



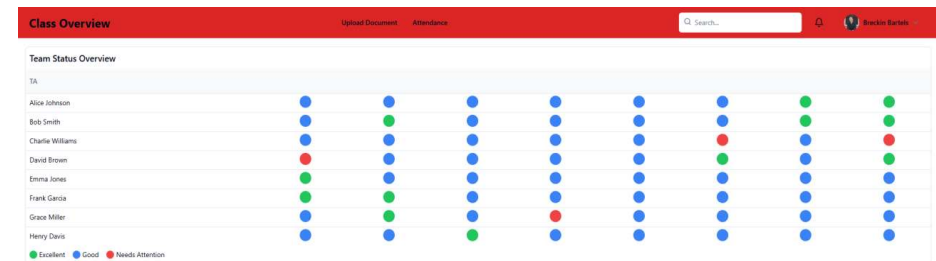
Computer Science

3090 Dashboard

Team 14: Bradley Gaines, Breckin Bartels, Kat
Christofferson, Ria Patel, Thomas Payton & Varun Jain

Project Overview

- Project: Computer Science 3090 Dashboard
- Advisor: Dr. Simanta Mitra
- Client: Dr. Simanta Mitra
- Goal: Create a platform that gathers, analyzes, and portrays data from numerous applications used in the course including, Canvas, CATme, Gitlab, etc.
- Special Features: Once the application is in motion, we will add attendance, ABET, and other features!



Home Page

← Back

Team 1
Status: Excellent
TA: TA 2


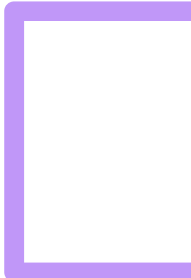
Student Progress

Student	Assignment 1	Assignment 2	Assignment 3	Final Project
Alice	C	A-	B	F
Bob	A	A-	B+	C
Charlie	B	A-	D	D
Diana	A-	F	C	B

Individual Team Page



Project Statement

- Official Project Abstract:
 - The Computer Science 3090 Dashboard will be a website that students, TAs, and professors can utilize to access resources, see team metrics, and look at the time until their next demo.
 - TAs will also be able to manage teams more efficiently and will be notified about problematic students.
 - It will integrate elements from Github, CATME, Google Forms, and Canvas to present all information in one place.
 - TypeScript, Node.js, and React Expo will be used to design the application, along with an AWS RDS-supported database for storage. Once developed, the system will be deployed on AWS.
 - Two teams have attempted this project in the past; our team will analyze their codes to develop a working application.
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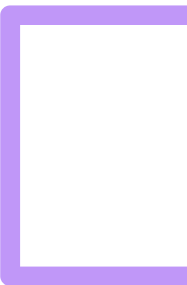
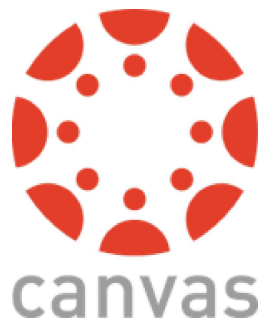


Related Products
&
Market Gap



Related Products & Market Gap

- Data sources include:
 - Canvas
 - CATME
 - Google Forms
 - Gitlab
- No convenient way to aggregate and view data in one place.





Product Research



Product Research

- Our research for an application that has all of the necessary aspects desired by Dr. Mitra (attendance, forms, reflections, assignments, grades, etc) fell short.
- In order to solve Dr. Mitra's problem, we will have to create this application/dashboard ourselves.
- By creating this platform ourselves, we are able to take feedback from Dr. Mitra, his TA's, and his students, in order to find out what aspects of the program are desired.
- Also by creating the platform ourselves, Dr. Mitra will be able to add functions in the future if necessary!





Users and Needs



Users and Needs

Users	Needs
Professors	<ul style="list-style-type: none">• Students enrolled (names, pictures, etc.)• Attendance tracking• Problematic students• Grades• Performance data• Ease in combination of data from multiple platforms
Teaching Assistants	<ul style="list-style-type: none">• Students in groups (names, pictures, etc.)• Problematic students• Grades• Reviews and reflections
Students	<ul style="list-style-type: none">• Group information (projects, teammates, etc.)• Assignments• Grades• Reviews and reflections
Others	<ul style="list-style-type: none">• Performance data



Requirements



Requirements

Topic	Requirements
Dashboard	<ul style="list-style-type: none">• Accessible to professors, students, TAs, and head TAs with role-specific views.• Responsive design for both desktop and mobile use.
Data Management	<ul style="list-style-type: none">• Efficient storage and retrieval of course data, including assignments, grades, and feedback.
User Interface	<ul style="list-style-type: none">• Intuitive and user-friendly interface for all user roles.• Consistent design across web and mobile platforms.

