Advance Course Explorer Project Proposal

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Project Summary:

Our application aims to enhance the functionality of Course Explorer and Advance Registration at U of I. Specifically, we want our website to provide additional features to our users (students). Our goal is to allow students to utilize our website for searching new classes, receiving updates on available seat courses, conducting more advanced searches, and effectively planning their future schedules. One notable feature is the integration of an interactive map that displays the locations of their scheduled classes. This will help students visualize their course arrangements. Additionally, we plan to incorporate warnings for tightly-packed class schedules and suggestions for alternative open sections that may better accommodate the student's timetable. Furthermore, we aspire to integrate the average GPA for every course into our website or database.

Project Description:

Our project contains the frontend and the backend.

For the backend, we plan to have a Database that stores our **user information**, **user class schedules**, and the **course schedule** we pulled from UIUC's API. We also plan to write multiple advanced SQL queries that help our users to better search for class(for example, search based on keywords, GenEd Requirement, average GPA). Generally, we plan to first build the SQL database locally, and later deploy on google platform.

For the frontend, we plan to have a **user login page** where users can login to see and manage their course schedule. The is a page that users can search, add and see their schedule for multiple semesters. There is also a **map visualization page** where we hope to embed Google maps and make it interactive with our users, and users can see their class locations on that map. There will also be **warning messages** for users who have a really tight schedule, and suggestions for another equivalent section. This will be accomplished by using the Google Maps API. Last but not least, there is a **past GPA look up page** where users can see GPA for past semesters for their class or their instructor, and we also hope to include that information on the search page as well.

We plan to connect our front end and back end using the APIs that the google platform provides, and write our own server if necessary. We also hope to use some public API, including but not limited to, the official API that UIUC provides for course schedules. We plan to use some pseudo-data for our users input (for example, student schedules), and we also want to use the datasets about UIUC's course schedule and the average GPA of past courses that are public

online. Together we hope to learn how to connect databases to the front end website, and learn how to build and maintain a complex database that can solve real world problems for users.

Usefulness:

Course Explorer and Enhanced Registration provide students with essential tools for searching and planning classes. However, these platforms lack a direct map feature that enables students to easily locate their classes without the need to search each location and enter it into external mapping services. Additionally, as an unofficial application, we can utilize GPA data from past semesters to assist our users in selecting classes and sections and we would use this GPA dataset.

Realness:

Our database relies on user input information as well as publicly available data, such as GPAs of classes and UIUC's course schedules. For instance, we can utilize public APIs like the one provided at https://courses.illinois.edu/cisdocs/api to retrieve schedules. Our objective is to allow users to input their own class schedules by searching for their desired class names and sections. This way, users can actively participate in managing and organizing their course information within our system.

Functionality:

1. **User Login:**
   User Users should be able to register and log in to our website using their @illinois.edu email addresses. Additionally, a "forgot password" option should be available to assist users in resetting their passwords.

   UI demonstration:

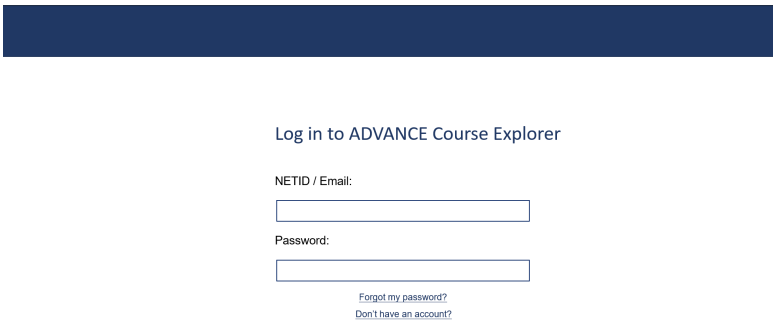


Figure 1: Login Screen

2. Class Schedule Management:

   Our website should provide an intuitive interface where users can add and view their scheduled courses. The system should store this data to enable users to access their schedules for different semesters.

