CMPT 275: Software Engineering I Assignment 2 - Requirements Document

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Revision History

Table 1 - Revision history of document

Revision	Status	Publication/Revision Date	By
1.0	**Created** • Introduction • Intended audience list	October 8, 2019	Kevin Jerome
1.1	**Added** • Functional req.	October 9, 2019	Kevin Jerome
1.2	**Added** • Non-functional req. • Glossary	October 10, 2019	Kevin Jerome
1.3	**Added** • New formatting	October 14, 2019	Kevin Jerome
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1. Introduction

Remedi – "Organize Your Health."

Remedi is an iOS mobile application and companion website designed to assist in the managing of the doctor-recommended exercises and medications for patients suffering from Parkinson's Disease (PD). The application is composed of 5 key features:

1. **Scheduling**
2. **Progress tracking**
3. **Reporting**
4. **Reminders**
5. **Exercises**

The core functionality of the mobile application revolves around aiding the Parkinson's patient. In the current state of medical bureaucracy, patients end up receiving verbose, confusing documentation from their physician which inevitably contains important information such as the type of physical therapy they need to undertake and the quantity of medicine they must ingest.

Often, the prescribed treatments are tied to a schedule. In certain cases, this schedule is not explicitly described or hard to find in the accompanying paperwork. With the app, we aim to provide a quick and streamlined experience to aid in the navigation through the complex landscape of medical paperwork.

Patients can avoid the stress involved with interpreting confusing documents as Remedi will provide clearly defined scheduling and unambiguous instructions for each exercise and medication with reminders help to keep the patient on-track to. The exercises themselves are explicitly detailed with a helpful instructional illustration and text description that inform the patient about what the exercise is and how to perform it.

Additionally, we provide a companion website that is intended to be used by a patient's physician. Physicians will be able to create, edit, and delete patient profiles, which include a patient's contact information as well as details about the current medical treatments (exercises and medication) prescribed to each patient. Physicians are provided with a straightforward managerial view of their patients that can be interpreted with minimal training.

The application and companion website are synchronized together using a database such that when a physician makes changes to a patient profile, that patient can quickly view the new information. Condensed reports can be generated that summarize a patient's activity and allows the doctor to utilize the information outside of the system.

2. Intended Audience List

2.1. Parkinson's Patients:

2.1.1. Expectations

2.1.1.1.   This user must be able to manipulate their hand, wrist, and arm in such a fashion that they can interact with the iPhone touch screen

2.1.1.2.   This user must be able to be able to control eye movement to a degree where they are able to view the iPhone screen

2.1.1.3.   This user must be able to comprehend written English at a high-school level

2.1.1.4.   This user must understand how to interact with an iPhone touch screen by tapping on the screen, pressing and holding a spot on the screen, and swiping gestures across the screen

2.1.1.5.   This user must understand how to start and stop the application

2.1.1.6.   This user must understand how to access and use email services

2.1.1.7.   The user is assumed to be in a physical location that does not damage or interfere with the hardware resources of the iPhone

2.1.2. Goals

2.1.2.1.   This user is assumed not to be a malicious actor who wishes to cause harm to themselves or others by using the application

2.1.2.2.   This user is assumed to want improved management of their medical condition using technological aid

2.2. Physicians/Doctors:

2.2.1. Expectations

2.2.1.1.   This user must be able to manipulate their hand, wrist, and arm in such a fashion that they can interact with a mouse and keyboard

2.2.1.2.   This user must be able to be able to control eye movement to a degree where they are able to read from a desktop monitor

2.2.1.3.   This user must be able to comprehend written English at a high-school level

2.2.1.4.   This user must understand how to use a web browser

2.2.1.5.   This user must understand use a keyboard and mouse

2.2.1.6.   This user is assumed to be in a physical location that does not damage or interfere with the hardware resources of the computer or any peripheral devices such as the mouse and keyboard

2.2.1.7.   This user is assumed to hold an accredited/recognized medical certificate such that they are legally allowed to prescribe physical therapy and medication to Parkinson's patients

2.2.2. Goals

2.2.2.1.   This user is assumed not to be a malicious actor who wishes to cause harm to themselves or others by using the application

2.2.2.2.   This user is assumed to want improved management of their patients' medical condition using technological aid

3. Features and Functional Requirements

Disclaimer: Herein "*shall*" denotes a requirement that must be met. "*Should*" denotes a desirable requirement and therefore is not a guarantee to be implemented.

