Project 648 Group 4 - Codename: Remedium

Executive Summary:

After being provided with a list of all requirements and desires for our new project, we've finished the initial research and planning phases, and can now present what we've discovered. Our project, which we've decided to codename Remedium (Latin for remedy), will be a comprehensive database for Physical Therapists and their patients to communicate and cooperate as effectively and efficiently as possible. In our research, we discovered that, in addition to this being a somewhat empty market, with few truly developed tools out there, that the majority of all options on that market are rather basic, cookie-cutter websites, devoid of a great deal of functionality. Remedium promises to answer a great many of the concerns and shortcomings we've seen with this market, and streamline the process to be simple, easy, and efficient. Almost all of the firsthand data we've received from patients is clear: treatments are easy, but miscommunication, or wait times, are a massive detriment to the healing process, and can lead to treatment taking much longer than it needs to. We plan for Remedium to fix these issues, by providing an environment in which these communication errors and wait times are all but neutralized, and all of the resources necessary for successful treatment can be placed at your fingertips.

One of the key advantages that Remedium will have over other available projects is the amount of streamlined, simple customization that we will offer. Instead of simply selecting from a library of available exercises and treatments, our Physical Therapists will be able to upload and share custom tutorials, as well as postings available as a universal post to all of their patients. This, in addition to our report generation system, and our number of features to allow for even further simple, direct communication to the patients will remove all room for error due to miscommunications. Coupled with a system that allows for quick, simple communication between users, customized to their own hours, Remedium promises to be easy to use, while also providing more options for each user. We will continue to add additional features over the development cycle (some potential future ones listed within the functional section below) to even further increase customization and communication, without sacrificing our design goal of clear, concise usability.

We're a student startup team, most of us in our final year of college at San Francisco State University, and between the five of us, we have years of experience with the tools and techniques used to make applications like this. With a clear, organized structure, and concrete goals in mind, we believe that we can deliver a product that both we, and our future users, can be distinctly proud of.

Personas and User Stories:

Our user stories will help assist our PTs in every way we can. Our goal is to provide an easy to use interface for PTs that's easy enough for anyone who have little to no computer knowledge at all to learn how to navigate, set up appointments, and create a distinction between the PT's work times and off-the-clock hours. Using these user stories, they focus on the usability, communication between the PT and the patient, and work-life balance for PTs.

Our number one priority would be to create an easy to use interface in which PTs can easily navigate through our web app, schedule appointments easily, as well as knowing how to start a video chat with a patient. This will be our foundation to how our web app will look and feel and this will also categorize into our general characteristics for our web app. In User Story 1, John isn't very tech-savvy so in order for us to make it easier for him, we are designing our UI/UX catering to people of all ages. For example, we will be providing a tutorial guide for the PT to know where things are and how to use them. This can be categorized as a pain point for people who have little to no experience with computers.

Our next feature would be to enhance the ease of setting up an appointment not only for the PT but it will make it easier for our patients as well. We will include a language feature in that PTs can list out all the languages in which the PT can speak fluently so that patients who are not proficient in English can comfortably communicate with the PT. This will help the PTs and patients communicate clearly to each other. Our third third feature is to keep a work-life balance for the PT so that they do not get overworked. In that case when a PT is off-the-clock, patients will only be able to contact the PT through email and will get back to the patient within their next work day.

Our third and last priority is to give PTs a proper work-life balance ratio. The reason for this is because we don't want our PTs to be overworked during after hours. In our web app, if a patient tries to contact a PT during their after hours, they can only send them an email and wait until the PT's next working day for a response and that reaching a PT can only be accessible through either email or during the PT's work schedule. This can be categorized as a pain point for PTs because if there is an influx of patients, the PTs can be overworked and we want each PT to have an evenly distributed workload as well as work-life balance. The following User Stories are arranged in order from highest priority to lowest priority.