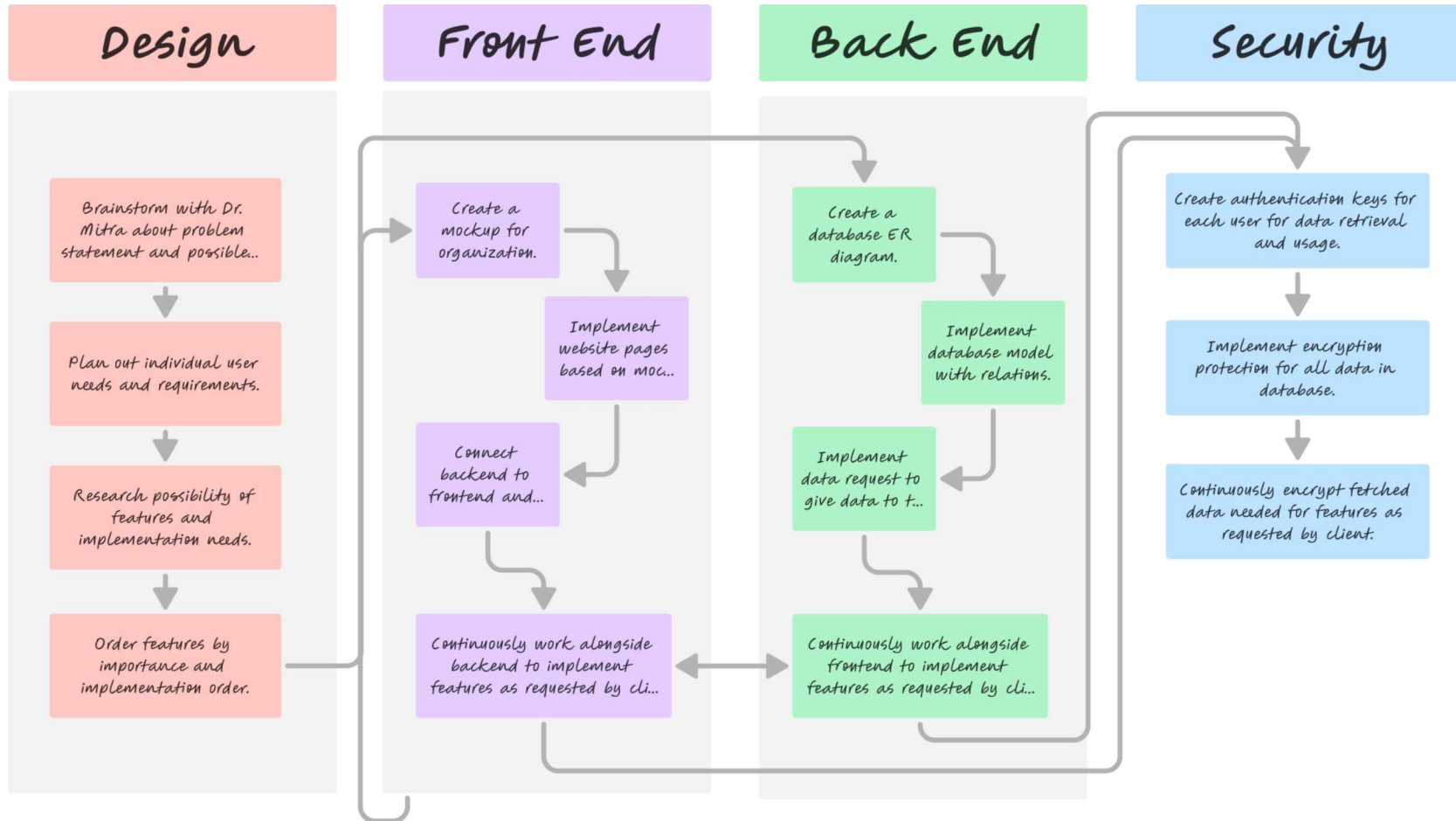




Task Decomposition



Task Decomposition





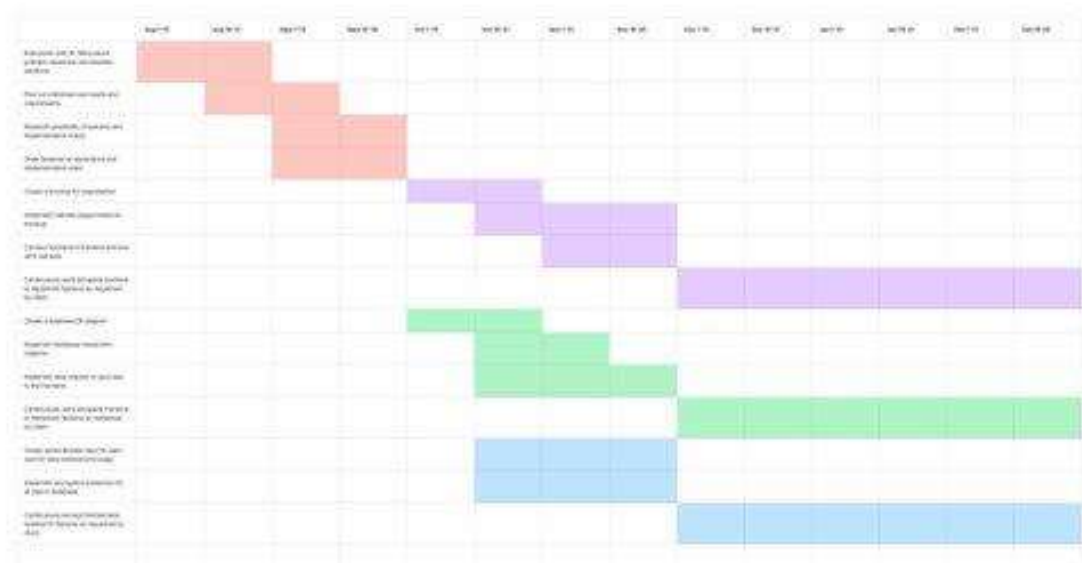
Project Management



Project Management

- Hybrid management style:
 - Waterfall:
 - Scheduled order of tasks to start i.e. design frontend, design backend, implement frontend, implement backend, implement security.
 - Agile:
 - Regular feedback from original implementation.
 - One semester of test run with continuous improvements.