3.1.   User account creation

    3.1.1. The user of the iPhone application shall be provided by the companion website with, via a physician's actions, a link, code, or other form of unique identifying information in order to obtain an account on the iPhone application (see 3.16)

3.2.   Opening the application

    3.2.1. The application shall be launched via a single tap gesture on the application icon via the iPhone screen

3.3.   Logging in

    3.3.1. A text field to input a username shall be available

    3.3.2. A text field to input a password shall be available

        3.3.2.1.   The password field shall be obscured using the '*' character as the user inputs their password.

    3.3.3. The user shall either login successfully and continue to 3.4 or 3.5 or shall be re-prompted and repeat the requirements listed at 3.3.

3.4.   First-time authentication

    3.4.1. Upon a successful login (see 3.3), the user shall be prompted with an already filled in on-screen text form to verify their identify if it is the first time the application has been started

    3.4.2. A first name text field shall appear

    3.4.3. A middle name(s) text field shall appear

    3.4.4. A last name text field shall appear

    3.4.5. A medical/health care number text field shall appear

    3.4.6. User shall be able to select from a 'Confirm' or 'Cancel' option

3.5.   Application home screen

    3.5.1. Upon reaching the home screen, the user interface shall show interactive button icons that correspond to different features

        3.5.1.1.   A button that displays the text "Schedule" shall be present

        3.5.1.2.   A button that displays the text "Statistics" shall be present

        3.5.1.3.   A button that displays the text "Exercises" shall be present

        3.5.1.4.   A button that displays the text "Medication" shall be present

        3.5.1.5.   A button that displays the text "Profile" shall be present

        3.5.1.6.   A button that displays the text "Options" shall be present

3.6.   Scheduling

    3.6.1. Upon pressing the "Scheduling" button (see 3.5.1), a new page shall be displayed that contains information about the exercises and medications a patient is prescribed

    3.6.2. Users shall be presented with a list of activities

        3.6.2.1.   Each activity will show a brief text description

3.6.2.2.   Each activity will be in one of two states; to-do, represented by an unchecked square box, and done, represented by a square box with a check mark through it

3.6.2.3.   The user shall be able to interact with a "Previous Day" or "Next Day" button which shows the users the activities from the previous or next day, respectively

3.6.2.4.   The date corresponding to the date being viewed shall be displayed

3.6.3.   A calendar view should be an option available to users which previews the activities in a pre-determined span of time

3.6.3.1.   The user shall be able to interact with a "Previous Month" or "Next Month" button which shows the user the activities from the last or upcoming month, respectively

3.6.3.2.   The date corresponding to the date being viewed shall be displayed

3.7.   Statistics (progress tracking)

3.7.1.   Upon pressing the "Statistics" button (see 3.5.1), a new page shall be displayed that contains information about the history of exercises performed in a visual or graphical representation

3.7.2.   Users shall be able to select an individual activity to analyze

3.7.3.   Users should be able to select a group of activities to analyze

3.7.4.   Several charts should be generated once a selection of activities is made

3.8.   Reporting

3.8.1.   Doctors shall be able to generate a user report

3.8.1.1.   The report shall contain data about the exercises and medications prescribed to the patient and their usage by the patient

3.8.1.2.   The report shall be exportable as a .csv or .pdf file

3.9.   Reminders

3.9.1.   Users shall be able to control the frequency of reminders via the "Options" menu (see 3.5.1)

3.9.2.   User shall be able to select how often they are notified by choosing from a pre-determined list of notification frequencies

3.9.3.   User shall be able to select how they are reminded

3.9.3.1.   Reminders shall be implemented via push notifications

3.9.3.2.   Reminders should be implemented via email

3.10.   Exercises

3.10.1. Upon pressing the "Exercises" button (see 3.5.1), a new page shall be displayed that contains information about each prescribed exercise

3.10.1.1.   Users shall be able to select an exercise via a tap gesture

3.10.1.2.   Users shall be able to view the name of the exercise

3.10.1.3.   Users shall be able to view prescription information, including the number of repetitions required

3.10.1.4.   A "View Description" button shall be present

3.10.1.4.1.   Users shall see a demonstrational illustration on how to perform the exercise

3.10.1.4.2.   Users shall be provided with a text description of the exercise

3.11. Medication

3.11.1. Upon pressing the "Medication" button (see 3.5.1), a new page shall be displayed that contains information about each prescribed medication

