



dreamsforschools

PROGRAMMING THE FUTURE

Dreams For Schools Web App

Team Dream-Works

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Revision History

Version	Changes	Date
v1	N/A	12/08/21
v2	<ul style="list-style-type: none">- Deliverables Plan- Ethics Review- Modified User Personas- Added User Stories to UX/UI Design Pages- Sequence Diagram- Class Diagram	02/13/22
v3	<ul style="list-style-type: none">- Added Judge UI/UX- UML Class Diagram	03/15/22

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Requirements

Deliverables Plan

All the deliverables that have been mutually agreed upon by our team and sponsors are listed below.

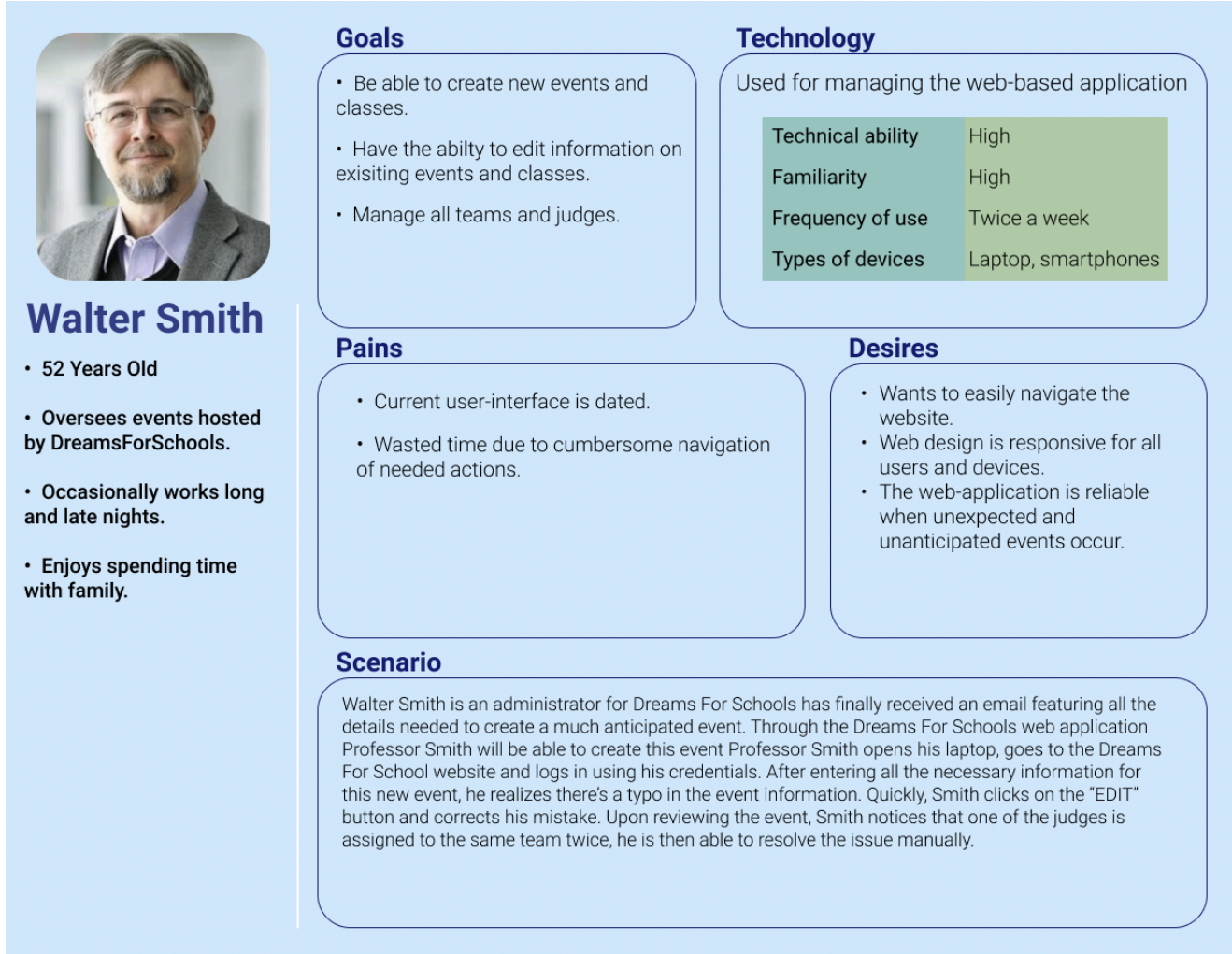
ITEM	DESCRIPTION	DELIVERY METHOD	STATUS
Web Application	The web-application is the Front and Backend of the administrative and judge portal. Our team will provide the necessary functionality.	GitHub Repository	In-Progress
Requirements & Design Document	The Requirements and Design document deals with how the logical requirements will be implemented within the system. Moreover, it includes personas and important diagrams.	Shared Drive (PDF)	In-Progress
Figma UI Mockup	The Figma UI mockup was provided to our team from the start. We have modified many of the user-flows to accommodate more features.	Shared Drive (Link)	Complete
Database Manual	The Database Manual will contain descriptions of how all of the data is stored within MongoDB. Additionally, it will contain instructions about how to utilize the API.	Shared Drive (PDF)	In-Progress
Sprint Reports	Sprint Reports have been an integral aspect of each sprint, as it allowed for our team to reflect on the previous sprint and learn how to improve on the next sprint.	Shared Drive (PDF)	In-Progress

Tutorial	The tutorial will provide a step-by-step approach on utilizing the system.	Shared Drive (Video)	Ongoing
Trello Board	The Trello board has played an active role in providing our team with a clear view on the status and progress of all items in the backlog.	Account Access	Ongoing

User Personas

The purpose of personas is to create reliable and realistic representations of our application’s prospective user-base. More specifically, these personas represent the industry judges that will be using our web-application to judge student based competitions. Our team created these user personas based on the existing requirements documentation provided by our sponsors.

Link: <https://www.figma.com/file/WFIPnUhlhwGgard9cwGWPj/Personas?node-id=0%3A1>



Walter Smith

- 52 Years Old
- Oversees events hosted by DreamsForSchools.
- Occasionally works long and late nights.
- Enjoys spending time with family.

Goals

- Be able to create new events and classes.
- Have the ability to edit information on existing events and classes.
- Manage all teams and judges.

Technology

Used for managing the web-based application

Technical ability	High
Familiarity	High
Frequency of use	Twice a week
Types of devices	Laptop, smartphones

Pains

- Current user-interface is dated.
- Wasted time due to cumbersome navigation of needed actions.

Desires

- Wants to easily navigate the website.
- Web design is responsive for all users and devices.
- The web-application is reliable when unexpected and unanticipated events occur.

Scenario

Walter Smith is an administrator for Dreams For Schools has finally received an email featuring all the details needed to create a much anticipated event. Through the Dreams For Schools web application Professor Smith will be able to create this event Professor Smith opens his laptop, goes to the Dreams For School website and logs in using his credentials. After entering all the necessary information for this new event, he realizes there’s a typo in the event information. Quickly, Smith clicks on the “EDIT” button and corrects his mistake. Upon reviewing the event, Smith notices that one of the judges is assigned to the same team twice, he is then able to resolve the issue manually.



