

Florida International University
School of Computing and Information Sciences

Software Engineering Focus

Final Deliverable

Project Title:

NuMom (Keeping Mothers and Infants Healthy)

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Abstract

The purpose of this document is to introduce readers to the current state of NuMom (Keeping Moms and Infants Healthy) after the Fall 2022 Capstone I/Capstone II/Senior Project development cycle. NuMom is an application for both Android and iOS devices made with the intent to provide free and easy access to prenatal and postnatal learning resources to low-income, minority mothers, who have been found to regularly have reduced access when compared to other populations. Besides providing features such as location searching and document/immunization/appointment recording, the resources provided by this app include of but are not limited to: growth milestones, feeding, safe sex practices, STDs, applying to help programs, etc.. The application is fully translated between English, Spanish, and Haitian Creole to ensure larger populations can access support systems for mothers and children alike. Throughout this semester, the development team of nine people has put a focus on preparing the application for even larger changes to come in the upcoming versions of the app. This means while various smaller features were implemented, a good amount of development time was spent on resolving both major and minor bugs. Some things worked on was readability, improving user experience, implementing features that were not consistent throughout the whole app, and including even more resources.

Keywords: application, manual, mothers, childcare, learning resources

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INTRODUCTION

Current System

The current system consists of a mobile app with support for both Android and iOS devices. Users can sign up for an account within the app to gain access to a variety of useful features. This includes the ability to search for clinics and shelters, learn about feminine sexual and reproductive health, and use tabs to keep track of important vaccination records, documents, and appointments. The application's target audience is new mothers from low-income minority households and/or single mothers.

Purpose of New System

We as developers throughout this semester have put a large focus on preparing the application for even larger changes to come in the upcoming versions of the app. This means while we implemented various smaller features, we spent a good amount of our development time resolving both major and minor bugs. Some things we worked on were readability, improving user experience, implementing features that were not consistent throughout the whole app, and including even more resources. The new system is ready to be updated to Expo 47 and implement larger features which the product owner has in mind for semesters to come.

User Stories

Implemented User Stories

User story ID	Belongs to	Description	Assignee
#001	Developers	Review pull requests of issues in other user stories	All Capstone I
#518	Developers	Task #1: Welcome Fall 2022	All Capstone II
#523	Developers	Task #2: Password Strength Checker	All Capstone II
#502	Developers	Update Icons for food in WIC section	Lisabeth Roche
#486	Developers	Menu component goes off screen bug fix	Lisabeth Roche
#543	Developers	Text not visible during sign up/login process	Hanane Mbarki
#451	Developers	Add a filter for Shelters, as well as WIC/Medicaid Location	Lisabeth Roche
#446	Developers	Add Website Button for STD List	Lisabeth Roche
#566	Developers	New Immunization page has unusable dropdowns	Lisabeth Roche
#540	Developers	Birth Control subsection within Learn section	Aqib Shah
#496	Developers	Change the Search Logo	Eden Sasson

Pending User Stories

User story ID	Belongs to	Description
#392	Developers	Fix links to some clinic websites that are not working/missing
#399	Developers	Add password strength progress bar to sign up page
#406	Developers	Add a way to rename/delete uploaded documents
#414	Developers	Make STD awareness/protected sex learn tab sections more user friendly
#479	Developers	Appointment tab dates is difficult to use when phone is in dark mode
#484	Developers	Remove the extra empty space from facilities page
#486	Developers	Make information more concise on several different pages
#501	Developers	Sorting for the immunization schedule page
#545	Developers	Upgrade Expo to version 47
#553	Developers	Text visibility and words cut-off within feeding section
#574	Developers	Clean up and complete formatting of birth control section

PROJECT PLAN

This section covers the planning method that we utilized to put this project together. Because this project used agile development approaches, the sprints had to be prepared ahead of time. Below are the sprint planning documents in order, which show the progress of how the project was planned. Moreover, specific hardware and software technologies were decided ahead of time as well.

Hardware and Software Resources

The following list of hardware and software resources were used in the development of the project:

iOS	Android	Software
iPhone 13 Pro Max	Samsung Galaxy S21	Visual Studio Code
iPhone 11 Pro	Google Pixel	Jet Brains WebStorm
IPhone 13 Pro		Firebase
		GitHub

Sprints Plan

Sprint 1

User Story 1 - Welcome Fall 2022!

Install expo, run the app, and make the first pull request on the repo to make sure everyone can access the app.

User Story 2 - Setup and Technical Introduction

Get everyone familiar with GitHub and the inner workings of the app by attending technical meetings with Eduardo.

Sprint 2

User Story 1 - Second Technical Meeting

As requested by Eduardo, attend a second meeting regarding how the GitHub workflow should function as well as any troubleshooting with running the app.

User Story 2 - Password Strength Checker

After the technical meeting, all Capstone 1 students and new Capstone 2 students should do this as an introductory task in the app.

User Story 3 – Misc. Bug Fixes

Capstone 2 students not working on User Story 2 should each pick an issue off of the GitHub and complete one issue per sprint at least – to be clarified later in the sprint.

Sprint 3

User Story 1 - Review Pull Requests of Issues in other User Stories

Capstone 1 students are expected to review the pull requests of all the other user stories as their main responsibility, therefore this user story represents that.

User Story 2 - Update Icons for Food

This user story is being extended from last sprint as it needs one more review from a Capstone 1 student to be closed out.

User Story 3 – Concise Information on Multiple Pages

Alter the paragraphs/formatting of pages such as the STD information so that it does not seem as daunting to read as it currently is.

User Story 4 – Darken color of title text / addresses #495

The light grey color could be difficult for users to read and doesn't catch the eye right away. Titles and addresses text color are too light and need to be darkened for readability. (Facilities, clinics, shelters, all addresses listed).