    3.11.1.1. Users shall be able to select a medication via a tap gesture

    3.11.1.2. Users shall be able to view the name of the medication

    3.11.1.3. Users shall be able to view prescription information, including the dosage

    3.11.1.4. A "View Description" button shall be present

        3.11.1.4.1. Users shall be provided with a text description of the medication

3.12. Profile

3.12.1. Upon pressing the "Profile" button (see 3.5.1), a new page shall be displayed that contains information about the patient profile

    3.12.1.1. The name, home address, phone number, and medical number of the user shall be displayed

    3.12.1.2. The doctor's name, workplace address, and workplace phone number shall be displayed

3.13. Physician account creation

3.13.1. Users (physicians) shall be able to create a new account via the website

    3.13.1.1. A text field to input a username shall be available

    3.13.1.2. A text field to input a password shall be available

    3.13.1.3. A text field to for password confirmation shall be available

    3.13.1.4. A text field for an email address shall be available

        3.13.1.4.1. A text field for the physician's first name shall be available

        3.13.1.4.2. A text field for the physician's middle name(s) shall be available

    3.13.1.5. A text field for the physician's last name shall be available

    3.13.1.6. A text field for the physician's location of practice shall be available

    3.13.1.7. A text field for the physician's medical identification number shall be available

3.14. Physician log-in

3.14.1. A text field to input a username shall be available

3.14.2. A text field to input a password shall be available

    3.14.2.1. The password field shall be obscured using the '*' character as the user inputs their password.

3.14.3. The user shall be able to delete their previously typed input in both the username and password fields in order to correct mistakes

3.14.4. The user shall either login successfully and continue to 3.15 or shall be re-prompted and repeat the requirements listed at 3.14.

3.15. Companion website home page

3.15.1. Patients names and medical numbers shall be displayed in a list

    3.15.1.1. The list shall be sortable by alphabetized last name or in ascending/descending order of medical number

3.15.2. For each patient profile, "View", "Edit", and "Remove" buttons shall be present

3.15.3. An "Add New Patient" button shall be present

3.16. **Patient account generation**

 3.16.1. Physicians shall be prompted to input patient information after clicking on "Add New Patient" button (see 3.15.3)

 3.16.2. A "Cancel" button shall be present in all succeeding webpages which shall exit the user back to the home page

 3.16.3. A "Contact" tab on the webpage shall appear

  3.16.3.1. A first name text field shall appear

  3.16.3.2. A middle name(s) text field shall appear

  3.16.3.3. A last name text field shall appear

  3.16.3.4. An email text field shall appear

  3.16.3.5. A phone number text field shall appear

  3.16.3.6. An address text field shall appear

  3.16.3.7. A "Next" button shall appear, allowing the user to proceed to the "Medications" tab

 3.16.4. A "Medications" tab on the webpage shall appear

  3.16.4.1. A dropdown to select the medication shall appear

  3.16.4.2. A dropdown to specify the dose shall appear

  3.16.4.3. A dropdown to select the frequency of ingestion shall appear

  3.16.4.4. An "Add Note" button shall appear for each medication

   3.16.4.4.1. Clicking "Add Note" shall allow user to save a text-based note for each medication

  3.16.4.5. A "Next" button shall appear, allowing the user to proceed to the "Exercises" tab

 3.16.5. An "Exercises" tab on the webpage shall appear

  3.16.5.1. A dropdown to select the exercise shall appear

  3.16.5.2. A dropdown to specify the number of repetitions/durations shall appear

  3.16.5.3. A dropdown to specify the exercise frequency shall appear

  3.16.5.4. An "Add Note" button shall appear for each medication

   3.16.5.4.1. Clicking "Add Note" shall allow a user to save a text-based note for each medication

  3.16.5.5. A "Finish" button shall appear, allowing the user to finish the creation of the patient profile

 3.16.6. Upon successful creation of a patient profile via 3.16.5.5, a unique identifier token shall be sent to the patient so that they can claim their profile and set up the iPhone app

  3.16.6.1. The token shall be sent via email

  3.16.6.2. When a patient profile is created on the website, a patient account for the iPhone app shall be created automatically for patients to register with

