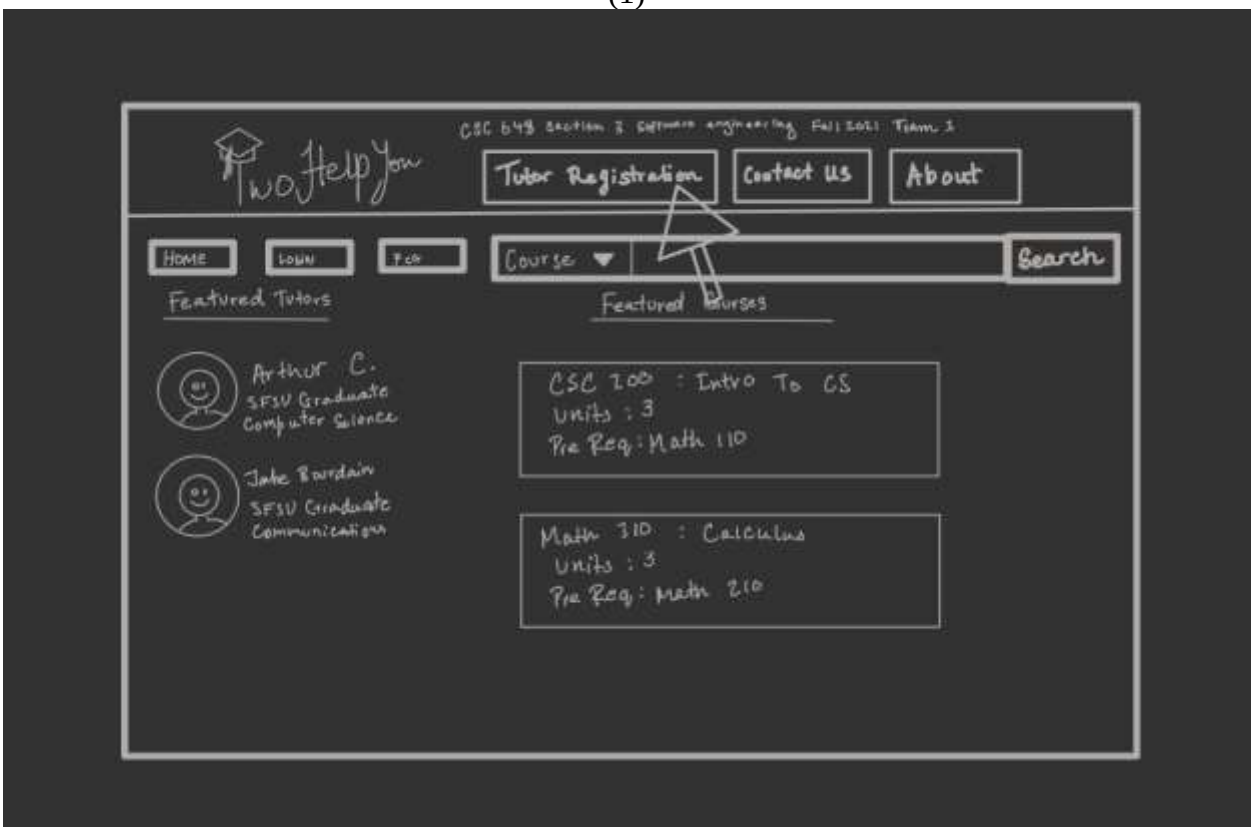

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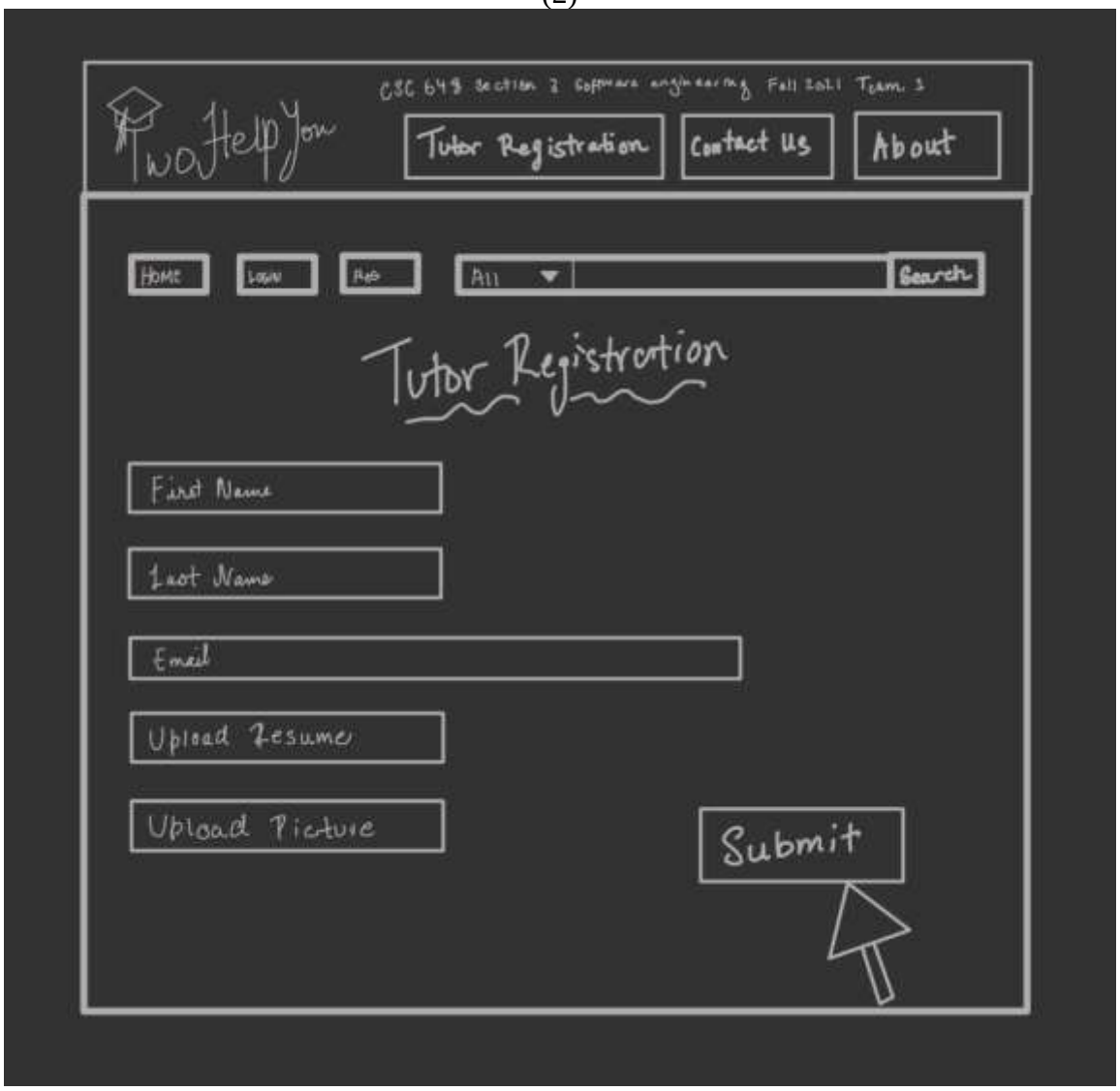
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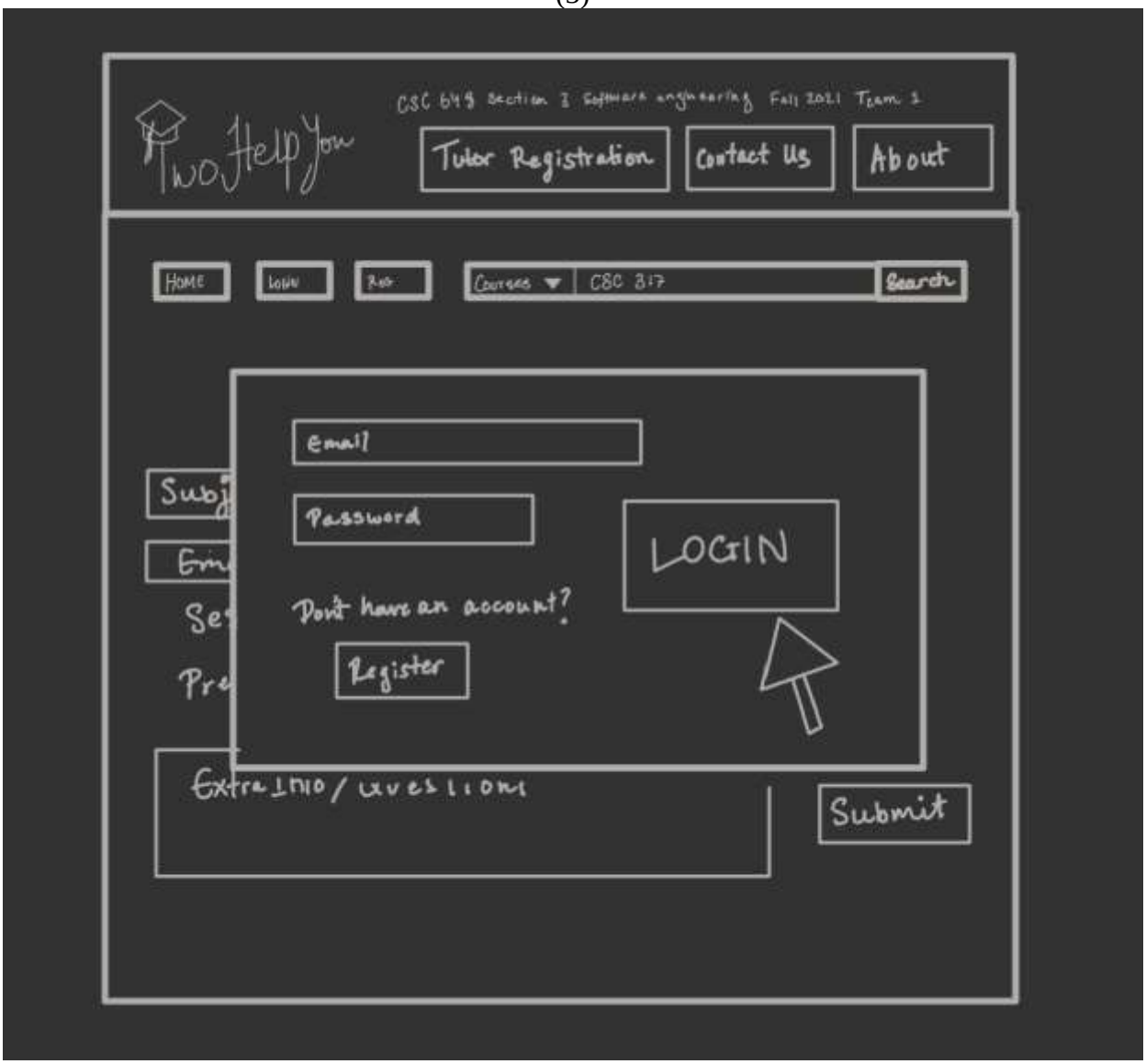
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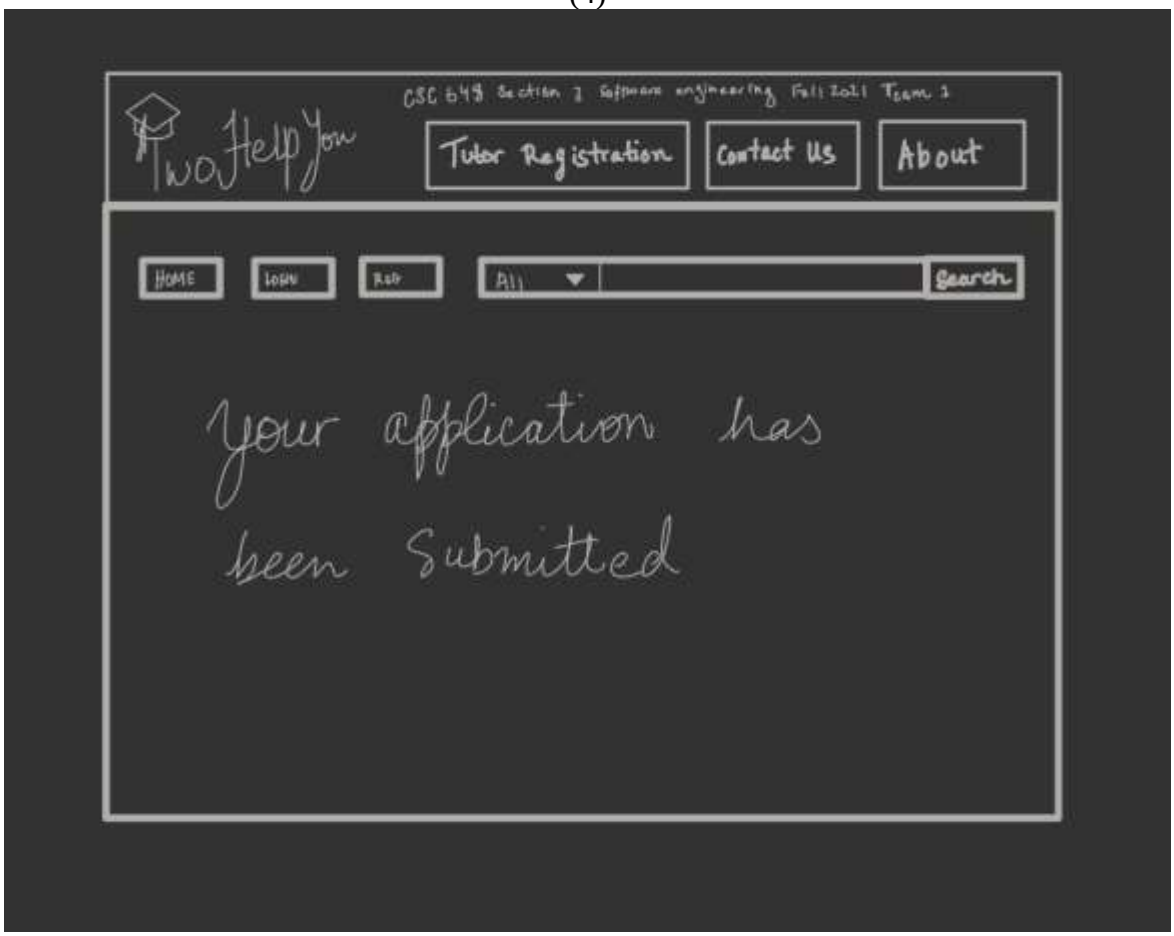
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your application has
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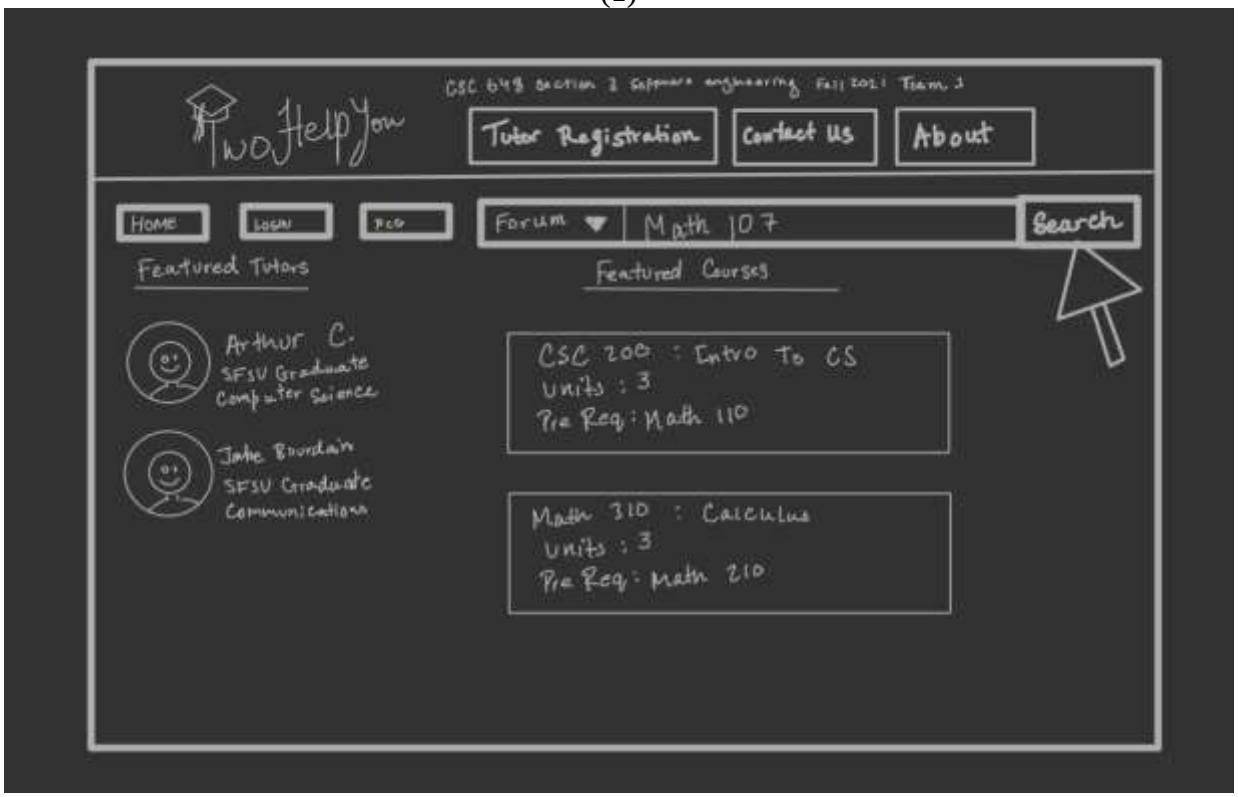
Use Case 3:
Calvin needs help on one of his Math 107 homework questions. (1) He uses the TwoHelpYou search function to search for forums related to his class. (2) He is presented with search results that contain forums related to math 107, and he selects one that fits his needs. (3) He is taken to the forum page to see an answer posted by a verified tutor.

