

Running head: MYNEXTLVL WEBSITE PROTOTYPE FOR ADOLESCENTS
WITH CHRONIC HEALTH CONDITIONS

MyNextLvl Website Prototype for Adolescents with Chronic Health Conditions

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MYNEXTLVL WEBSITE PROTOTYPE FOR ADOLESCENTS WITH CHRONIC HEALTH CONDITIONS

Executive Summary

For adolescents between the ages 12-21 who live with chronic health conditions, it can be difficult to manage and keep track of medications and appointments in addition to finding accurate information and resources based on their condition. The MyNextLvl website prototype aims to provide adolescents who suffer from chronic health conditions with resources, information and reminders for medications, refills and appointments. The primary aim of the interactive prototype design is to ensure the usability of the MyNextLvl application, where adolescents between the ages 12-21 can access resources as well as have access to reminders and appointment notifications. MyNextLvl website will support adolescents in transitioning from pediatric to adulthood/adult healthcare and allow them to self-manage their condition by providing them with a space to keep track of their medication and doctor appointment reminders, medication refills, access to low-cost clinics and resources to inform users of their medical conditions.

The capstone project started with interviewing the client and needs finding, followed by a user task analysis. The research concluded adolescents between the ages 12-21 with chronic health conditions user groups as main target. To present the users better in the design, implementation, and testing process, three personas were created to represent the users in different scenarios for use cases and testing. A consistent information hierarchy was designed across each page of the site. The final site will be responsive on multiple platforms.

Research methods in this capstone project include interviews and surveys for early needs finding and usability studies and testing activities in the late interactive prototype designs, which include testing the prototype and implementing changes to improve efficiency

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and usability. Data collected from research on the MyNextLvl website prototype will determine the components on the new prototype that will be created based on user feedback to meet user expectations. The final website prototype is expected to be user-friendly and efficient with a 100% completion rate in under 30 seconds.

During the last 8 weeks of project time, three versions of the prototype were generated. two were tested; seven participants were involved in the testing. Our final prototype was able to pass 100% of the tasks identified at the beginning of the needs finding. The average time for tasks to be completed is 30 seconds.

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Background

While missing a few doses of medication occasionally can be a common mistake, it can be a dangerous one with important medications. “Poor medication adherence is a common problem for heart failure patients, a recent Journal of the American Heart Association report found. As a result, these patients may experience increased heart failure symptoms and reduced physical function” placing patients at a higher risk for hospital admission or even death (Gleeson, 2018). “It is estimated that in 2019 there were over 2.7 billion smartphone users and around 1.4 billion tablet owners worldwide” explaining the shift in users gravitating towards reminder technology (Porter, Huggins, Truby, & Collins, 2016). To remember to take medication, many adolescents are often reminded to take their medication by their parents or friends in addition to using technology such as calendars, tracker apps and setting alarms. To keep track of medication, refills, and appointment reminders, the MyNextLvl website prototype was created to keep all patient's information in one place to help adolescents who struggle to remember important dates relating to their medication or doctors' appointments. The MyNextLvl website prototype, tailored to adolescents with chronic health issues between the ages of 12-21, was built over an 8-week period and provides adolescents with medication, refill and appointment reminders in addition to providing resources for those with chronic health conditions. Feedback from this project will help create user-friendly technology for adolescents transitioning from pediatric to adulthood/adult healthcare.

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Project Planning and Management

Week 1 Timeline

During week 1, the project scope, success measurements, scenarios & task list, pencil paper prototype, wireframe, and interactive prototype were complete, and the project was on track.

Week 2 Timeline

During week 2, the stakeholders map, site structure, storyboard, task list, and survey questions were completed, and the project was on track.

Week 3 Timeline

During week 3, the project proposal was completed.

Week 4 Timeline

During week 4, the entity relationship diagram was completed.

Week 5 Timeline

During week 5, personas were added to the timeline and completed in addition to a second version of the prototype for testing.

Week 6 Timeline

During week 6, user testing was completed in addition to surveys.

Week 7 Timeline

During week 7, the final prototype was completed a few days after the planned date.

Week 8 Timeline:

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During week 8, the report was completed a few days after the planned date.

