TeamBandit

Design Review 3

Team Outlaws

Quinn Melssen
Dakota Battle
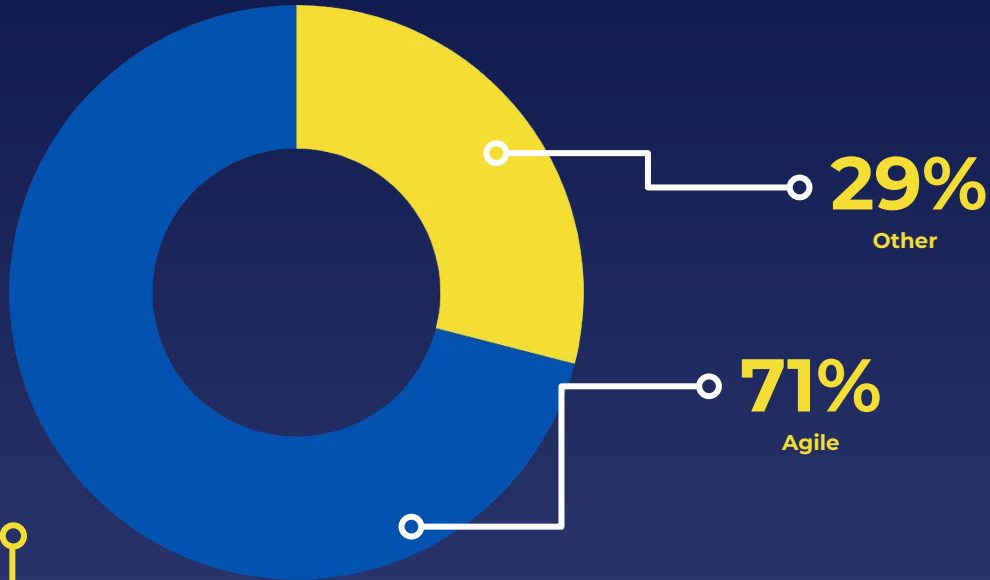Liam Scholl
Max Mosier

Client

Dr. Eck Doerry

Tech Companies Use of the Agile Methodology

29%
Other

71%
Agile

- Agile software development is a programming practice centered around small teams.

- According to Goremotely, over 71% of tech companies either already use, or are adopting agile methods.

- This number is rapidly increasing as agile continues to dominate the waterfall method.

The Difficulty in Managing and Maintaining Teams

- Team based classes are difficult to organize due to how many moving parts they entail

- Keeping up with submissions and ongoing processes can be tedious

- Menial tasks take up a lot of time

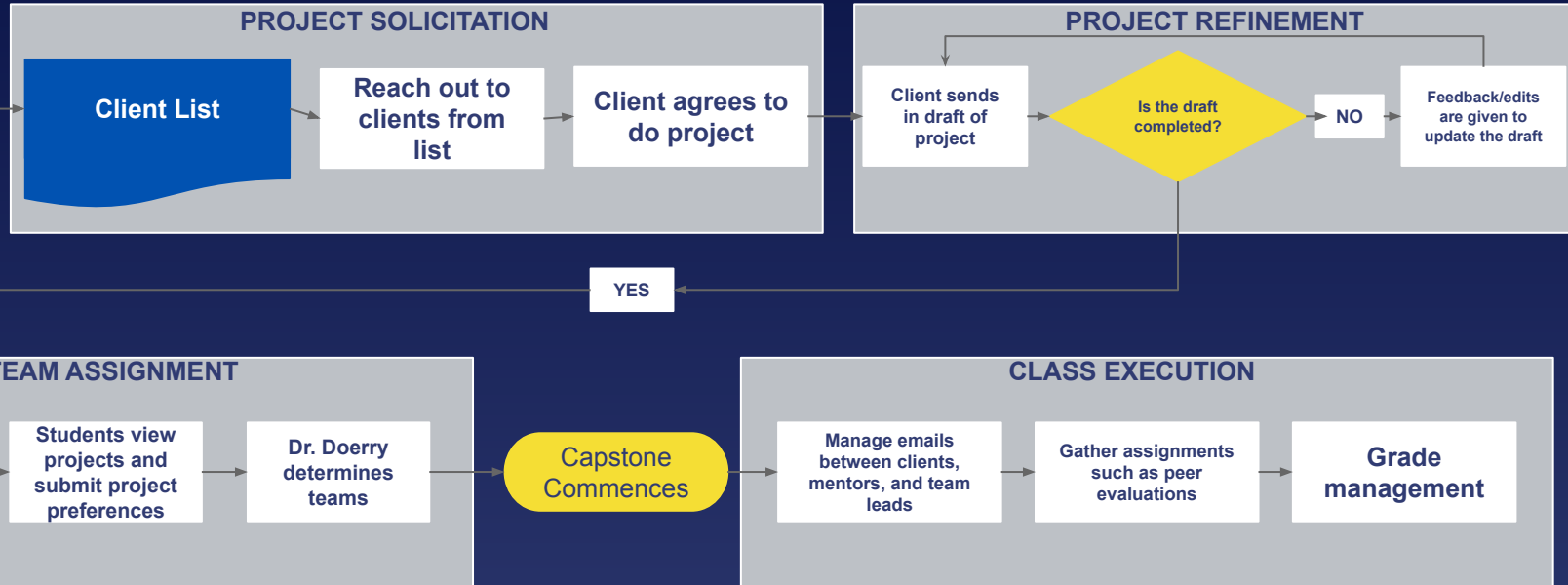- Communication between different parties is difficult to track