(1)



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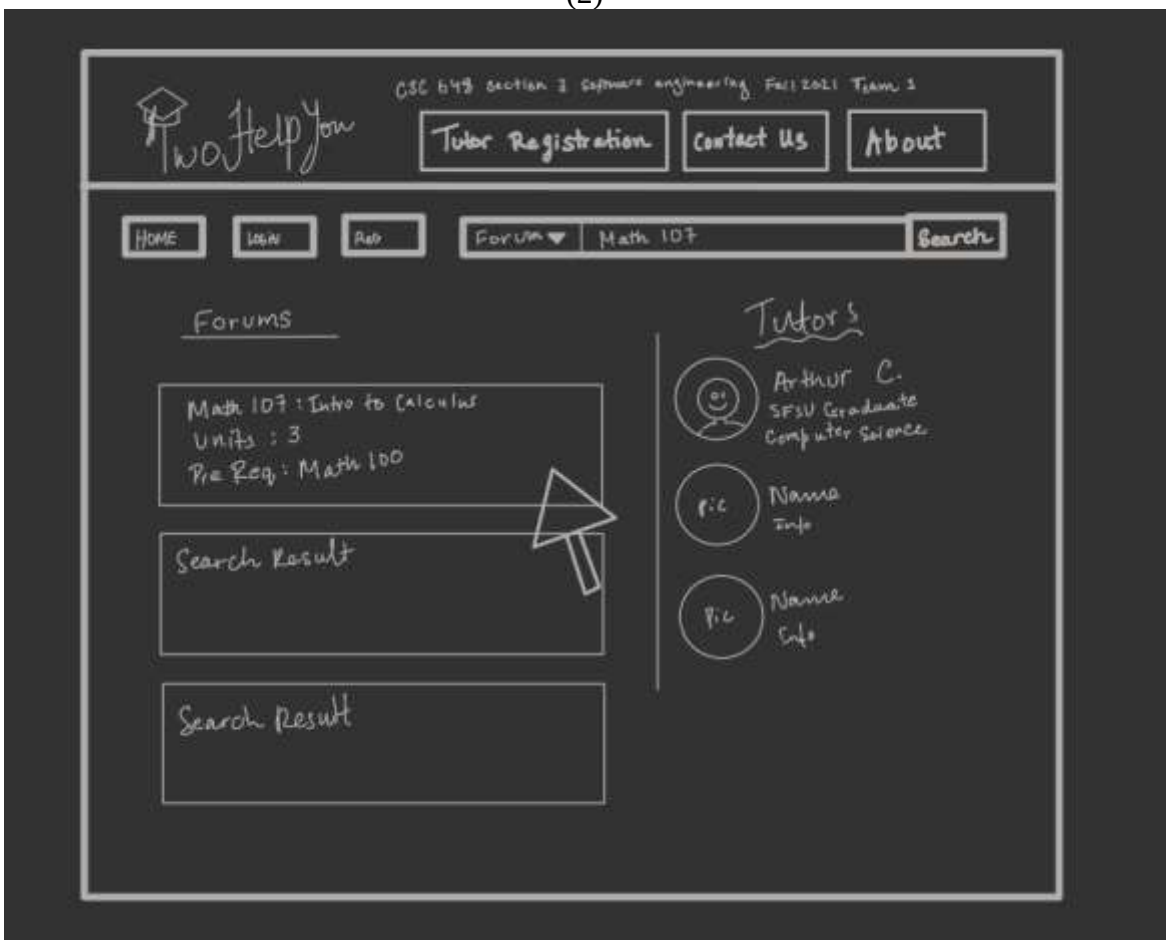
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Arthur C.
SFSU Graduate
Computer Science
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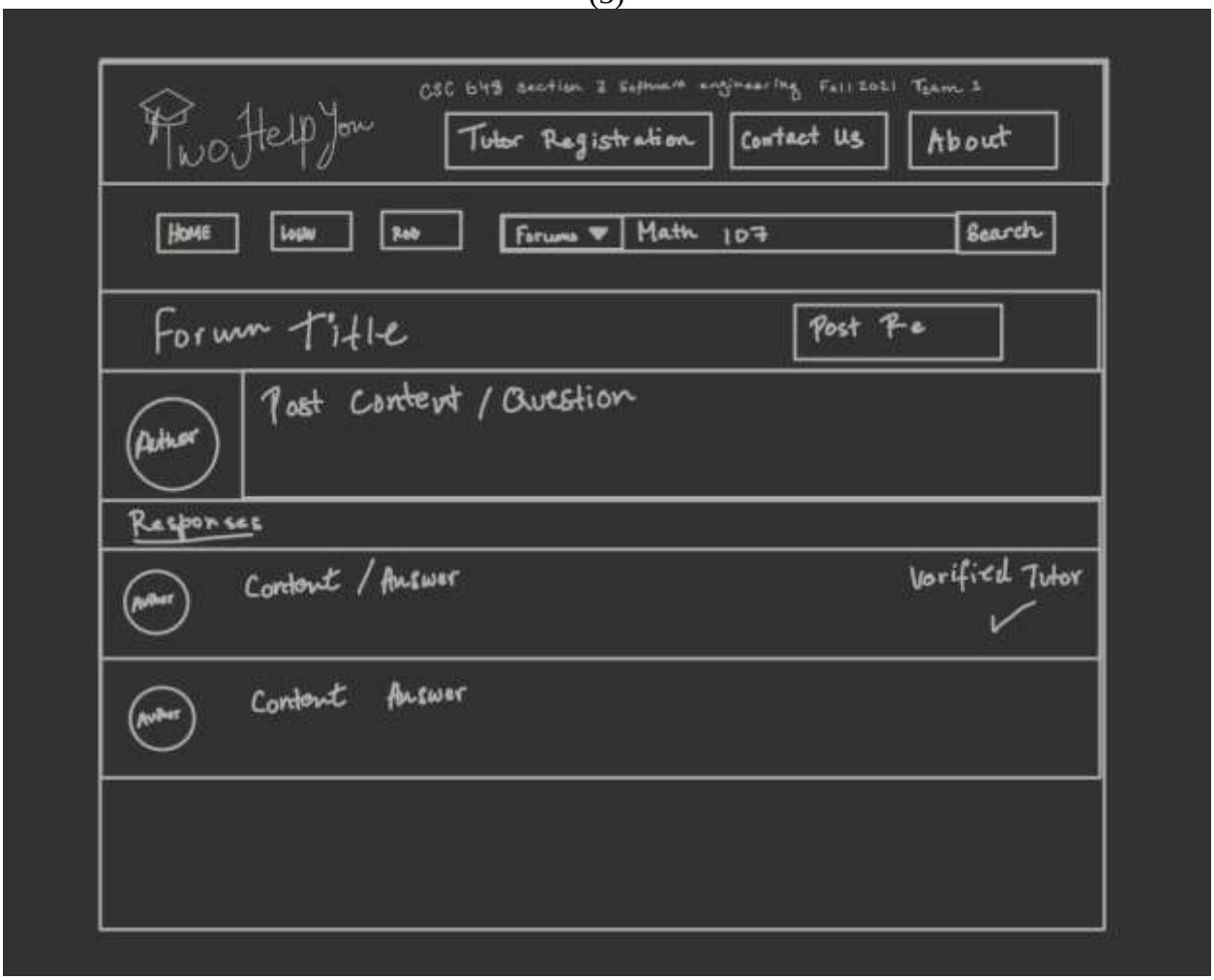
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Verified Tutor
Content Answer

Use Case 4:
Salome needs help with her English course. (1) She uses the search function on TwoHelpYou to find her course. (2) Using the search results, she selects a tutor whom she likes. (3) Salome clicks on the schedule session button to set up a session with Jake (tutor). (4) She fills out the form and clicks submit. (5) She is then prompted to log in, and she does so. (6) She is given a confirmation that her request has been sent.

