

Parakeet Social Support Registry Application

DESIGN DOCUMENT

SDDEC22-08

Client: Dr. Katherine Rafferty

Advisor: Professor Matthew Wymore

Team Members:

Samantha Culver: Team Manager & Front-end Designer

Kellan Hulet: Front-end Developer, Front-end Manager

Brayden Ruch: Back-end Developer, Client Correspondent

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Executive Summary

Development Standards & Practices Used

List all standard circuit, hardware, software practices used in this project.
List all the Engineering standards that apply to this project that were considered.

Summary of Requirements

List all requirements as bullet points in brief.

- User Registration
- Support Request Creation
- Support Request Accepting
- Community Chats
- Request Chats
- User Calendar
- Update/Thank you button for jobs/story of user
- User Search
- User Following
- Community Creation

Applicable Courses from Iowa State University Curriculum.

List all Iowa State University courses whose contents were applicable to your project.

- ComS 309
- ComS 362
- ComS 327

- ComS 363 - Introduction to database management systems

New Skills/Knowledge acquired that was not taught in courses

List all new skills/knowledge that your team acquired which was not part of your Iowa State curriculum in order to complete this project.

- Meeting Note Taking
- Project Management Aspects

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List of figures/tables/symbols/definitions (This should be the similar to the project plan)

1 TEAM

1.1 TEAM MEMBERS

Samantha Culver, Kellan Hulet, Brayden Ruch, Amaranthia Willers

1.2 REQUIRED SKILL SETS FOR THE PROJECT

Skill sets for the project include experience working with front- and back-end web development, communication, self-accountability

1.3 SKILL SETS COVERED BY THE TEAM

Front-end web experience: Kellan Hulet & Samantha Culver

Back-end web experience: Amaranthia Willers, Brayden Ruch

Communication: Samantha Culver, Kellan Hulet, Brayden Ruch, Amaranthia Willers

Self-accountability: Samantha Culver, Amaranthia Willers, Kellan Hulet

1.4 PROJECT MANAGEMENT STYLE ADOPTED BY THE TEAM

Open Communication & Positive Feedback, Commitment to Team Processes, Leadership, & Accountability, and Commitment to Team Success and Shared Goals

1.5 INITIAL PROJECT MANAGEMENT ROLES

Team Organizer: Samantha Culver

Front-end Developers: Samantha Culver, Kellan Hulet

Back-end Developers: Brayden Ruch, Amaranthia Willers

Note Taker: Brayden Ruch

2 Introduction

2.1 PROBLEM STATEMENT

There are a large number of individuals who face medical crises on a daily basis. Frequently, it is quite difficult for these people to get the support they need from their community due to societal pressure, the stress of the crisis causing them to forget who offered support, and a variety of other reasons as well. With the development of our Social Support Registry web application, our team is trying to make it easier for individuals to get the types of support they need from their community in an organized and simple manner.

2.2 REQUIREMENTS & CONSTRAINTS

- Functional requirements:
 - App should allow users to have the following capabilities:
 - Request support
 - Fill requests for support
 - Bio/About to tell people about their needs
 - Search feature
 - Create an account
 - Public and Private options
 - Access a calendar
 - Messaging feature
- Resource requirements: Server to run the frontend and backend of application once launched
 - Total budget is \$1000 (constraint)
- Aesthetics requirement: The app will have a blue palette for the theme. The goal is to have a calm and relaxing feel.
- Economic/market requirements: There are a few social support applications but none that aim to organize supporters.
- Time requirement: Our goal is to have a working prototype by the beginning of May to allow for testing over the summer.

2.3 ENGINEERING STANDARDS

802E-2020: Privacy Considerations-how to mitigate privacy threats

828-2012: Configuration Management minimum standard requirements

829-Software Testing Documentation Standard

802.15.8-Peer to peer communication standard for chat feature

830-1998: Software Requirement Specifications Documentation for passing the work on to other maintainers/developers after our part of the project ends

X.509-SSL-defining the format of public key certificates
23026-2015: The standard for the life cycle of websites
7002: Data Privacy Standard for personal information

2.4 INTENDED USERS AND USES

- 1) People who are in health crises will benefit because they can more easily organize their needs for their fellow community members to offer help for
- 2) The community around people in need cares about the existence of the website because they can use it to offer aid in the ways that they're most able to help their friends and family in a crisis
- 3) Healthcare providers appreciate the existence of Support Registries because when individuals facing a health crisis get emotional and tangible support for loved ones it helps ease their stresses and improves the chances of a positive recovery.

3 Project Plan

3.1 PROJECT MANAGEMENT/TRACKING PROCEDURES

Team SDDEC22-08 is adopting the agile project management style. This style is demonstrated by our frequent communication with our client, the team's efforts to make the project easy to adjust should new goals arise later in the development process, and how thus far our team goals have been fluctuating between development goals and design goals for the project quite fluidly. To track the team progress on the project, we are using Gitlab, Jiro, and Discord to maintain progress and team communication.

3.2 TASK DECOMPOSITION

For the project, the overall objective is to design a website that allows users to communicate their needs to their community and have their community sign up for tasks to help users in need with their requests. Breaking this website down is rather simple. For the Back-end development:

1. Database for User Information
 - a. Registration
 - b. Login
 - c. Profile
 - d. Privacy Settings
 - e. Need Support/Giving Support
2. Creating the Calendar feature for each user
 - a. Requires being able to pull from support jobs, calendars of other users/communities, and have notifications of scheduling conflicts
3. Chatting between users for specific tasks will mainly be a backend problem, since the front end really only needs to send the correct requests to the server for the messages to be displayed/sent
 - a. Task Chats
 - b. Community Chats
 - c. Public Chats
4. Relations between Users
 - a. Following
 - b. Friends/privacy settings
 - c. Communities
 - d. Searching

For the Front-end development:

1. We need to first create the main page from which every other page can be reached:
 - This will be the home page. It will have the option to link to a sign-in page or a registration page for new users. It will also allow users to go to the 'about' page to read about the purpose of the website.
2. Then, a sign-in page should be created, with communication set up with the server to validate a user's name and password.
 - This page should send a request to the server to verify login information. If invalid login, it should notify the user that either they have an incorrect username or password entered.
 - IFF the username and password are both valid, the website should be approved to link to that user's home page.
3. From there, the about page should be developed.
 - This page will mostly detail the purpose of the website and site resources for the research behind the reason for the website's development. It will also provide a brief summary of the developers who worked on the website. Since this page will be mostly text, it in theory will be one of the easier pages.
 - This page should have the ability to link back to the homepage (either the non-signed in page or the user's personal homepage if the user was logged in at the time the about page was viewed)

4. User's homepage (similar to 1)

- This homepage should provide the user with the option to logout, the ability to look at their user profile
- User should be able to interact with their messages
- They should be able to access their calendar
- And users can search for other users from this page

5. Registration page

- Users should be able to mark whether they are in-need or helper user
- Users should be able to rank their support needs if they marked in-need
- Users should be able to Provide a summary of their situation along with any photos they'd like to share
- Users should have the option to specify their general location (by zip-code)
- Users should be able to setup email or phone notifications for when someone messages them or add things to their calendar or signs up for support tasks
- Users should be able to add support needs if they aren't provided as one of the preset suggestions: they should also be able to give a detailed description of what their needs would entail (whether a preset need or an added need)
- Users should be able to specify days of the week where some needs are more important than others.
- Users should be able to set a username and password for login purposes (as well as a recovery email)
- Users should be able to set their account to either public, private (only access user page if provided a link), or hidden (hidden = only able to find if searched for by specific name)

6. Profile page

- Profile should contain most of the information provided from registration
- Profile should provide the option to modify any and all information within it
- Profile page should offer a shareable link for users to send to loved ones and people in their community to make it easy for them to find their page.

7. Calendar page

- Should allow user to modify tasks on their calendar
- Should be able to send user reminders for upcoming tasks on their calendar (either phone or email reminders or both)

8. Search page

- Can search by user names to find specific people you're looking for
- Can copy user link from the search result to share with own friends/family
- Can Click on user to take to specific user's page for more details
- Can send user a message from the search page
- Can request friend status from specific user to do higher-trust support tasks

9. Messaging page

- Can view all conversations had with other users
 - Sorted by inbox and outbox
 - Can open specific message chain to continue conversations with users
10. Other user page
- Should allow user to view other users needs
 - User should be able to sign up for needs requested by other user, which would add that task to user's own calendar
 - Can read user profile description to understand their story
 - Can send user a message to start a message chain
 - Can request friend status to do higher-trust support tasks

3.3 PROJECT PROPOSED MILESTONES, METRICS, AND EVALUATION CRITERIA

1. It's necessary to first create the main page from which every other page can be reached:
 - Welcoming to new users
 - Each to navigate
 - Efficiently designed to allow users to navigate to their profile or sign up
2. Then, a sign-in page should be created, with communication set up with the server to validate a user's name and password.
 - Secure sign in
 - Allow browser to cache user data for easier sign in
 - Optionally keep users signed in on given device
3. From there, the about page should be developed.
 - Show developer bios
 - Explain the idea behind the website
 - Show relevant research to support website
4. User's homepage (similar to 1)
 - Dependent on type of user, show information relevant to them
 - ie: if supporter, show upcoming obligations/status of accounts user supports
 - ie: if user is receiving support, easily ask for more or check status of requested support
 - Link to calendar and account settings are easily accessible
5. Registration page
 - User is able to easily sign up for an account
 - Secure registration

- Auto sign in after?
6. Profile page
 - Show information about the user that is readable but also looks good
 - Able to follow user or request to follow
 - Able to message user or request to message
 7. Calendar page
 - Display all time sensitive support in an easy to view calendar
 - Could be linked with Google Calendar
 8. Search page
 - Search for users or communities
 - Filter by type of user or by text input
 - Results are easily filtered and viewable
 9. Messaging page
 - Receive messages from users
 - Show messages from newest to oldest
 10. General front end
 - Able to communicate with the backend quickly and display the loading state to the user.
 - Handle invalid inputs or bugs without app crashing
 - Overall aesthetic is calming and looks professional
 - Users are able to navigate the app easily and intuitively
 11. Communities
 - Creating A Community
 - Community Support Tasks
 - Community Chats
 12. Mobile App Portability
 - Format Web Application so that it will work as a mobile application

3.4 PROJECT TIMELINE/SCHEDULE



3.5 RISKS AND RISK MANAGEMENT/MITIGATION

Risks	Category	Probability	Impact	RMM (number)
Personal information leaks	cybersecurity	.2	High	001
Lack of Support Response	market	0.5	High	002

RMMS:

Risk Information Sheet			
Risk ID: 002	Date: 03/13/2022	Probability: 0.5	Impact: High

Description: Lack of response from support networks of users	
Refinement/Context: may not know about application, may not check the application often enough, there may not be enough people that can provide the needed support using the application to keep track of the support needs of people	
Mitigation/Monitoring: check with users for feedback, make a way to spread from different users to their support networks, make incentives for checking in more frequently(?)	
Management/Contingency Plan/Trigger: <ol style="list-style-type: none"> 1. Advertise to user base 2. Notifications/reminders for users 3. Consistent Usability of product 4. Feedback from Users 	
Current Status: monitoring, planning, and feedback	
Originator: Amy Willers	Assigned: all

3.6 PERSONNEL EFFORT REQUIREMENTS

Front-end Development time estimates for project by task:

Tasks	Estimated Time to complete (in hours)
1) Initial homepage	4
2) Sign-in page	9
3) About page	2
4) User homepage	15
5) Registration page	40
6) Profile page	15
7) Calendar page	25
8) Search page	5

9) Messaging page	5
10)Other user page	5
Total time for Front-end Development:	125 hours

Back-end Development time estimates for project by task:

Tasks	Estimated Time to complete (in hours)
User Information	15
Relations between Users	30
Calendar Information	10
Chat Features	50
Communities	15
Total time for Back-end Development:	120

3.7 OTHER RESOURCE REQUIREMENTS

Design of the Logo and selecting a color scheme are the primary other requirements.

4 Design

4.1 DESIGN CONTEXT

4.1.1 Broader Context

This product is being developed to assist communities with individuals that are experiencing a health crisis and are in need of different types of support from their communities. These communities are impacted by our design, and our project addresses the societal need for effective ways to provide support to individuals in need of assistance.