Task	Start	End	Status
Planning			
Project Proposal	09/22/22	11/03/22	Complete
Project Scope	10/19/22	10/24/22	Complete
Success Measurements	10/19/22	10/24/22	Complete
Design			
Stakeholder Map	08/28/22	08/20/22	Complete
Scenarios & Task Analysis	08/28/22	10/29/22	Complete
Story Board	08/28/22	10/29/22	Complete
Site Structure	08/29/22	10/29/22	Complete
Pencil & Paper Prototype	08/28/22	08/31/22	Complete
Wireframe	08/31/22	09/02/22	Complete
Task List	09/22/22	10/22/22	Complete
Survey Questions	09/22/22	11/09/22	Complete
Entity Relationship Diagram	09/22/22	11/10/22	Complete
Personas	11/07/22	11/07/22	Complete
Development			
Interactive Prototype V.1	09/02/22	10/01/22	Complete
Interactive Prototype V.2	11/03/22	11/09/22	Complete
Testing (Survey & Task List)	11/03/22	11/30/22	Complete
Deliverable			
Refined Prototype (V.3)	11/03/22	12/08/22	Complete
Final Report	11/03/22	12/11/22	Complete

The project was planned according to the timelines above, which demonstrates the project progress since the project had started. The timeline demonstrates when each task has been started and when each task will be completed. The major deliverables from the project will be the final report and the revised final website prototype. The final revised website prototype is dependent on the data collected from the research and will be completed according to the timeline. Tasks are updated each week to ensure that the project is on track and developed successfully. All tasks were completed within the time frame provided.

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Scope

The mission of the MyNextLvl website is to create an efficient and user-friendly interface based on the research and data collected where users can access their medication and doctor appointments reminders in addition to having access to resources based on the user's medical condition. The goal of the prototype is to ensure a user-centered and easy to use application for implementation of the MyNextLvl application. The usability studies of the prototype will have participants completing each task in under 30 seconds on average and will be easy to navigate at the end of this research. The project deliverable will be a version of the MyNextLvl prototype being tested. The project will be able to accomplish everything on the task list, which is generated in the early research needs finding phase. The project design includes tasks analysis, personas, database design, and function analysis.

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Research Question

The research question for this project, ‘how to create a strong user-centered website prototype to provide resources for adolescents with chronic health conditions’, will be acknowledged by conducting research on the MyNextLvl website prototype. The research will determine how likely the user will be to use this resource as they transition from pediatric to adulthood/adult healthcare. The study methods will determine the new design of the MyNextLvl website prototype for adolescents with chronic health conditions. This research question will be answered by analyzing research methods used in the study. The study will contain mixed methods to collect both qualitative and quantitative data. The qualitative data will be analyzed to gain in-depth insight into the users experience while using the website prototype. The quantitative data will be analyzed to establish general facts as users explore the website prototype. In the survey questionnaire, both qualitative and quantitative data will be collected from participants to determine their experience on the website prototype. The usability test will provide qualitative data as users complete tasks from the given task list and provide opinions on the website prototype. For adolescents struggling with a chronic health condition, it is important to have access to credible and reliable information when online. Combining reliable information with a space to manage and organize medications and appointments will allow for positive feedback on the website prototype.

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Usability Study Methodology

The qualitative research will be done mostly through usability testing with a given task list in addition to a list of 10 survey questions. Quantitative research will be gathered from the survey questions. The mixed methods will allow for the delivery of deeper insights into the research and will allow for the results to be compared to determine the best outcome.

The usability testing helps determine areas of struggle that the user experiences with the website prototype when completing the given tasks. When analyzing the users testing experience, data will determine where the website prototype will be improved on and where the prototype can stay consistent. The data will also be used to change or replace items on the prototype to deliver the best outcome. The survey data will be used to determine where the website prototype will improve in addition to gathering opinions about the overall appearance of the website prototype.

When using the website prototype, users are able access the navigation bar in addition to being able to create or log into an account. When logged in, users can manipulate reminder information in addition to the personal information provided. Users will also be able to view resources near them such as free or low-cost clinics and will have access to trusted information on their health condition.