Gantt Chart





Key Risks



Key Risks

Section	Risk
Frontend	<ul style="list-style-type: none">• Privacy.• Easy usability.
Backend	<ul style="list-style-type: none">• Tables.• Data analysis.
Security	<ul style="list-style-type: none">• Data encryption.• Academic data storage.
Overall	<ul style="list-style-type: none">• Different views.• Future adaptations.

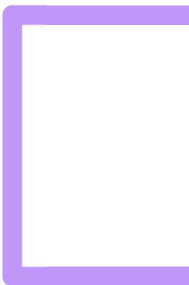
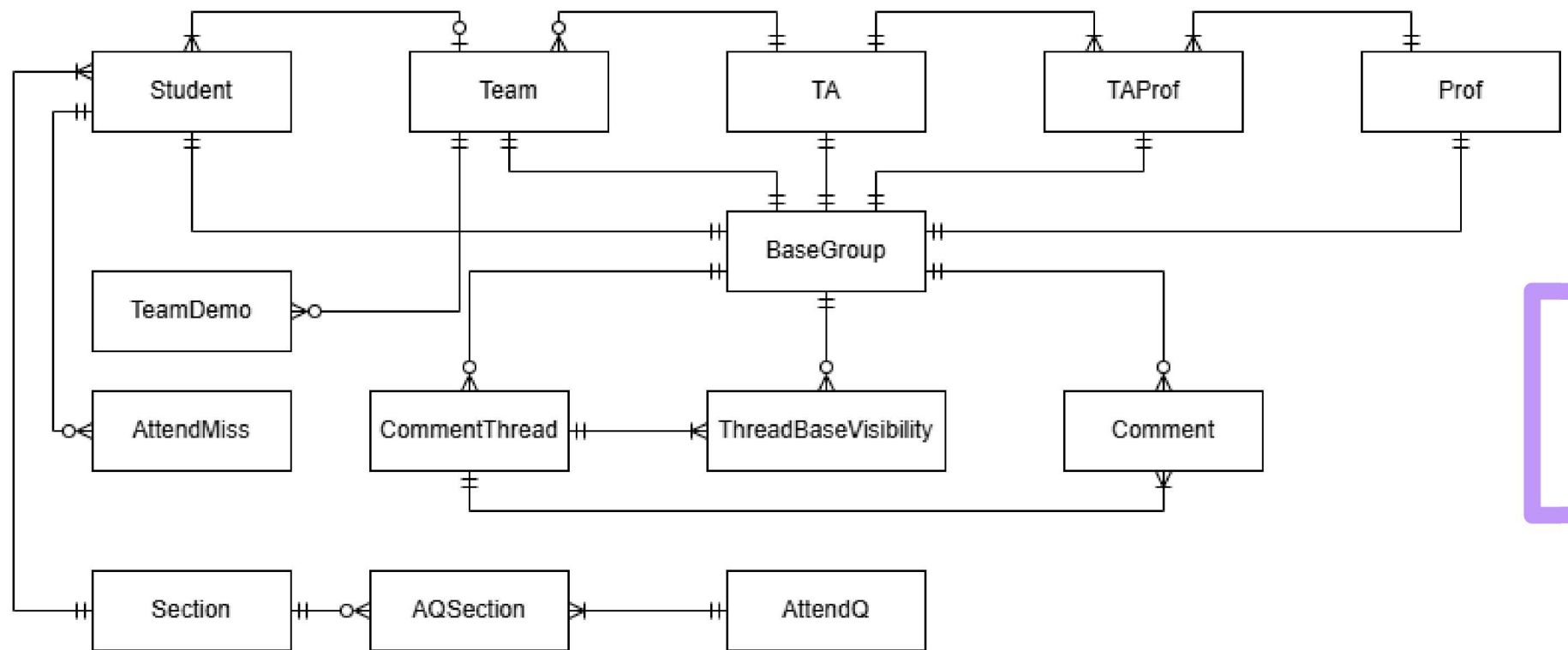