Barbara Davis

- 48 Years Old
- Technical Solutions Officer at a major company.
- Over 25 years of experience in the IT space.
- Loves to travel around the world with her husband.

Goals

- Be able to give scores to the projects made by event participants.
- Be able to log into their account with their email and password.
- Be able to see all teams and amount of time remaining for judging.

Technology

Used for scoring event participants.

Technical ability	Proficient
Familiarity	Low
Frequency of use	Low
Types of devices	Laptop, smartphones

Pains

- Difficulty in editing personal information.
- Current user-interface is dated.

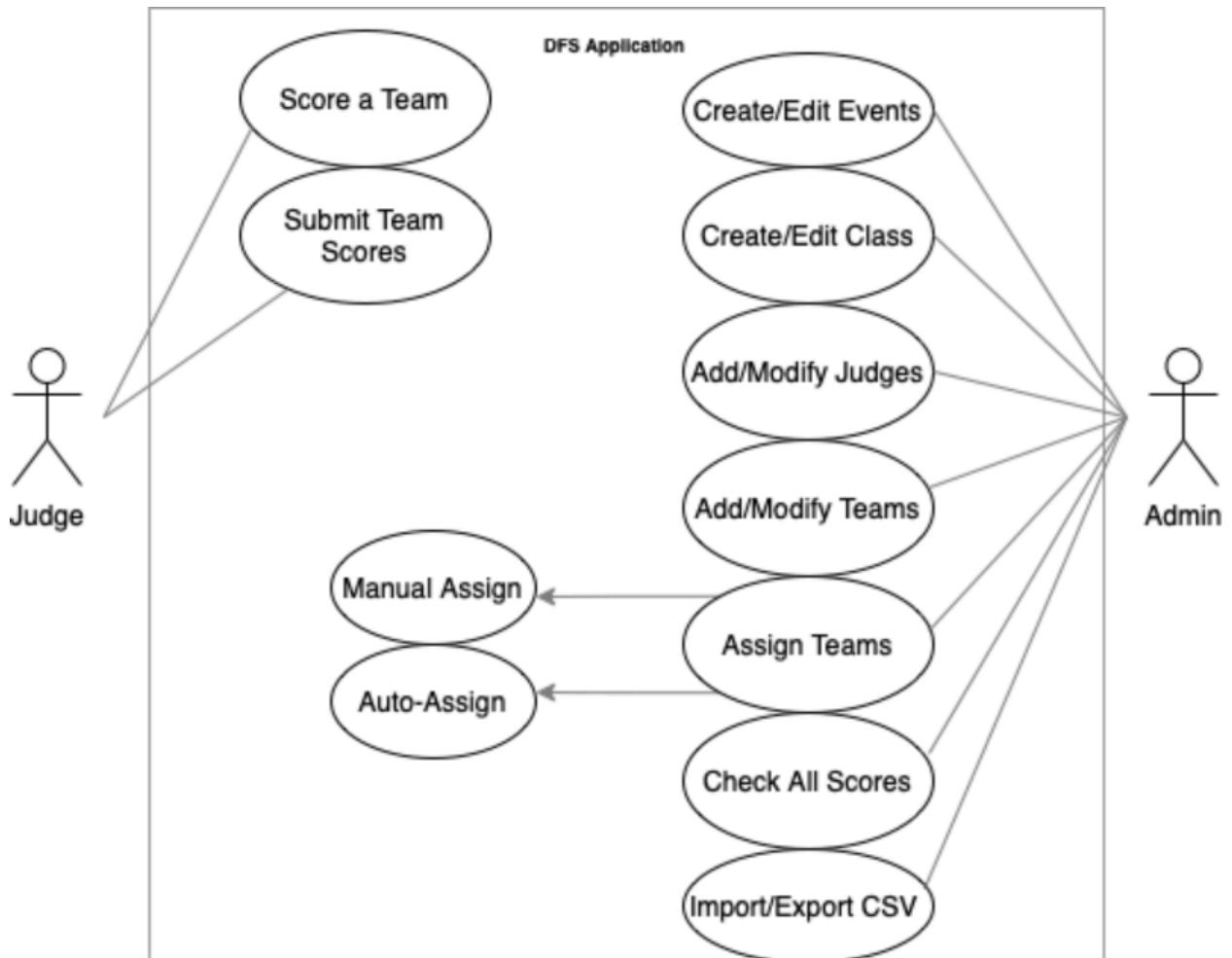
Desires

- The application is all-encompassing and does not require the use of other hardware/software for judging.
- Keep track of all assigned teams and be able to score them appropriately.

Scenario

Barbara Davis arrives to the very anticipated student showcase at UCI. Davis, a judge for this Dreams For Schools event, walks over to the judges table and sits down in her designated seat. She proceeds to open the DFS web application and log in with her judge account that was created beforehand. After watching each of her assigned teams present, Davis goes into the application and submits their respective scores. After believing to have entered every team's score, she realizes there is a yellow check mark indicating he still has not finished submitting every score. As there is still time remaining, she submits all remaining scores.

Functional Requirements



Must Haves

- As an administrator, I want to be able to create new events so that Dreams For Schools is able to support future events using the same application.
- As an administrator, I want to be able to create new classes so that Dreams For Schools is able to support and teach more STEM concepts to students.
- As an administrator, I want to be able to manually add judges for events so that registered teams can be accessed thoroughly.
- As an administrator, I want to be able to manually add student teams so that all participants are accounted for.
- As an admin user I want to be able to easily set the date and location for events so that Judges know where and when each event will be held.
- As an admin user I want to be able to manually assign judges to teams so that errors

can be reduced during the judging process.

- As an admin user I want to be able to automatically assign judges to teams so that there is less time wasted doing it manually.
- As an admin user I want to be able to quickly access the judged scores of all student teams so that a winner can be easily determined.
- As an administrator, I want to be able to easily import data via CSV files so that information does not have to be manually entered.
- As an administrator, I want to be able to easily export data via CSV files so that information can be saved efficiently.
- As a judge I want to be able to enter scores in all the categories for each team I am assigned to judge so that my score can be accurately accounted for.
- As a judge I want to be able to submit all my scores for all the teams I am judging so that each team receives a score and a winner can be determined.

Should Haves

- As an administrator, I want to be able to easily navigate the application so that I can save time completing needed tasks.
- As an admin user I want to be able to customize the judging criteria for individual classes so that they can be reused.
- As an administrator, I want to be able to view information pertaining to each judge so that I can contact them.
- As a judge I want to be able to see which teams I have finished scoring with a visual check mark system so that I can save time from checking if a team has been scored.
- As a judge I want to be able to see the amount of time remaining until the judging portion of the competition is complete so that I can submit the scores.

