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02/10/2017

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Advanced Bioinformatics

**Written Proposal**

The idea behind the project is to create a mobile, easy to access patient profile. After working in a doctor’s office my job was to prepare all necessary documents for the doctor to view before visiting with the patient. When things went smoothly the patient would come in prepared with the documentation they needed for the appointment we would be able to get them in and out with relatively no wait. However, the problems occurred when a patient would forget to have certain information such as lab results forwarded from one doctor to the doctor they are seeing. Then we would have to call the doctor and wait for their office to fax over the documentation causing further delays. This is one such occasion where the patient profile would come in handy because all the information for the patient including lab results and which doctor performed the test would be readily available. Another problem that I found patients had was keeping track of the medications that they had to take throughout the day, especially when a patient has 3 or more doctors with each doctor prescribing 2 medications each. With the application I have in mind the patient would be able to view their full list of medications and get notification reminders for when they should take their medications. There are a few existing applications that do are very similar things to what I would want the application to do, however most of them are far more complex and harder to use than I would want. Additionally these applications do not give notification reminders for when people should be taking their medications. The application I’m building is supposed to simplify the patient to doctor interactions and to make it user friendly for people of all ages.

The main environment that I plan to use for both creating the application and database is Android Studio. For the creation of the application the language that I will use is java and because I need to create a database to store the patient profiles I will need to use SQL as well. Android Studio (or AS) is the Android’s official IDE for developing applications. It has many features that help first time application developers develop their first application. AS offers code template and sample applications for the user to download and alter to fit their needs or to just get a better understanding of how to accomplish certain tasks they need for their application. AS has firebase and cloud integration, where the firebase assistant will connect your app to firebase and add many services including analytics, notifications, and authentications. The cloud integration allows the user to create and deploy a backend for their application, which I will be utilizing to create the database to hold the patient profiles. One last feature that AS provides is that it has a phone emulator which simulates a normal android phone, allowing for efficient debugging and prototyping of my application. The main skills that I will need to acquire in order to complete this project includes knowledge of java to write the actual code, how to manipulate and utilize all the features that AS offers, and SQL knowledge for the database. Since AS offers a wide variety of sample application codes and code templates for many GUI functions it will help to piece things together in an easy to understand manner. However, since I have never developed an application before I am sure that there will be a few unforeseen problems that I will face and skills that will need to be acquired in order to complete its development.

**Concept Overview and Projected Timeline:**

* Learn how to use Android Studio and create a database using SQL (Feb. 10 – Feb. 14)
* Begin working on the application incorporating the appropriate amount of screens with a user friendly layout. (Feb.14 – Feb.18)
* Start working on the register/sign-in screen and ensure that when data is entered it is stored securely. (Feb.18 – Feb 23)
* Work on the Patient home screen by adding a clickable icon leading to the basic patient profile area where they can fill-in and edit their information. (Feb. 23 – Feb. 28)
* Work on the Doctor home screen by adding a clickable icon leading to the basic doctor profile area where they can fill-in and edit their information. (Feb. 28 – Mar. 3)
* Add an icon on the doctor’s home screen leading to a search box for doctor’s to find patients and generate a request to view the specified patient’s profile. (Mar. 3 – Mar.10)
* Create a method to grant privileges to doctors to view the specified patient profile upon patient approval with a limitation for doctors to only edit and add data corresponding to each doctor respectively. (Mar.10 – Mar. 18)
* Add clickable icons on the patient home screen for patient history, medications, and lab results. (Mar. 18 – Mar. 21)
* Ensure all new doctor entries, edits, uploads, and updates to the database are stored correctly and are retrievable. (Mar.21 – Mar. 28)
* Add one more icon on the patient home screen for that patient’s list of current doctors and the overview which includes basic doctor info, past visits, doctor’s synopsis of each visit, medications prescribed and labs performed by each doctor. (Mar. 28 – Apr. 3)
* Input several different sample patient and doctor profiles and troubleshoot each individual feature to ensure it all works properly. (Apr.3 – Apr.10)
* Have others test the application to see what can be optimized. (Apr. 10 – Apr. 12)
* Put finishing touches on the application and submit it. (Apr. 12 – Apr. 28)

1. **Register/Sign-in**

* Allows a person to register/sign-in to their account.
* Second option is to add a doctor registration/sign-in form.

The initial screen will allow the person to either register a new account or sign-in if they have a pre-existing account.

1. If the person is new and registers they will be presented with two options:
2. Register as a patient
3. Register as a doctor
4. If the person is already registered then they can just sign-in and get into the app.

When the patient or doctor registers their information is sent and stored in the database. Once signed into their account the patient/doctor will then be able to fill out their required information.

1. **Patient/Doctor information**
2. Basic Patient information
   * Full Name
   * Address
   * Contact information
   * Emergency contact information
   * DOB
   * Insurance Provider (with co-pay amount)
   * Blood type
3. Basic Doctor information
   * Full Name
   * Specialty
   * Address of office
   * Contact information

Upon logging into the application the doctor will be able to search the database for any patient that currently has an account. The doctor will then be able to request to add the patient to their list of patients. Finally, in order for the doctor to view the patient’s personal information the patient will need to have accepted said doctor to their list of doctors.

Doctors will be able to view everything in the patient’s profile, however they will only be allowed to edit the information that they provide.

1. **Patient history**
2. Patient past illnesses
3. Family history
4. Past hospitalizations
5. **Medications**
6. Current Medications(if any)
   1. Medication description
   2. Doses per day
      1. Time between doses
      2. Medication Notifications
   3. Reason the medication was prescribed
      1. Current illnesses
      2. High Blood Pressure
7. Pharmacy they go to
8. Preventative Care
9. **Lab Results**
10. Stores patient’s lab results categorized by the doctor that ordered said test.
11. Ability for patients to only download the lab results to view.
12. Ability for doctors to add/remove/edit lab results.
13. **List of current doctors and overview**
14. List of current doctors
15. List of confirmed doctors
    * Upon clicking on one of the doctors already on the patient’s list the patient will be able to view:
16. Basic doctor’s information
17. Past visit dates
18. Doctor’s synopsis of visit
19. Current medications prescribed by that doctor
20. Labs and tests given by that doctor