3.17. **Patient account editing**

 3.17.1. Contact information shall be editable

  3.17.1.1. Text fields, and if applicable, quantities, shall be editable

  3.17.1.2. Physicians shall be prompted to enter new information

 3.17.2. Medical information shall be editable

  3.17.2.1. Text fields, and if applicable, quantities, shall be editable

  3.17.2.2. Physicians shall be prompted to enter new information

 3.17.3. Exercise information shall be editable

3.17.3.1.   Text fields, and if applicable, quantities, shall be editable
3.17.3.2.   Physicians shall be prompted to enter new information

3.18.   Patient account removal

3.18.1. A user shall be able to remove a patient profile by clicking the "Remove" button associated with that profile

3.18.2. When a patient profile is deleted, a patient's app account also becomes deleted

3.18.3. A confirmation prompt shall appear upon a deletion request

3.18.3.1.   The prompt shall warn the user that the request cannot be reversed

4. Non-functional requirements

4.1. Space requirements

4.1.1. The app shall adhere to the maximum allowed uncompressed iOS app size of 4GB [1].

4.2. Availability requirements

4.2.1. The app shall have a 99% uptime per calendar year once deployed

4.2.2. The website shall have a 99% uptime per calendar year once deployed

4.3. Usability requirements

4.3.1. The app shall require at most 20 minutes of training for a user to be able to use the entire functionality of the app

4.3.2. The website shall require at most 60 minutes of training for a user to be able to use the entire functionality of the website

4.4. Speed requirements

4.4.1. The time the app is launched until it is fully loaded shall not exceed 5 seconds

4.4.2. The app shall take no more than 1 second to respond when the user performs an action that requires the app to display a new user interface

4.5. Security requirements

4.5.1. All user account information shall be stored in a secure database

4.6. Ethical requirements

4.6.1. The app and website shall not be legal substitute for professional medical advising

4.7. Portability requirements

4.7.1. All app components shall function on an iPhone X

5. Example Tutorials

5.1. Physician wishes to create a new patient profile

5.1.1. Proceed to domain name via web browser

5.1.2. Log in with credentials

5.1.3. Click "Add New Patient" button
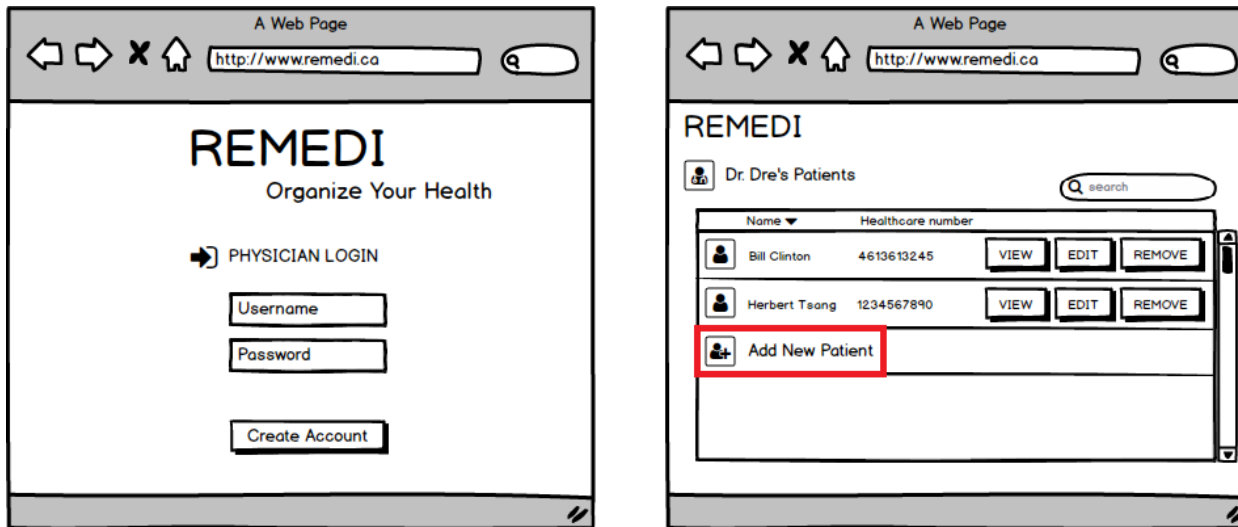
Figure 1 - Website login and patient adding