Area	Description	Examples	Relevant Considerations
Public health, safety, and welfare	How does your project affect the general well-being of various stakeholder groups? These groups may be direct users or may be indirectly affected (e.g., solution is implemented in their communities)	Increasing/reducing exposure to pollutants and other harmful substances, increasing/reducing safety risks, increasing/reducing job opportunities	Increasing accessibility to emotional, physical, and other types of support for people who are in a health crisis.
Global, cultural, and social	How well does your project reflect the values, practices, and aims of the cultural groups it affects? Groups may include but are not limited to specific communities, nations, professions, workplaces, and ethnic cultures.	Development or operation of the solution would violate a profession's code of ethics, implementation of the solution would require an undesired change in community practices	Development of the solution would allow the groups it impacts to better provide the support to those in need that they want to, helping them to support their communities.

Environmental	What environmental impact might your project have? This can include indirect effects, such as deforestation or unsustainable practices related to materials manufacture or procurement.	Increasing/decreasing energy usage from nonrenewable sources, increasing/decreasing usage/production of non-recyclable materials	Increasing carpooling to school/medical appointments, minor increase in usage of non-recyclable materials used for servers/computers
Economic	What economic impact might your project have? This can include the financial viability of your product within your team or company, cost to consumers, or broader economic effects on communities, markets, nations, and other groups.	Product needs to remain affordable for target users, product creates or diminishes opportunities for economic advancement, high development cost creates risk for organization	Due to the fact that the website does not raise money to support itself, it will be an endeavor that operates at a loss for the client to support the needs of several communities.

4.1.2 User Needs

Users in crisis need a way to more easily ask for assistance and clarify the type of support they need through their crisis, because currently it is extremely difficult for people to ask for assistance and actually get the support they need (as evidenced by several research studies provided by the client).

Users wanting to support others need an easier way to understand what their community members need to be able to provide appropriate assistance, because currently it's extremely difficult for supporters to really know the best way to help their loved ones in crisis situations.

Communities need an easy way to organize who in the community will provide support to the individuals in crisis at any given time to spread out the support for an individual in need so they receive a balance of support and not sporadic support because currently, there is no easy way to organize when people are going to provide their support to their community members.

4.1.3 Prior Work/Solutions

There are a few similar websites that currently exist. One is called the Dinner Party. The website aims to make it easy for people to get connected who all have experienced some sort of loss. The goal is to get people to just meet together and talk about their shared grief, basically be there for someone who is going through the same thing they have. The website looks very good visually, provides easy sign up to get connected, and has detailed information about why it is important to talk about grief. The website is similar to ours by letting users easily get support and showing why it is important. However, this website deals with accepting the past and how to handle grief. Our website would be focusing on providing support while the emergency is occurring.

Another similar website is Wisdo. Wisdo is a bit more similar to our app, their goal is to get people connected who have similar interests or exist in a similar community. Their website is also very easy to navigate and aesthetically pleasing to look at. The similarities would be that both websites aim to get people connected, however Wisdo is focusing on making friends and achieving goals. Our website would focus on immediate support, but that could include just being a friend to someone.

<https://www.thedinnerparty.org/>

<https://wisdo.com/>

4.1.4 Technical Complexity

The project has significant technical complexity due to the level of security needed to protect user information. Because there are accounts associated with users, and people can register to support one another in ways including picking up children from school, it is necessary to ensure that the users information is secure and protected. This involves engineering security for the coding base, and determining the best way to secure user information is a challenge that must match the current industry standards for data security.

4.2 DESIGN EXPLORATION

4.2.1 Design Decisions

One primary design decision that was made was to have the navigation of the website be located at the top of the web page rather than in a dropdown bar or some other format.

A second design decision was to allow for users to message one another. This was a decision the team came to when it was realized that in order to provide support to someone, it may be necessary to have a conversation with them to actually arrange a time that they can provide the support. It would therefore be easiest if the same website where users schedule their time to support an individual allows them to communicate with others on when works best.

A third design decision was to decide on a logo and web name for the project. Ultimately, the team allowed the client to decide, but the group came up with several options to choose from, and suggested ideas for logos that could go along with each of our name ideas.

4.2.2 Ideation

For the navigation of the website, the team elected to have the navigation system be on the top of the website because it was similar to many other sites, and therefore more likely to be familiar to the user base and more intuitive to use and navigate than if the design were to change the navigation method to something more unique.

The team spent some time thinking of different navigation options. The pros and cons of each idea were weighed, and eventually determined that the navigation being located at the top of the web page would be best. Some other options that had been considered included:

Navigation along the left side of the web page, a drop down menu, navigation along the right side of the web page, navigation along the bottom, and of course, the navigation at the top of the page, which was ultimately the design the team chose.

4.2.3 Decision-Making and Trade-Off

Choosing to have the navigation be located in a header instead of a dropdown was due to the accessibility and ease of use it provided. A sidebar can be convenient for a minimalist look but having access to most of the website in an easy to find and navigate header seemed to be the best option.

Allowing users to have access to a messaging feature was something we felt important to have because of the level of support it could provide. Being able to talk to someone, whether to set up times to meet or to provide support through text, is an important part of the website. We decided against not having an messaging feature and possibly providing a phone number or contact info because we want the app to be fully available and usable by anyone.

The team decided to let the client decide with our help because it is the client's idea and the group's goal is to help create their idea into a reality. The team wanted the client to have the final say to keep the work aligned with their idea.

4.3 PROPOSED DESIGN

On the front end, the current design starts on a default homepage that welcomes users in and tells them a little description of the website. The site has a header that displays the website's name on the right and has five links to different pages. The first page is an about page and a mission statement. Those pages are stand alone and only link to the home page. There is an account page where users can monitor their account as well as access their calendar, account settings, and request support pages. The search page allows users to search through various filters for accounts. There is a messages tab that will allow users to communicate with one another and finally a login page that prompts a user to login or allows a user to register a new account. Our current color scheme is a blue palette, using mostly navy blue as the brand color with light gray and lime green accent colors. The palette can be found in the next section. The front end is being developed via React.JS using Grommet and Visual Studio Code as the IDE. The site will be deployed for testing on an ISU testing server until the official server (provided through the client) is ready to be used to deploy the server-side code on.