3

Our Client

- Computer Science Professor at Northern Arizona University

- Has lead CS capstone project for 15+ years

- Is one of many faculty members that understands the moving parts in organizing a team-based course

Dr. Eck Doerry
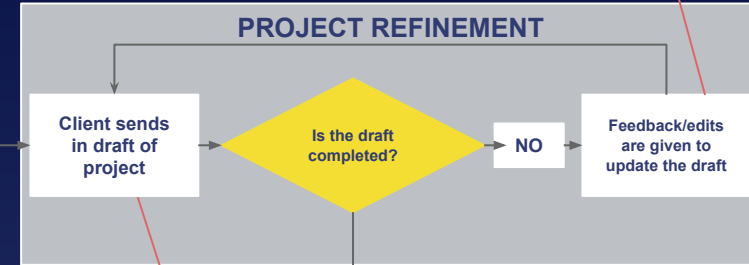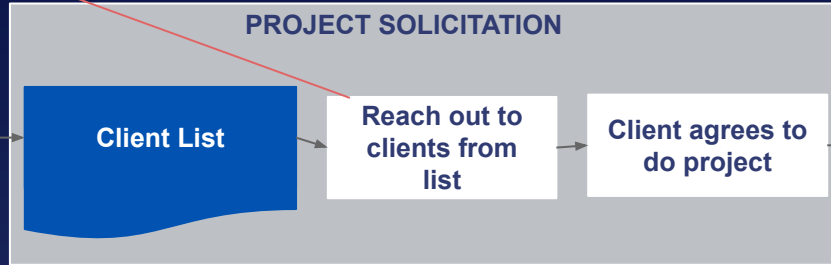
Dr. Doerry's Current Workflow

PROJECT SOLICITATION

Preparation for Capstone Begins

Client List → Reach out to clients from list → Client agrees to do project

PROJECT REFINEMENT

Client sends in draft of project → Is the draft completed? → NO → Feedback/edits are given to update the draft

YES

TEAM ASSIGNMENT

Project is added to the list of available projects → Students view projects and submit project preferences → Dr. Doerry determines teams

Capstone Commences

CLASS EXECUTION

Manage emails between clients, mentors, and team leads → Gather assignments such as peer evaluations → Grade management

5

Problems with the Workflow

Manually creates email list

Chance to forget to reply

~1 Hour of Effort

PROJECT SOLICITATION

~8 Hours of Effort Per Team

PROJECT REFINEMENT

Preparation for Capstone Begins

Client List

Reach out to clients from list

Client agrees to do project

Client sends in draft of project

Is the draft completed?