User Story 5 – Text not visible during sign up/sign In

During the sign up and log in, the text in the text bubbles is not visible, so the user is left wondering what information to input. The text in the text bubbles should be made darker for better visibility.

Sprint 4

User Story 1 - Review Pull Requests of Issues in other User Stories

Capstone 1 students are expected to review the pull requests of all the other user stories as their main responsibility, therefore this user story represents that.

User Story 2 - Add a filter for Shelters, as well as WIC/Medicaid Location

Multiple pages of the app which show locations do not have a filtering system that other pages do have, should be added for consistency.

User Story 3 – Darken color of title text / addresses #495

The light grey color could be difficult for users to read and doesn't catch the eye right away. Titles and addresses text color are too light and need to be darkened for readability. (Facilities, clinics, shelters, all addresses listed).

User Story 4 – Change size of rectangular buttons housing options on learn page

Change size of rectangular buttons housing options on Learn page as they are currently awkwardly shaped on different devices.

User Story 5 – Change color of font for readability

The current font should be changed to be more accessible.

Sprint 5

User Story 1 - Review Pull Requests of Issues in other User Stories

Capstone 1 students are expected to review the pull requests of all the other user stories as their main responsibility, therefore this user story represents that.

User Story 2 - Learn Tab: STD Awareness/Protected Sex (Aqib)

The sections are too text heavy. We should make this more user friendly and easy on the eyes to read. The pictures in the Female Condom Insertion tab should also be larger for the user.

User Story 3 – Text Visibility and Words Cut-Off within Feeding Section #553

The words within the feeding section should be a bit darker as it is not easy to see them clearly. In addition, the words are cut off on the right-hand side of the screen as shown below, so making the entire line visible on-screen is preferable.

User Story 4 – Add Website Button for STD List #446

Within the Learn tab about STDs, add a website field for all of the STDs and viewable/clickable links for each of them that provide more information.

User Story 5 – More birth control information #551

Include another subsection of title “Birth Control” to the Learn section and an annotation of “Learn about different types of possible birth control options”.

Sprint 6

User Story 1 - Review Pull Requests of Issues in other User Stories

Capstone 1 students are expected to review the pull requests of all the other user stories as their main responsibility, therefore this user story represents that.

User Story 2 - Sorting for the Immunization Schedule page Issue #501

Try following the homepage sort-fetched logic/ or any solution you have on the Immunization Schedule header, so the user doesn't have to scroll too much.

User Story 3 – More birth control information #551

Include the following information: In 2015–2017, 64.9% of the 72.2 million women aged 15–49 in the United States were currently using contraception.

User Story 4 – Add more information to Learn section. #529

Within the Learn tab about STDs, add a website field for all of the STDS and viewable/clickable links for each of them that provide more information.

User Story 5 – Text Visibility and Words Cut-Off within Feeding Section #553

The words within the feeding section should be a bit darker as it is not easy to see them clearly. In addition, the words are cut off on the right-hand side of the screen as shown below, so making the entire line visible on-screen is preferable.

Sprint 7

User Story 1 - Review Pull Requests of Issues in other User Stories

Capstone 1 students are expected to review the pull requests of all the other user stories as their main responsibility, therefore this user story represents that.

User Story 2 - Complete Final Deliverable

Work on completing the final documentation as well as the four videos and our individual posters.

System Design

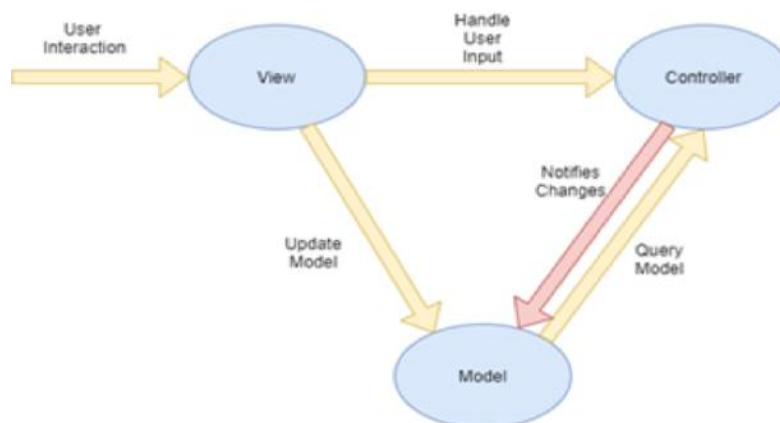
Information on the design elements used in this project is provided in this section, as well as an explanation and list of the architecture patterns. A package diagram depicts the entire system and details the subsystems. The project's design patterns are explored in the final section.

Architectural Patterns

Model-view-controller, popularly known as MVC, was the pattern that we employed. The application was separated into three sections using this structure:

- View - displays the information to the user, the user interface (UI).
- Controller - handles the user's inputs.
- Model - contains the core functionality, logic, and data of the application.