Backend/DB Overview

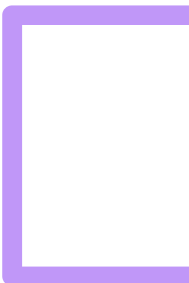
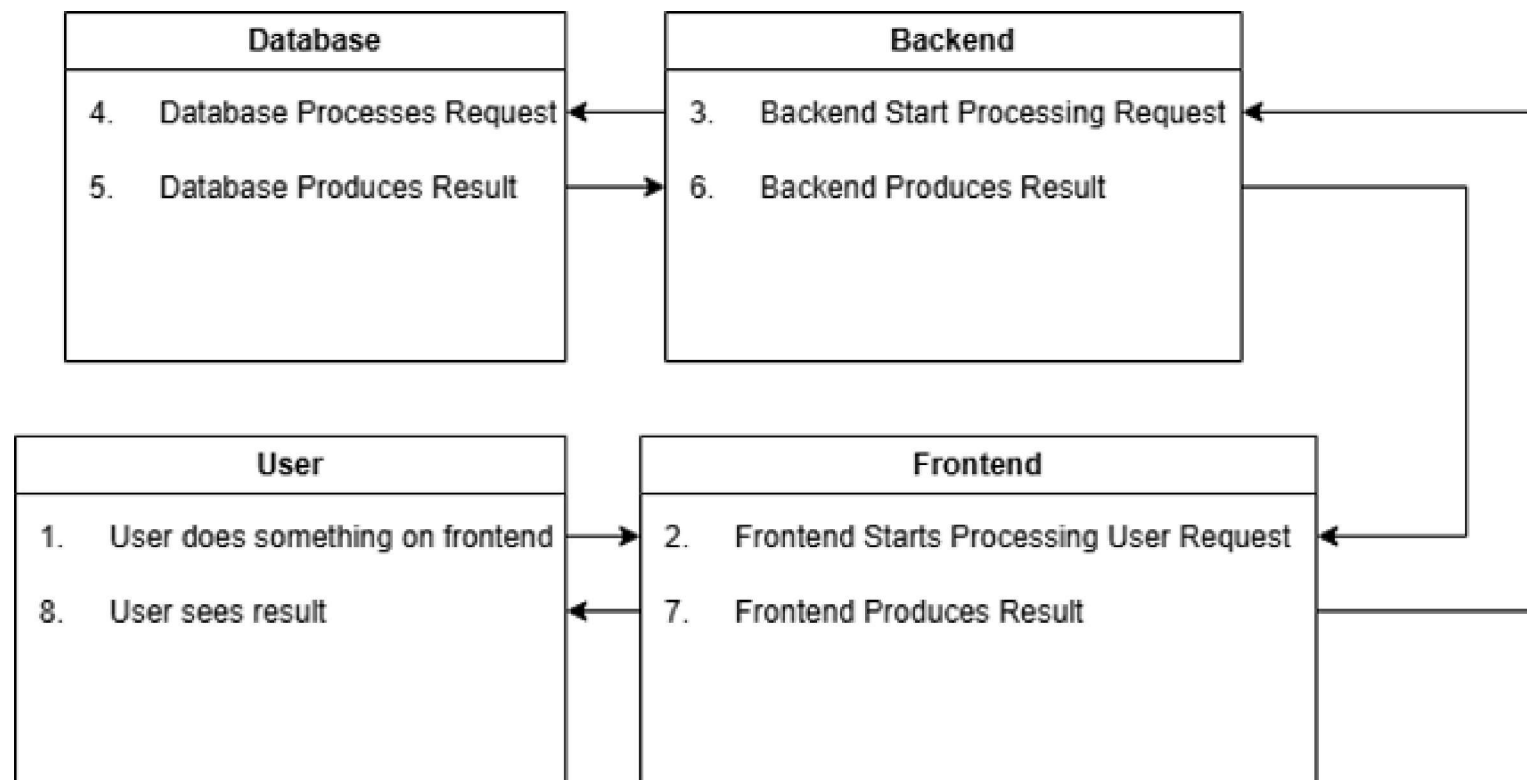