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Needs finding

The type of data collection methods that will be used will be usability testing with a given task list, and surveys. The usability testing will be conducted through Zoom, where the user will be given a list of tasks to complete while being observed. The tasks will include the following:

1. Amy wants to create an account with her email: Amy12345@gmail.com and wants to set her password as: Mynextlv1123
2. Amy wants to log out and log back in with her new account.
3. After logging in, Amy wants to add a reminder for her albuterol medication for Sunday at 11 AM on 11/01/22 without entering dosage or refill reminder.
4. Amy wants to learn about her medical condition, asthma.
5. Amy wants to learn what resources are available in Dekalb County for Asthma.
6. Amy wants to delete her doctor's appointment reminder for Dr. Shaw.
7. Amy wants to add a doctor's appointment reminder for Dr. Smith on Monday at 3:00 PM on 11/01/22.
8. Amy wants to delete a medication reminder for Zolpidem.
9. Amy wants to add fish, an allergy, to her user profile.
10. Amy wants to change her doctor's phone number to (444) 444 - 4444.
11. Amy wants to edit her emergency contact relation from mother to father.
12. Amy wants to go over the HIPPA Regulations.

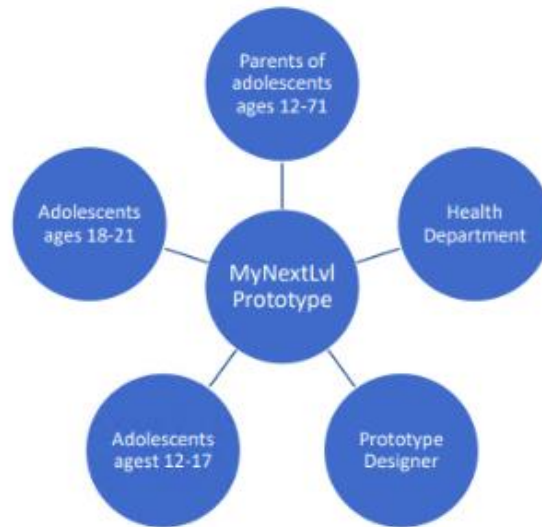
The Zoom meeting may be recorded if the user allows, and notes will be taken as users complete each task. Tasks range from logging in to an account given username and password to exploring different features of the website prototype to determine how easily accessible they are to the user. The survey will be completed through Google, where users will rank each statement as Strongly Agree/Agree/Neutral/Disagree/Strongly Disagree.

1. I think that I would like to use this system frequently.
2. I found the system unnecessarily complex.
3. I thought the system was easy to use.
4. I think that I would need the support of a technical person to be able to use this system.
5. I found the various functions in this system were well integrated.
6. I thought there was too much inconsistency in this system.
7. I would imagine that most people would learn to use this system very quickly.
8. I found the system very inconvenient to use.
9. I felt very confident using the system.
10. I needed to learn a lot of things before I could get going with this system.

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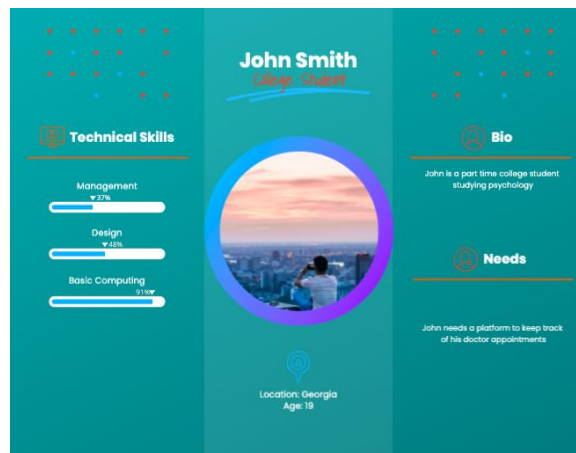
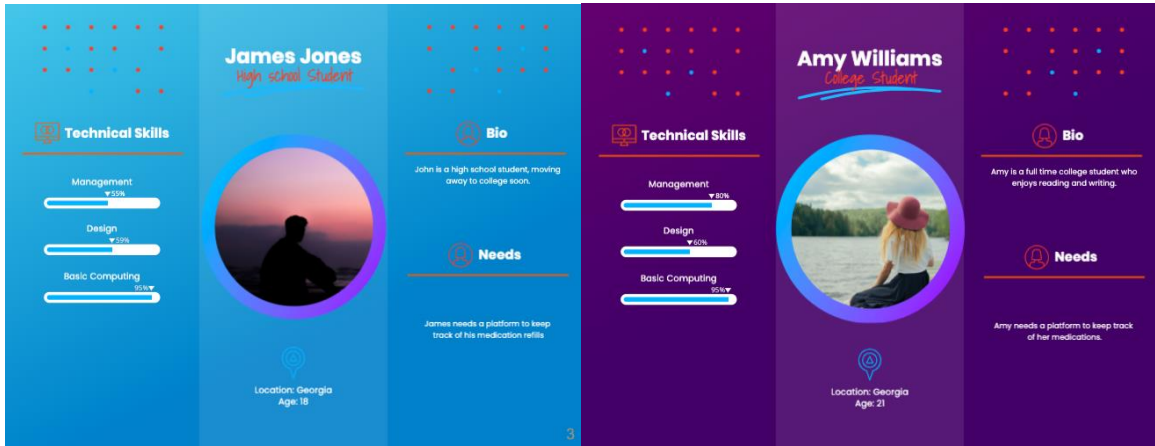
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System Development