NO

Feedback/edits are given to update the draft

Information must be digitized for algorithm

Manually n-queens spreadsheet

YES

Digs through inbox to find emails

Manually check/update versions in spreadsheet

TEAM ASSIGNMENT

CLASS EXECUTION

Project is added to the list of available projects

Students view projects and submit project preferences

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Capstone Commences

Manage emails between clients, mentors, and team leads

Gather assignments such as peer evaluations

Grade management
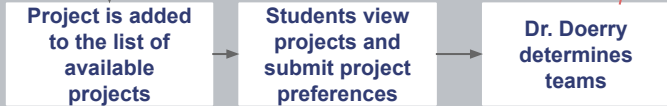
~16 Hours of Effort

~8 Hours of Effort Per Team

Based on 2021-2022 Capstone, Total Hours of Effort: 401 Hours of Effort Per Capstone

6

Solution Overview

Solution - Develop a web application that allows a user to:

- Store information from emails associated with TeamBandit
- Have a digital list of clients to email in one place
- Students can fill out specific deliverables to store information automatically
- Tool for manually/algorithmically sorting students into teams

Improved Workflow

~30 Minutes of Effort

~ 5 Hours of Effort Per Team

PROJECT SOLICITATION

Preparation for Capstone Begins → **Client List** → **Reach out to clients from list** → **Client agrees to do project**

PROJECT REFINEMENT

Client sends in draft of project → **Is the draft completed?** → **NO** → **Feedback/edits are given to update the draft**

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TEAM ASSIGNMENT

Project is added to the list of available projects → **Students view projects and submit project preferences** → **Dr. Doerry determines teams** → **Capstone Commences**

CLASS EXECUTION

Manage emails between clients, mentors, and team leads → **Gather assignments such as peer evaluations** → **Grade management**

~ 4 Hours of Effort

~ 6 Hours of Effort Per Team

Based on 2021-2022 Capstone. Total Hours of Effort: 269 Hours of Effort Per Capstone. ~132 Hours of Effort Saved

8

Domain Requirements

The key requirements that this web application should fulfill:

- Allow course organizer to create an account to save their information
- Assist our client's task of keeping track of a mass amount of emails from many clients
- Provide tools for a course organizer to add a course and manage inner course modules as well as manage students and mentors from within a course
- Enable organizers to assign students to projects through a built-in Team Assignments
- Automatically generate team websites, containing details about a pre-existing project
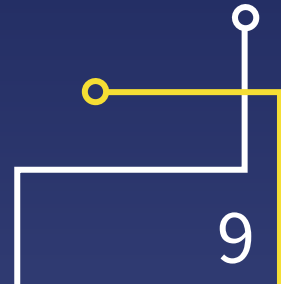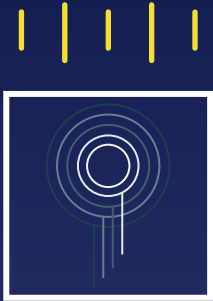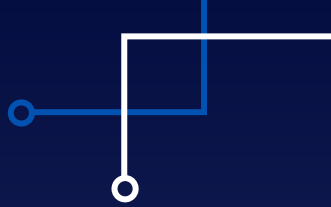
Architectural Overview