Nice to Haves

- As an administrator, I want to have a team page automatically generated so that more information can be known.
- As an administrator, I want to have the ability to ask judges for their interest in volunteering so that they can help with future DFS events.
- As an administrator, I want to be able to send teams and judges generated links that allows them to fill out information so that it does not have to be done manually.
- As an administrator, I want to be able to view demographic information of judges so that I have a broad understanding of different characteristics to adequately make decisions.
- As a judge, I want to be able to see a map of the event so that I can easily navigate to assigned teams and score them appropriately.
- As a judge, I want to have access to an individual page so that I can ensure all my personal information (mailing address, phone number, email, t-shirt size) is correct.
- As a judge, I want to be able to make notes for each assigned team so that I can refer to the information and adequately score.

Non-Functional Requirements

Security

The web-application will be secured via the assignment of different user roles. Currently, there are two main roles which consist of Admin and Judge. Depending on the role, the user will be able to access specific data.

- Admins: have the ability to read and write data globally.
- Judges: have the ability to read and write data as it pertains to their assigned teams.
- Guest: N/A

Scalability

The app should be able to accommodate the increase in capacity and functionality based on the user's demands.

Reliability

The application's functionality should be tested to ensure that it is failure-free upon production usage.

Availability

The application should be online at all times for event purposes. In the case of unplanned system downtime, all features/functionality should be online in a swift manner.

Usability

The web-application's interface has to be user-friendly so that intended actions can be completed without complication.

Capacity

The application should be able to accommodate 500+ concurrent users, while storing existing information.

Maintainability

The application should be easily repaired and enhanced with high code quality and appropriate documentation.

Data Integrity

The system shall maintain data integrity by keeping backups of all updates to the database for every record transaction.

Performance

The web-application's load times should not exceed one second for users.

Ethics Review

In today's connected world, stories of ethical missteps in technology dominate mainstream media. For all of the good technology can do, it also raises issues of privacy, disinformation, bias, fairness, and safety. Without attention to the ethical aspects of our products, our intended benefits may be overshadowed by unintended harms. The main right technical risk zones include bad actors, disinformation, algorithmic bias, exclusion, outsized power, surveillance, data control, and addiction. After a considerable amount of discussion, our team identified ethical risk zones that apply to our system and have identified some strategies for mitigating these risks.

Algorithmic Bias

Algorithmic bias applies to our product because of the implementation of an algorithm in the back-end to automatically pair student-teams with judges. Our application will promote fairness by randomly assigning judges to a number of student teams. This process will not only prevent algorithmic bias but promotes competitive integrity. In the event that users have been profiled or discriminated against, the application's administrators have the authority to manually re-assign judges to teams. Additionally, each team only has information that pertains to their project such as school name, a brief description, along with names of the mentor and students. All of which minimizes the risk of algorithmic bias, as no specific team is favored.

Data Control

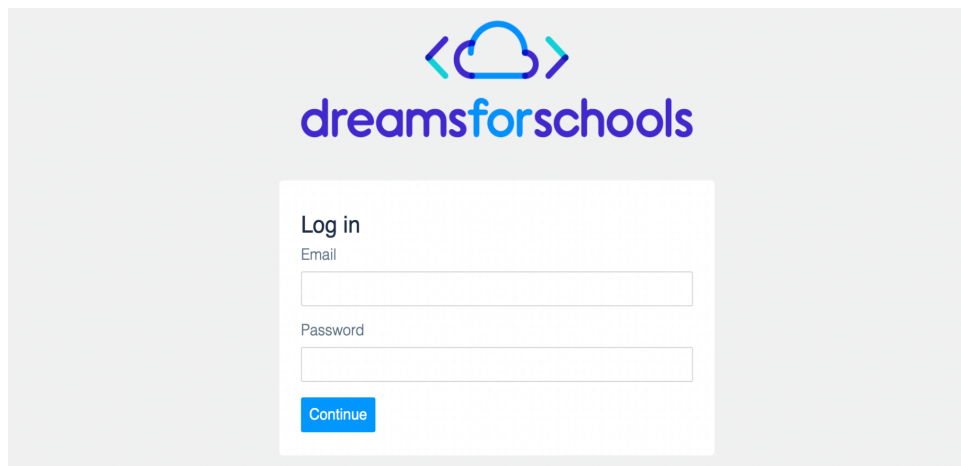
Data control is relevant to our product because we are collecting information from users. More specifically, the DFS Judging Application collects data from judges. Judges are required to provide their first and last name, email address, industry, and t-shirt size. They can optionally choose to provide other information such as mailing address for contacting purposes. We ensure that the data is safely stored as each judge will have their own unique username and password; requiring authentication per session. The information will only be viewable to themselves and application administrators. Moreover, the web-application is secured by HTTPS protocol; protecting users from malicious attacks on unsecured networks.

UI/UX Design

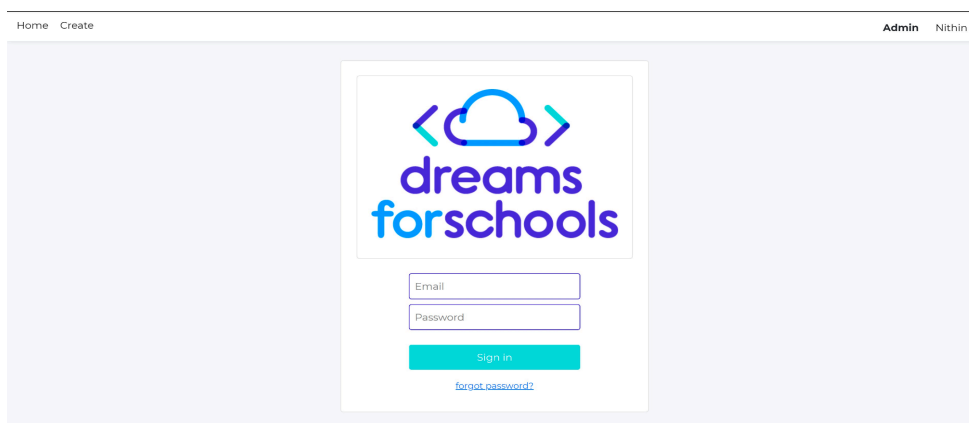
The existing prototype web-application's front-end styling was overhauled and replaced with a new updated design language. The styling was largely based upon the provided Figma mockup that was created by a previous design group. Our team reviewed each individual page and made tweaks that drastically improved certain user flows, allowing for a more streamlined experience. Some key changes that were made include the refinement of the navigation bar that allows for users to quickly return to the home page along with the ability to create new events and classes; a much needed separation from selecting and creating events. The addition of pop-up modals allows for users to focus on the selected task(s) at hand. Currently, there are still some additional pages that need to be worked on and backend tasks that will allow for data to populate on the pages.

<https://www.figma.com/file/VUjnt18QxXH9uH9nl4AfAM/Final-Prototype?node-id=1473%3A4049>

Previous Login Page:



New Login Page:



User Stories: “As a user, I want to be able to easily and securely log in to the system so that my information can only be accessed by me”.