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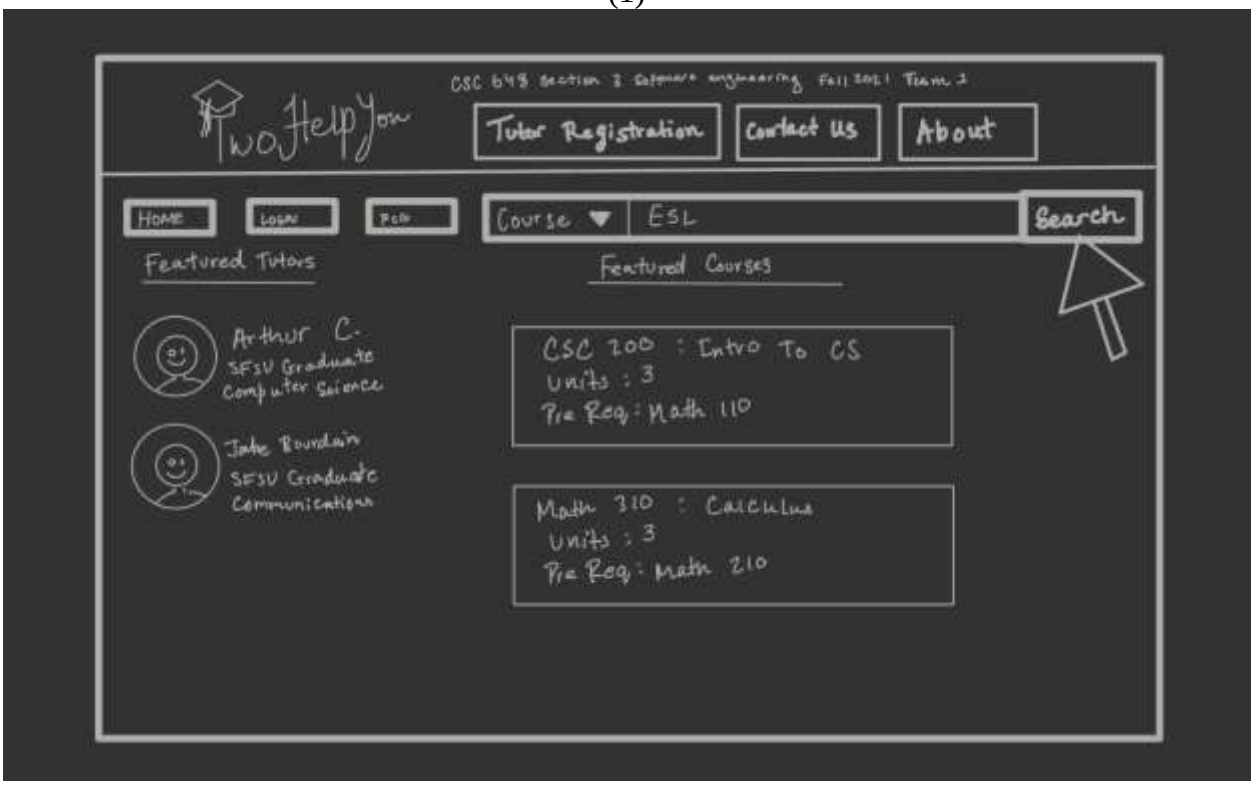