WEB HOSTING

Chosen Solution: aws

- Cheap
- Reliable
- Popular
- Easy to Use

FRONT END

Chosen Solution: React

- JavaScript Library
- Modern/Maintained

BACK END

Chosen Solution: express node

- Runtime Environment for JS
- Web Framework for Node

DATABASE MANAGEMENT SYSTEM

Chosen Solution: PostgreSQL

- Store large and sophisticated data
- Most powerful open source RDBMS

SUPPORTING FRAMEWORKS

Chosen Solutions: BCrypt HASH

- Authentication
- Security
- Routing
- Styling

10

Implementation Details
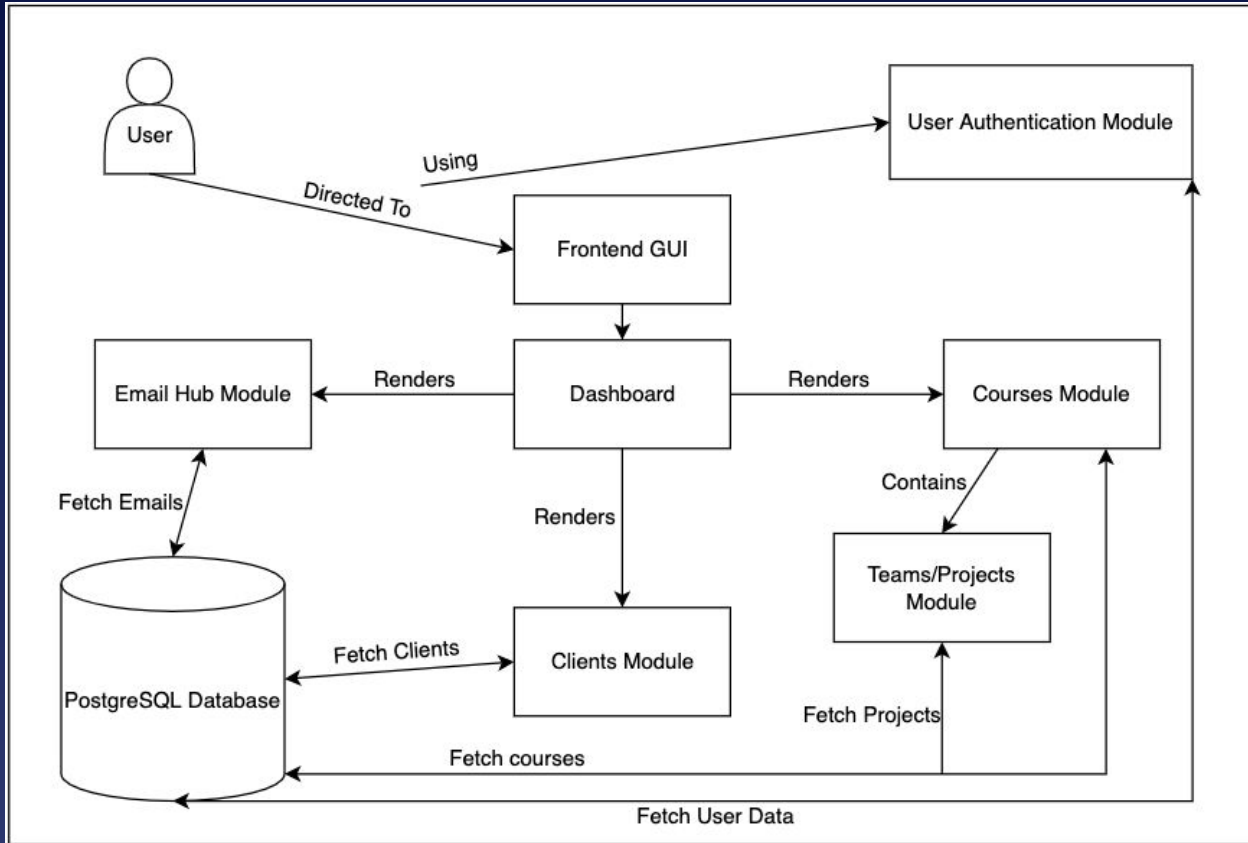
General Flow:
- User performs an action
- Action data is sent from React to Express route through HTTP request
- Express route executes queries on PostgreSQL

Organizer Adds a Course:
- Organizer selects to add course and fills out required fields
- Form data is sent to an Express route where data is inserted into the database
- New data is dynamically displayed to the organizer

User Sign-In / Creation

Organizer First Sign In

TeamBandit   🎓Total Courses:0   👤Total Clients:0   📋Total Projects:0   👥Total Students:0   ⚙ R

Robert Paulsen - Organizer

Profile

Logout

Courses   ADD A NEW COURSE

Course Name	Course Organizer	Course Semester	Total Projects	Total Students	Date Created

Courses

Clients

Email Hub

Logout

Client List

TeamBandit 🎓Total Courses:5 👤Total Clients:3 📋Total Projects:32 👥Total Students:18 ⚙ M

Clients [ADD CLIENT] [⬆ UPLOAD CLIENT LIST]