Previous Select/Create Event:

The screenshot shows the 'dreamsforschools' web application interface. At the top, there is a logo consisting of a cloud with arrows pointing left and right, and the text 'dreamsforschools' below it. The main content area is divided into two sections: 'Select an Event' and 'Create an Event'. The 'Select an Event' section includes a search input field, a table with columns 'Name', 'Date', 'Location', 'Enter', and 'Delete', and a button labeled 'Show 10 Past Events'. The 'Create an Event' section includes input fields for 'Name', 'Date' (with the value '12/07/2021'), and 'Location', followed by a blue 'Create' button. At the bottom of the page, there is a 'Log out (Nithin Jilla)' button.

New Select Event:

The screenshot shows the 'dreamsforschools' web application interface with a list of events. At the top, there are navigation links 'Home' and 'Create' on the left, and 'Admin' and 'Nithin' on the right. The main content area features the 'dreamsforschools' logo and the heading 'Your Events'. Below the heading is a search input field. A table lists the events with columns for 'Name', 'Date', and 'Location'. Each row includes a 'View' button and a trash icon. At the bottom of the table, it says 'Show event(s) (Total: 4)'. The table data is as follows:

Name	Date	Location	View	Trash
2021/12/1 - SFUSD AppJam	2021/12/1	SF	View	Trash
2021/12/7 - IUSD AppJam	2021/12/7	Irvine	View	Trash
App Jamboree	1/6/22	Lake Forest	View	Trash
AppJelly	1/6/22	Santa Ana	View	Trash

User Stories: "As an admin, I would like to easily view all the events that have been planned so that I can edit them accordingly."

New Create Event:

Home Create Admin Nithin

Name:

Date:

Location:

User Stories: “As an admin, I would like to easily distinguish the difference between creating an Event and a Class.”

Previous Event Information:

The screenshot shows a web interface for editing an event. At the top, a dark blue header contains the text "All Events (5/27/21 - SAUSD AppJamboree (Romero Cruz, Villa Willard))" on the left and "Log out (Nithin Jilla)" on the right. A sidebar on the left features the "dreamsforschools" logo and a menu with items: "Event Info", "Judges", "Teams", "Assign Teams", "Criteria", "Due for Judging", "Total Score", "Export", "Winner", and "Presentation". The main content area is titled "The Current Event" and contains a form with the following fields: "Name" (with the value "5/27/21 - SAUSD AppJamboree (Romero Cruz, Villa Willard)"), "Date" (with the value "05/27/2021"), and "Location" (with the value "Online"). A blue "Save" button is positioned below the "Location" field.

New Event Information:

The screenshot displays the "New Event Information" page. At the top, a navigation bar includes "Home" and "Create" on the left, and "Admin" and "Nithin" on the right. The sidebar on the left shows the "dreamsforschools" logo and a menu with items: "Overview", "Student Teams", "Industry Representatives", "Judging Assignments", "Criteria", "Deadline", "Project Scores", and "Presentation Scores". The main content area features a teal "Edit" button, the event title "2021/12/1 - SFUSD AppJam", and a location pin icon next to "SF". Below the title, there are icons for a calendar, "2021/12/1", a clock, "time", and a location pin, "SF". The event description is: "Event Description. Wafer pie chocolate cake tootsie roll candy canes cotton candy jelly apple pie liquorice. Chocolate gummi bears liquorice marzipan caramels candy tart. Brownie candy marshmallow tootsie roll bonbon cupcake. Event Description. Wafer pie chocolate cake tootsie roll candy canes cotton candy jelly apple pie liquorice. Chocolate gummi bears liquorice marzipan caramels candy tart. Brownie candy marshmallow tootsie roll bonbon cupcake." Below the description, there are two columns: "Industry Representatives" with a list of "Ben Drutman" (repeated five times) and "Student Teams" with "Ramen Warriors/Awkward Noodles". A "Windows Ink Workspace" watermark is visible in the bottom right corner.

User Stories: “As an admin, I would like to view more information about specific events so that I am able to make more informed decisions and make necessary changes.”

Previous Judges:

All Events (5/27/21 - SAUSD Applamboree (Romero Cruz, Villa Willard)) Log out (Nithin Jilla)

dreamsforschools

- Event Info
- Judges**
- Teams
- Assign Teams
- Criteria
- Due for Judging
- Total Score
- Export
- Winner
- Presentation

Add Judge

Judge Email

[Add](#)

Existing Judges (4)

Search

Email	Name	Password	Edit	Delete
cellogum@gmail.com	Elaine Chen	6444	Edit	Delete
nguyen_ck@yahoo.com	Khanh Nguyen	1925	Edit	Delete
matsprehn@gmail.com	Mathew Sprenh	8636	Edit	Delete
riaan.vandermerwe@neudesic.com	Riaan van der Merwe	5230	Edit	Delete

Import Judges

Paste CSV or TSV Here

New Judges (RENAMED: Industry Representatives):

Home Create Admin Nithin

dreamsforschools

- Overview
- Student Teams
- Industry Representatives**
- Judging Assignments
- Criteria
- Deadline
- Project Scores
- Presentation Scores

Industry Representatives

[+ Import](#) [Export](#)