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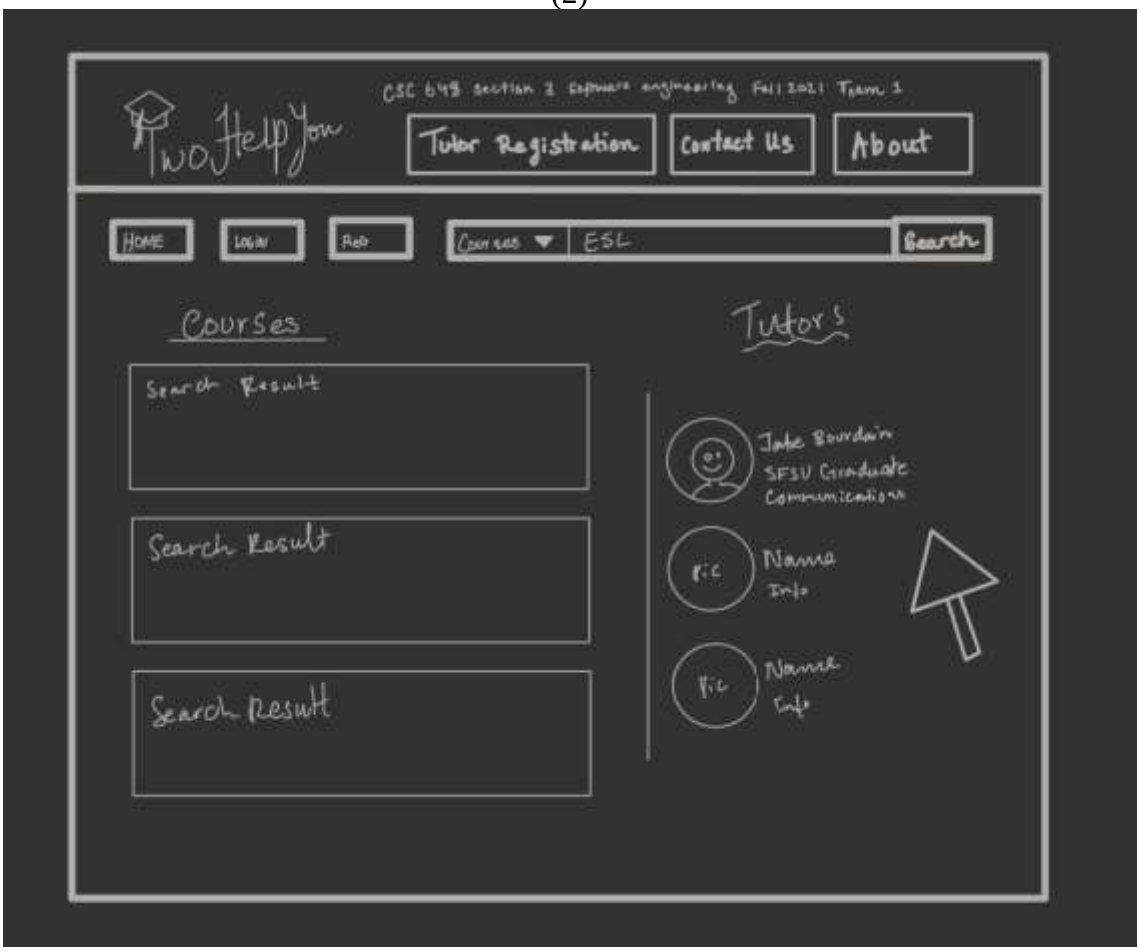
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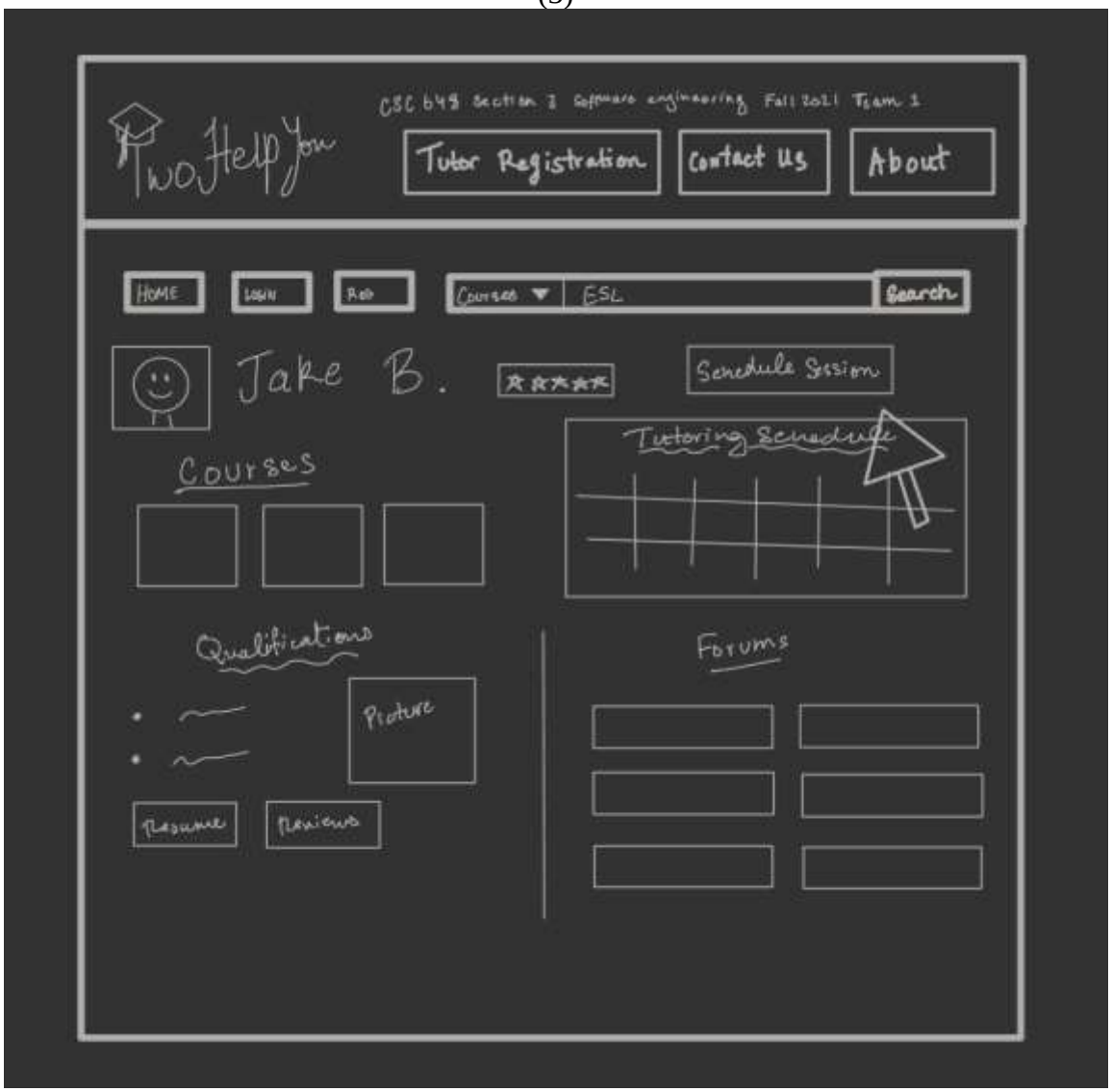
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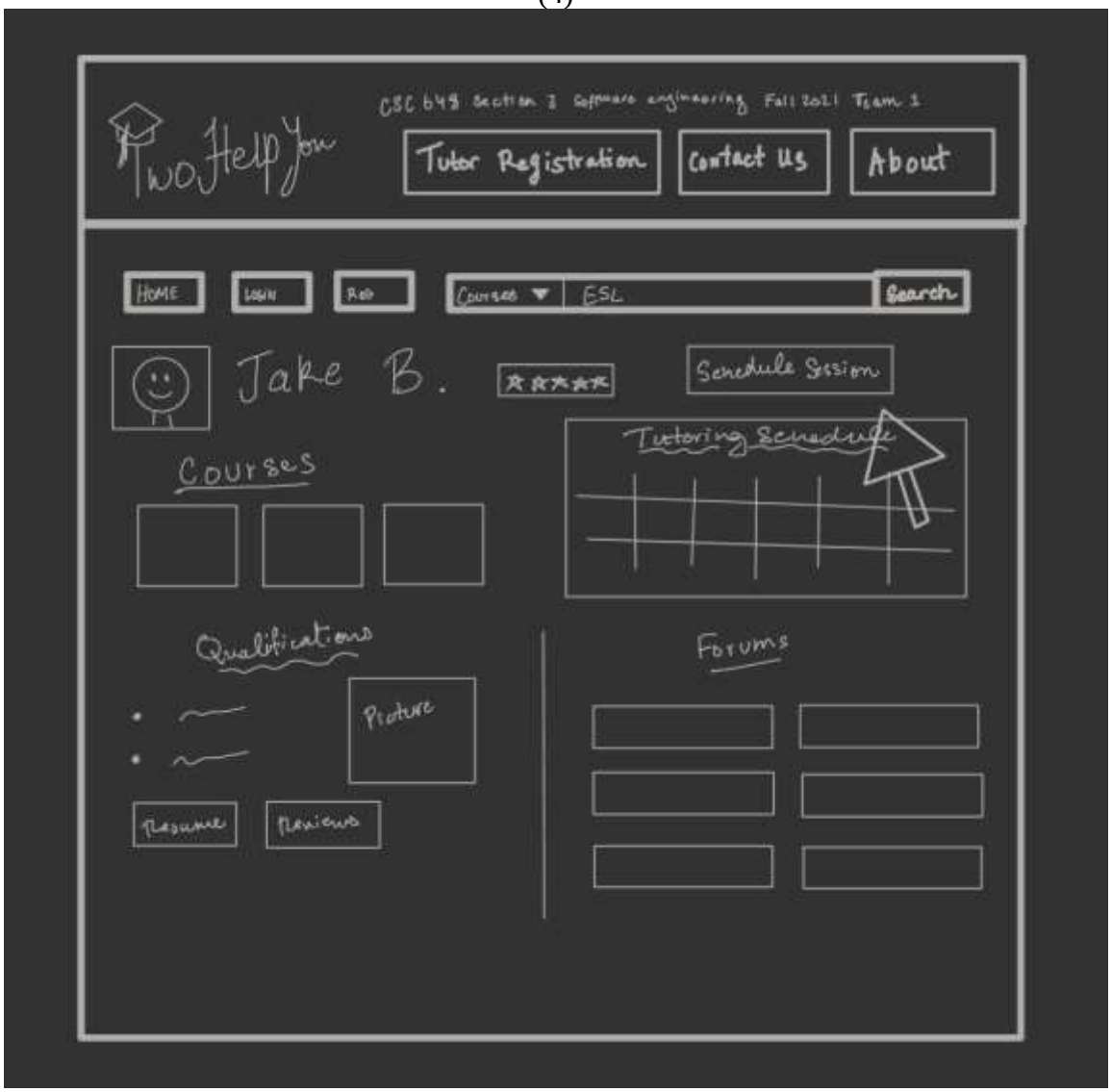