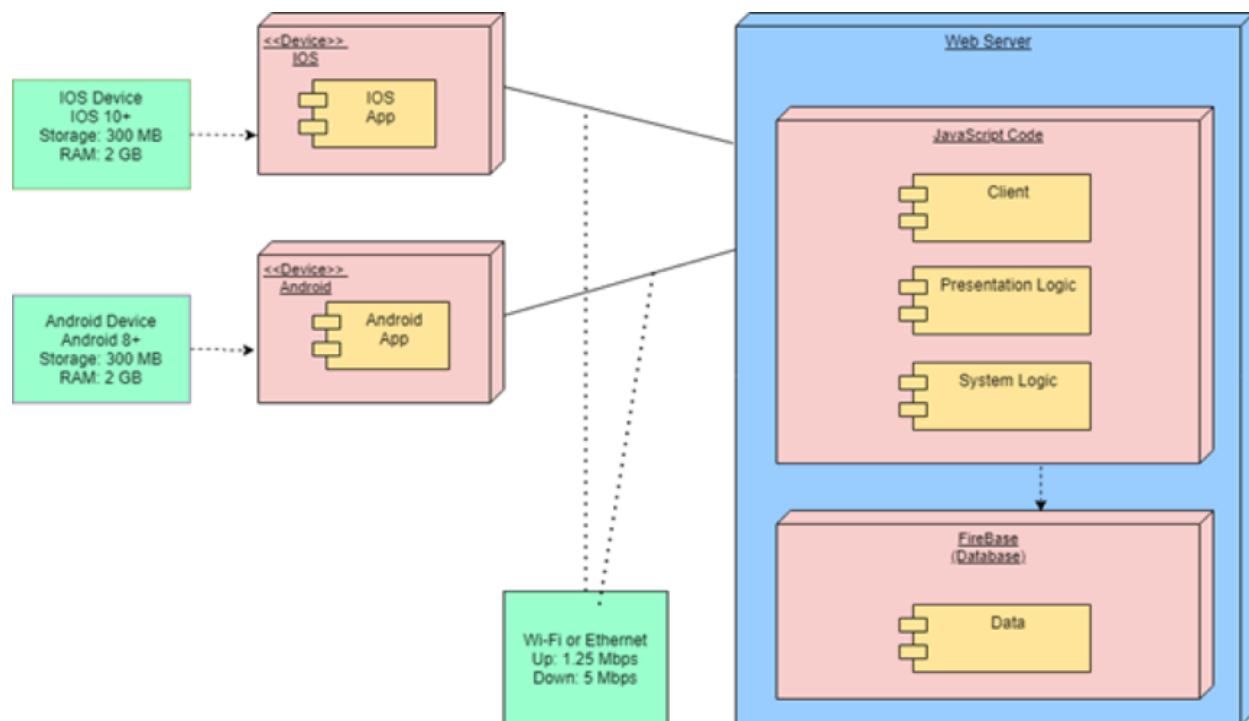
The data model, user-facing information, and control information were all intended to be contained in this MVC. Because it permits code reuse within the application, this design pattern is effective.



System and Subsystem Decomposition

The system and subsystem decomposition in this document explains how the application is organized. The app was created using React Native and deployed using Expo. The `src` folder houses all of the program's files and documents, as well as translation files for the three languages supported by the app: English, Spanish, and Creole. Throughout the program, we used React Hooks to replace class inheritance. React Hooks employs the same concept as class inheritance, but with functions passing returns that are used whenever one component is called within another.

Deployment Diagram



Design Patterns

- Facade: The app employs the Facade design pattern to represent the UI in a user-friendly manner without exposing the system's logic to the user.
- Singleton: To avoid instantiating the database API multiple times, the app utilizes the Singleton design pattern to maintain only one instance of Firebase, with only one global access point.
- Iterator: The Iterator design pattern is used in the app to display multiple buttons as well as the Clinics and Shelters.
- Chain of Responsibility: Several components in the app use a chain of responsibility design pattern to delegate access to functions to other components.

System Validation

Using GitHub as our version control system, every user story had a branch that pertained to changes relating to it. Our changes came about with the help of IDE debugging (whether the developer decided to use Visual Studio Code or JetBrains WebStorm), and the frameworks we used throughout development (React Native and JavaScript). Only once the code was verified would we merge it into the main development branch. Verification of our work was a collaborative effort, where each one of our pull requests required reviews from two other team members to be considered ready. When reviewing, we would run the app locally using Expo on our own devices and ensure the issue was completed correctly and caused no new issues along the way. Issues were reported if necessary, and we always made sure to check on both Android and iOS devices to ensure consistency. At the end of the semester, the development branch was merged into the release branch and the culmination of our work was released into the world.

Glossary

Framework: A basic structure underlying a system, concept, or text.

Authentication: The process of confirming if the user is who the user says it is

Feature: A capability that the software offers

UI: Short for User Interface. Is the display on which the user interacts.

Cloud functions: Cloud Functions is a server-less execution environment for building and connecting cloud services.

API: Short for Application Programming Interface. a set of functions and procedures allowing the creation of applications that access the features or data of an operating system, application, or other service.

Expo: Expo is a platform that allows you to develop and quickly iterate on applications that are based in React Native and JavaScript.

Dependencies: is a broad software engineering term used to refer when a piece of software relies on another one

TestFlight: is an online service for over-the-air installation and testing of mobile applications, currently owned by Apple Inc. and only offered to developers within the iOS Developer Program

UML diagram: Is a diagram based on the UML (Unified Modeling Language) with the purpose of visually representing a system along with its main actors, roles, actions, artifacts or classes, to better understand, alter, maintain, or document information about the system.