5.1.4. Proceed to fill out patient contact information by entering text into provided field

5.1.5. Click "Next" button in bottom righthand corner

5.1.6. Proceed to fill out patient medication information using dropdown menus

5.1.7. Click "Next button in bottom righthand corner
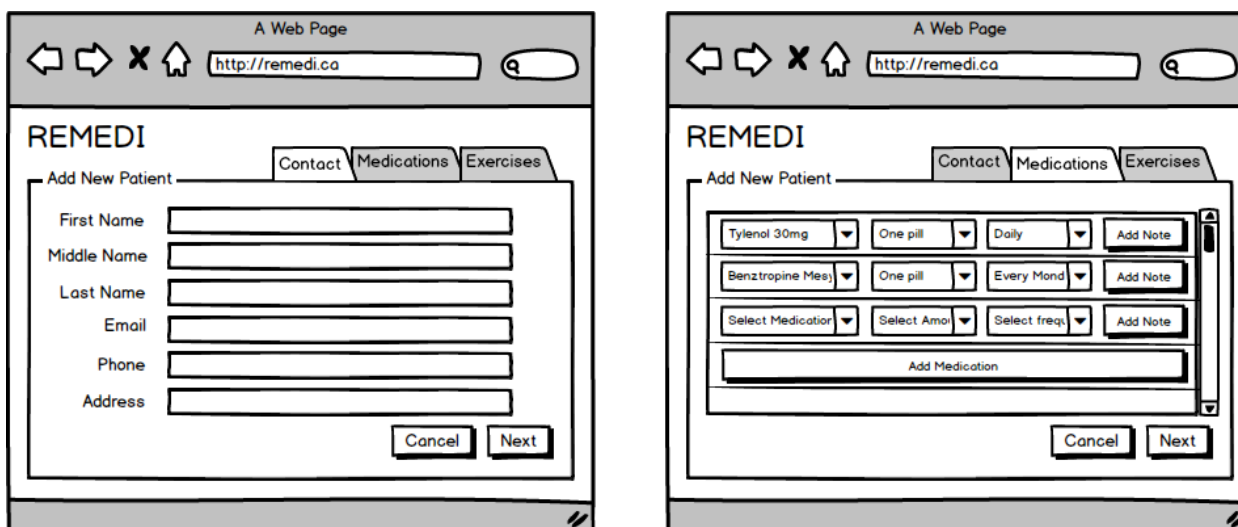
Figure 2 - Prompt to input contact and medication information

5.1.8. Proceed to fill out patient exercise information using dropdown menus

5.1.9. Click "Finish" button in bottom righthand corner

Figure 3 - Prompt to input exercise information

5.2. Viewing scheduled activities

5.2.1. Open the app

5.2.2. Enter your username and password in the respective fields

5.2.3. Tap the "LOGIN" button depicted in Figure 4

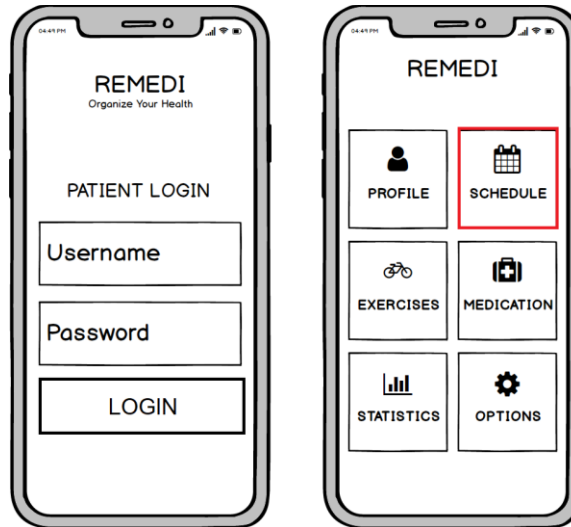5.2.4. Tap on the "Schedule" button depicted in Figure 4

