**Project Title:** Healthcare Appointment Scheduling System
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**Introduction:**

Our group proposes that a Healthcare Appointment Scheduling System is significant to how consumers now connect with their primary doctors and departments. Our system aims to help patients and doctors share medical data and notes before, during, and after the appointments that would be publicly available and synchronized for both of the targeted audience's intentions. Additionally, a goal of implementing secure authentication is being considered to best fit the Health Insurance Portability and Accountability Act (HIPAA Privacy Standards). Because this project is being completed in the context of a personally and critically sensitive field, higher regards for data security and authentication will be held to fruition.

**Objective:**

Provide healthcare clients with a means to swiftly book appointments with medical professionals and retrieve health records.

**Project Scope:**

The most important factor to remember is to conform to HIPAA privacy standards in which standardized technological tools used in the industry must be learned and implemented in such a way that data can be secured behind walls of authorization. Additionally, terms must be present to allow users to best understand and decide whether they are okay with trusting our system with their data, alongside any matters of privacy and security that we want to share with them.

That being said, our target audience would be patients, doctors/nurses/healthcare professionals, and the customer support line who may be aiding in the scheduling process for these patients. The goal is for transparency and synchronization in calendars so both doctors and patients can meet within an appropriate time frame. With all of this in mind, the following deliverables would include:

- A user account and profile be created to host any medical notes that either the patient feels is necessary to mention to whomever they meet / doctor can alter or add files to.
- A means to accomplish multifactor authentication on the user's behalf.
- Encrypt notes and files prior to sending through the server and decrypt as needed when fetched.
- A calendar and a timed queue for requests to be scheduled within an appropriate manner.

- Email/Push notifications must be available to notify users if an appointment is successfully scheduled or any alternate times that would better fit the healthcare professionals of the selected department/primary physicians.

**Features and Technology:**

Our current vision for the UI/UX would be a simplistic modern design that can be easy to navigate. This can be developed utilizing a web-based React framework like Next.js alongside JavaScript, HTML, and CSS. With Data management and clouds, we intend to utilize Cloud Firestore as a JSON NoSQL database to house all doctor's contact information and the patient's medical history/notes and their contacts. This would best combine with some other APIs that we intend to use with JavaScript.

In addition to utilizing Firestore as a database, we want to utilize the Firebase Authentication API, which would be perfect for enabling and controlling multi-factor authentication. Additionally, we believe that the Google Calendar API is very useful for swift and synchronized scheduling between both of the target audiences. The most important API to consider is the FHIR API, which stands for Fast Healthcare Interoperability Resources. This is generally considered to be standard for exchanging medical history and documents due to it allowing multiple different Electronic Health Record Systems to be reached and transmit important files and notes through a standardized REST API. It is also compatible with JSON which makes it perfect for our group's skillset. With this in mind, we could utilize it alongside Firestore to fetch uploaded files and data before and after an appointment is completed.

Like we said earlier, the core principle is to create this with the intent to mirror a live scenario in which a hospital and Electronic Health Record Systems would be using this. Thus, any progress not only in code but in directions, should we have to update our plan of implementation, must be done in such a way that it follows all medical and security policies, like that of HIPAA or if anything else is to come up. We have a Jira board with the intent to follow through with an agile methodology, testing each component repeatedly and as often as possible to ensure the entire user journey is as seamless and effective as possible. We will also comment out code and document our progress through a shared google drive and github so not only are our successes tracked, but also other attempts and issues that may have been explored can be summarized and taken into account for future development. If anything critical to our implementation or plan is to be considered, you, the professor, will be updated promptly. We will take whatever steps necessary to see this project through. Thank you.

**References:**
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- FHIR as a RESTful API and Documentation: https://www.hl7.org/fhir/http.html
- Firebase Authentication Documentation: https://firebase.google.com/docs/auth/web/multi-factor
- Google Calendar API Overview and Documentation: https://developers.google.com/calendar/api/guides/overview
- React Next.js Framework Documentation: https://nextjs.org/docs