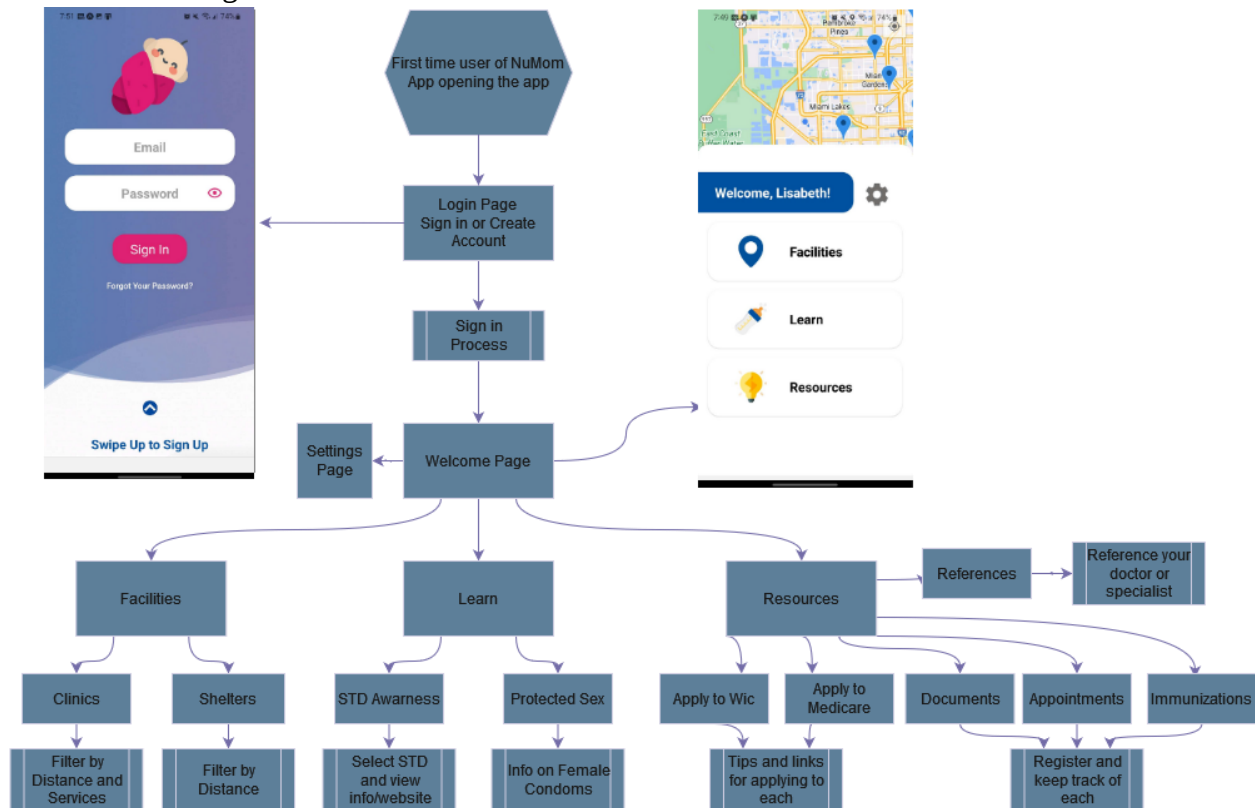
PO: Short for Product Owner. Is the person responsible for guiding changes and talk to developers about things that need to be modified on a software.

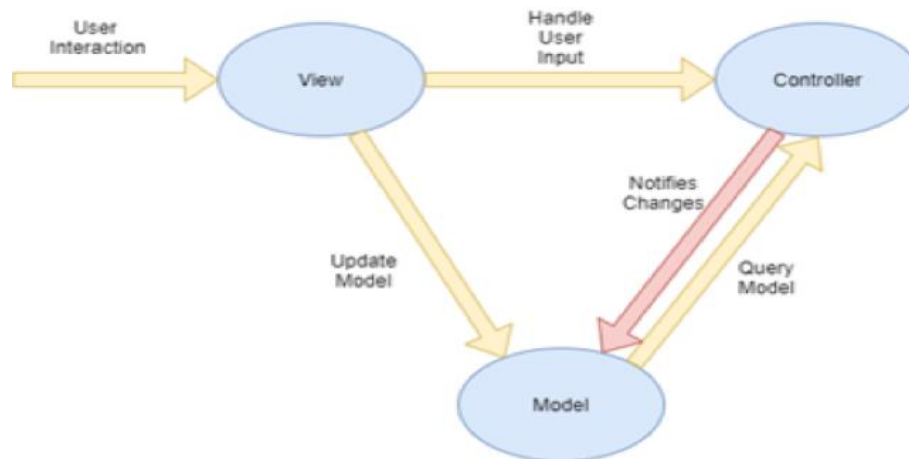
IDE: Short for Integrated Development Environment. is a software application that provides comprehensive facilities to computer programmers for software development.