Above is the stakeholder map for the website prototype. The stakeholder map is designed to determine which features the website prototype will need for the prototype design. As presented in the stakeholder map, the role of parents of adolescents between the ages 12-17 is to provide consent for their child to use the prototype and to monitor their child's activity on the prototype. The role adolescents between the ages 12-17 is to view and keep up with reminders and refills with the supervision of an adult, in addition to being able to modify their information. The role adolescents between the ages 18-21 is to view and keep up with reminders and refills in addition to being able to modify their information on their own. The prototype designer is me, and my role is to ensure that users can have easy access to their information and can use the prototype efficiently with no errors. Lastly, the health department includes pharmacies, doctors and specialists, and they play a role in the prototype because their information is used to alert users of reminders regarding appointments and refills.

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The personas above were generated to represent the target user group. The target user group are adolescents between the ages of 12 and 21 who suffer from medical conditions and need help remembering when medications are to be taken and when their doctors' appointments are to be.

Scenarios
<p>Scenario 1</p> <p>Jessica has asthma and wants to find more information on her condition and wants access to resources. She is new to the area and needs to view all available resources near her. She searches the web and comes across MyNextLvl. She finds information on asthma and can view available resources near her on MyNextLvl.</p> <p>Task Analysis: The prototype must have reliable information on medical conditions. The prototype must also include resources based on the user's condition(s).</p>
<p>Scenario 2</p>

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Bob wants to check on his medication refills to see how long he has until he can refill his prescriptions. He checks on MyNextLvl and uses the navigation bar to find medications that he is currently taking and can view the time frame he has until his next refill. In addition, Bob can set reminders for his medication refills.

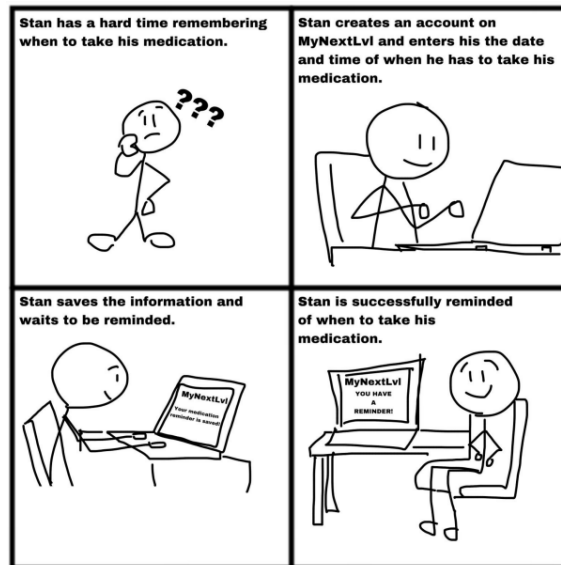
Task Analysis: MyNextLvl must allow users to create an account. The prototype must also allow users to add/edit medications. The prototype should also offer reminders so that users are easily able to stay on top of their upcoming refills.