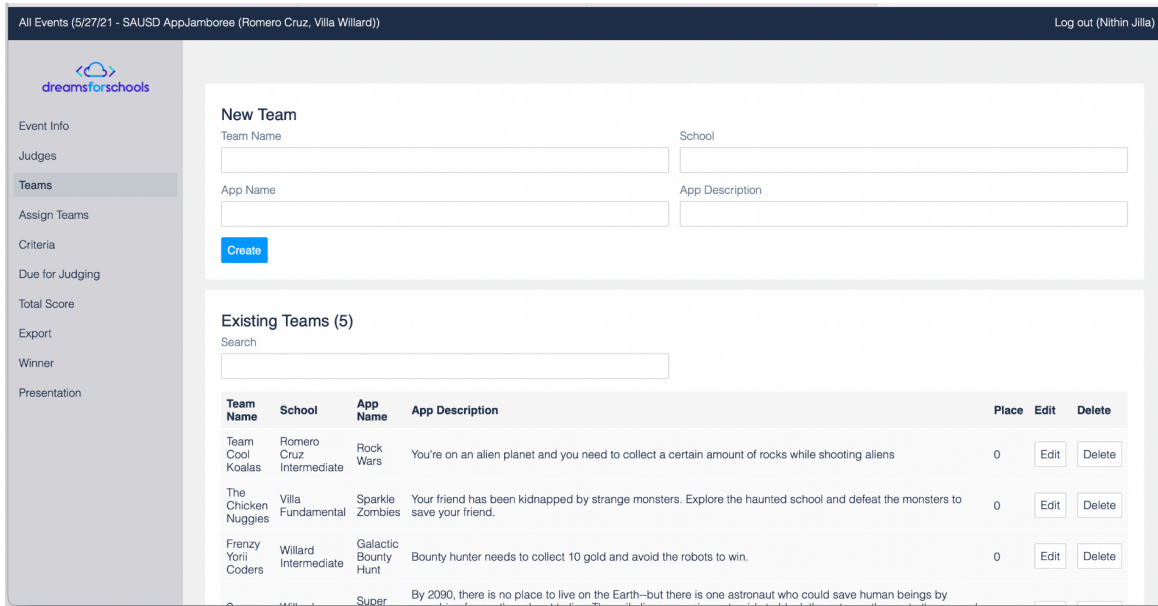
Search

Name	Email	Company	Password
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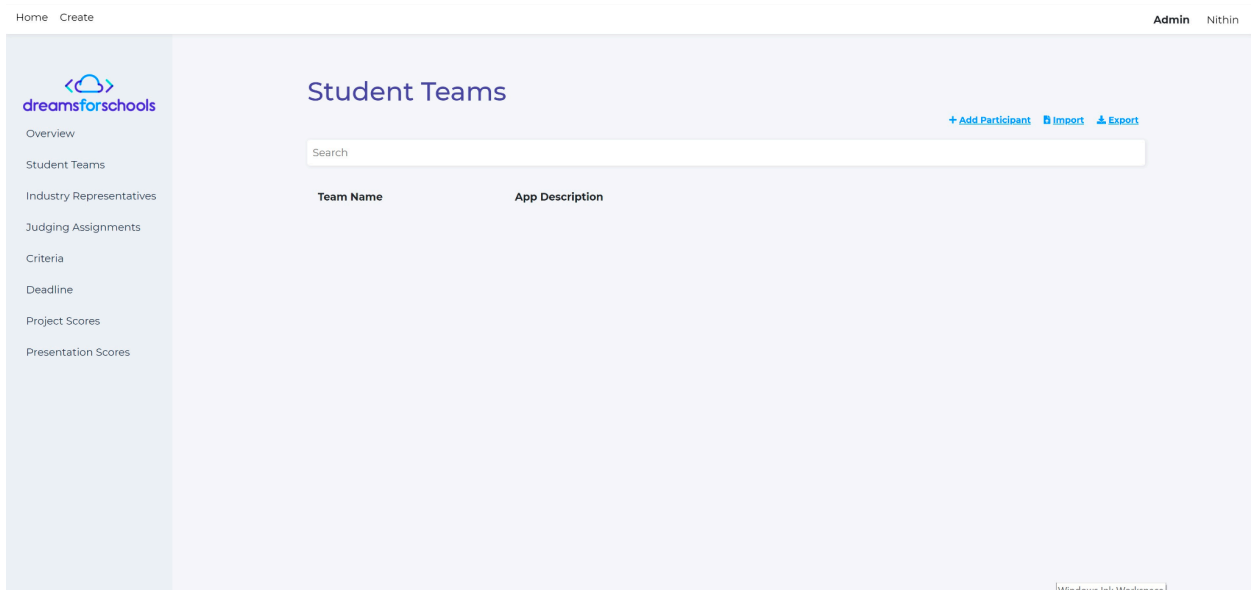
User Stories: “As an admin, I would like to modify the existing mailing address of judges so that I can reach out to the judges.”

“As an admin, I would like to access information for all users registered on the application, so that I can make changes if needed.”

Previous Teams:



New Teams (RENAMED: Student Teams):



User Stories: “As an admin, I would like to access the information by exporting/uploading a CSS file so that I do not have to manually extract/input information.”

“As an admin, I would like to view all the student teams information so that I can better answer questions and better understand the competition.”

Previous Judging Assignments:

All Events (5/27/21 - SAUSD AppJamboree (Romero Cruz, Villa Willard)) Log out (Nithin Jilla)

dreamsforschools

- Event Info
- Judges
- Teams
- Assign Teams**
- Criteria
- Due for Judging
- Total Score
- Export
- Winner
- Presentation

Current Assignment

Judge	Team Cool Koalas	The Chicken Nuggles	Frenzy YoYri Coders	Space Rangers	Team Toad
Elaine Chen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Khanh Nguyen	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Mathew Sprenh	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Riaan van der Merwe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Auto Assign

New Judging Assignments:

Home Create Admin Nithin

dreamsforschools

- Overview
- Student Teams
- Industry Representatives
- Judging Assignments**
- Criteria
- Deadline
- Project Scores
- Presentation Scores

Judging Assignments

Industry Representative

Auto Assign

How many judges per team?

|Windows Ink Workspace|

User Stories: “As an admin, I would like to view all the judges and their assigned student teams so that I can make informed decisions that will ensure all teams are fairly assessed.”

Previous Criteria:

The screenshot shows the 'Add Criterion' form and a table of 'Existing Criteria'.

Add Criterion Form:

- Name:
- Category:
- Max Score:
- Buttons:

Existing Criteria Table:

Name	Category	Max Score	Delete
UI/UX: Is the app easy to use and understand? Does it have an intuitive feel as to how the app works and what to do next?	Design	10	<input type="button" value="Delete"/>
Do the graphics have a cohesive look? Is there a similar design and theme throughout the app?	Design	10	<input type="button" value="Delete"/>
Does the application have an opening screen, instructions & a closing screen?	Design	10	<input type="button" value="Delete"/>
How usable is the app? Are there any bugs/issues that are noticeable?	Functionality	15	<input type="button" value="Delete"/>
Are there features of the app that make it stand out and add technical sophistication?	Functionality	15	<input type="button" value="Delete"/>
How well does this app meet the designated theme?	Theme	15	<input type="button" value="Delete"/>
How creative/unique is this application compared to others?	Theme	15	<input type="button" value="Delete"/>

New Criteria:

The screenshot shows the 'Criteria' page with a sidebar and a main content area.

Page Header: Home Create Admin Nithin

Left Sidebar:

- Overview
- Student Teams
- Industry Representatives
- Judging Assignments
- Criteria
- Deadline
- Project Scores
- Presentation Scores

Main Content Area:

Criteria

[+ Add Criteria](#)

Name	Category	Max Score
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User Stories: “As an admin, I would like to have a list of criteria readily available, so that I can quickly add it to specific classes.”

Previous Due For Judging:

The screenshot shows a web application interface for 'dreamsforschools'. At the top, a dark blue header contains the text 'All Events (5/27/21 - SAUSD Applamboree (Romero Cruz, Villa Willard))' on the left and 'Log out (Nithin Jilla)' on the right. A left sidebar menu lists various options: Event Info, Judges, Teams, Assign Teams, Criteria, Due for Judging (highlighted), Total Score, Export, Winner, and Presentation. The main content area is titled 'Due for Judging' and contains two input fields: 'Date Judging Ends' with the value '05/27/2021' and 'Time Judging Ends' with the value '12:30 PM'. Below these fields are two buttons: a blue 'Save' button and a white 'Clear' button.