1. **User Story 1:**
John is 50 years old. He's not familiar with technology. He often struggles at the beginning with working patients in telecommunication (slow to familiarize but diligent and determined). He has accepted the fact that this would be the future for doctors so he's somewhat convinced that he needs to learn how to use tech better. He has vast experience with physical therapists as he has worked in the field for over 20 years. He's got lots of hands-on experience like examining their situation live (feeling the pain by pressing).

He's expecting the app to be simple and not overly complicated. He's expecting a tutorial guide that explains what he needs to know to do his job.
Since he's lackluster at tech. He'll probably set up time when patients can talk with him (aka office hours or when he's working). And most often he would be ignorant of a patient's email or text messages when he's not focusing on his work.

2. **User Story 2:** David is a 25 year old undergraduate who has a passion in physical therapy. He feels compelled to help people in need and the right guidance from recovering from a serious injury. He also likes to hang out with his friends and go do outdoor activities. Since David has a lot of Spanish and French speaking friends growing up, he decided to learn them while in high school and college and has been practicing with his friends ever since and feels pretty confident in having a conversation with one of them in Spanish or French.

Since David landed his first step in his career with our website and has been working with us for the past 6 months, he has been noticing that he hasn't been getting as many appointments with patients since he first started. His list of scheduled appointments having been dropping for the last 3 months. He feels that since he can speak in Spanish and French fluently that he will be able to reach out to more patients who can speak English just fine but who would feel more comfortable in their native language.

3. **User Story 3:** James is a 30 year old professional, fresh out of school, and eager to start his career. He's a bit of a technophile, always up to date on the newest gadgets, and spends a lot of his time with technology in general. He holds that his biggest success in life is how he managed to get through school while also supporting his new wife, and the child they have on the way. He owns a small apartment, and worries frequently about the space. Most nights, he and his wife either get fast food, or cook together.

He doesn't often talk about work at home, because he believes firmly in the separation of a work and home life, never bringing the stresses of the day home at night. His hours also reflect this. He's open to most new forms of technology, and is generally an early adopter, but only when he's certain that it can benefit him after researching it.

3. Data Definitions:

- **Unregistered User:** This type of user can only view the landing page or sign up.
- **Registered User:** A user that falls under the category of Physical Therapist, Patient. Registered users have a username and password to access their profile.
- **Physical Therapist (PT):** A type of user that has a list of current patients, possible patients,
- **Patient:** A type of user that that can view a list of Physical Therapists, view their profile, keep a collection of possible PT's they are interested in for later reference, upload videos
- **Report:** A system of tracked variables generated when a PT account interacts with a Patient account. These variables should be available upon request, and should be generated automatically without user input needed to begin.
- **Profile:** A page generated automatically, but customizable, for each Registered User. Serves as a place for information about the user to be displayed, as well as to facilitate User to User communication, and a content repository.
- **Content Repository:** A receptacle for all content, be it videos, diagrams, or text posts, that have been uploaded by, or sent to a registered user.
- **Body Diagram:** A customizable structure that can be designed along with any post, that should be able to highlight in detail where each exercise is to be targeting or 'felt' on the body.
- **Content Post (Post):** A bit of information that a registered user wants to upload that has certain priorities and qualities to it based on who the user wants to see it. Generally, a PT will have more access to this feature than a Patient. Posts should be viewable based on options, tagged, composable, and searchable within a given Content Repository.
- **Database:** Our backend data; should contain all hidden details and be linked to the profiles, their permissions, their content repositories, and their account information such as passwords, etc.
  (Note: This is present to differentiate the Database from the Content Repository. The Database should contain all Content Repositories, but the Repositories are not the Database itself.)
- **Ping:** A type of alert or notification sent to a user on a fixed point within their profile, indicating new information or updates are available at a glance. (An example of a service providing a ping might be a new report, a new content post uploaded from a PT or patient tied to the account, or a new message)
- **Tag:** A piece of information that can be tied to an exercise or post, that will be used to refine search results on searchable things. Can be auto-generated or customized.

Functional Requirements:

1. Profile Creation: Physical Therapists should be able to create a profile using the general information they want to be publicly available on the website about their practice.