Scenario 3

Ally has accessed the information and resources page of MyNextLvl has further questions. She finds that the resources page has phone numbers listed where she is easily able to contact local medical clinics with her questions.

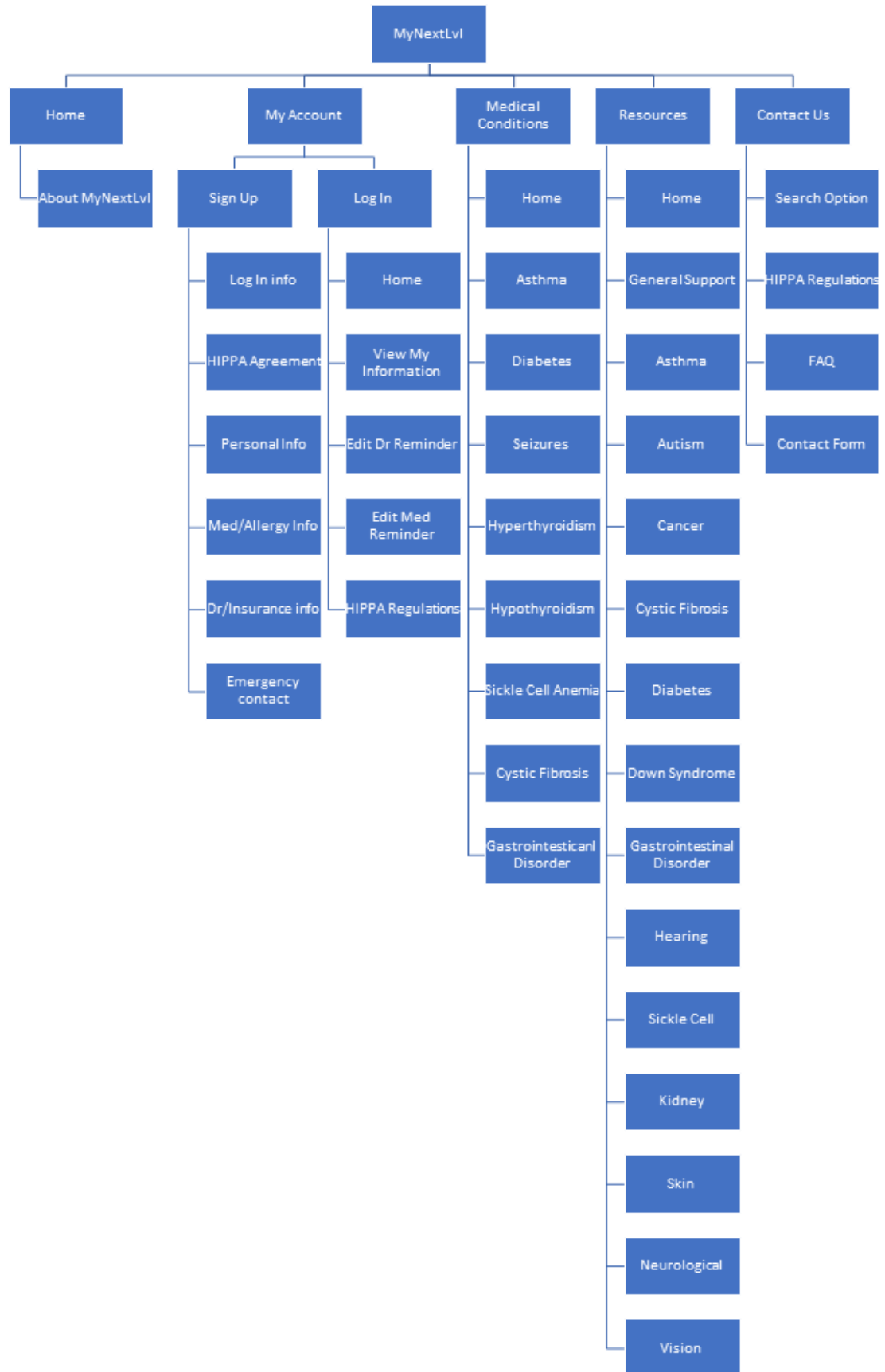
Task Analysis: The site must provide users with contact information on local medical clinics.