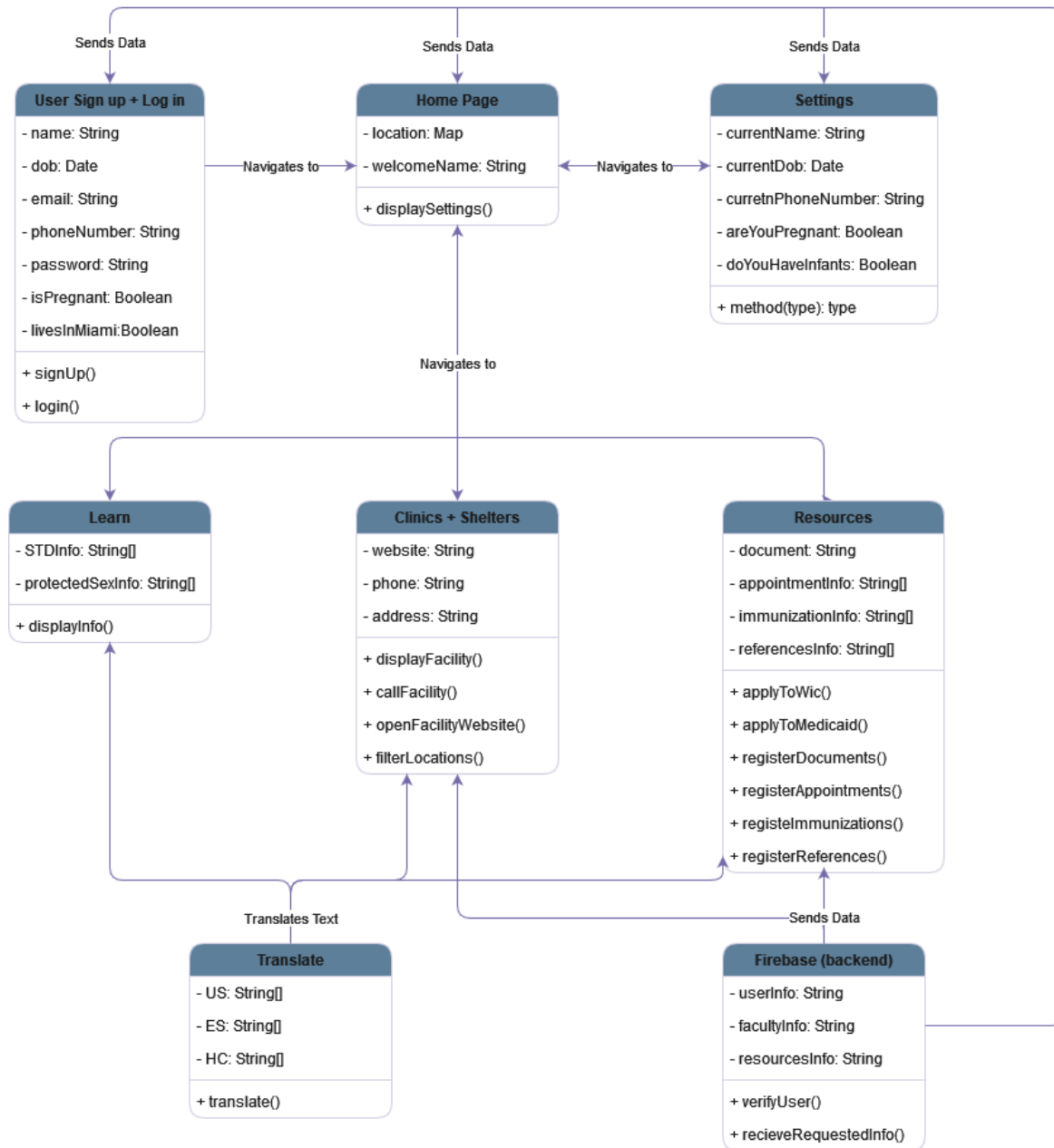
Appendices

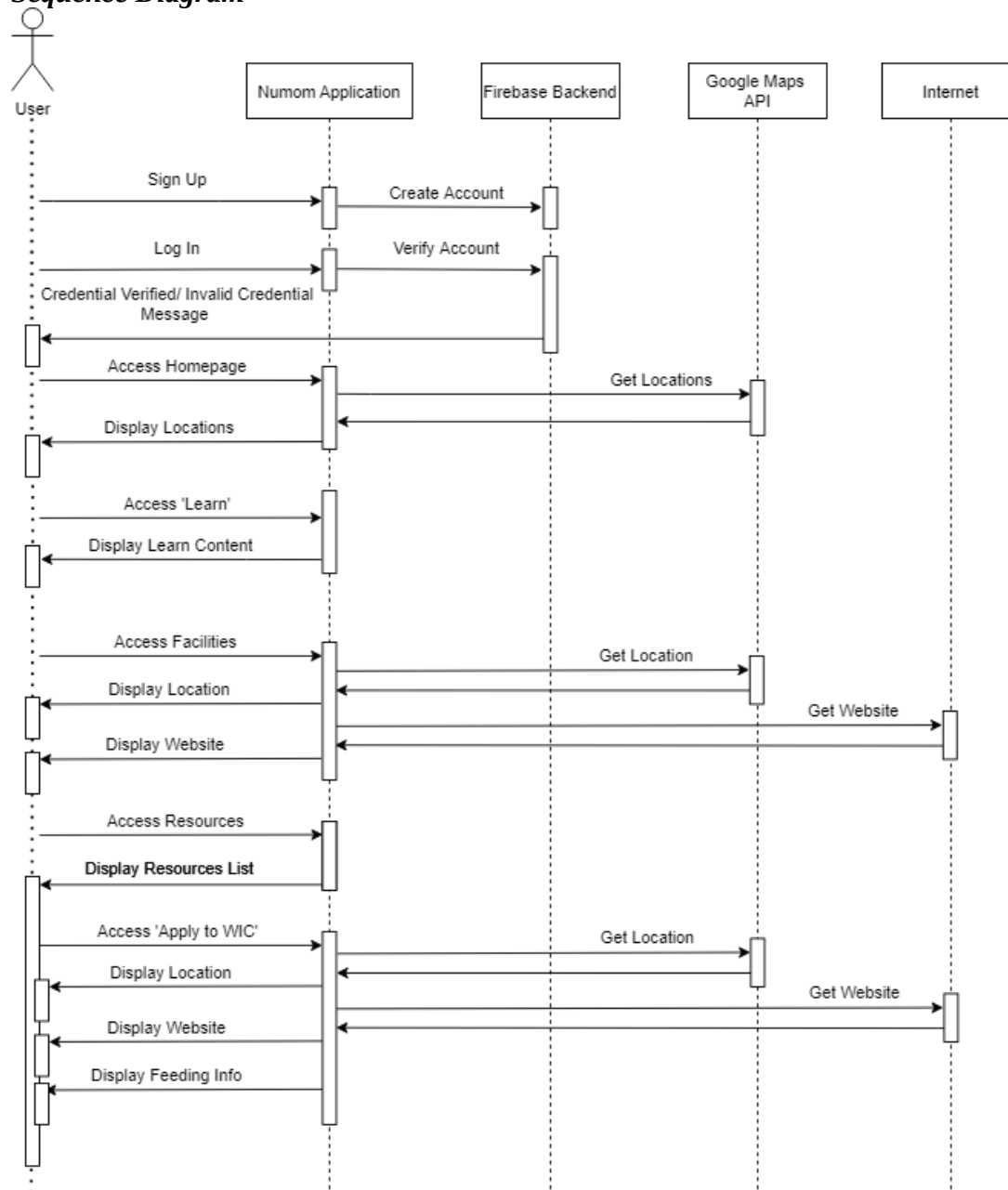
Appendix A - System Design Diagrams

Architecture Diagrams

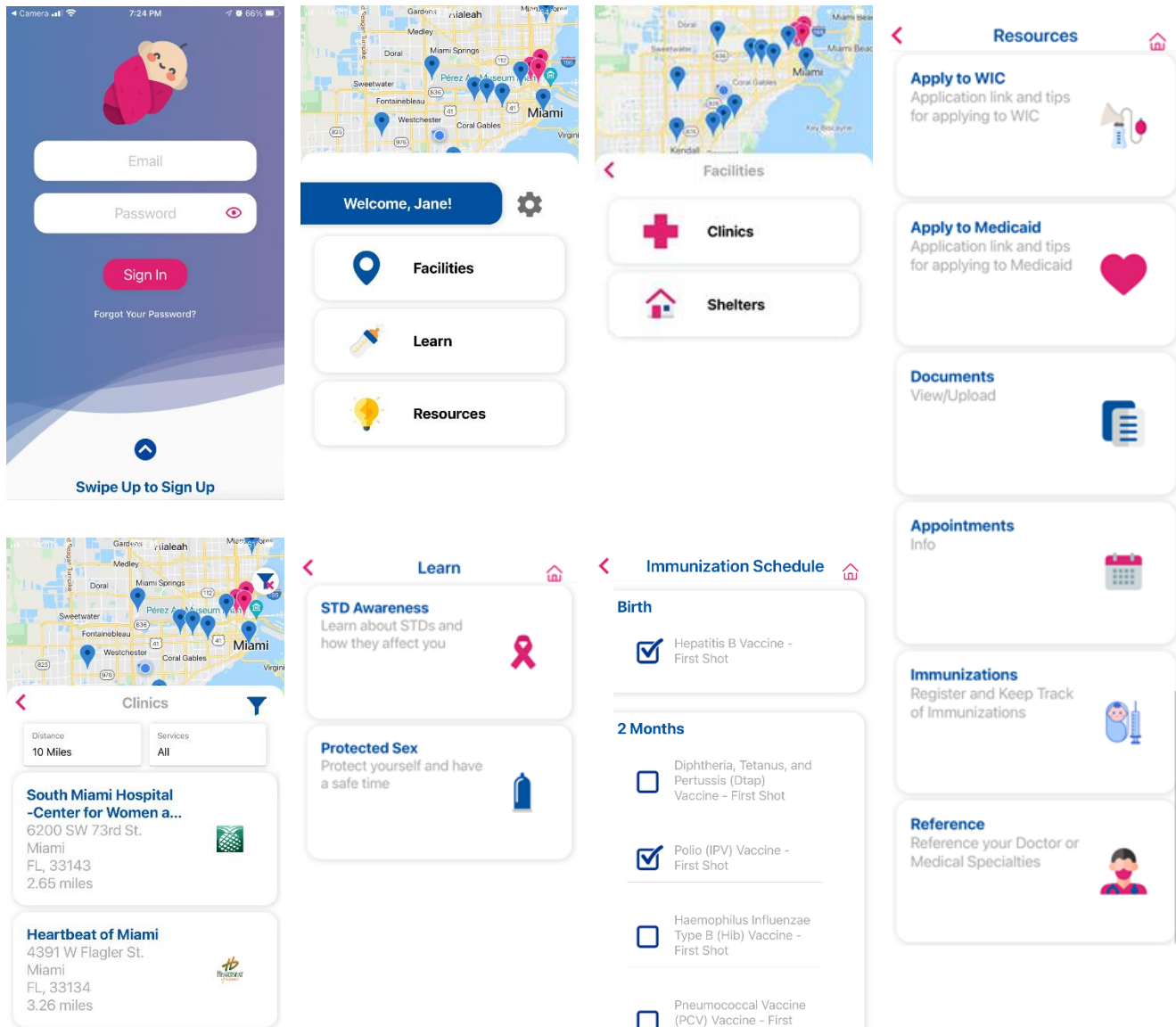




Class Diagram

Sequence Diagram

Appendix B - User Interface Design



Appendix C - Sprint Review Reports

Sprint 1 Review Meeting Minutes:

Attendees: David Martinez, Lisabeth Roche, Michael Ferrer, Daniel King, Eden Sasson, Elijah Khazzouh, Aqib Shah, Justin Venegas, Hanan Mbarki

Start time: 5:45 PM

End time: 6:00 PM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

- User Story 1 – Welcome to Fall 2022
- User Story 2 – Setup and Technical Meeting

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting.

- N/A - All user stories were completed and accepted

Sprint 2 Review Meeting Minutes:

Attendees: David Martinez, Lisabeth Roche, Michael Ferrer, Daniel King, Eden Sasson, Elijah Khazzouh, Aqib Shah, Justin Venegas, Hanan Mbarki

Start time: 5:30 PM

End time: 6:00 PM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

- User Story 1 – Second Technical Meeting
- User Story 2 – Password Strength Checker

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting.

- User Story 3 – Update Icons for food #502 – Needs one more review to be closed.

Sprint 3 Review Meeting Minutes:

Attendees: David Martinez, Lisabeth Roche, Michael Ferrer, Daniel King, Eden Sasson, Elijah Khazzouh, Aqib Shah, Justin Venegas, Hanan Mbarki

Start time: 5:30 PM

End time: 6:00 PM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

- User Story 1 – Review Pull Requests of Issues in other User Stories
- User Story 2 – Update Icons for Food
- User Story 5 – Text not visible during sign up/sign in
- User Story 6 – Menu Component going off screen

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting.