Figure 4 – App login screen and home screen, schedule highlighted

5.2.5. The activities will now be shown as in Figure 5
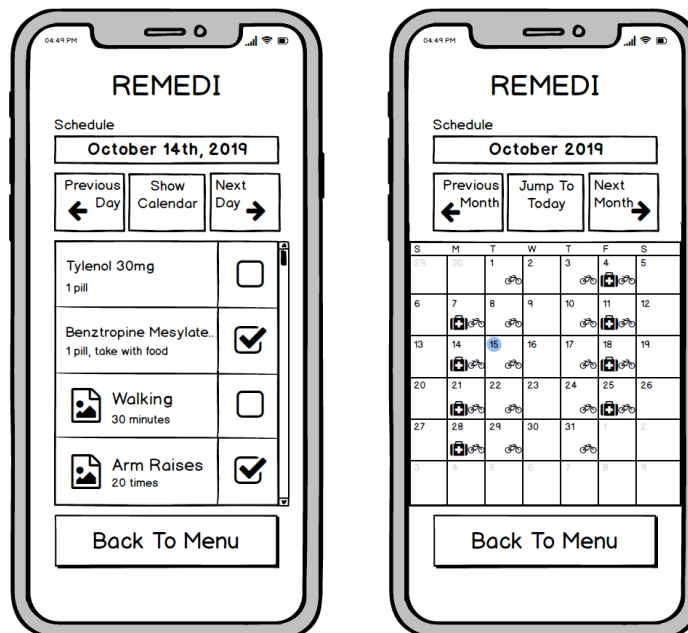
Figure 5 – Overview of scheduled activities

5.3. Obtaining more detail about an exercise

    5.3.1. Open the app

    5.3.2. Enter your username and password in the respective fields

    5.3.3. Tap the "LOGIN" button depicted in Figure 6

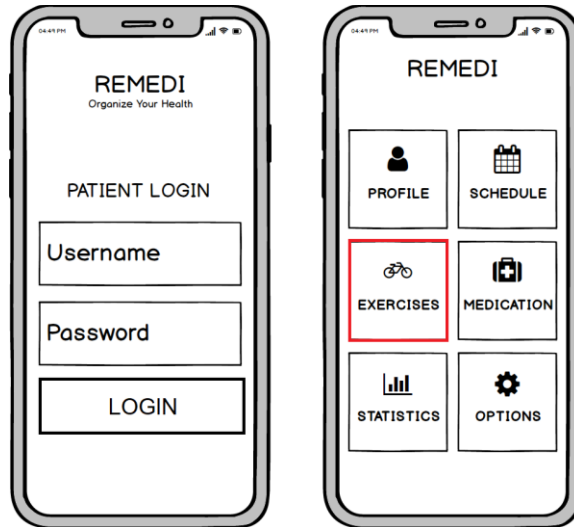   5.3.4. Tap on the "Exercise" button depicted in Figure 6

Figure 6 – App login screen and home screen, exercises highlighted

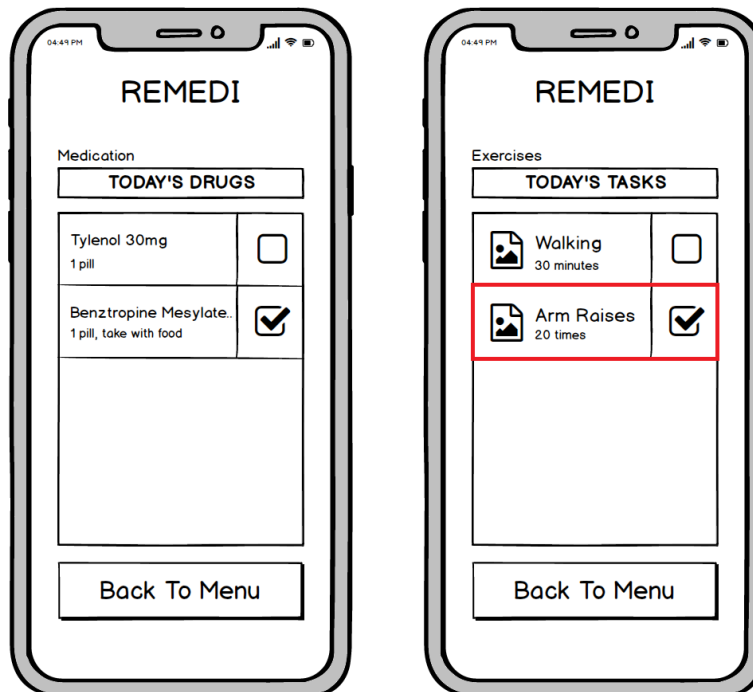   5.3.5. Select the desired activity and tap (e.g. "Arm Raises")