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The scenarios, task analysis and storyboards were generated next to demonstrate possible tasks the users may accomplish on the website prototype. This helped to create the site structure, presented below.

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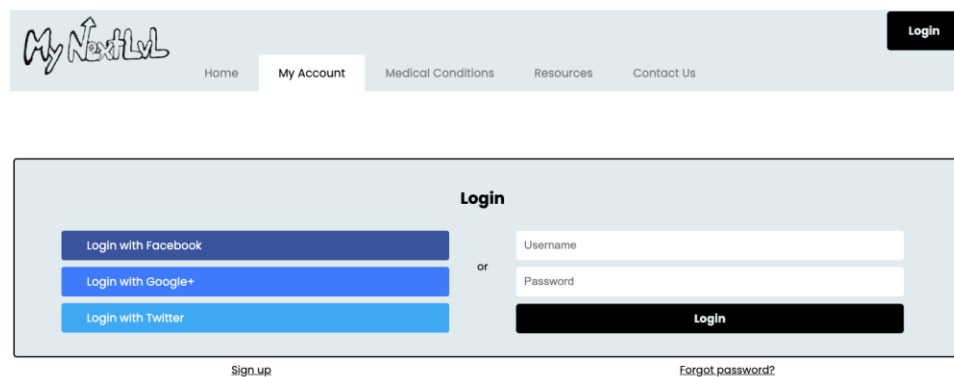
The site structure demonstrates how the prototype's content will be grouped, linked and presented to the user. 'Home', 'My Account', 'Medical Conditions', 'Resources' and 'Contact Us' are the main navigation options when the user first accesses the prototype. The 'Home' tab will provide a small description of the prototype and the goals of the prototype. The 'My Account' tab will allow users to sign up or log in. If users wish to sign up, they will navigate the 'Sign Up' tab, where they will enter their username and password, agree to HIPPA Regulations, enter their personal information, enter their doctor information, and lastly, their emergency contact information. If users wish to log in, or have already logged in, they will use the 'Log in' navigation and will be able to have an overview of their reminders in the 'Home' tab and will be able to view or edit their information, doctor reminders, and medication reminders in addition to having access to their HIPPA agreement in the following tabs. The 'Medical Conditions' tab will allow users to view information on the medical conditions listed in the subcategories. The 'Resources' tab will allow users to view resources such as low-cost clinics in Dekalb county, depending on the subcategory options. The 'Contact Us' tab will allow users to search for a specific keyword within the prototype and will have the HIPPA Regulations as well as Frequently Asked Questions and a way for users to contact the site owner with questions.



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The creation of the paper and pencil prototype was next generated from the site structure, as demonstrated above, and provided a guideline for the wireframe prototype. Some improvements from the paper and pencil prototype to the wireframe prototype include the 'About Us' tab changed to the 'Home' tab and the addition for a 'Medical Conditions' tab. The set up was also completely changed in the 'My Account' tab in the wireframe prototype for both sign up and log in to allow for more detail and easier navigation. More detail was also added to the 'Resources' and 'Contact Us' tab in the wireframe prototype so that users would be able to find resources based on a specific condition and to find help easier. The wireframe prototype then allowed for the creation of the first version of the interactive prototype.



As shown above, color was added to the interactive prototype, whereas the wireframe prototype contained little color. The sign in page was upgraded to allow users to sign in via their

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social media or google account in addition to being able to use their username and password in the interactive prototype, whereas in the wireframe, users are only given the general username and password sign in option. In the sign-up page, users are required to agree to the HIPPA Regulations before entering their doctors and medication information, whereas in the wireframe prototype, users may skip entering their information and are required to accept the HIPPA Regulations at the end of their sign-up process. When logged in, users were presented with a small calendar which included their reminders in the wireframe prototype, and in the interactive prototype users can view their reminders weekly, allowing for a less confusing layout. The process of editing personal information and reminders has also been made simpler in the interactive prototype, while the resources, medical conditions and contact us pages remain similar.

The function design of the prototype include:

Home – This is the default page that the user sees when entering the website prototype and includes a brief description of the goals of the website

My Account – This is where the user can sign up or sign in and when signed in, transforms to the users profile, where their reminders are displayed.