	COLUMNS	≡ FILTERS	⬇ EXPORT

Last name	First name	Email	Organization	Phone Number	Location	Logo	Notes	Edit
Mosier	Max	max@com.com	Maxwell Studios	928-928-9289	Flagstaff, AZ		This is a note	✏ EDIT
Durden	Tyler	tyd@paper.com	Paper Street Company	111-111-111	Roswell, NM		Fight Club	✏ EDIT
Tony	Stark	tony@stark.com	The Avengers	222-222-2222	Avengers Tower, NY		Iron Man	✏ EDIT

1–3 of 3 ‹ ›

14

CSV Uploader

DRAG AND DROP FILE HERE

OR

UPLOAD .CSV FILE

First Name	Last Name	Email	Organization	Phone Number	Location	Notes
Tony	Stark	tonys@avengers.com	The Avengers	111-111-1111	He is Iron Man	
Tyler	Durdan	tylerd@paperstreetco.com	Paper Street Company	222-222-222	Fight Club	

CANCEL   COMMIT CHANGES

TeamBandit   Total Courses:0   Total Clients:0   Total Projects:0   Total Students:0

Clients   ADD CLIENT

COLUMNS   FILTERS   EXPORT

Last name	First name					tes	Edit

0–0 of 0

15

Organizer / Client Inbox

TeamBandit 🎓Total Courses:1 👤Total Clients:1 📋Total Projects:1 👥Total Students:2 ⚙ Q

Inbox	🗑	From	Subject	Date	Attachment
	☐	qjmelssen@gmail.com	Project Idea	01:40 04-07	✉
Quinnifred Melonsan qjmelssen@gmail.com	☐	**qjmelssen@gmail.com**	**Project Idea**	**01:35 04-07**	

Email Popup

TeamBandit | Total Courses:1 | Total Clients:1 | Total Projects:1 | Total Students:2

Inbox

Quinnifred Melonsan

	From	Subject	Date	Attachment
	qjmelssen@gmail.com	Project Idea	01:40 04-07	

From: qjmelssen@gmail.com

Subject: Project Idea

Date: 01:40 04-07

Body:
Ok, here is my proposition! Tell me what you think!

Attachment: qjmelssen-90a813bc-7e5e-43e4-862e-1a6a4442cae7.pdf

Conversation View

🎓Total Courses:1 👤Total Clients:1 📋Total Projects:1 👥Total Students:2 ⚙ Q

Inbox

Quinnifred Melonsan
qjmelssen@gmail.com

Hello Mr. Quinn, I am mulling over an idea for a capstone project, but was unsure if it works in the context of your Capstone Program. Please let me know if you'd like to see it! Regards, -Quinn Melssen

Hello, I am sure it will be great, our capstone program can be very flexible with the software we design! Shoot over a PDF of what you have now and we can work on it from there! Regards, Mr. Quinn

Ok, here is my proposition! Tell me what you think!

18

Course Overview

TeamBandit 🎓Total Courses:5 👤Total Clients:5 📋Total Projects:32 👥Total Students:18 ⚙ M

Courses [ADD A NEW COURSE]

Course Name	Course Organizer	Course Semester	Total Projects	Total Students	Date Created
CS 315 - AUTOMATA THEORY	Max Mosier	Fall 2022	13	7	2022-02-23
CS 480 - OPERATING SYSTEMS	Max Mosier	Spring 2022	5	24	2022-02-23
CS 465 - DISTRIBUTED SYSTEMS	Max Mosier	Fall 2021	0	1	2022-02-23
CS 470 - ARTIFICIAL INTELLIGENCE	Max Mosier	Spring 2021	0	0	2022-02-23
MAT 316 - LINEAR ALGEBRA	Max Mosier	Spring 2021	0	0	2022-02-27