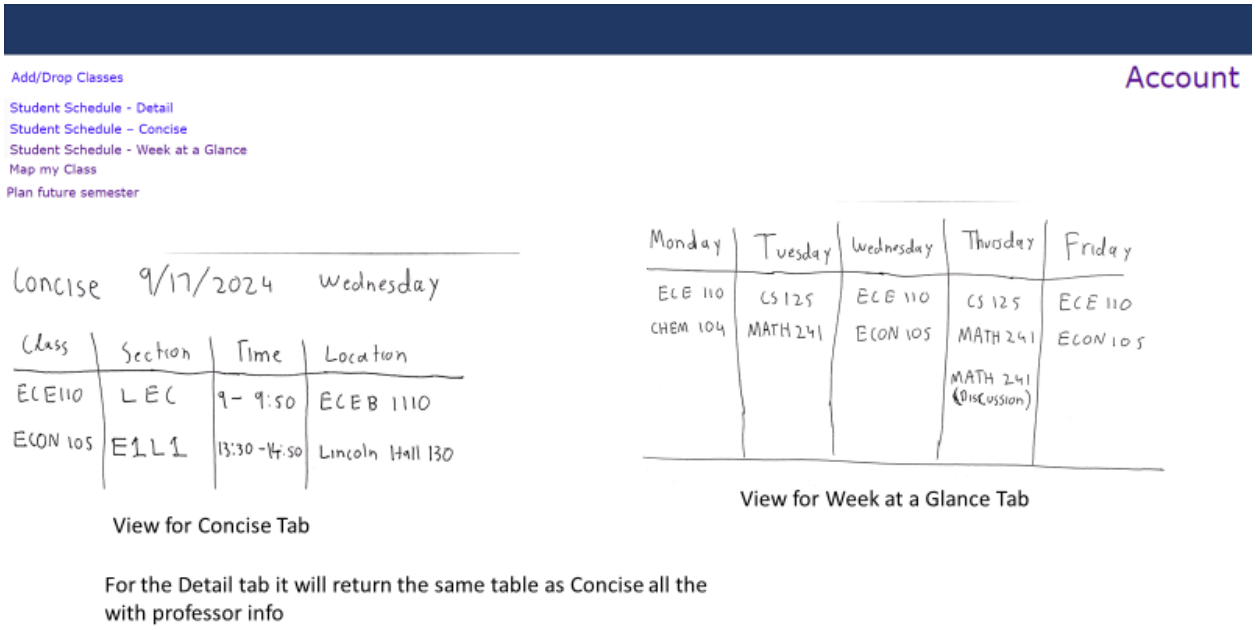


Figure 2: Home Screen - Multi Tab Management Page

3. Searching and Planning for Future Schedules:
   Our website should facilitate class searches, including an advanced search option. Users should be able to search for classes based on various criteria such as department, credit hours, general education requirements, or keywords. To enhance decision-making, we aim to integrate open datasets from the University containing average GPA information for courses from past semesters. This feature will allow students to view the average GPAs of courses or even specific sections. This can be accessed with the “Plan future semester” button from the home screen

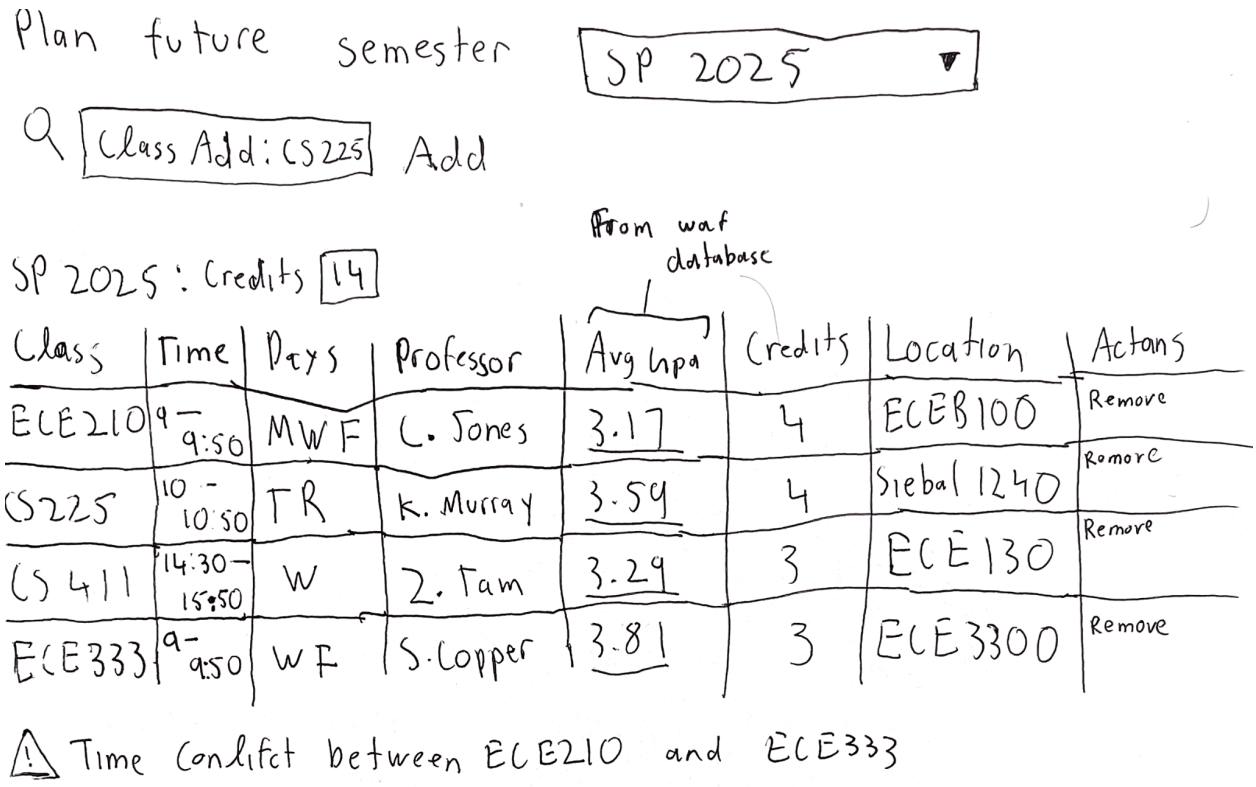
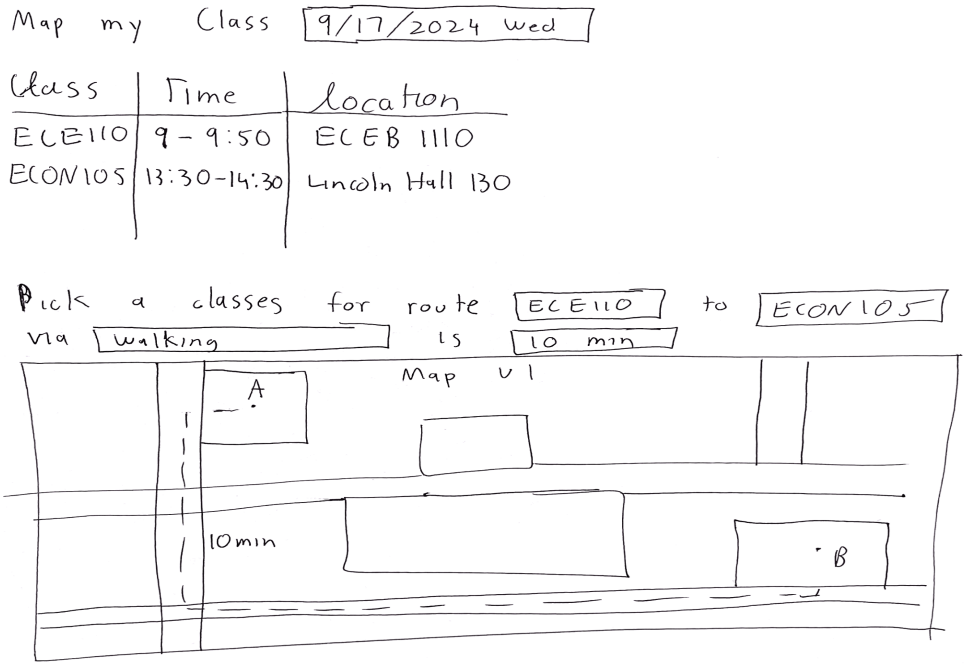