Figure 7 – Description of specified activity

5.3.6. Tap "View Description"
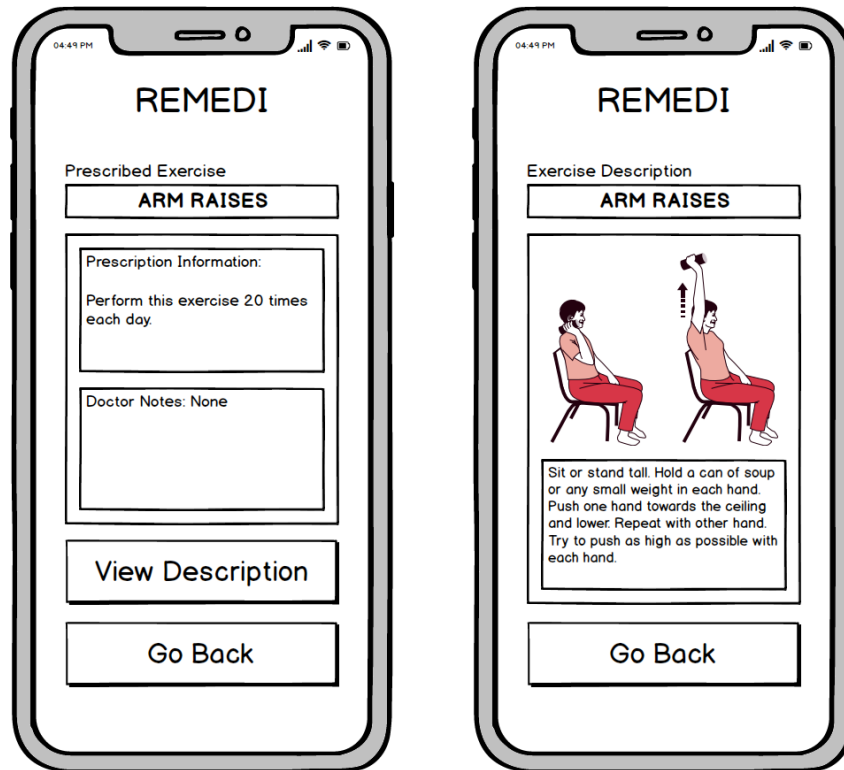5.3.7. A more detailed description of the activity is now visible

Figure 8 – Description of specified activity

5.4.   Viewing statistics

5.4.1.   Open the app

5.4.2.   Enter your username and password in the respective fields

5.4.3.   Tap the "LOGIN" button depicted in Figure 9

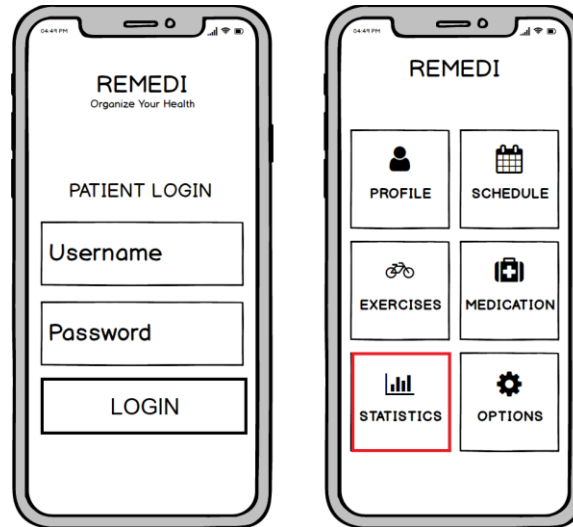5.4.4.   Tap on the "Statistics" button depicted in Figure 9

Figure 9 – App login screen and home screen, statistics highlighted

5.4.5.   Select the desired activity and tap (e.g. "Arm Raises")

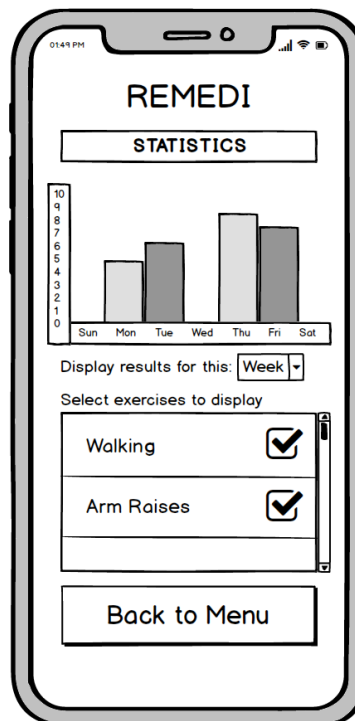5.4.6.   A screen like Figure 10 will be shown