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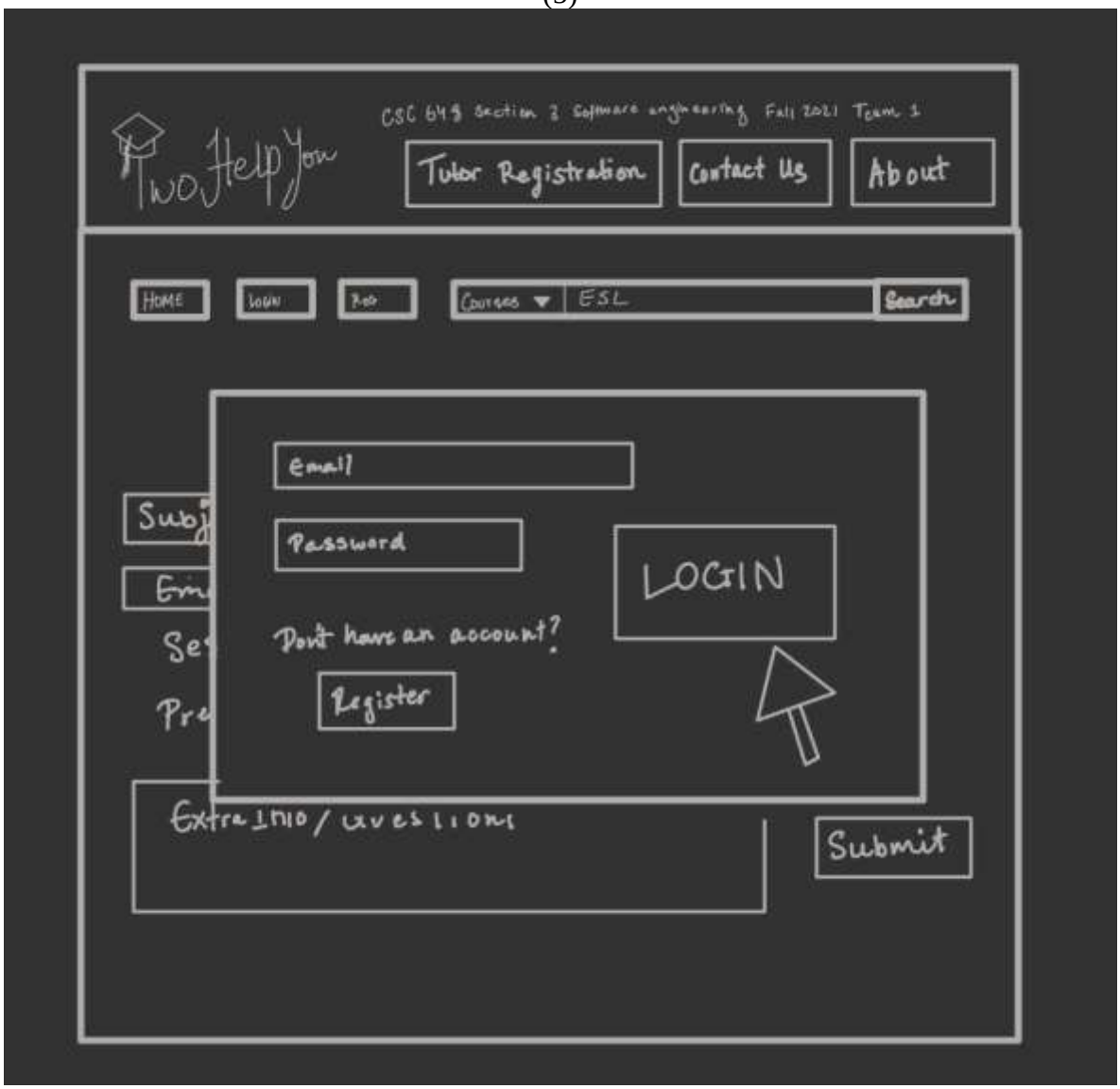
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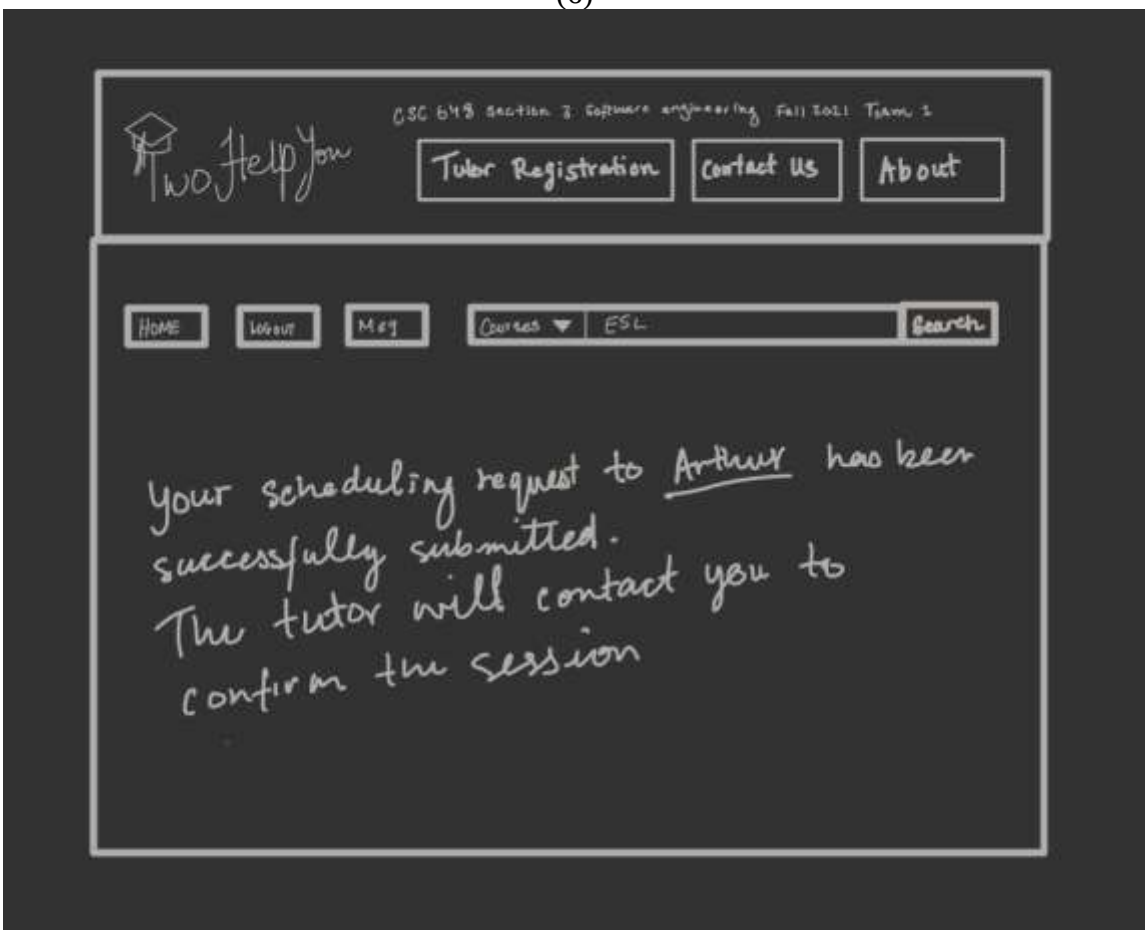
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Your scheduling request to Arthur has been successfully submitted.
The tutor will contact you to confirm the session