New Due For Judging:

The screenshot shows the updated 'Due for Judging' form. The top navigation bar now includes 'Home Create' on the left and 'Admin Nithin' on the right. The left sidebar menu is more detailed, listing: Overview, Student Teams, Industry Representatives, Judging Assignments, Criteria, Deadline, Project Scores, and Presentation Scores. The main content area is titled 'Due for Judging' and features two input fields: 'Date Judging Ends' with a placeholder 'mm/dd/yyyy' and a calendar icon, and 'Time Judging Ends' with a placeholder '--:-- --' and a clock icon. Below these fields are 'Save' and 'Clear' buttons.

User Stories: “As an admin, I would like to have a clear view of when judges are supposed to submit their final scoring so that I can better manage the event.”

Previous Score:

All Events (5/27/21 - SAUSD AppJamboree (Romero Cruz, Villa Willard)) Log out (Nithin Jilla)

dreamsforschools

Event Info
Judges
Teams
Assign Teams
Criteria
Due for Judging
Total Score
Export
Winner
Presentation

Team Cool Koalas

Judge	Design	Functionality	Theme	Total
Elaine Chen	0	0	0	0
Khanh Nguyen	0	0	0	0
Mathew Sprenh	0	0	0	0
Riaan van der Merwe	0	0	0	0

The Chicken Nuggies

Judge	Design	Functionality	Theme	Total
Khanh Nguyen	0	0	0	0
Mathew Sprenh	0	0	0	0
Riaan van der Merwe	0	0	0	0

Frenzy Yorii Coders

Judge	Design	Functionality	Theme	Total
Elaine Chen	0	0	0	0
Khanh Nguyen	0	0	0	0
Riaan van der Merwe	0	0	0	0

New Score:

Home Create Admin Nithin

dreamsforschools

Overview
Student Teams
Industry Representatives
Judging Assignments
Criteria
Deadline
Project Scores
Presentation Scores

Presentation Scores

All Teams

Judge	Score	Input
-------	-------	-------

Data Correction

If one or more judges report that they cannot find one or more teams when giving presentation scores, or if one or more judges are missing when a team is selected above, clicking on the button below may fix the issue. If the issue persists after clicking on the button, please try manually removing the judges that have problems and adding them again. Clicking on the button below will not remove any existing scores or presentation scores stored in the system. However, manually removing a judge will remove all the scores and presentation scores given by this judge.

Perform Correction

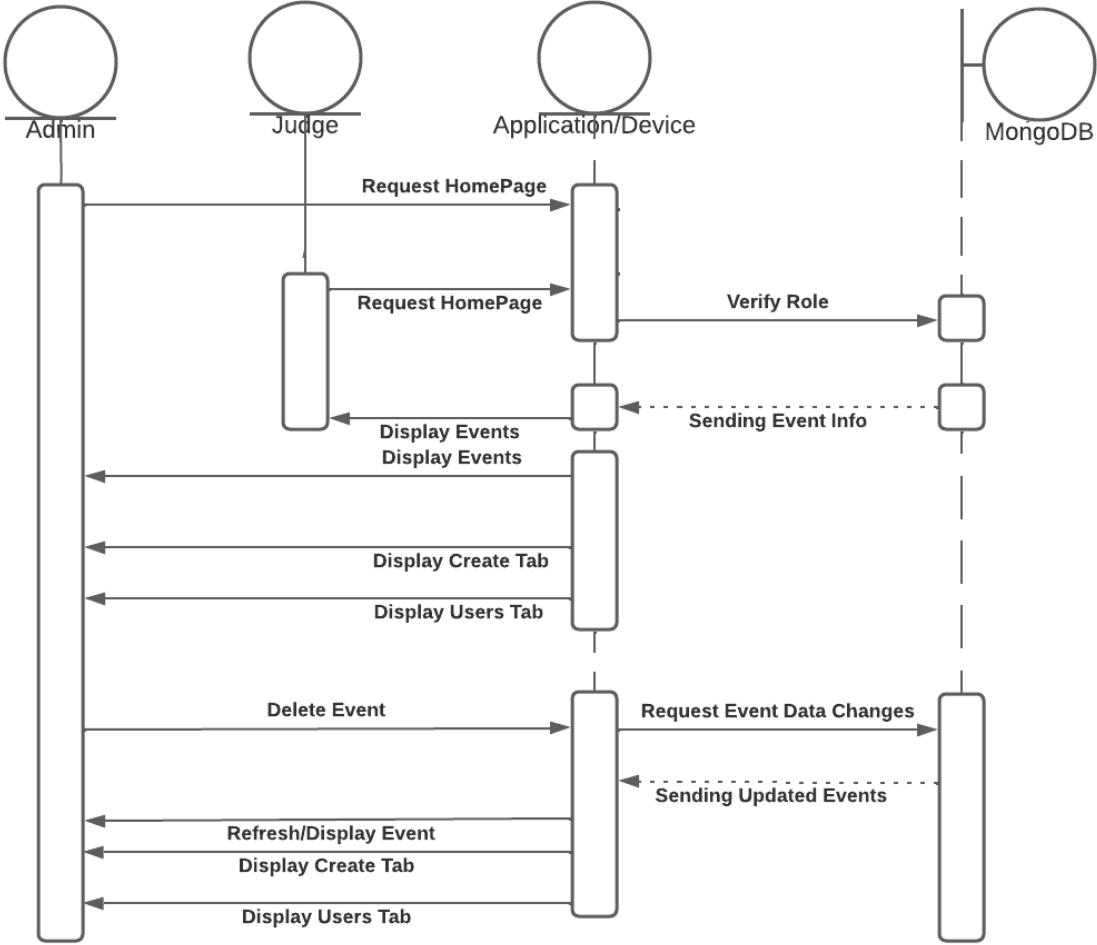
Windows Ink Workspace

User Stories: “As an admin, I would like to have the ability to view the scoring breakdown for individual teams so that a winner can be determined.”