My Account (When signed in) - Users can edit their information under the ‘My Information’ tab, users can edit their doctor and insurance information under the ‘Doctor & Insurance’ tab, users can add or delete reminders in the ‘Reminders’ tab, and users can view the HIPPA regulations under the ‘HIPPA Regulations’ tab.

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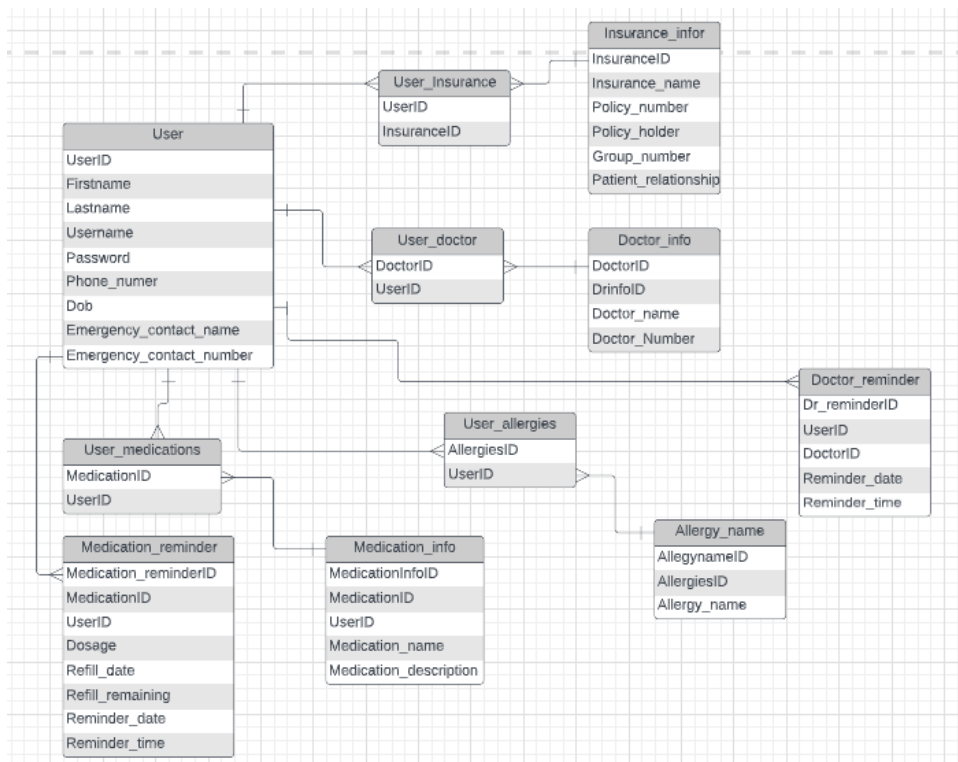
Reminders – Users are able to enter their doctor or medication reminders and save their reminders, which will be added to the home tab where the user is able to view them as soon as they sign in.

Medical Conditions – Users can view information related to their medical condition under this tab, which includes a list of medical conditions in the subcategories.

Resources – Users can view clinics and other resources near Dekalb County under this tab.

Contact Us – Users can search for FAQ or contact the site owner for questions by filling out the form at the bottom of the page.

After the creation of the interactive prototype, an entity relationship diagram was created to determine the information system requirements as presented below:



The Entity Relationship diagram demonstrates how information would be stored from the

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website prototype. The 'user' table contains the user's personal information from their login information to emergency contact information. Normalization is used to organize the data and to provide more flexibility as redundancy and inconsistent dependency are eliminated. The 'Insurance_infor' table contains all of a patient's insurance information, the 'Doctor_info' table contains a patient's doctor information. The 'Doctor_reminder' table is where the user's doctor reminders are stored. The 'allergy_name' table contains all of a patient's known allergies. The 'Medication_info' table contains a patient's current medications and the 'Medication_reminder' table is where a user's medication reminders are stored.