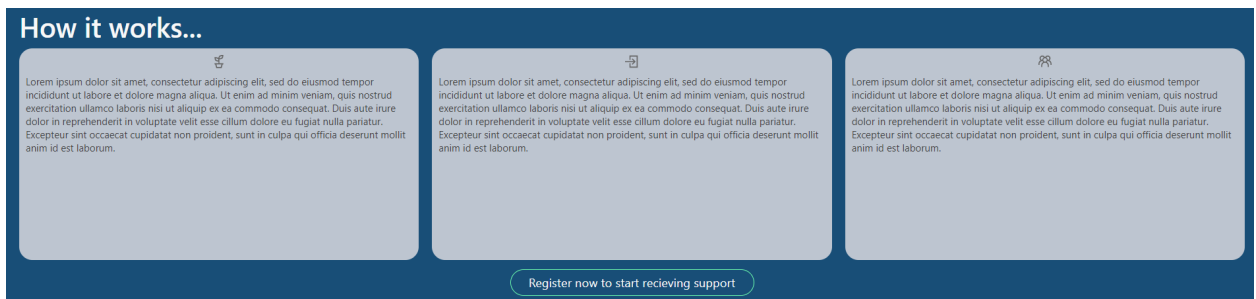
The components communicate with the back end through a series of routers and websockets that communicate data entered from the front end to send to the back end and vice versa.

On the back end, we have a server that has been in testing to make sure that it can register users, log users in, and display the registered users' information. There is also a place in the database for relations between users and we have tried some designs for templates for support requests. Additionally, the server now pulls from the git repository so that it is up to date with the current version of the website front end. The server is being developed in Node.js and Express as these are easy languages to use to establish communication with a front-end coded in React.js. with AWS cognito as a supporting feature to help with account security and storage for users. The database is being managed through MySQL.

4.3.1 Design Visual and Description



As shown by the visual above, the home page of the website hosts the name of the site in the top left corner. In the top right, there are redirects to different web pages, including to the about page, the search functionality, the account information page, the message center, and the ability to login.



Our mission:

[Full Mission Statement](#)

- * Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Vitae turpis massa sed elementum tempus.
- * Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Vitae turpis massa sed elementum tempus.
- * Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Vitae turpis massa sed elementum tempus.

Scrolling down on the home page better details the purpose and functionality of the website, as well as linking to allow users to register a new account.

The search features allows users to filter between searching for other users, different groups on the site, and different organizations associated with the website.



Search Parakeet

User Group Organization

4.3.2 Functionality

The design is intended to function as a middle ground to receive support. The goal is that the user could use the app similarly to a social media, where they can check it as they please and request support at any time, with supporters being able to offer assistance at any time as well. The app also would help with organizing support, allowing users to see when agreed upon assistance will take place with the calendar, link to GoFundMe for monetary support, or organize supporters for certain days, for example in the case of food delivery. The current design is functional for demo purposes using test data built into the frontend. The goal was for the client to have an app to show to potential users and demonstrate what an account looked like that would be receiving support and an account that would be supporting other accounts. The app's messaging system is not functional and will be implemented next semester.

4.3.3 Areas of Concern and Development

The frontend's concerns mostly revolve around usability and accessibility. The app should be useful to anyone and that idea must be kept in mind during the whole process. This involves choosing an appropriate color scheme, using a UI library that focuses on accessibility, and making the app extremely user friendly. The immediate plans to address those issues is to design with that in mind, creating a user friendly experience from the beginning instead of having to go back and incorporate those changes later.

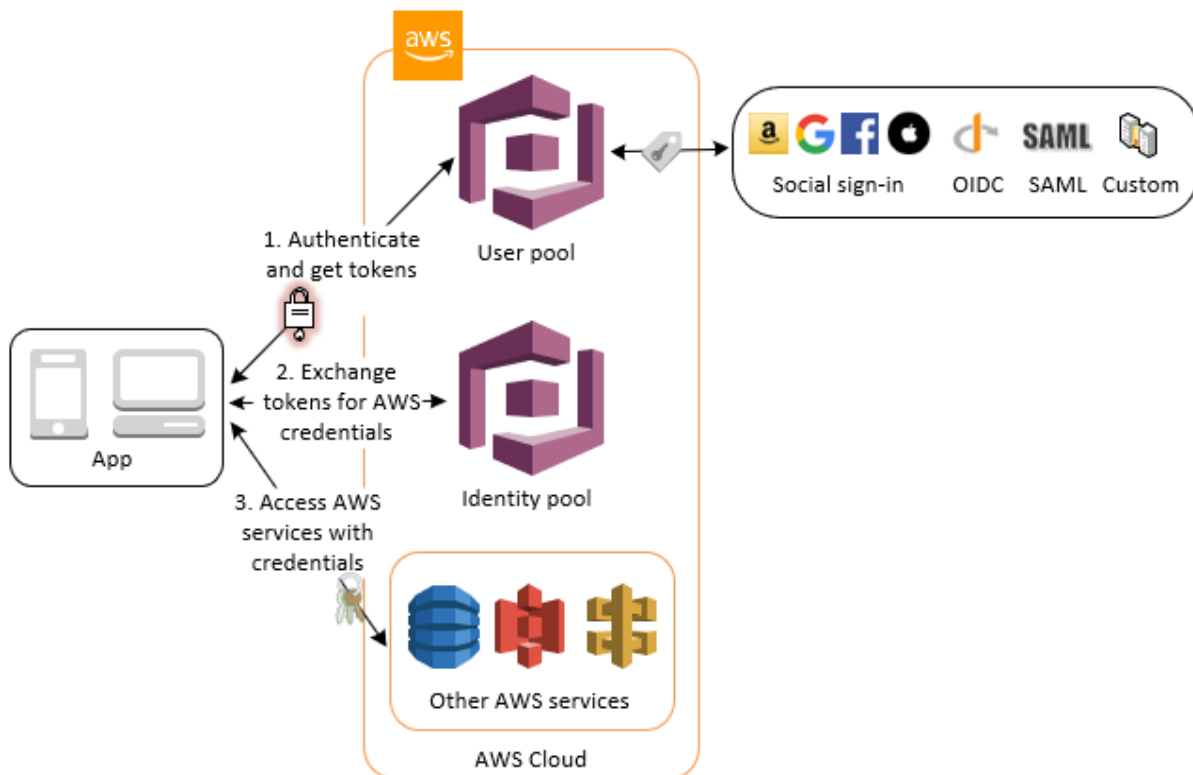
For the backend, the most immediate development plans are for users to be able to register and follow other users. After that will likely be implementation of the calendar functionality for users with notifications for schedule conflicts, which will be the most likely to cause problems. Functionally, the chats will likely be the most difficult and worrisome part of the back end development, since there could be sensitive information discussed by users that should be protected, and response times need to be fairly quick to best work for the main support functionality of the system. Request templates will be

