**Project Direction Overview:**

I would like to develop a hospital management system mobile based application named **“Health Matters”** which can be used by any size hospital to better manage their patients and their assets. I intend to target this application for government hospitals to benefit the entire public and the hospital itself. This application will contain the data for the patients (their personal information, medical history, vaccination, etc.) as well as the medical staff at the hospital. The application is initially targeted for use by patients as they are the number one priority and then extend to doctors, administrators and so on.

Now I will explain with some examples for how the application is supposed to be used. The application will be having different type of logins depending on if you are a patient, doctor, or an administrator. A patient is new to the hospital and may or may not know about the hospital application. When the patient visits the hospital, he/she will go to the reception for his/her query and receptionist may refer the patient to some doctor and bill him for the appointment accordingly. On the bill will be mentioned the patient ID number and the details provided by the patient to the receptionist. The receptionist will also inform the patient about the mobile app which can be installed by scanning the QR code or the link provided on a poster at the reception. The patient can now login to the application using the patient ID and will be asked to setup the password and profile and to link his/her email address with it. If the patient had already installed the application before coming to the hospital, then they will already be having a patient ID. Now all the data related to the patient will be visible on the application and he can track it.

People who are visiting government hospitals are usually those who are not very affording. This application is built to provide them with ease of access to their data, make payments, appointments, remind them if something is due like a vaccination or an appointment etc. There will be a lot of programming involved with the front-end GUI and everything, but I will only be focusing on the database component of this application.

**Use Cases and Fields:**

One important use case will be the patient interacting with the app for the first time and creating an account. Steps are as follows:

1. The patient visits the hospital website or app store (Google, Apple, etc.) to install the application for the first time.
2. The application asks them if they are a new user and do not have an associated patient ID and if so, then prompts them to create an account.
3. The patient creates an account and enters his/her personal information which is entered into the database at the back end.
4. The patient now has the access to all his/her information.

Some important field for patient information is as follows:

|  |  |  |
| --- | --- | --- |
| Field | What it stores | Why it’s needed |
| Patient ID | A unique number to identify the patient. | This is the unique identifier of the patient; the patient details can be accessed using this ID. |
| First Name | This is the first name of the patient. | This will be shown in the account and will be used to address the patient. |
| Last Name | This is the last name of the patient. | This will be shown in the account and will be used to address the patient. |
| Mobile Number | This is the mobile number of the patient. | This will be used to contact the patient. |
| Permanent Address | This is the permanent address of the patient. | This is where the patient lives and can be used to send medications etc. |
| Gender | This is the gender of the patient. | This is required to identify the gender of the patient. |
| Emergency Mobile Number | This is the emergency mobile number. | This will be used to contact the person appointed to contact in case of an emergency with the patient. |
| Email address | This is the personal email address of the patient. | This will be used to send all the reports, bills, etc. to the patient for record. |
| Billing Address | This is the billing address of the patient. | This will be used for billing purposes etc. |
| Credit/Debit Card Number | This is the credit/debit card number. | This will be used for billing the patient. |
| Security Code (CVC) | This is the CVC code of the credit/debit card. | This will be used for billing the patient. |
| Credit Card Expiry | This is the expiration date of the credit/debit card. | This will be used for billing the patient. |
| Credit Card Holder Name | This is the name on the credit/debit card. | This will be used for billing the patient. |

Another important use case is the patient using the application to make an appointment.

1. The patient logs into the application using his/her patient ID.
2. The patient goes to the appointment tab to make an appointment with a specialized doctor.
3. The tab shows him the list of doctors working at the hospital, their related information such as name, designation, office hours, etc. which is stored in the database at the back end.
4. The patient selects the doctor to make an appointment and is asked to pay for the appointment either through the application or at the reception.
5. The patient makes the payment through application using his/her credit card and the appointment is confirmed and patient provided with an appointment number.
6. The application will remind the patient of the appointment depending on the reminder setting in the application set by the user.