Use Case 5:
Theodora wants to participate in extracurricular discussions related to Complex Analysis in her free time. (1) She uses the search function of TwoHelpYou to look for forums related to Complex Analysis. (2) She is served several search results, which are forums that relate to Complex Analysis. She selects one she thinks is interesting. (3) She is taken to the forum page, where she clicks the post reply button to contribute to the discussion. (4) She is then prompted to log in, and she does so. (5) Theodora can now use the text box and post reply button to post her response to the forum.

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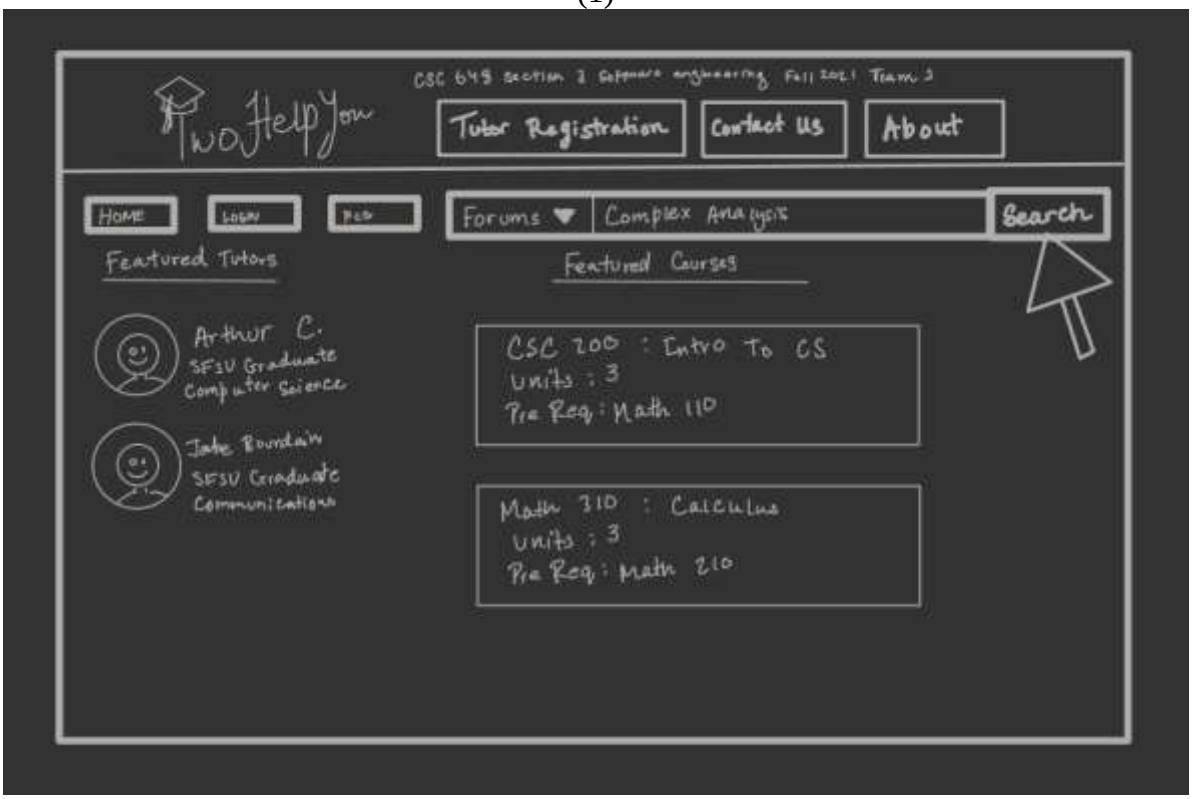