much easier to functionally implement, though the varied nature of information given may be difficult for implementation purposes.

4.4 TECHNOLOGY CONSIDERATIONS

Highlight the strengths, weaknesses, and trade-offs made in technology available. Discuss possible solutions and design alternatives

One technology we are utilizing is AWS Cognito. The service is very easy to set up and use within the React application and we were able to get a functioning registration of a user demonstrated. Cognito is able to make account registration secure and encrypted which is important to our application since we are dealing with mostly medical issues. One of the trade offs of Cognito would be the pricing since if we were to hit an active monthly user count of greater than 50,000 users, we would have to pay per user. On the flip side, the service is free until we reach that amount. The relationship will be the frontend will query AWS Cognito when a user registers or logs in and Cognito will return a token, which will be again passed to Cognito and will return a user's data. This data will be used between the frontend and backend to load user data. Below is a diagram of how Cognito integrates into an application.



For the frontend, we are utilizing ReactJS framework which is a very easy to use way to create applications. React is easily expandable as well so if in the future, the client wants to add onto the application, it can be done quickly and easily. A downside is that only Kellan Hulet had experience in React before the project so there is a learning curve to overcome.

4.5 DESIGN ANALYSIS

As of now, our proposed design has not been fully tested to say if it works well or not, however in initial meetings with our client, she did like the design and thought it looked good. We have had some iterations of smaller components such as moving the navigation into the main header instead of being a sidebar popout. This change was motivated by a focus on accessibility so we wanted everything to be available right away and not hidden. Another change that we may be making is the font size and color, since we did receive feedback that it was a little small. We are considering adding either a larger font or a setting to set the font size throughout the app. We have not implemented this feature yet but further down the line we intend to include different types of accounts to allow for organizations/groups to be integrated into the website.

4.6 DESIGN PLAN

Our design plan consists of monthly client meetings to update and refine our design. Currently, one of the main aspects of our testing will be the client showing a prototype app to a select number of potential users to give feedback over the summer. We plan to use that feedback to improve our design during the fall semester. Since our design is focused on accessibility and usability, we plan to incorporate features such as screen reading accessibility and the use of fonts and colors that are easier to read for people with conditions such as dyslexia.

Another aspect of our design plan is to have a high level of security within the application. Since a lot of our planned users will be dealing with some sort of medical emergency or crisis, we don't want their personal information to be at risk of being stolen or leaked to unwanted people. We are planning on utilizing AWS Cognito for secure user registration since it has built in encryption. For our database design, we want to incorporate similar security features for components such as messaging.

5 Testing

Testing the product involves protecting data for users, ensuring proper data storage, testing data updates that properly update every applicable section of the website without altering unnecessary pages, and several other tests. Because the product is a website that functions similarly to many social media sites in combination with many fundraising/service sites, testing will involve primarily tests that are similar to those performed on social media and fundraising/servicing websites.

5.1 UNIT TESTING

Website pages- loading the page, organization of information, navigation away. Main tools will be browsers and error reporting for bugs.

Server responses- PostMan for checking without specific website page navigation, creating a new profile, changing a current profile, searching for a specific user profile, multiple requests at once, multiple chats at the same time, multiple messages from a user, multiple messages to a user, multiple support job requests, error message testing for the calendar, websites not loading, chat permissions for users not allowed to view the chat, community calendar, loading multiple web pages

Database storage- multiple open chats at the same time, multiple messages, calendars, additional templates, public chats with multiple users, feedback from users. Tools will include PostMan, web browsers, and some unit testing within MySQL and Node.js for bugs and errors.

5.2 INTERFACE TESTING

The application will be largely based around each individual user. The personalized interfaces will need to be tested to make sure that each user is seeing a correct version of the page. For example, each user account page will be personalized to them, similarly to a social media. The team will want to make sure that the data displayed on the account page would be the same as displayed on the calendar page and to other users looking at this user's profile. To test this, with each pull request the group will have a series of manual tests to make sure that the data is displaying as expected.

A specific example will be the user profile page and calendar. The profile page will have a smaller version of the calendar as well as upcoming events. These events and smaller calendars need to match the calendar page with any changes that are made.

The team will be using Jest to create automated tests that can be run for every new pull request made to make sure the functionality remains the same.

5.3 INTEGRATION TESTING

A few critical integration paths in our design involve the search feature and how it interacts with accounts and groups. For starters, a user's account will have a public or private setting with a public account being able to be supported by anyone and a private account requiring accepting followers. One possible implementation may have only public accounts show up on the search function and a private account could be found through a link. Also, when we implement groups and communities, users will be able to search for those but we don't want accounts also coming up. The plan is to implement the search filter part by part as we implement the different functionalities. We will be using Jest to make sure functionality is as expected while we continue development.

5.4 SYSTEM TESTING

System testing will be done using Jest as well. We want to create an in-depth suite of tests that will cover the basic functionalities of the app, such as creating an account, following a user, adding a request for support, etc. We want to make sure that the app will handle errors correctly without crashing and display a useful error message to the user. We will also have tests that make sure the users' data is being displayed correctly across pages and that changes will be handled correctly as well.

5.5 REGRESSION TESTING

To ensure new additions do not break the program, we are working on several different branches in git. This prevents work conflicts and allows us to test new code, while still

going back to older versions if the new code doesn't work. Critical features that cannot break include our server communication and our database storage.