ER Diagram





Application Connectivity Diagram



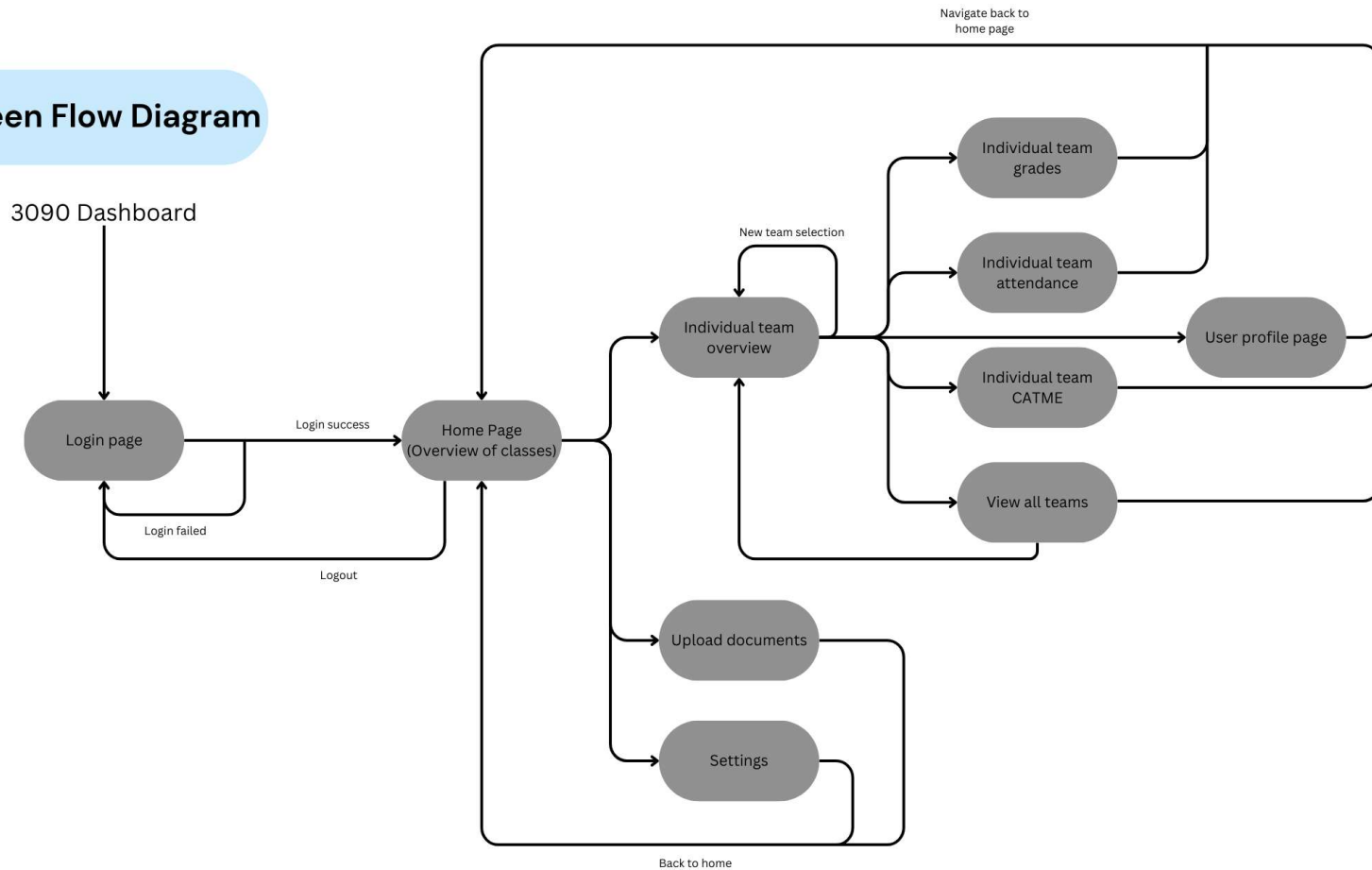


Frontend Overview



Screen Flow Diagram

Screen Flow Diagram





Home Page

Figma Mockups

Select a team ▾

Welcome Dr. Mitra!

Here's an overview of the class!

Projects

ID ▾	Project Name	Status	Actions
0	Example Project 1	Excellent	View
1	Example Project 2	Good	View
2	Example Project 3	Needs Attention	View

Students

ID	Last Name ▾	First Name	Grade	Actions
0	Bartels	Breckin	A+	View
1	Patel	Ria	B+	View
2	Payton	Thomas	D-	View

Basic Implementation

The screenshot shows a web application interface for a class overview. The browser address bar indicates the URL