Landing Page

Adding a New Project

Students Page

CS 315 - Automata Theory   PROJECTS   SCHEDULE   STUDENTS   ASSIGNMENTS   MENTORS   SETTINGS

Students

COLUMNS   FILTERS   DENSITY   EXPORT   + ADD   ⬆ UPLOAD STUDENT LIST

First Name	Last Name	Student ID	Email	GPA	Edit
Max	Mosierz	33331	maxm@gmail.com	3.12	✏ EDIT
Quinn	Melssen	22223	quinnm@gmail.com	4	✏ EDIT
Carter	Taylor	44444	cartert@gmail.com	3.8	✏ EDIT
Dakota	Battle	333333	dakotab@gmail.com	3.7	✏ EDIT
Liam	Scholl	555554	liams@gmail.com	4	✏ EDIT
Chris	Evens	800008	chrise@gmail.com	3.2	✏ EDIT
Steve	Irving	87474	steveeee@gmail.com	8.9	✏ EDIT
Dead	Man	66666	deadm@gmail.com	6.6	✏ EDIT
Billie	Eyes	500005	billiee@gmail.com	4	✏ EDIT
Richard	Garcia	600006	richardg@gmail.com	2.5	✏ EDIT
Bob	Marley	700007	bobm@gmail.com	3.5	✏ EDIT
Joe	Burt	11112	joeb@gmail.com	1.51	✏ EDIT
Albert	Einstein	3	albere@gmail.com	3	✏ EDIT

Rows per page: 100   1–13 of 13   ‹ ›

22

Student Sign-In

TeamBandit

Chris Evens - Student

Profile

Logout

Courses

Course Name	Course Semester
CS 315 - AUTOMATA THEORY	Fall 2022

23

Project Preferences

Team Assignment

← GO BACK

← BACK TO PROJECTS

| Students | | | Projects | | | | | | Team Size Goal: 2 |
Student Information	GPA ↑	Assigned Project	The Avengers Initiative	SociAll	300 Spartans	Wows Moving Castle	Another Project	Paper Street Company	Ebon Hawk
Total Assigned:			3	2	2	2	1	0	0
Max Mosierz, maxm@gmail.com,	3.12		1	3	2	4		5	
Quinn Melssen, quinnm@gmail.com,	4	The Avengers Initiative	1	3					
Carter Taylor, cartert@gmail.com,	3.8	SociAll		2	5	1	4		
Dakota Battle, dakotab@gmail.com,	3.7	Another Project							
Liam Scholl, liams@gmail.com,	4								
Chris Evens, chrise@gmail.com,	3.2	The Avengers Initiative		2	4	1	5	3	
Steve Irving, steveeee@gmail.com,	8.9	The Avengers Initiative		3					
Dead Man, deadm@gmail.com,	6.6	SociAll							
Billie Eyes, billiee@gmail.com,	4	Wows Moving Castle							
Richard Garcia, richardg@gmail.com,	2.5	300 Spartans							
Bob Marley, bobm@gmail.com,	3.5	300 Spartans							
Joe Burt, joeb@gmail.com,	1.51								

Team Lead Assignment

Student Settings

Team Lead Actions

TeamBandit

TEAM LEAD ACTIONS:

Team Page Color

Team Website Font Color

Team Name

The Avengers

Project Abstract

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nam eleifend id elit vel consectetur. Vestibulum dictum lobortis arcu eu bibendum. Aenean interdum sem felis, id tincidunt quam dictum et. Vestibulum fringilla orci non lectus laoreet porttitor. Nunc convallis velit in nisi tristique fringilla. Etiam auctor sit amet magna ut laoreet. In ipsum lacus, pulvinar et interdum at, ultricies sed sem. Aliquam nec velit consectetur, hendrerit lectus et, gravida est. Phasellus rhoncus quam et malesuada ultricies. Curabitur ut tempor purus. Vivamus sit amet maximus nibh. Pellentesque gravida lacinia luctus. Phasellus condimentum nibh nulla, at elementum nisi molestie quis. Sed hendrerit dolor nec ultricies tincidunt.