5.6 ACCEPTANCE TESTING

Our website will include a feedback page for users to be able to make additional requests, explain what they like about the web design, and what isn't working with the product. Over the summer, the client will be able to release a beta version of the website to users to be able to test it and interact with the feedback page, so next semester we can work on improvements based on user feedback.

5.7 SECURITY TESTING

Our plan for security testing is to design with security in mind and take steps to ensure user data security. One example of this was to use AWS Cognito as our user login and registration system. Since AWS handles encryption and data security, we do not have to worry about creating our own encryption system which would most likely be far less complicated and secure than one from AWS. Cognito also lets us set up two factor authentication for added account security. Another aspect of the plan is to implement a web application firewall (WAF) between our users and the application's server. We wanted to implement a WAF because it adequately protects against many of the common attacks against web applications such as SQL injection, XSS, cookie poisoning, unvalidated input, layer 7 Dos, and web scraping.

Penetration testing will be conducted on different accounts to determine the security level of the user accounts. Testing to ensure database integrity will also be performed. A firewall will also be tested to ensure it is secure against different types of malicious attacks against the website. All of this testing will be on a private server to make sure outside access is not available and before proper deployment and public access. We also plan on making use of Nessus vulnerability scanner and NSE NMAP scripts to test our server integration for known vulnerabilities.

5.8 RESULTS

Most of the results of testing will not be completed until the second semester, when the team will also have feedback from users as to what was useful and what is not based on our design. Only Unit Testing will have been effectively performed before the end of

the semester. Thus far, Unit testing has shown that the website is functioning as expected with the current stage of development , but it's clear there is still a lot of work to be done.

6 Implementation

Due to the fact that many of our design elements have been determined through implementing small features and determining visually what works better than other options, our preliminary design has already been in the process of implementation throughout the semester. There is already a rudimentary website design layout, several pages implemented, and a temporary host server for website testing to be performed. Database implementation has begun with tables for user accounts and details being established.

7 Professionalism

This discussion is with respect to the paper titled “Contextualizing Professionalism in Capstone Projects Using the IDEALS Professional Responsibility Assessment”, International Journal of Engineering Education Vol. 28, No. 2, pp. 416–424, 2012

7.1 AREAS OF RESPONSIBILITY

Area	Description	IEEE code of ethics	How it differs
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<p>Work Competence</p>	<p>Perform work of high quality, integrity, timeliness, and professional competence</p>	<p>Code 6: Maintain and improve technical competence and undertake tech tasks only if qualified or after full disclosure of pertinent limitations</p> <p>Code 7: Seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, and to credit properly the contributions of others</p>	<p>The IEEE code of ethics focuses more on interactions within the developer network, and doesn't focus much on shareholders in this area, unlike the NSPE version.</p>
<p>Financial Responsibility</p>	<p>Deliver products and services of realizable value and at reasonable costs</p>	<p>Code 3: Be honest and realistic in stating claims or estimates based on available data</p> <p>Code 4: Reject bribery in all its forms</p>	<p>The two versions are very similar, but the IEEE code breaks down the financial responsibility into more specific detail, saying what the project developers are responsible for and what they should avoid to maintain financial responsibility</p>

<p>Communication Honesty</p>	<p>Report work truthfully, without deception, and understandable to stakeholders</p>	<p>Code 3: Be honest and realistic in stating claims or estimates based on available data</p> <p>Code 2: Avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist</p>	<p>Both versions for this category are also very similar, with the IEEE model simply going into more detail and breaking out more specific examples on what to be honest and forthcoming with to stakeholders and fellow developers.</p>
<p>Health, Safety, and Wellbeing</p>	<p>Minimize risks to safety, health, and well-being of stakeholders</p>	<p>Code 8: To treat fairly all persons and not engage in acts of discrimination</p> <p>Code 9: To avoid injuring others, their property, reputation, or employment by false/malicious action</p>	<p>The IEEE code actually includes the importance of avoiding discrimination and preventing it, where the NSPE doesn't go into specifics with that category</p>

<p>Property Ownership</p>	<p>Respect property, ideas, and information of clients and others</p>	<p>Code 9: see above Code 7: See above</p>	<p>The IEEE gives specific examples of how to respect people, but also is more internally focused and doesn't include how to interact with stakeholders and clients as much as the NSPE does</p>
<p>Sustainability</p>	<p>Protect environment and natural resources locally and globally</p>	<p>N/A</p>	<p>This varies in that the IEEE code of ethics doesn't have a single code that directly matches to the NSPE model for sustainability.</p>
<p>Social Responsibility</p>	<p>Produce products and services that benefit society and communities.</p>	<p>Code 10: to assist colleagues and coworkers in their professional development and support them in following code of ethics</p>	<p>IEEE code is more focused on internal interactions than ensuring that products will be useful to the public and society at large, which is different from NSPE which is wholly focused on producing something useful to the public</p>

NPSE Definitions:

Table 1. The seven areas of professional responsibility in the assessment instrument

Area of responsibility	Definition	NSPE Canon
Work Competence	Perform work of high quality, integrity, timeliness, and professional competence.	Perform services only in areas of their competence; Avoid deceptive acts.
Financial Responsibility	Deliver products and services of realizable value and at reasonable costs.	Act for each employer or client as faithful agents or trustees.
Communication Honesty	Report work truthfully, without deception, and understandable to stakeholders.	Issue public statements only in an objective and truthful manner; Avoid deceptive acts.
Health, Safety, Well-Being	Minimize risks to safety, health, and well-being of stakeholders.	Hold paramount the safety, health, and welfare of the public.
Property Ownership	Respect property, ideas, and information of clients and others.	Act for each employer or client as faithful agents or trustees.
Sustainability	Protect environment and natural resources locally and globally.	
Social Responsibility	Produce products and services that benefit society and communities.	Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.

7.2 PROJECT SPECIFIC PROFESSIONAL RESPONSIBILITY AREAS

Work Competence- We are meeting a high level of performance by meeting deadlines during our weekly sprints, maximizing our quality of our work, and not claiming any step in the process is finished until the quality of the work is to standard. This responsibility definitely applies to our project because ANY company would expect work competence in their employees, regardless of the field of work they are in. Therefore, it would apply to everyone in any industry.