Usability study analysis

The results from the prototype testing version 2 are presented below and it was determined that on average, users were not able to complete task #3 in under 30 seconds. In addition, most participants also struggled to complete tasks #9 and #10. Participants also mentioned that it was difficult to save changes to the user information and reminders where a little difficult to figure out. This resulted in version 3 of the prototype to include a more efficient way of adding reminders, where a tab was created for both doctor and medication reminders, whereas before, each reminder was placed under a different tab. In addition, users are now able to select the data they want to be reminded of, rather than just the day and time, allowing users to schedule reminders for weeks in advance. There was also a change made for how users are able to edit their information, and instead of one location for users to edit their doctor, insurance and personal information, users are now able to navigate to one subcategory tab for their personal information and another tab for their doctor and insurance information, eliminating the confusion. When signed in, users are also able to delete any reminders from the 'home' tab under 'My Account', allowing for convenience.

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Task #	Time it took to complete in seconds							Average	Completion
	Tester 1	Tester 2	Tester 3	Tester 4	Tester 5	Tester 6	Tester 7		
1	11	22	25	26	25	26	17	22	yes
2	4	13	20	16	15	15	20	15	yes
3	44	82	40	98	25	40	39	53	no
4	9	24	1	9	13	14	8	11	yes
5	13	6	2	8	5	8	19	9	yes
6	19	23	30	13	18	36	7	21	yes
7	26	10	20	13	10	14	6	13	yes
8	7	11	3	10	18	6	7	9	yes
9	27	44	5	14	25	51	15	26	yes
10	28	35	2	38	25	57	12	28	yes
11	18	3	1	17	11	36	22	15	yes
12	3	2	1	1	10	3	1	3	yes

The results from the survey are presented below, and results indicated that most users found the site easy to navigate and felt confident exploring the site.

Survey Results (7 participants):

11. I think that I would like to use this system frequently.

Strongly Agree: 14.3%

Agree: 57.1%

Neutral: 14.3%

Disagree: 14.3%

Strongly Disagree: 0%

12. I found the system unnecessarily complex.

Strongly Agree: 0%

Agree: 0%

Neutral: 14.3%

Disagree: 71.4%

Strongly Disagree: 14.3%

13. I thought the system was easy to use.

Strongly Agree: 28.6%

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Agree: 57.1%

Neutral: 14.3%

Disagree: 0%

Strongly Disagree: 0%

14. I think that I would need the support of a technical person to be able to use this system.

Strongly Agree: 0%

Agree: 0%

Neutral: 0%

Disagree: 42.9%

Strongly Disagree: 57.1%

15. I found the various functions in this system were well integrated.

Strongly Agree: 14.3%

Agree: 85.7%

Neutral: 0%

Disagree: 0%

Strongly Disagree: 0%

16. I thought there was too much inconsistency in this system.

Strongly Agree: 0%

Agree: 0%

Neutral: 0%

Disagree: 85.7%

Strongly Disagree: 14.3%

17. I would imagine that most people would learn to use this system very quickly.

Strongly Agree: 28.6%

Agree: 57.1%

Neutral: 14.3%

Disagree: 0%

Strongly Disagree: 0%

18. I found the system very inconvenient to use.

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Strongly Agree: 0%

Agree: 0%

Neutral: 14.3%

Disagree: 57.1%

Strongly Disagree: 28.6%

19. I felt very confident using the system.

Strongly Agree: 0%

Agree: 85.7%

Neutral: 14.3%

Disagree: 0%

Strongly Disagree: 0%

20. I needed to learn a lot of things before I could get going with this system.

Strongly Agree: 0%

Agree: 0%

Neutral: 0%

Disagree: 42.9%

Strongly Disagree: 57.1%

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Conclusion

From testing version 2 of the prototype, some changes were made to allow users a better experience and faster completion time in version 3. Adding reminders has now been simpler, with the addition of a tab for both doctor and medication reminders, whereas before, in version 1 and 2, each reminder was placed under a different tab. Users are now able to select the date they want to be reminded on, rather than just the day and time, allowing users to schedule reminders for weeks in advance. There is also a change made for how users can edit their information, and instead of one location for users to edit their doctor, insurance and personal information, in versions 1 and 2, users are now able to navigate to one subcategory tab for their personal information and another tab for their doctor and insurance information in version 3, eliminating the confusion. When signed in, users are also able to delete any reminders from the 'home' tab under 'My Account', allowing for convenience, where in version 2, users were only able to edit their reminders.

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