Figure 10 – Activity statistics

5.5.   Viewing a profile

5.5.1. Open the app

5.5.2. Enter your username and password in the respective fields

5.5.3. Tap the "LOGIN" button depicted in Figure 11

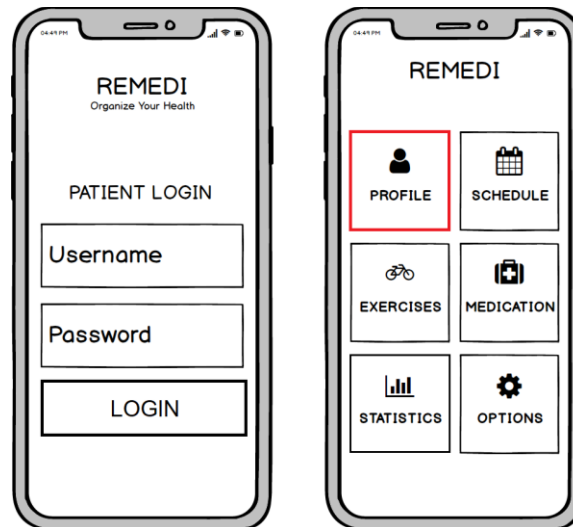5.5.4. Tap on the "Statistics" button depicted in Figure 11

Figure 11 – App login screen and home screen, statistics highlighted

5.5.5. Select the desired activity and tap (i.e. "Arm Raises")

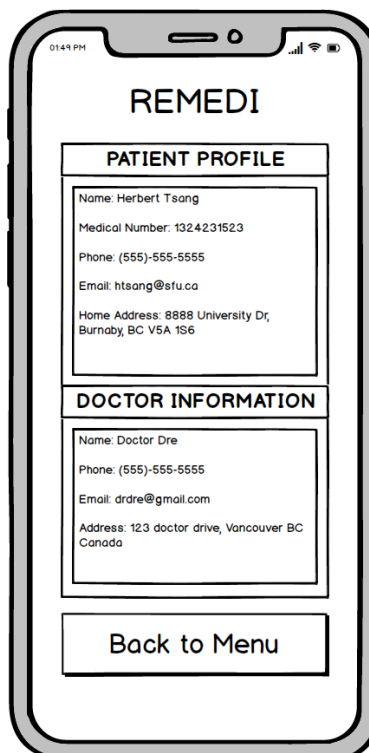5.5.6. A screen like Figure 12 will be shown

Figure 12 – Profile Screen

6. Glossary

6.1.   **Account** – A collection of data tied to a unique user of the application or website

6.2.   **Activity** – An action or set of actions that requires the patient to perform an exercise or take a medication, defined by a numeric unit

6.3.   **App/application** – Refers to the software developed for the iPhone platform; intended to be used by the patient

6.4.   **Companion website** – Refers to the website intended to be used by the physician

6.5.   **Doctor** – see **Physician**

6.6.   **Exercise** – An activity that the patient performs which involves the use of the patient's physical body functions

6.7.   **Medication** – A prescribed dose of medical drugs that is to be taken by the patient

6.8.   **Patient** – A person suffering from Parkinson's disease; user of the iPhone application

6.9.   **Physician** – A medically-licensed professional who is the primary user of the companion website and is responsible for prescribing activities to the patient user

6.10.   **Physical Activity** – see **Exercise**

6.11.   **Progress** – A time-series measurement of the numeric quantity of exercises performed and medication taken

6.12.   **Reminders** – A periodically displayed text description that informs the user to carry out one or more activities

6.13.   **Therapy** – See **Exercise**

6.14.   **Scheduling** – Refers to the feature in which an overview of activities is presented to users with an assigned time and date for each activity

6.15.   **User** – Refers to the parties who interact with the application or website; the application user is a patient, whereas the website user is a physician

6.16.   **Website –** see **Companion website**

7. References

[1]   Apple Inc., "Maximum build file sizes," *Apple Inc*. [Online].
        Available: https://help.apple.com/app-store-connect/#/dev611e0a21f.
        [Accessed Oct. 10, 2019].