Some important fields for doctor information are as follows:

|  |  |  |
| --- | --- | --- |
| Field | What it stores | Why it’s needed |
| Doctor ID | A unique number to identify the doctor. | This is the unique identifier of the doctor; the doctor details can be accessed using this ID. |
| First Name | This is the first name of the doctor. | This will be shown in the account and will be used to address the doctor. |
| Last Name | This is the last name of the doctor. | This will be shown in the account and will be used to address the doctor. |
| Mobile Number | This is the mobile number of the doctor. | This will be used to contact the doctor. |
| Permanent Address | This is the permanent address of the doctor. | This is where the doctor lives and will be used to send mail if needed. |
| Gender | This is the gender of the doctor. | This is required to identify the gender of the patient. |
| Emergency Mobile Number | This is the emergency mobile number. | This will be used to contact the person appointed to contact in case of an emergency with the doctor. |
| Email address | This is the personal email address of the doctor. | This will be used to send all the salary and other related info to the doctor. |
| Billing Address | This is the billing address of the doctor. | This will be used for billing purposes etc. such as salary. |
| Office Hours | This is the timing of the office. | This will be used to display when the doctor will be available for a checkup. |
| Qualification | This is the qualification of the doctor. | These are the degrees attained by the doctor. |
| Designation | This is the designation of the doctor. | This is the designation of the doctor such as professor, etc. |
| Account Number | This is the account number of the doctor. | This is the account to which the salary of the doctor will be transferred. |

Some important fields for payment information are as follows:

|  |  |  |
| --- | --- | --- |
| Field | What it stores | Why it’s needed |
| Payment Type | This is the type of payment cash / card. | This is required for billing purposes. |
| Billing Address | This is the billing address. | This will be used for billing purposes etc. |
| Credit/Debit Card Number | This is the credit/debit card number. | This will be used for billing purposes. |
| Security Code (CVC) | This is the CVC code of the credit/debit card. | This will be used for billing purposes. |
| Credit Card Expiry | This is the expiration date of the credit/debit card. | This will be used for billing purposes. |
| Credit Card Holder Name | This is the name on the credit/debit card. | This will be used for billing purposes. |
| Doctor ID | A unique number to identify the doctor. | This is the unique identifier of the doctor; the doctor details can be accessed using this ID. |
| Patient ID | A unique number to identify the patient. | This is the unique identifier of the patient; the patient details can be accessed using this ID. |

Some important fields for appointment information are as follows:

|  |  |  |
| --- | --- | --- |
| Field | What it stores | Why it’s needed |
| Appointment Number | The unique number of the appointment. | To check if the appointment was made and the details. |
| Patient Complain | The issue with the patient. | To keep record of the patient’s, complain. |
| Doctor ID | A unique number to identify the doctor. | This is the unique identifier of the doctor; the doctor details can be accessed using this ID. |
| Patient ID | A unique number to identify the patient. | This is the unique identifier of the patient; the patient details can be accessed using this ID. |

Another use case could be if the patient wants to look up his/her medical history to check his/her history of treatment at the hospital and for his/her medication:

1. The patient logs into the application using his/her patient ID.
2. The patient goes to the patient history tab in the application.
3. The patient checks his medical history stored in the database.
4. The history will show each appointment ID, the doctor with whom the appointment was made, the patient medical condition, diagnosis, the medication prescribed by the doctor.
5. The patient can then log out once they have the required information.

Some important fields for the diagnosis are:

|  |  |  |
| --- | --- | --- |
| Field | What it stores | Why it’s needed |
| Appointment Number | The unique number of the appointment. | To check if the appointment was made and the details. |
| Doctor Diagnosis | Diagnosis of the patient complain. | To keep record of the diagnosis. |
| Doctor Medication | Medication given by the doctor. | To keep record of the medication. |
| Doctor Referral | If doctor refers to some other doctor. | To keep record of doctor referral. |
| Doctor next appointment date | Next appointment date with the doctor. | To keep record of next appointment date. |
| Patient admission type (IN/OUT) | Doctor decision if patient should be admitted. | To keep record of the admission type. |

**Summary and Reflection:**

My database is for a hospital management system with priority to the patients for whom this application is being created. This application will also go on to include the hospital staff afterwards. What happens normally is that patients go to the hospitals, and they have a lot of paperwork to deal with such as medical history, medicines, bills, lab reports, etc. The purpose of the application is to keep a track of everything and provide billing and other services as well. The information is also visible to the patient in the application so even if they lose the paperwork, it is all there in the database of the application and accessible to them. Also, all the paperwork will be having the digital signatures of the doctors, lab staff etc. so that the information can be validated easily when used for other purposes.

The database will be quite complex, containing all the information of the patient such as their personal, billing, history, and other such information. Handling such a large amount of information could be quite complex. In addition, I also intend to extend the app usage to doctors, administrators, and then other staff at the hospital. The app will also contain their information such as their timing, salaries, and other information of hospital assets.

However, the complexity of the database does not discourage me, and I am excited to get started with the project as soon as possible so that I can learn more about databases and how to implement them in practical situations. Any feedback on making this application better is appreciated.