is localhost:3000/dashboard. The page title is "Class Overview". At the top right, there is a search bar, a notification bell, and a user profile dropdown labeled "User".

Teams

[Add Team](#)

ID ↑	Name	Status	Deadline	Actions
0	Website Redesign	Excellent	2023-12-31	View Edit Delete
1	Mobile App	Good	2024-03-15	View Edit Delete
2	Database Migration	Needs Attention	2023-11-30	View Edit Delete

Students

[Add Student](#)

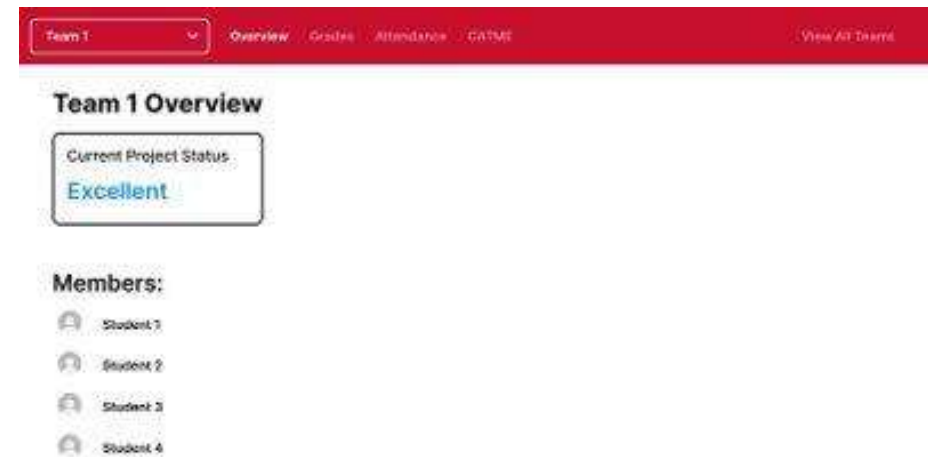
ID ↑	Name	Grade	Major	Actions
2739472	Johnson, Alice	A	Computer Science	View Edit Delete
2869285	Smith, Bob	B+	Engineering	View Edit Delete
5922042	Williams, Carol	A-	Mathematics	View Edit Delete



