A Project Final Report on

QUIKBOOK: ONLINE DOCTOR APPOINTMENT SYSTEM

Submitted in Partial Fulfillment of the Requirements for

the Degree of **Bachelor of Engineering in Information Technology**

under Pokhara University

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22 11 2019

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ABSTRACT

QuikBook is an online doctor appointment system. In its essence, the website is developed to provide patients and doctors a medium to book appointments.

QuikBook allows a patient to register an account and log in to make an appointment. They can refer to the list of doctors they can choose from. On the contrary, doctors are registered by the admin. They are allowed to login to the system and view the appointments booked by patients for them. All the doctors registered in the system are managed by the admin. Both patients and doctors have the freedom to manage their own profile.

The completed project delivers a website that alongside booking appointments, also performs medical records management and sends reminders for the appointments.

Keywords: QuikBook, Appointment, Patient, Doctor.

LIST OF FIGURES

Figure 1: Incremental Model

Figure 2: Use case diagram

Figure 3: ER Diagram

Figure 4: Domain model

Figure 5: Activity diagram for register, login and booking appointments

Figure 6: Activity diagram for login and managing appointments

Figure 7: Activity diagram for login and managing appointments

Figure 8: Activity diagram for login and managing appointments

Figure 9: Sequence diagram for registration and login

Figure 10: Sequence diagram for registering new doctor and profile

Figure 11: Sequence diagram for booking new appointment

Figure 12: Sequence diagram for uploading prescriptions

Figure 13: Gantt chart for Increment 1

Figure 14: Gantt chart for Increment 2

Figure 15: Gantt chart for Increment 3

LIST OF TABLES

Table 1: Work Division

Table 2: Testing

TABLE OF CONTENTS

1. INTRODUCTION....1
   1.1 OBJECTIVES....2
   1.2 PROBLEM STATEMENT....3
   1.3 SIGNIFICANCE AND LIMITATIONS....4
2. LITERATURE REVIEW....5
3. METHODOLOGY....7
   3.1 SOFTWARE DEVELOPMENT LIFE CYCLE....7
   3.2 REASONS FOR USING INCREMENTAL MODEL....8
   3.3 TOOLS AND TECHNOLOGIES TO BE USED....8
4. SYSTEM DESIGN AND UML MODELS....9
   4.1 USE CASE DIAGRAM....9
   4.2 ER DIAGRAM....11
   4.3 DOMAIN MODEL....12
   4.4 ACTIVITY DIAGRAM....13
   4.5 SEQUENCE DIAGRAM....17
      4.5.1 SEQUENCE DIAGRAM FOR REGISTRATION AND LOGIN....17
      4.5.2 SEQUENCE DIAGRAM FOR REGISTERING DOCTOR AND PROFILE....18
      4.5.3 SEQUENCE DIAGRAM FOR BOOKING APPOINTMENT....19
      4.5.4 SEQUENCE DIAGRAM FOR UPLOADING PRESCRIPTIONS....20
5. TIME SCHEDLE ESTIMATION....21
   4.1 INCREMENT 1....21
   4.2 INCREMENT 2....22
   4.3 INCREMENT 3....22
6. WORK DIVISION....23
7. TESTING....24
8. BIBLIOGRAPHY....25
APPENDIX....26

1. INTRODUCTION

During our lifetime, sickness and illness are inevitable and medical assistance is compulsory in ailing them. Compared to the situation a few decades ago, people now understand the importance of seeking doctors. And with populated cities like Kathmandu, the number of patients is always on the rise making process of booking appointment on the spot unnecessarily time consuming and hectic.

QuikBook is an online doctor appointment system. This website is proposed to provide a platform for booking of appointments as per the patient's requirements from the comfort of their home. It provides detailed information of all the doctors available. Patients have the option of searching for doctors, book appointments with preferred doctors and time slot, and view their updated prescription after appointment. Similarly doctors can view their upcoming appointments and the medical history of patients that requested the appointment.

The proposed website makes use of the digital age where online services mean convenience, to provide a comfortable experience for both the patients and the doctors.

1.1 OBJECTIVES

- To create a web-based doctor appointment system.
- To enable patients to book an appointment from the comfort of their home.
- To reduce unnecessary time and effort while making an appointment.
- To give patients option to view and choose from list of doctors.
- To manage appointment history of both patients and doctors.