Financial responsibility – Our group is performing on a high level for this category as well, since thus far our work has had no costs involved. It is possible that in the future there will be a server domain fee when we actually launch our website for public use, but this will not be applicable until our website is far more developed, which reduces the time in which costs will apply. This category currently applies to a very small degree with our project since we don't have any physical materials that are needed, and all our work is done through software.

Communication honesty – This category most certainly applies to our project because we have a client who is requesting our project be developed. We have thus far achieved a high level of performance for this category by meeting with our client at a frequency they desire, presenting them with demonstrations of our ideas in a way that they can give feedback on the project, and explaining to them our process without the use of technical language so they can follow how the project is coming along. Additionally, we

are honest about what would be feasible while developing this project for a mobile application.

Health, safety, and well-being – This category doesn't really apply to our project because a website doesn't present any inherent health risks to the stakeholders, and thus far we do not have any financial burden being placed on the stakeholder either. Our performance level is therefore N/A.

Property Ownership – In this area, we have not gotten into the specifics of what part of the website is property of our client, but we are working to respect the information of any users for our website by creating secure login abilities for the accounts. In this sense, we are probably currently performing at a medium level for this category.

Sustainability – This category is again not applicable to our project because it is a purely software-based website. There aren't any specific natural resources that need to be used to develop or maintain it aside from the electricity to run it, and as developers of software we do not have a say in where the electricity is sourced. In this sense, I would say our performance in this category is N/A because we have no control over whether the resources used to maintain our project are sustainably sourced or not.

Social Responsibility – Given that our project is meant to create a way for people in need to ask for help from their community members in an easier fashion that's organized and concise, our project most definitely falls into this category. I'd say our team is performing at a high level for this category because we are doing our best to make our website user-friendly, easy to use, and a good resource for people who are in need as well as for people who want to help others in need.

7.3 MOST APPLICABLE PROFESSIONAL RESPONSIBILITY AREA

Social Responsibility – This responsibility is effectively the entire goal of our project. With our client, we are hoping to develop a social registry application that will allow people to clearly lay out and define what they need help with when they are in a crisis situation (ie: cancer diagnosis). There will be an ability for the person in need to rank what needs are most important to them, and for them to select individuals they would be willing to fulfill their needs for them (ie: if they need someone to pick up their child from school while they're at a doctor's appointment, they can make sure that the person volunteering for that duty is trustworthy). The impact of this responsibility to the project is that social responsibility completely frames our way of thinking about our project, ways we intend to implement different deliverables, and how we will go about making our product useful to the public.

8 Closing Material

8.1 DISCUSSION

For the project, the goal was to develop a functioning website through which users can request and acquire different types of aid from people within their community, and communicate effectively what their needs are with people in their communities. Thus far, the project design has met these requirements and seems to be progressing successfully into meeting client expectations.

8.2 CONCLUSION

Our current progress is a prototype app that is set up to be an example of what an account who is receiving support might look like. The generic parts of the website are developed, including an initial home screen, the about page, and the mission statement. The application has a preset color scheme that we approved with our client, using a dark navy blue to a green palette. Our goals for the finished product would also include functionality such as a calendar, messaging service, search capabilities, and expanded group functionality.

The main issue that kept us from completing our goals this semester was lack of time. Most of the functionality we want to implement will be quite complex and require a lot of work to get it functioning as desired, along with the accessibility and security requirements that we would like to fulfill. For future development, work will be more partner based instead of individual and the team will be able to help each other figure out and implement each component.

8.3 REFERENCES

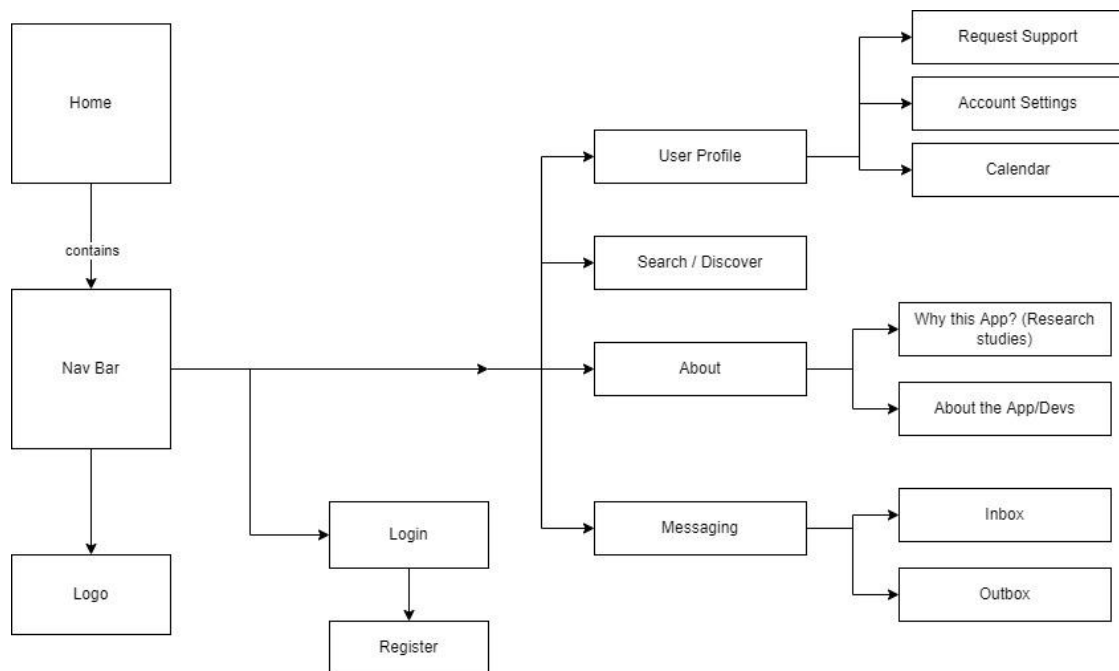
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8.4 APPENDICES

This is the flow diagram for our website and will be useful for unit testing and design constraints moving forward.