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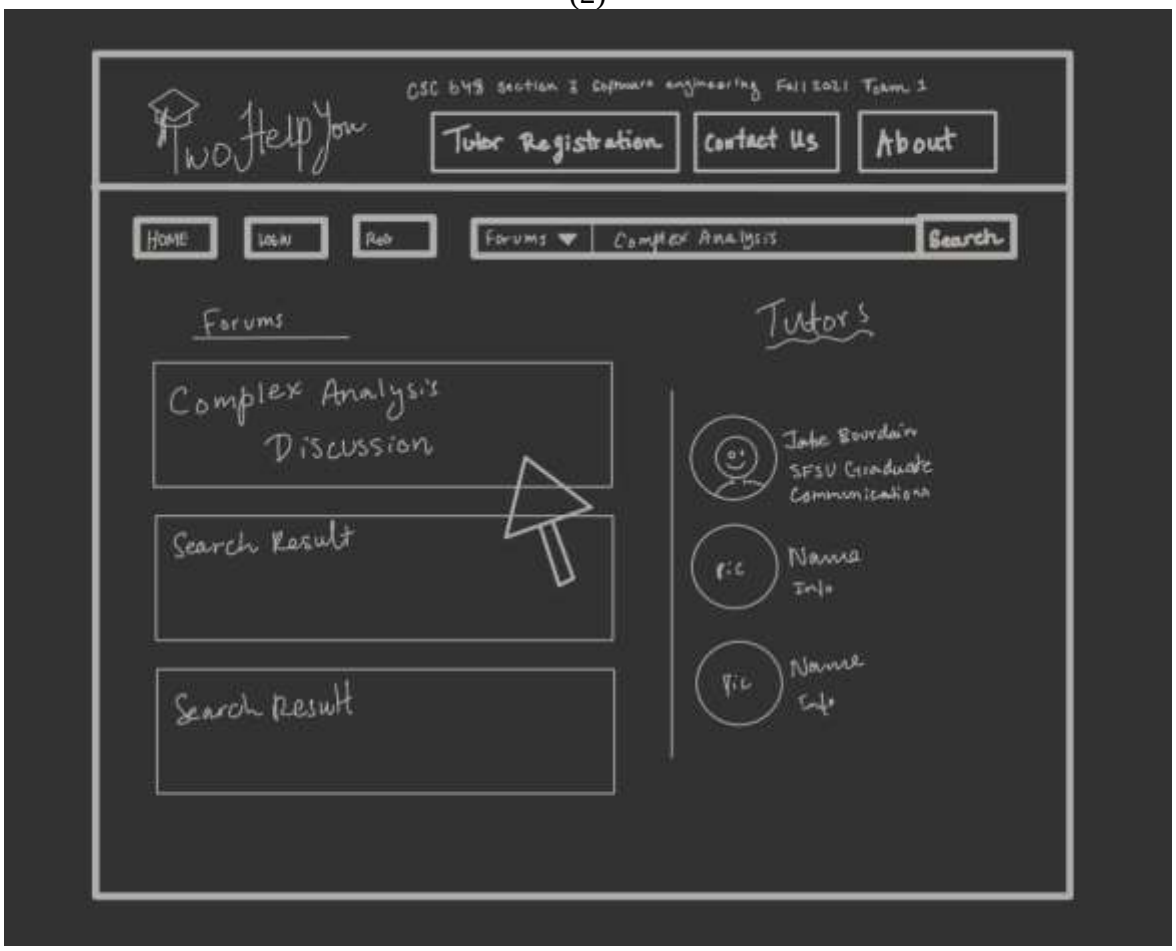
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SFSU Graduate
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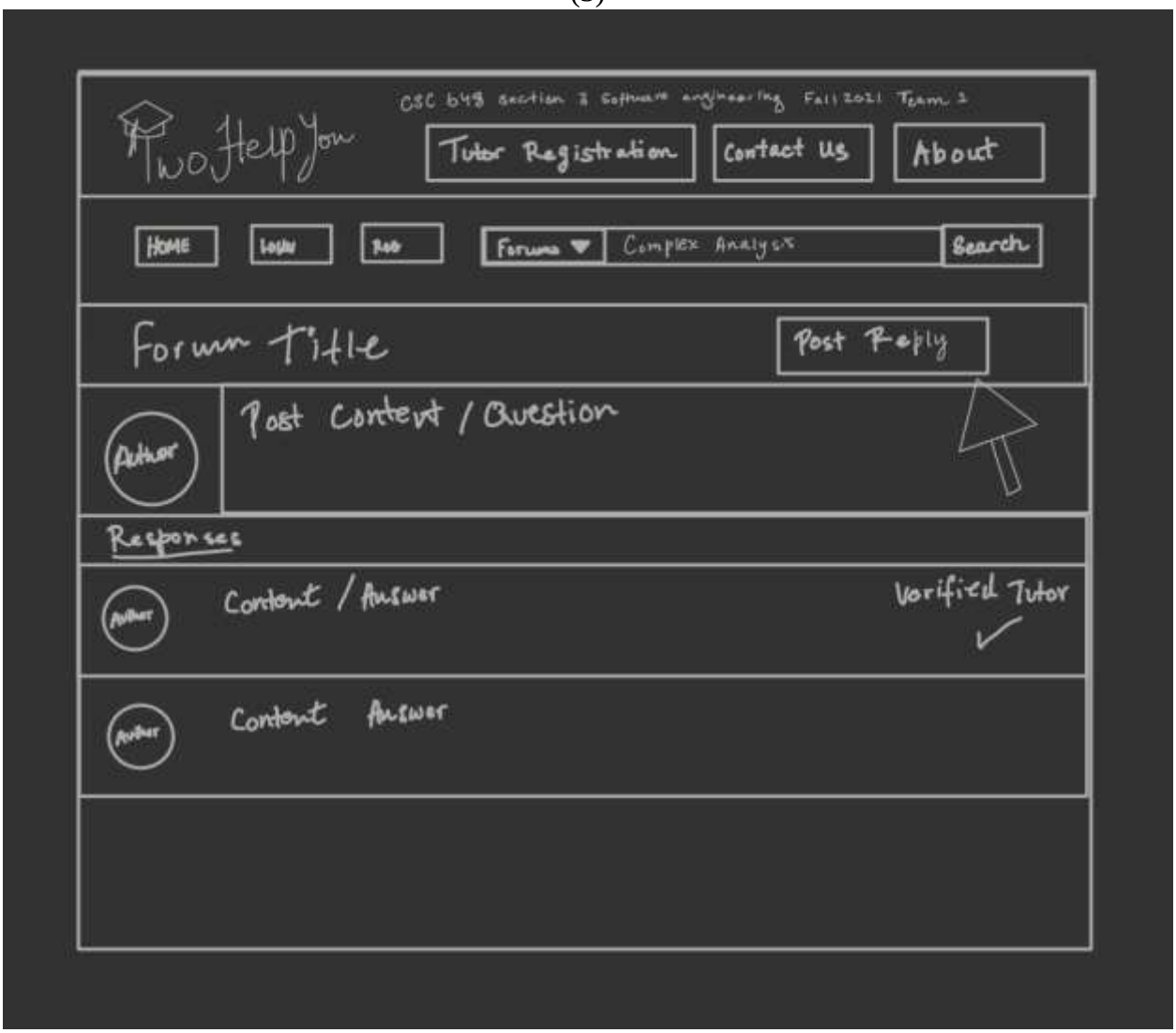
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Verified Tutor
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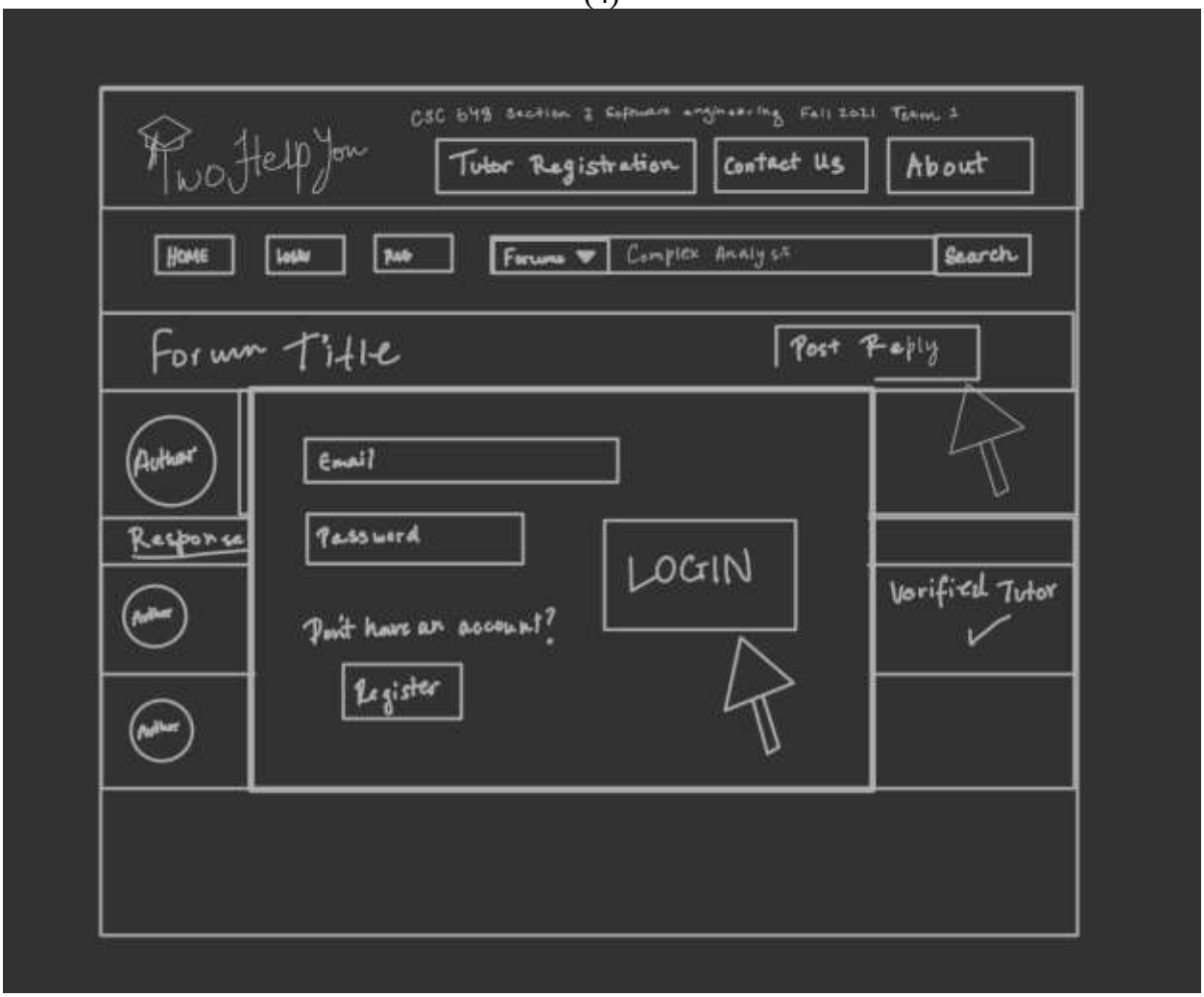
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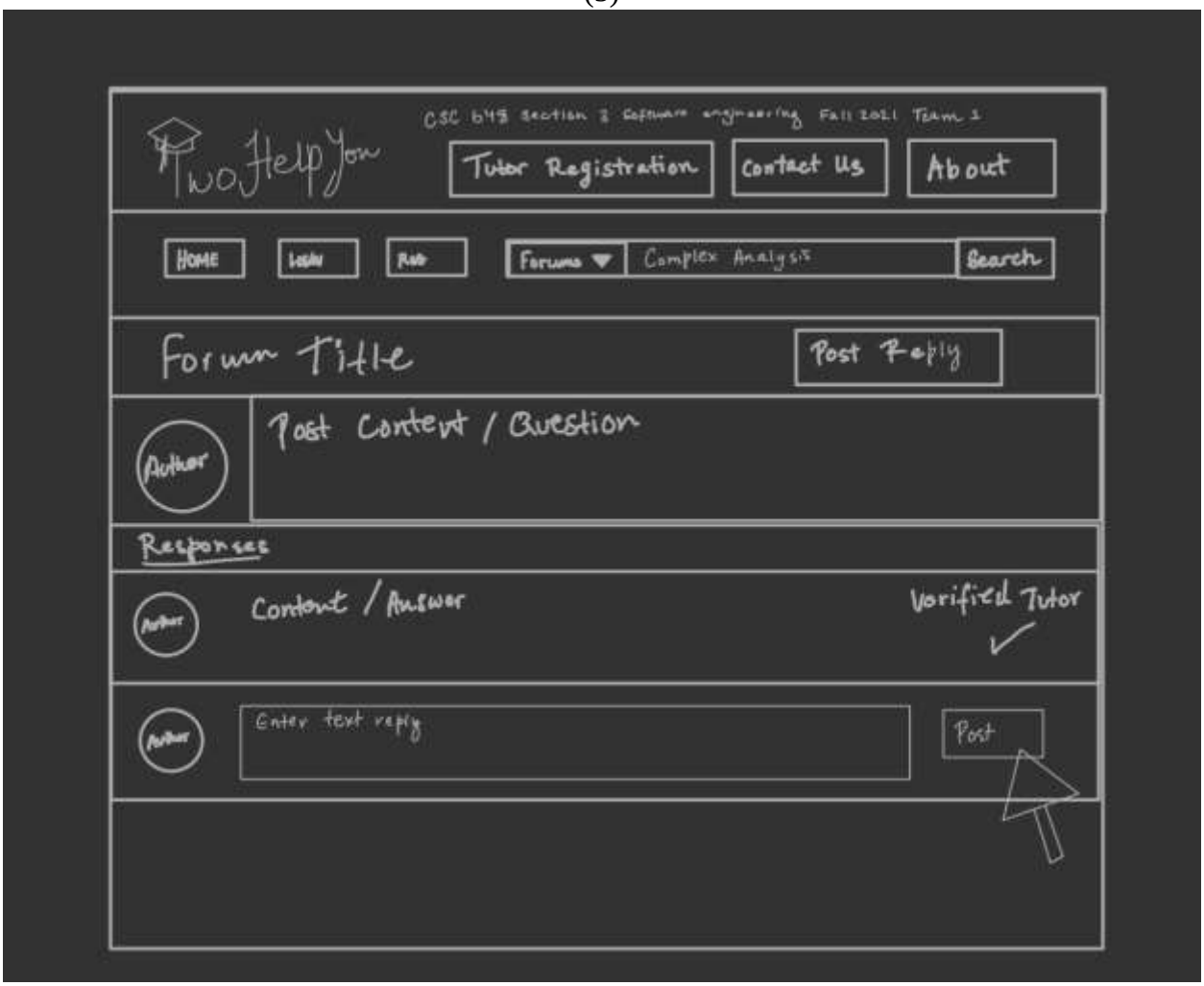
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Responses
Content / Answer
Verified Tutor
Enter text reply
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5. High level Architecture, Database Organization summary only