Team Logo

Team Page Backdrop

Projects Page

Pre-Generated Team Website

Challenges and Resolutions

- Course data conflicts due to separate organizer and student view directories
  - Revise organizational structure to have one course view, adjust content based on user role

- Several Specific Database Conflicts
  - Manually adjust each mode of manipulating data (forms, tables) to enforce constraints in accordance with database table dependencies

Testing Plan

Unit Testing

- Testing individual components of application
- Application does not take actions on its own- emphasis on components directly interacted with by users
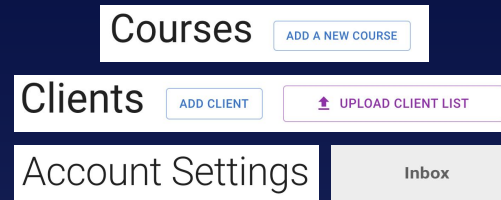
Units of Interest

1) Authentication - Account registration, login
2) Data Manipulation - Adding clients, assembling teams
3) Unique user features - Team lead actions

Testing Plan

Integration Testing
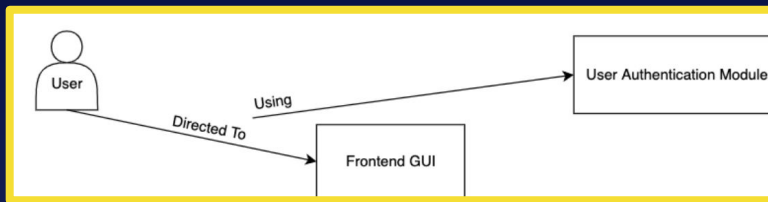
- Look for defects in interactions between modules:

1) Authentication Module - JWT Tokens
   - Each possible action that results in populating data to check for proper identification of user role (Organizer or Student)

2) All Application Modules - React
   - React Testing Library to verify proper loading of each application module
   - Each DOM element (divs, body tags, etc.)
   - Library's render function individually targets component/HTML Tags and ensures inner elements are mounted to make up the complete expected result to be displayed.

Testing Plan

Usability Testing

- Evaluate application's design as it pertains to the end user

Procedure

1) Gather a sample of test users consisting of
   a) Course Organizers/Instructors
   b) Students
2) Test users will perform test use cases with no prior experience
3) Participants will "think aloud" as they navigate the application
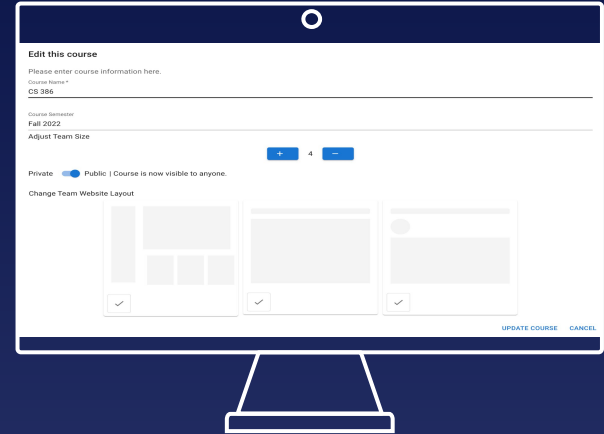
Testing Plan

Refinement Strategy

- Assess each issue as they are discovered
- Identify repeated areas of concern in User Testing
- Assemble schedule for refinement based on results of testing

Testing - Refinement	WEEK 1	WEEK 2	WEEK 3	WEEK 4
Authentication Integration Issue				
React Integration Complication				
User Testing Issue #1				
Adjust interface to accomodate issue				
Course Unit Refinement				
Patch newly discovered bug				
Fix end user specific issue #1				
Fix end user specific issue #2				