Figma Mockup

Individual Team Page

Basic Implementation



← Back

Team 1

Status: Excellent

TA: TA 2

Student Progress

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Diana	A-	F	C	B


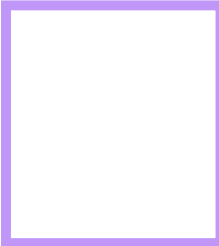


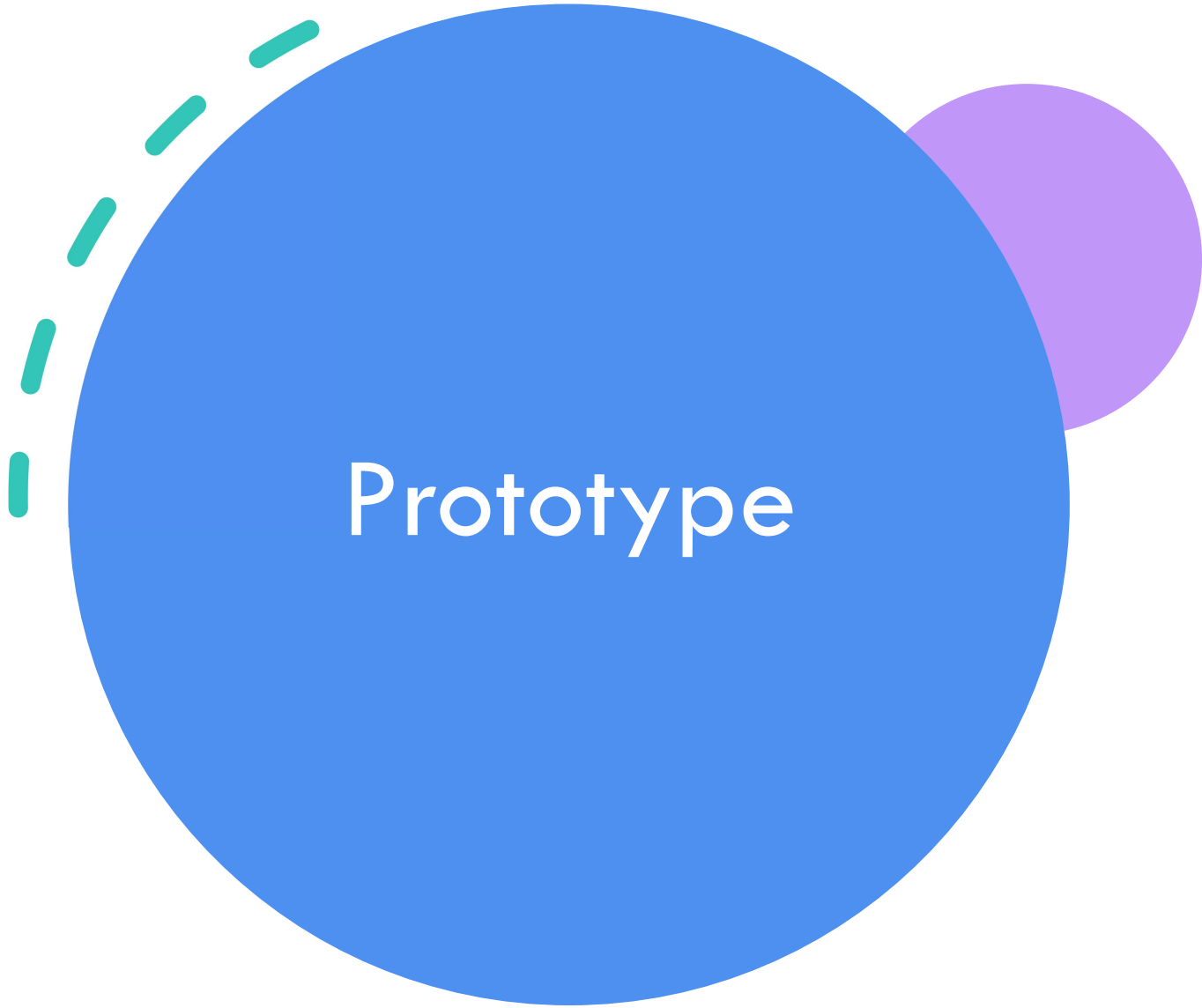


Areas of Concern



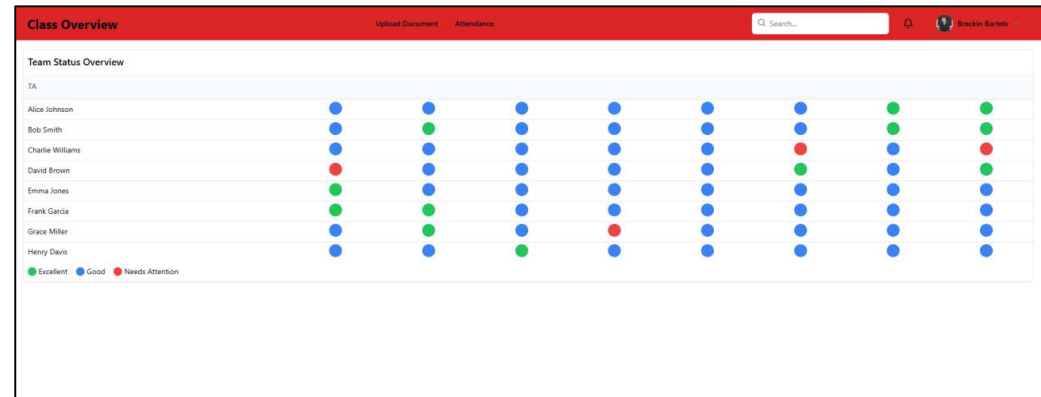
Areas of Concern

- 
1. ISU integrated login
 2. External API's
 3. FERPA
 4. File analysis and creation
- 



Prototype

- Current dashboard design (Website):
 - Basic implementation of desired features.
 - Basic outline of pages.
 - Trial and error of how to represent data.



Home Page

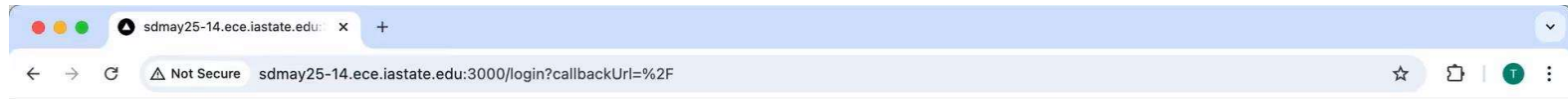


Attendance Page




Individual Team Page

Demo



Login

 Sign in with Google



Prototype Reflection

- Our prototype follows an iterative approach
 - Instead of creating multiple prototypes, our project shows advancement by additions to our website design.
- We learned based on what didn't work:
 - Multiple pages are better for neater organization.
 - Important details should be represented first, then users should have the ability to drill down pages for more information.
 - Color codes allow for quick and easy understanding of the data being conveyed.
- Initial designs that are still held in our current website include:
 - Home page focused on our client's data.
 - Easy viewing of individual student data and group data.



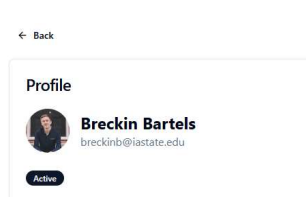
Pros & Cons Table – Canvas vs Our Dashboard

	<i>Alternative #1 Canvas</i>	<i>Alternative #2 Our 309 Dashboard</i>