Main Database Schema:

1. User table
    - id (primary key)
    - first_name
    - last_name
    - username(unique)
    - email(unique)
    - password
    - active
    - created
    - photopath
    - thumbnail
2. Post table
    - post_id (primary key)
    - availability
    - authorized
    - user_id (foreign key)
    - course_id(foreign key)
    - post_creation
3. Forum table
    - forum_id (primary key)
    - title
    - date_time
    - user_id(foreign key)
4. Message table
    - message_id (primary key)
    - time
    - message
    - receiver_id (foreign key)
    - sender_id (foreign key)
    - related_course_id (foreign key)
5. Reviews table
    - review_id(primary key)
    - review
    - rating
    - user_id (foreign key)
    - post_id (foreign key)
6. Course table
    - course_id(primary key)
    - course_prefix
    - course_postfix

7. Comment table
    - comment_id(primary key)
    - comment
    - forum_id (foreign key)
    - user_id (foreign key)

Media Storage: The uploaded image by the users will be stored in a static folder. Database will be storing the relative path to the image.

Search: Using LIKE query, we can match part of the full data present in a column. Along with wildcards like % in different combinations, we can match our keyword with the pattern of the data present in columns.

Rating: Algorithm to find the average of the rating from the users will be used.

Reviews: Reviews will be sorted by the date created from newest to oldest.

6. Identify actual key risks for your project at this time.

Skill Risks:

- The team needs to learn the API: Utilization of APIs required like Google Analytics API will require time to learn and implement despite being ensured that the tools are easy to learn and use. The best way to learn how to use the API is to practice implementing it; currently, we are not at the stage that requires its usage.
- Team members need to familiarize themselves with frontend tools: Needing to refresh and learn new frontend tools like Handlebars and React requires actual usage and implantation that has not taken place yet due to not needing to utilize the tools to improve the website. As the team begins to build the website further, the team will remember or reach out to appropriate sources of knowledge to work on the frontend development.
- The team needs to work with React: Many team members are unfamiliar with React outside of those utilizing it in another class. Finding good sources and reaching out to known colleagues familiar with the tool would be the best approach to improving and using it for frontend development.
- Scope: The scope of the project can easily get out of hand due to how ideals can easily influence the development of the project, not having clear list of tasks to accomplish can result in any project to become stuck in development hell due to developers adding features without pause and resulting in the failure to deploy in a timely manner. By making a clear list of features early on and prioritizing them, it makes it possible to deliver a functional product in a timely manner, specifically by limiting the number of priority one tasks. Also known as limiting the scope of the project.

Technical Risks:

- CPU/Server utilization using Amazon's free tier of AWS: Although addressed in milestone 1, using the free tier of AWS has risk due to limitations imposed. Exceeding the limits will charge fees on the account. If the fees remain unpaid can result in account suspension. The careful monitoring of the account is the best approach to ensure that the account remains active by having the backend lead regularly checks the cloud server billing. Although efforts have been made to ensure that no additional cost is incurred by setting everything manually, it is not guaranteed.
- Github usage when working on multiple parts in parallel: The risk of merge collisions is ever prevalent when working with various branches and individuals on any project. By carefully testing the branches before and after each merge by leads and Github master heavily reduces issues. This ensures that the Main branch always remains operational and stable.

Team Risks:

- Frontend and backend communication on the connection between UI with database: Naming variables to populate or generate database items requires strong communication between the two leads and unification within the respective ends to ensure uniformity. Constantly reviewing team member codes and adhering to a uniformed naming convention and frequent communications between leads can significantly reduce issues.

Which was implemented and practiced throughout the development of the vertical prototype.

- Pacing of work and members so that workflow is continuous: The delegation of work and tasks in a way that works is not in a state of waiting due to requiring a task to have completed. By establishing and enforcing internal deadlines enormously decrease tasks gridlock.

7. Project management

To ensure the successful delivery of Milestone 2 and the remaining project as we advance, the team has incorporated the usage of Asana to keep track of internal deadlines and assigned tasks. The team has successfully utilized the tool in Milestone 1 to ensure the timely completion and submission of Milestone 1.

Aside from using Asana to track tasks and internal deadlines, the team holds meetings utilizing Discord and Zoom as platforms. The Team Lead, Frontend Lead, and Backend Lead meets every Friday to coordinate tasks and communicate any questions or concerns. The Frontend Lead and Backend Lead meet up with their respective development members to work and coordinate when necessary. All meetings that take place have minutes taken and posted for all members to inform everyone what is going on. Aside from the scheduled meetings, other meetings are held, when necessary, primarily using Discord.

Outside of team meetings, the team has chosen to utilize Discord as an instant messaging platform to communicate freely. The use of the platform allows the team to post announcements, questions, updates, and most importantly, keep everyone up to date with the project.

The team has agreed to the Github Master's repository management with communications with the Leads' needs. This management style revolves around having two primary branches, which are the Main and Development branches. Aside from these two branches, new branches are constantly being created and deleted as needed for development. No members are to code onto the two primary branches directly. Every sub-branch designed for development will be tested and reviewed, then merged into the development branch, where it will be checked again prior by another team member. Only when the development branch is stable, and it is deemed necessary to be merged into the main branch where it will be tested before pushing to the AWS EC2 instance.