35
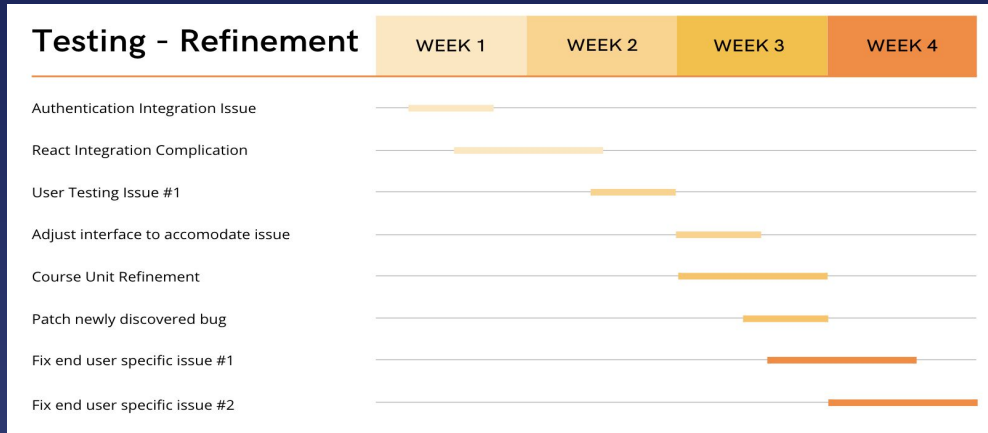
Schedule

Team Bandit Development Plan

	Jan	Feb	Mar	Apr	
2022					**2022**

- **Email Parser Python Script** — 14 days — Jan 29 - Feb 11
- **Database Integration** — 21 days — Feb 9 - Mar 1
- **Project Creation** — 10 days — Feb 20 - Mar 1
- **Project Preferences** — 16 days — Feb 24 - Mar 11
- **Website Templating** — 31 days — Mar 1 - Mar 31
- **User Testing + Refinement** — 65 days — Feb 22 - Apr 27
- **Student/Mentor Admin** — 30 days — Apr 1 - Apr 30
- **Routing Rehash** — 13 days — Mar 20 - Apr 1
- **Student Email Blast** — 13 days — Apr 3 - Apr 15

Today   UGRAD

In Conclusion...

- Team-based courses are a massive undertaking. The objective is to build an app to make organizing these courses simple and faster

- This review - overview of solution architecture, implementation, testing plan, and schedule for final sprint

- Our client is very pleased with the prototype

- Using TeamBandit, it is now easy for any educator to teach students in the way which reflects every industry:

In Teams.
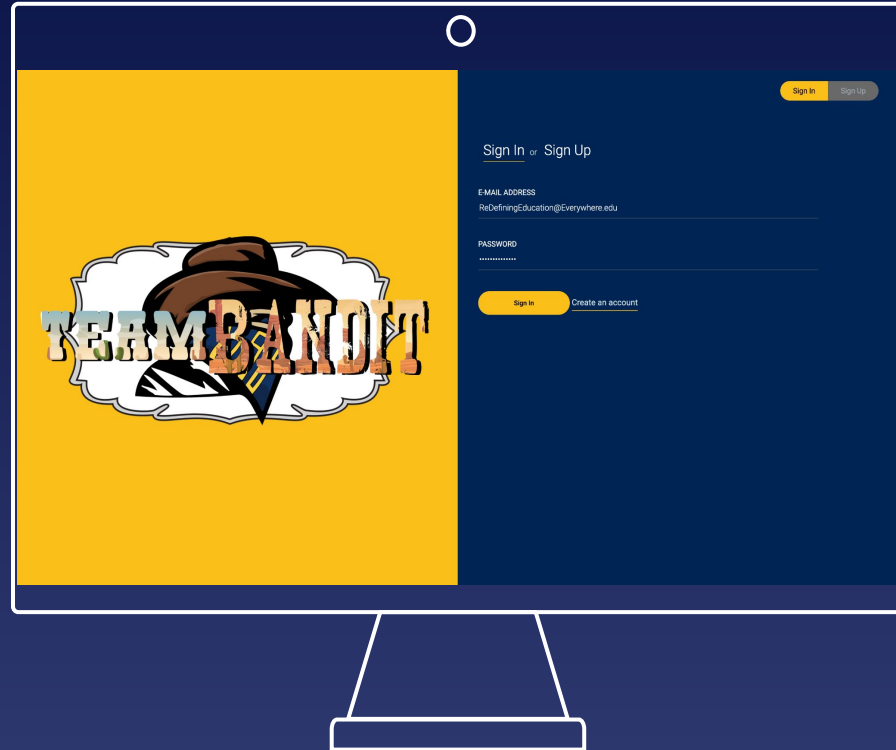
Questions?

Quinn Meissen
Team Leader

Max Mosier
Developer

Dakota Battle
Developer

Liam Scholl
Developer

https://ceias.nau.edu/capstone/projects/CS/2022/Outlaws/