<i>Pros</i>	<ul style="list-style-type: none">• Easy to use.• Available to everyone.• Protects privacy.• Assignment distribution/submissions.• Grade displays.• Multiple integrated applications.	<ul style="list-style-type: none">• Easy to use.• Available to everyone.• Protects privacy.• Assignment status.• Grade displays.• File uploader.• Demo status updates.• Integration with CATme and GitLab.
<i>Cons</i>	<ul style="list-style-type: none">• No file uploader.• No demo status.• No integration with CATme and GitLab.	<ul style="list-style-type: none">• Website application only.• Submissions not automatically updated.• Requires Canvas grading.



Implications and Next Steps

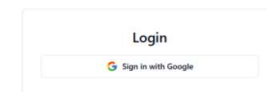
- We are continuously:
 - Adapting the layout of the website for efficient data searching.
 - Adding more pages to fit the desired features of our client.
 - Implementing safety features such as Microsoft Authentication logins.
 - Integrating with other applications such as Canvas, CATme, and Google Forms.
 - Maximizing the potential of our website.



Student Profile



Upload Documents



Google Login



Conclusions


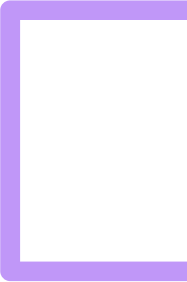
- Users include Professors, Teaching Assistants, and students.
- All information will be available in one location.
- Stronger organization of course materials for storage.
- Engineering standards IEEE 830-1988 & 101-2016 are applicable.



Questions?



Sources

- [1] “TypeORM - Amazing ORM for TypeScript and JavaScript (ES7, ES6, ES5). Supports MySQL, PostgreSQL, MariaDB, SQLite, MS SQL Server, Oracle, WebSQL databases. Works in NodeJS, Browser, Ionic, Cordova and Electron platforms.” typeorm.io. <https://typeorm.io/>
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 - [3] jwt, “JWT.IO - JSON Web Tokens Introduction,” jwt.io, 2024. <https://jwt.io/introduction>
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