2. View Current Patients and their Profiles: PT Profiles should be able to see a list of all of their patients, and access their profiles / assign them exercises if need be.

3. Upload Video: PT's should be able to upload a video tutorial for custom exercises towards ankles, knees, hips, back, shoulders, elbows, and wrists (to be used as tags) and called as a library.

4. Upload Text/Modeled Videos: Should be able to upload text along with videos, to explain further details if needed, or general information at a glance.

5. Pick Exercises from Preset Library: PT should be able to upload exercises to their content repository to enable a drag and drop method of exercise creation, allowing exercises to be re-used for other patients, and allowing for easily and quickly customizable exercise plans.

6. Review Patient Progress: PT should be notified when patient uploads a video, and these videos should be editable by the PT with linework that can be drawn on top manually, give feedback to the patients beyond this, and even share these videos with other PT's via enabling access to their content repositories.

7. Text Communication: A messaging system should be enabled between PT's and patients, resulting in email and app-based notifications that may be customized (every time a patient asks a question, 1 summary per day, 1 summary per 1 week, etc.)

8. Care Tracking: Each patient profile should include an indicator as to how many minutes the PT has spent providing care to that patient. Eligible activities are:

- Responding to questions
- Reading Chat
- Viewing Videos
- Reading Profile
- Generating Exercises
- Reviewing Exercises

9. Report Generation: PT activity should be documented in a report, retrievable on request on a daily, weekly, and monthly basis, exportable into a PDF and including time tracking.

10. Forum Style Layout: Posts and Videos, generally all content is structured around a forum-esque layout, in which users can filter by post type, search for specific content uploaded by the PT, and generally access all content that the PT has uploaded to their account's content

repository. Additional functionality will be provided to privatize, update, delete, or filter posts. Should assist in ease of use.

11. Profile Customization: Most things on the profile (from picture, to description, to hours and other information) should be customizable and editable by the PT at any time. These customizations should not be in such a way that they detract from the overall look and feel of the site, but should give each profile a bit of personality.

12. Customized Search Options: Should allow you to search for PT's by their name, location, experience, language preferences, etc. Should also allow for a profile's content repository to also be searchable, via tags, names, and other such options, to avoid getting lost in an ocean of relevant content.

13. Voice/Video Chat: Should be enabled if a PT enables it, within the hours they can list on their profile. In these hours, the PT should be contactable any way the PT deems permissible. Outside of these hours, communication should be restricted. This feature should be firmly customizable based on the PT.

14. Detail on Request: Videos and other posts should come with a customizable (optional) feature, allowing the PT to specify on a chart of the human body exactly what muscles should be felt, and enable the user to read additional information about each, if provided by the PT.

15. Notifications/Ping Queue: A readied tab on each PT profile should display how many incoming patient apps are available, as well as how many messages are waiting to be answered in their respective tabs on the PT's profile, or notifications of new posts/reports being available. In general, it should be a general page listing all relevant updates for a user at a glance. Profiles should be linkable based on relationships (PT - PT, PT - Patient, None) and permissions between them should be resolved based upon the relationship between the accounts. The profile should consist of a(n):

- About Page
- Chat / Communication Page
- Patients Page
- Edit / Options Page

16. Video Pose Estimation (maybe): Users of all kinds should be able to watch videos uploaded by their PT's, and PTs should be able to upload their own videos to their page, automatically tagged as video content for the Forum Layout, but we may use the pose estimation tool on these videos.

Non-Functional Requirements:

1. Application shall be developed, tested and deployed using tools and servers reviewed by

Class TA in M0 (some tools may be guided by TA in the class, some may be chosen by the student team but all tools and servers have to be reviewed by class TA)

2. Application shall be compatible and usable on PC browsers
3. Data shall be stored in the team's chosen database technology on the team's deployment server
4. Application shall be easy to use and intuitive
5. The code base should be well maintained so that new engineers can easily read and continue building on the code.