8.4.1 Team Contract

Team Members:

- 1) Samantha Culver 2) Kellan Hulet
3) Brayden Ruch 4) Amaranthia Willers

Team Procedures

1. Day, time, and location (face-to-face or virtual) for regular team meetings:
Thursdays 6:00-7:00 PM on Discord
2. Preferred method of communication updates, reminders, issues, and scheduling (e.g., e-mail, phone, app, face-to-face):
Discord, email and Zoom for client communication
3. Decision-making policy (e.g., consensus, majority vote):
Team must come to a general consensus for project decisions
4. Procedures for record keeping (i.e., who will keep meeting minutes, how will minutes be shared/archived):
The official notekeeper for the client meetings has been designated as Brady Ruch, who will take notes and share them in the discord channel 'meeting-notes'.

Participation Expectations

1. Expected individual attendance, punctuality, and participation at all team meetings:
Unless ill or communicated to the team ahead of time, all team members are expected to attend all scheduled team meetings on time and participate with thoughtful ideas and questions with every meeting. Emergency (or otherwise unscheduled) meetings will be more lenient on attendance, but team members are expected to do their best to attend these meetings to obtain the most up-to-date information the team has.
2. Expected level of responsibility for fulfilling team assignments, timelines, and deadlines:
Every team member is expected to contribute to the best of their ability to team assignments in a timely manner. All deadlines should be met by each team member. Exceptions are made for those team members who fall ill or

communicate a conflict ahead of time. Team members should contribute a minimum of 6 hours per week to meeting deadline work, unless discussed with the group due to illness or other exceptions.

3. Expected level of communication with other team members:
All team members are expected to be reachable within 24 hours of an initial query from a fellow teammate. Team members should do their best to reply in a timely fashion to questions from their group mates and should reach out to their group members quickly if they struggle with an aspect of the project or any assignments.
4. Expected level of commitment to team decisions and tasks:
All team members are expected to contribute an average of 6-8 hours per week on all project-related work for the semester. Missed hours for one week can be made up in subsequent weeks in the case of health issues or other situations if discussed with the team.

Leadership

1. Leadership roles for each team member:
Samantha Culver: Team organization & Individual Component Design
Kellan Hulet: Individual Component Design & Frontend testing
Brayden Ruch: Client interaction, Individual Component Design, Full Stack
Amaranthia Willers: Individual Component Design & Backend testing
2. Strategies for supporting and guiding the work of all team members:
Team members will do their best to answer questions from other team members in a timely fashion and in a public channel so as to allow all team members the chance to receive the answer to the query. Discord will be used to promote communication and guidance to fellow team members, with the opportunity for group mates to join call channels to discuss verbally what issues they're having with a more knowledgeable team member when necessary.
3. Strategies for recognizing the contributions of all team members:
Team members will work together on the weekly reports to help one another with ensuring every individual reports their contributions accurately and to the fullest degree. Team members will also show appreciation for assistance given by fellow team members by crediting their aid within the weekly report on the task that the individual was helped on.

Collaboration and Inclusion

1. Describe the skills, expertise, and unique perspectives each team member brings to the team.

Samantha Culver: good at communicating, creative mind to come up with solutions to problems with the project, experience working in teams to solve puzzles and working together to problem-solve, experience working on front-end web development

Kellan Hulet: Experience working on front end for a professional application, experience with problem solving and communicating in a team.

Brayden Ruch: Experience working with Search Engine Optimization, familiarity with UI development and ease of access utilities for clients

Amaranthia Willers: Experience working on both front and back end development for a professional application, problem solving, interpretation of client desires into functional design and communicating with a variety of people in informative ways

2. Strategies for encouraging and support contributions and ideas from all team members:

Credit team members for their ideas within the weekly reports, finding ways to work into the project ideas that hadn't been considered before,

3. Procedures for identifying and resolving collaboration or inclusion issues (e.g., how will a team member inform the team that the team environment is obstructing their opportunity or ability to contribute?)

If a team member feels that they are not able to contribute, they should reach out to the team member(s) that they feel are contributing to the exclusion to discuss their worries - ideally they would call for a virtual meeting through discord with the party(ies) in question. If the team member(s) responsible do not respond appropriately to the issue and do not respect the individual's request to be able to contribute, then the individual should go forward with raising the issue to either Professor Shannon or the advisor to the team to see about working up a plan with more experienced individuals on how to resolve the exclusion issue.

Goal-Setting, Planning, and Execution

1. Team goals for this semester:

Functional prototype for client to use over break to gather feedback on areas to improve from users.

Web application that is capable of being easily modified into a phone application

2. Strategies for planning and assigning individual and team work:
 Team members will volunteer for different tasks each week during the team meeting, with plans to branch into helping other team members should they complete their tasks ahead of time. If team members do not select tasks for themselves for any reason (either absence from the meeting or having no preference on the tasks to be completed in the next week) then the team member managing the tasks that remain unassigned (ie: front-end tester assigns front-end tasks, back-end tester assigns back-end tasks) will distribute tasks to the team members without any selection as needed. Ideally, every week each team member will have three to four tasks to work on consisting of both individual and group tasks.

3. Strategies for keeping on task:
 Weekly reports will lay out work for the upcoming week for each team member, which will be viewable to the whole team for the entirety of the semester to ensure they team is staying on track. Tasks will be broken down and assigned in simple fragments to allow for team members who fall behind due to illness or other emergencies to be capable of catching up without much difficulty.

Consequences for Not Adhering to Team Contract

1. How will you handle infractions of any of the obligations of this team contract?
 Team members who fail to meet the obligations laid out within this contract will first be given a warning by the other members of the team.

2. What will your team do if the infractions continue?
 If infractions continue, the team will raise the issue with the project advisor and/or Professor Shannon, as well as communicate the issue in more detail with the offending party. If infractions fail to stop at that point, the team will discuss with Professor Shannon options to resolve the issue permanently.

- a) I participated in formulating the standards, roles, and procedures as stated in this contract.
- b) I understand that I am obligated to abide by these terms and conditions.
- c) I understand that if I do not abide by these terms and conditions, I will suffer the consequences as stated in this contract.

1) Kellan Hulet DATE 2/10/2022

2) Brayden Ruch DATE 2/10/2022

3) Amaranthia Willers DATE 2/10/2022

4) Samantha Culver DATE 2/10/2022