- User Story 3 – Concise Information on Multiple Pages
- User Story 4 – Darken color of title text/address #495

Sprint 4 Review Meeting Minutes:

Attendees: David Martinez, Lisabeth Roche, Michael Ferrer, Daniel King, Eden Sasson, Elijah Khazzouh, Aqib Shah, Justin Venegas, Hanan Mbarki

Start time: 5:30 PM

End time: 6:00 PM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

- User Story 1 – Review Pull Requests of Issues in other User Stories
- User Story 2 – Add a filter for Shelters, as well as WIC/Medicaid Location
- User Story 4 – Change size of rectangular buttons housing options on learn page

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting.

- User Story 3 – Darken color of title text/address #495
- User Story 5 – Change color of font for readability

Sprint 5 Review Meeting Minutes:

Attendees: David Martinez, Lisabeth Roche, Michael Ferrer, Daniel King, Eden Sasson, Elijah Khazzouh, Aqib Shah, Justin Venegas, Hanan Mbarki

Start time: 5:30 PM

End time: 6:00 PM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

- User Story 1 – Review Pull Requests of Issues in other User Stories
- User Story 2 – Learn Tab: STD Awareness/Protected Sex
- User Story 4 – Add Website Button for STD List #446

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting.

- User Story 3 – Text Visibility and Words Cut-Off within Feeding Section
- User Story 5 – More birth control information #551

Sprint 6 Review Meeting Minutes:

Attendees: David Martinez, Lisabeth Roche, Michael Ferrer, Daniel King, Eden Sasson, Elijah Khazzouh, Aqib Shah, Justin Venegas, Hanan Mbarki

Start time: 4:00 PM

End time: 4:15 PM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

- User Story 1 – Review Pull Requests of Issues in other User Stories
- User Story 2 – Fix for the Immunization page

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting.

- User Story 3 – More birth control information #551
- User Story 4 – Add more information to Learn section. #529
- User Story 5 – Text Visibility and Words Cut-Off within Feeding Section #553

Sprint 7 Review Meeting Minutes:

Attendees: David Martinez, Lisabeth Roche, Michael Ferrer, Daniel King, Eden Sasson, Elijah Khazzouh, Aqib Shah, Justin Venegas

Start time: 6:00 PM

End time: 6:15 PM

After a show and tell presentation, the implementation of the following user stories were accepted by the product owners:

- User Story 1: Review Pull Requests of Issues in other User Stories
- User Story 2: Complete Final Deliverable

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting.

- N/A

Appendix D - User Manuals, Installation/Maintenance Document, Shortcomings/Wishlist Document

User Manual

When the user first launches the application, they are greeted with the Login page. On this page, the user can log in to their account, and there is a "Forgot Password" button that will take them to another page where they can enter their email address to reset their password. There is also a "Swipe up to Sign Up" option, which takes users to a welcome page before prompting them to enter their name and birth date. During the signup process, the user is asked for previous information in order to gain access to the application, as well as any other information required to create an account. The app will enroll the user in the SMS messaging service during the sign-up process. The user should receive a text message shortly after creating their account.

When they log in, they are taken to the homepage, where they are greeted by the app and see five things: a map with available clinics, a cog for the settings page, a 'Facilities' tab, a 'Learn' tab, and a 'Resources' tab. When the user presses the cog, they will see account-related fields such as their phone number, date of birth, name, and answers to questions such as "Do You Live in Miami?", "Are you Pregnant?", and "Do You Have Any Infants?" They can change these at any time and save their changes at the bottom of the page. The user can log out of the website from the upper right-hand corner of the Settings page. This is the only way the user can completely log out of the app.

The user can then exit the Settings tab and return to the homepage, where they can click on the Facilities page, where they are given two options: "Clinics" and "Shelters." When the user clicks the "Clinics" tab, they will see a list of clinics sorted by proximity. The clinic's name, address, and distance from the user's current location are displayed to the user. The user can filter the list of clinics at the top of the page by distance (five, ten, and fifteen miles) or by services (abortions, free materials, and immunization). The shelters can also be filtered by distance. The user can tap on a specific location to get the location's website, phone number, and services offered if it is a clinic.

After returning to the homepage, the user may proceed to the "Learn" page. The Learn page provides the user with two tabs: "STD Awareness" and "Protected Sex." The "STD Awareness page" lists the diseases that can be transmitted through unprotected sex. The user can

view information on the symptoms, the testing procedure for diagnosis of said STD, treatment for the STD, the consequences if the STD is left untreated, and when it is safe to begin sexual activity for each STD. There is also a button that links to outside government sources if the user wants more information.

The "Protected Sex" section emphasizes safe sex and makes use of female condoms as a safe sex resource. At the top of the page, there is a brief explanation of what a female condom is and a picture of one. On this page, the user can choose between two options: "Female Condom Do's and Don'ts" and "How to Insert and Remove a Female Condom." The "Female Condom Do's and Don'ts" section instructs the user on how to use female condoms properly, essentially what to do and what not to do. The Dos are listed at the top, while the Don'ts are listed at the bottom. "How to Insert and Remove a Female Condom" walks the user through the process of inserting a condom step by step. This page explains how to use condoms, care for them, and dispose of them properly.

The user can then exit the Learn tab and return to the homepage. When the user clicks on the "Resources" tab, a list of tabs appears, including "Apply to WIC," "Apply to Medicaid," "Appointments," "Documents," "Immunizations," and "References."

When the user navigates to the "Apply to WIC" page, he or she will see a "Checklist," "Feeding," "Locations," and "Website." The Checklist page allows the user to enter the following information needed to apply for WIC: "Family members" - Each member applying for WIC; "Proof of Income of all family members" - Salaries, child support, alimony, foster care payments, interest withdrawn, unemployment, and so on. The Feeding tab informs the mother about the feeding guidelines for infants aged 0 to 12 months. By scrolling, the user must select the correct age range for the infant. Each age range includes information on infant food options and alternatives, and each food option has a graphic icon showing what types of foods pertain to it. When the user reaches the bottom of the list, additional information on foods to avoid for infants and important notes for the mother are provided. The Location tab displays a list of WIC facilities in the user's general vicinity and can be filtered by distance like the other maps. The Website tab takes you directly to the WIC home page.