Figure 3: Future Semester Planner

4. Interactive Map:
   We aspire to integrate an interactive map into our website, displaying pins that indicate the locations of students' classes. Additionally, we aim to provide an estimation of the walking time between classes. For users with tightly-packed schedules, the system will issue warnings to ensure they have sufficient time to commute between classes. When users hit the map my classes screen they will be presented with a similar version of this where there will be a build in UI of google maps where they can plan the commute between each classes and also get a warning if the returned time for google maps is less time that the time between classes that is returned from the table



5. Other functions

   Our website will have the capability to send users their finalized schedules via email. The email will include the schedule itself, a map displaying the class locations, and a written description of each class location. We will continue to tweak the design and features we progress in our project.

Work Distribution:

Our goal is to ensure equal distribution of responsibilities among our team members. To achieve this, we aim to identify and list all the small functions and components of our project. Each team member will be primarily responsible for one specific task, with the ability to seek assistance from other team members when needed. We believe that this approach will provide us with an opportunity to apply and enhance our knowledge in both front-end and back-end development throughout the course.

Additionally, we plan to have two team members primarily focused on the back-end development, while the other two team members will focus on the front-end development. This division of work will allow the two groups to efficiently manage their respective tasks and seamlessly integrate the smaller components of the project. The detailed work distribution is as follows:

Frontend Tasks	Assignee	Helper
Build the Website from scratch	Ronald	Zonghan

Deploy website	Zonghan	Ronald
Login UI and buttons / functions	Sam	Ronald
Map Integration, API, UI	Ronald	Everyone else
API connection	Sam	Ronald
DB connection	Zirui Wang	Sam
Course Display UI, email schedule function	Zirui Wang	Zonghan
Course search UI, connection to procedures in SQL	Zonghan	Sam

Backend Tasks	Assignee	Helpers
Build Database locally & insert datasets	Zonghan Yang	Ronald
Advance database program relate to course schedules	Zirui Wang	Sam
Advance database program relate to Map and location information	Ronald	Zirui Wang
Advance database program relate to User login information	Sam	Ronald
Advance database program relate to Advance search + GPA search	Sam	Zonghan Yang
Connect DB to Front End APP	Zirui Wang	Sam
Deploy DB on GCP	Zonghan Yang	Sam