Software Design

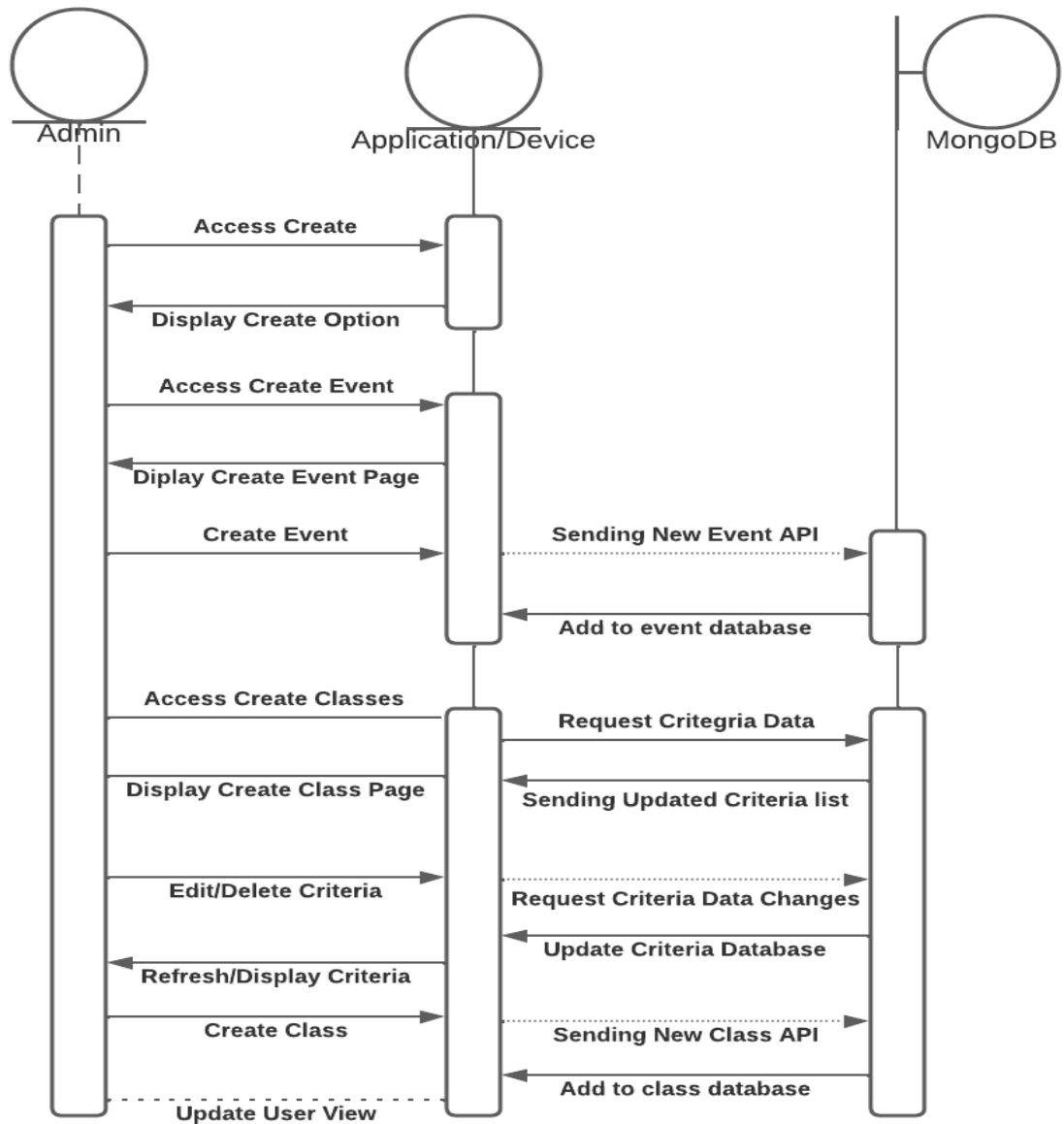
UML Sequence Diagram

1. Sequence Diagram for Judge and Admin home view



The following sequence diagram illustrates the way that DFSapp handles different user type homepage views. The process involves a role verification process that takes place between the react app and the mongo database where the role of the user is checked during the sign in process. Once signed in, depending on the user type, the user will see all the functionalities assigned specifically to their role. Admin can also directly change the events list in the homepage whereas Judges can not.

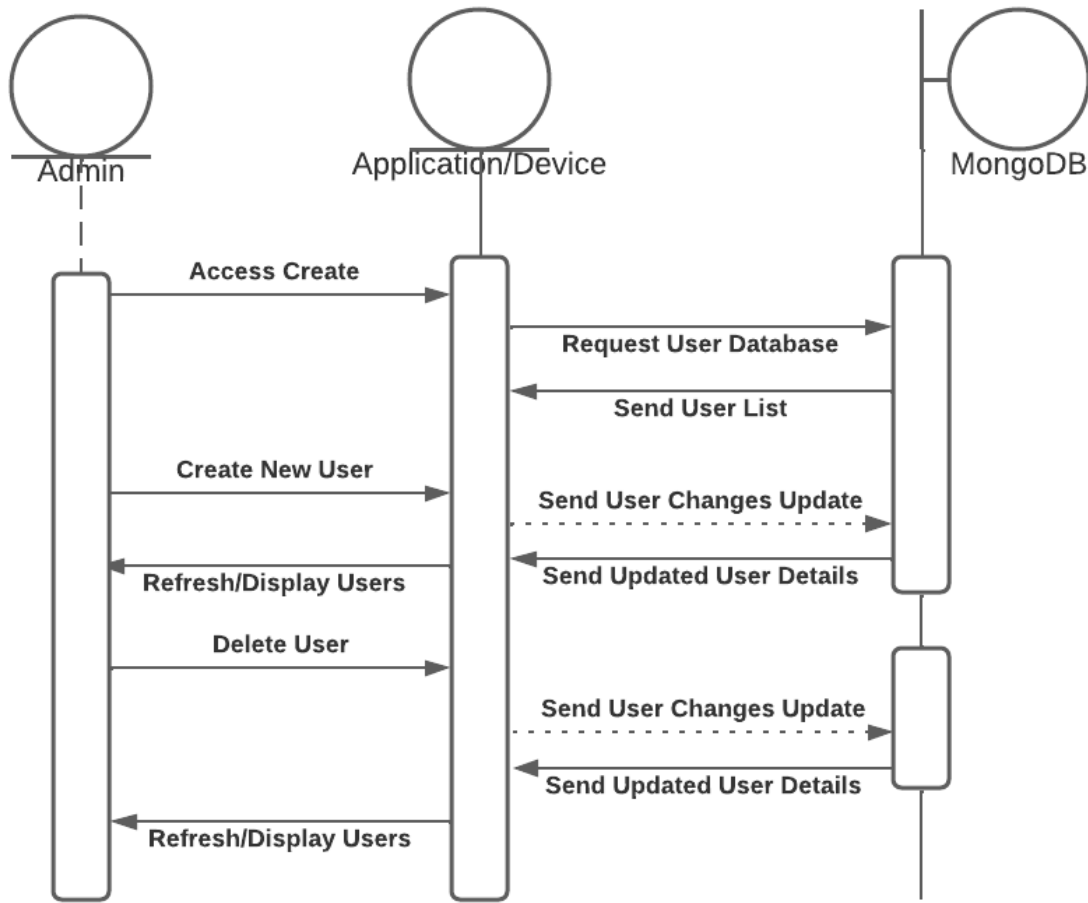
2. Sequence Diagram for Create Class/Event



The following sequence diagram describes primarily the create tab on the admin view of the website. With admin permission, the user accesses a drop down menu between create event and create class. The process of creating class and event are similar. Accessing the create event doesn't call the API for data and only displays empty fields that can be filled out to create a new class. Creating a new class will make an api call that updates mongoDB and new events will display on the home page. The create classes tab similarly displays all the empty fields for a new class to be created but it also has, in addition, a criteria list that displays all the criteria of that class. This is an API called directly from mongoDB to retrieve the criteria list and can also