The "Apply to Medicaid" tab will take the user to a page that includes a link to the Medicaid site, a checklist of items to bring to their Medicaid appointment, and a locations tab that contains nearby Medicaid offices, similar to the "Facilities" tab, but for Medicaid locations.

By going to the "Appointments" tab, the user may be able to add and remove appointments, as well as rename them. The user can add appointments by clicking the plus (+) sign at the top of the page. Once entered, the data is saved in the Firebase system and is ready to be viewed. In order to sync their appointments, the user will be prompted for access to their device's calendar. To delete an appointment, simply tap the trash can icon next to the appointment details.

The "Documents" tab works similarly to the "Appointments" tab, with the main difference being that the user can upload an image, crop it, and then click "OK." The user will then be presented with an input box in which to name the file. These files will be immediately saved in the cloud via Firebase and can be viewed on the documents page.

Users are greeted at the top of the "Immunizations" page with three buttons: a plus (+) sign to add to the Immunization Register, an envelope to send an email of the immunizations listed on the page, and a calendar icon. By tapping the plus sign, the user will be taken to a page where they can enter the type of immunization their child received, the dosage, the date, and any other information. The envelope generates an email for each immunization listed on the Immunization Register using the user's primary email address. Finally, the calendar icon will take the user to the "Immunization Schedule," where they can view their child's immunization history and check off any new immunizations. The list is arranged according to the infant's age, starting at birth and going up to 2 months, 4 months, etc. There is a list of immunizations received under each age group. The Immunization Schedule's list of immunizations is automatically checked off as the user adds immunizations to the Immunization Register. This gives the user a simpler alternative for keeping track of their child's immunizations.

The "References" tab is the user's last option. At the top of the page, the user will see a plus (+) sign where they can enter details for a financial or medical reference. Once entered, the data is immediately available for viewing on the references page after being stored in Firebase. Every reference has a trash bin button, similar to the "Appointments" tab, allowing the user the ability to remove the reference.

Installation/Maintenance**Step 1:**

- Install git on your computer <https://git-scm.com/downloads>
- Install Node.js (comes with npm) <https://nodejs.org/en/>

Step 2:

Download Visual Studio Code from your browser through:

<https://code.visualstudio.com/download>

Step 3:

Open Visual Studio Code and select get from version control; from the dropdown, select git. A link will be requested where you will input the following link:

<https://github.com/edumorlom/moms-infants-healthy.git>

Step 4:

After the project is cloned in your computer you will be able to access it from your command line interface. After that, go to your project from the terminal by using “cd” and going to the folder where the project is in.

Step 5:

Install all the backend node dependencies and expo by running the following commands in the root directory:

- npm install --global expo-cli
- npm install && expo install

Step 6:

You must now download the firebase api key file and place it into the /src directory in your local repository. In order to obtain this file, you must contact NuMom Lead Mentor, Eduardo Morales for it at edmorales.97@gmail.com

Step 7:

Install the expo client on your mobile device (or install an Android/iPhone simulator on your computer):

iOS: <https://apps.apple.com/app/apple-store/id982107779>

Android: <https://play.google.com/store/apps/details?id=host.exp.exponent&referrer=www>

Step 8:

Once everything is completed, use the command within the root folder “expo start” or “npm start” to start expo. A window will open in your default browser with a QR code to be scanned with your phone. The application now will show up in your phone on the application of the expo client.

Step 9 (optional):

You can run expo on a virtual device on your computer, which allows further testing on additional devices. View the following links to get started for either iOS or Android:

iOS: <https://docs.expo.io/workflow/ios-simulator/>

Android: <https://docs.expo.io/workflow/android-studio-emulator/>

Shortcomings/Wishlist**1. Add a way to Rename/Delete Uploaded Documents**

Adding the ability to rename and delete uploaded documents is a feature we were unable to complete but can significantly benefit the end user as they would be able to update previously uploaded documents that are no longer relevant adding to a cleaner interface.

2. Dark Mode

Implementation of a dark mode in the application can further enhance the user experience while also having a better dynamic look with other operating system themes. We attempted implementing a dark mode feature but were not able to complete it.

3. Add Password Strength Progress Bar to the Sign-Up Page

This is another feature we were not able to get to but one of the utmost importance in our opinion as our app has sensitive information and we feel it is important to ensure our users know to use a strong password to keep their data confidential.

4. Clean up formatting for the new birth control section

We recently added a new birth control section to the app and because it was done towards the end of the project it is not as clean as we hoped it would be, we think changing the formatting on the section would greatly benefit the usability for the end user.

References

- [1] Firebase Documentation. (n.d). retrieved September 14, 2020, from: <https://firebase.google.com/docs>
- [2] JavaScript documentation. (n.d). retrieved September 14, 2020, from: <https://devdocs.io/javascript/>
- [3] Twilio. (n.d). retrieved September 14, 2020, from: <https://www.twilio.com/docs>
- [4] CDC. (n.d). retrieved September 14, from: <https://www.cdc.gov/>
- [5] React Native Documentation. (n.d). retrieved September 14, from: <https://facebook.github.io/react-native/docs/getting-started>
- [6] Expo Documentation. (n.d). retrieved September 14, from: <https://docs.expo.io/versions/latest/>
- [7] Git documentation. (n.d). retrieved September 14, from: <https://git-scm.com/doc>
- [8] Medicaid application. (n.d). retrieved September 14, 2020 from: <https://www.healthcare.gov/medicaid-chip/>
- [9] WIC application. (n.d.). retrieved September 14, 2020 from: <https://www.fns.usda.gov/wic/wic-how-apply>