Performance:

1. The site loading time shall be less than 2 seconds for all screens

Capacity:

1. The total data storage allowed by the web site shall not exceed 80% of the server capacity for this site
2. The web site shall be capable to handle at least 50 users
3. The web site shall be prepared to support scalability for adding future features

Competitive Analysis:

Competitive Features are from PT-Connect, BetterPT.com, and PtPal

Our Features	**Competitive Features**
Forum Style Layout: posts and videos from PT history with the purpose of ease of use. Video uploading by PT and streaming by patients.	Access to a library of exercises with easy-to-understand illustrations.
Profile Customization: From picture, to description, to hours and other information.	Free user-friendly patient app available for download in Apple and Google stores.

Customized Search Options: allow you to search for PT's by their name, location, experience, language preferences, etc.	Prescribe exercises via email, print-out, or mobile app (Customizable exercise to follow on app using HEP Codes).
Communication: Voice/video chat between patient and therapist. Notifications to show how many incoming patient apps are available, as well as how many messages are waiting to be answered.	Add your clinic's branding to the patient mobile app (App profile includes company logo and add unlimited patients).
Detail on request and assignments: customizable feature that allows PT to show and explain exact human body parts fully. PT assigns exercise to patients. Generate patient reported outcomes.	

Our planned product has unique features that's different from other competitors features. Our messaging system allows PT to send their content to multiple patients or simply a single patient. They can also upload videos and posts that get tagged so the patient can filter posts types quickly and find them. For communication, we have voice/video chat to offer more intimacy and direct communications between PT and patients in and out of schedule appointments. And lastly, we also have detail on request of customizable features such that PT can specify body parts of where the patient is having pains with for clarity and better explanation.

User Requirements:

I. Language diversity: This is a measure of the density of language or the concentration of unique languages on this application. The implementation of User profiles, Profile customization, video/voice chat, and customized search function in the application would enable the PT and Users to communicate in a way that bridges the language barrier like in the case of User 1 who would be requiring same/foreign language communication channels

II. User Support: This is a range of services that assist users in the effective usage of the application. Forum style functionality would help with the aspect of supporting users. Judging

from how social media platforms are built for users to be active on these websites. Implementing this function would allow PT to easily assist users in a way they may be already familiar with.

III. User-friendly UI/UX: This is providing easy to use interface(s) for users. User 3 and User 4 have a persona that requires User-friendly easy to navigate the application. By implementing Profile customization, forum style, notifications/ping queue function, Videos uploading and streaming allows, and Video/voice chat the PT and users to make effective usage of the application.

IV. Crowd Usage: In providing the above-listed functions enable the multiple usages of the software, if implemented appropriately user 2 and user 1 would find the software very beneficial because of the user-friendly functionalities

V. Consistency and durability: This is the conformity in the application of software and the ability of the software to withstand usage. Videos uploading and streaming, Video/voice chat, Notification/ping queue, Video/voice chat, and Profile customization allow for the consistent usage and durability of the application.

High Level System Requirements:

This is the comprehensive list of all technologies that we believe to be relevant at this time. All current browsers (Chrome, Edge, Firefox) should be supported.

Server Host: Google Compute Engine
Operating System: Ubuntu 16.04 LTS
Database: PostgreSQL 12.4
Web Server: nginx 1.18.0
Server-Side Language: Node.Js
Web Application Framework: Express
Additional Technologies: Sequelize, CertBot,

Team:

- Spencer Heltsley - Team Lead
- Kevin Chan - GitHub Master
- Zi Collin Zhen - Front End Lead
- Kolapo Agunbiade - Scrum Master
- Andrew Keelin - Backend Lead

Checklist:

Team found a time slot to meet outside of the class

DONE

Github master chosen

DONE

Team decided and agreed together on using the listed SW tools and deployment server

DONE

Team ready and able to use the chosen back and front end frameworks and those who need to learn and working on it, along with study schedule

ON TRACK

Team lead ensured that all team members read the final M1 and agree/understand it before submission

DONE