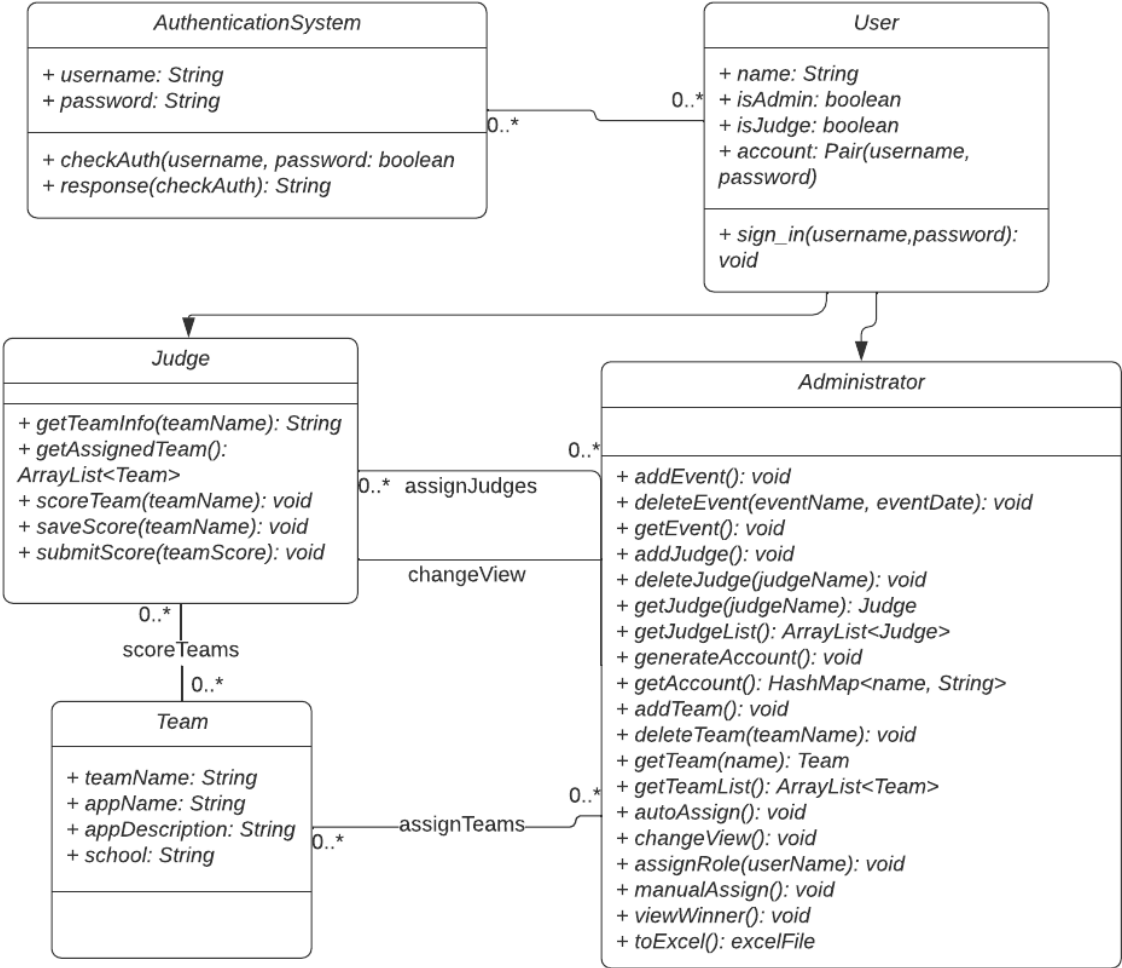
be edited. Similarly, when a new class is created, there is an API call to mongoDB that updates the classes list.

3. Sequence Diagram for Add/Remove Users



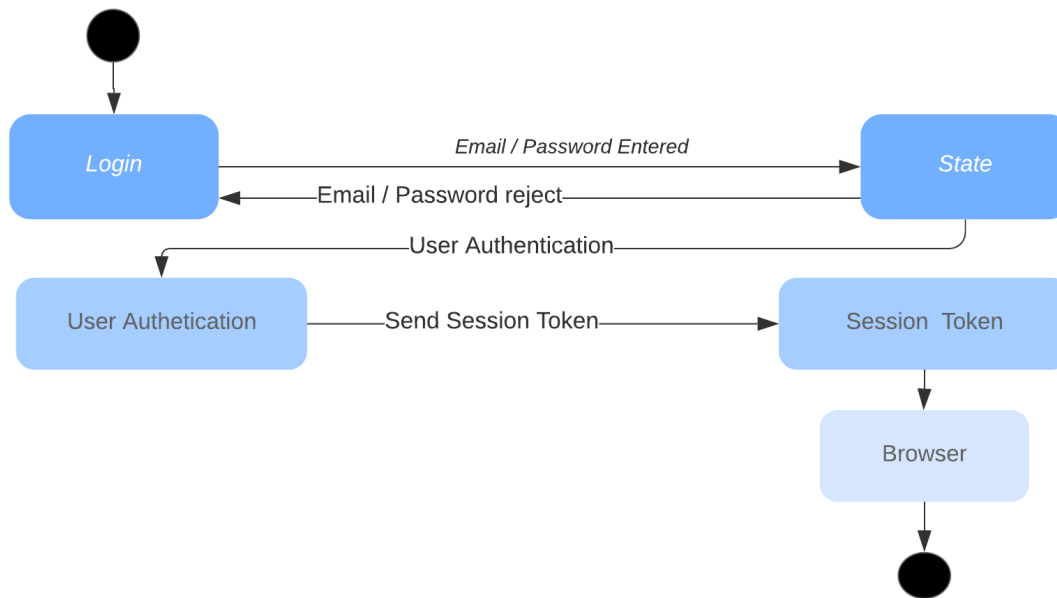
The following sequence diagram illustrates the interaction between the Admin and the system in creating and removing users. Users are accessed by the administrator from the client side, where it communicates with the database. Depending on what the administrator wants to do, it can add and delete users when needed. The client will then update the database and then the database will return an updated database so that the client can display it to the client.

UML Class Diagram



The UML class diagram above showcases our user. The user will have a set of class variables unique to each user and will go through our authentication. With that being said, the user will go through the authentication system. The user will also be given a pre-existing account and role before they login with the authentication system. The UML class diagram dives into two of the roles that the user has the chance to have: administrator and judge. This will be checked through the booleans that are given in the class under `isAdmin` and `isJudge`. The judge will be given permission to access certain functionalities for scoring. They will also be able to see the information for the team. The administrators will also be given even more permissions for integral functions. They will be able to control who is a judge and who is on a team, etc. The teams will be able to be accessed by the judge and the administrators but not vice versa.

State Diagram (Authentication Session Token)



The state diagram above shows the basic interactions of how the login system works for the web application. When a user starts the process in the upper left hand circle, they are prompted to login. After that, the state will be set based on the inputs that the user puts in. It gets rejected and the login is invalid. The state is then processed through the user authentication and it creates a session token for the web application. The state is then processed and completed.