1.2 PROBLEM STATEMENT

- The whole process of booking an appointment is quite a tedious task. Going to the hospital, standing in queue and booking the appointment takes up half of the time of your visit.

- Even if patients were to book the appointment with a phone call, they do not have any information whatsoever on the doctors they booked the appointment with.

- On the other hand, doctors don't have prior knowledge to number of appointments and the time of appointments which is the reason we find ourselves in the situation where the doctor is absent and we have to wait for a long time or just reschedule the appointment.

- The medical history of a patient is not known to the doctor until they meet the patient and read it from the hospital book on the spot.

- In worse cases, the patient loses the book with the medical history. The information about the doctors the patient visited previously and the medicine they were prescribed is lost. This causes inefficient flow of information between the patient and the doctor.

- It is not unheard that patients forget the appointment day and thus, miss it. This cannot be avoided unless every patient is called and reminded of the appointment.

1.3 SIGNIFICANCE AND LIMITATIONS

The significance of QuikBook is listed as follows:

- The website can be accessed easily by the public and is easy for patients and doctors to use.

- QuikBook eliminates the need of booking during office hours only. There are no time constraints so patients can make appointments any time they are free.

- It includes medical records management to review and analyze the case of any patient which helps the doctor in making complementary and coordinated treatment plan. This also reduces the time in accessing physical files.[1]

- Quikbook sends out reminders to patients to reduce no-shows which affect workflow and cause inconvenience.

- It helps in reducing extended waiting time for patients since overbooking is avoided by booking appointments in free time slots only.[1]

2. LITERATURE REVIEW

If we look at the current online doctor appointment scene, there are a handful of such systems that have been providing online services to patients. So, in this section we will be reviewing two of such existing systems that resemble this project.

1. Norvic Hospital Online Appointment

This is the official website of Norvic hospital where patients can book an appointment online. It isn't a standalone online appointment booking system but rather an integration of information sytem, job application system, and appointment booking system. However, we will only review the aspect significant to us that is the online appointment booking system of Norvic hospital.

This system provides the following features:

- Patients can request an appointment by filling up the form, which is the first thing that comes up when you go to online appointment.
- Patients are given a list of all the doctors working under Norvic hospital currently and all their necessary details.
- The doctors can be searched according to the department the doctor belongs to and their name.
- Patients can view and download their lab reports online as well.
- Employees can log into their account.

These are the features that are known to the patients. But the website doesn't disclose whether or not patients need to update their medical history. It isn't specified if a doctor has full access to patient's medical history or not. There is no explicit information about patients getting reminders either.

2. Bumrungrad International Hospital

Bumrungrad International Hospital is a hospital based in Bangkok. It's website that allows patients to book an appointment online also serves the purpose of relaying the hospital's information. All the important information about the hospital is documented in the website. We'll only compare the relevant features of the website.

This system has the following features:

- Patients can fill up the form and book an appointment.
- The detailed information about all the available doctors working in Bumrungrad hospital is made public to the patient.
- Patient can search for doctors using filters based on name and specialty for convenience.
- Patient can choose the doctor themselves or it is recommended to them by the website itself.
- Patients can post queries and give feedback to the hospital.

This system is similar to Norvic hospital's in the aspect of no clear information about doctor's interface. It is unknown if the appointments are handled by the doctors directly. The patient has no prior information as to what other activities they can do in this website.

Both of these websites are similar to QuikBook in its essence. QuikBook, however has a separate doctor interface where they manage their profile, view appointments, review patient's medical history to be educated on their case before appointment e.t.c.

3. METHODOLOGY

3.1 SOFTWARE DEVELOPMENT LIFE CYCLE

For the development of this project, we are using Incremental model. In this model the requirements are broken down into different standalone modules which work as individual increments. Each increment goes through the requirement analysis, design, coding and testing phases.

- **Requirement analysis:** In this phase, requirements are identified by a thorough analysis of the project. A SRS (System Requirements specification) document is generated as output of this phase.

- **Design:** Initially, the requirements identified and documented in the previous stageg are studied and system design is carried out according to it.

- **Coding:** In this phase, coding is done based on the system design developed. A working product is developed by the completion of this phase.

- **Testing:** The completed system is tested and any required change is implemented to create the finished product that is ready for deployment.

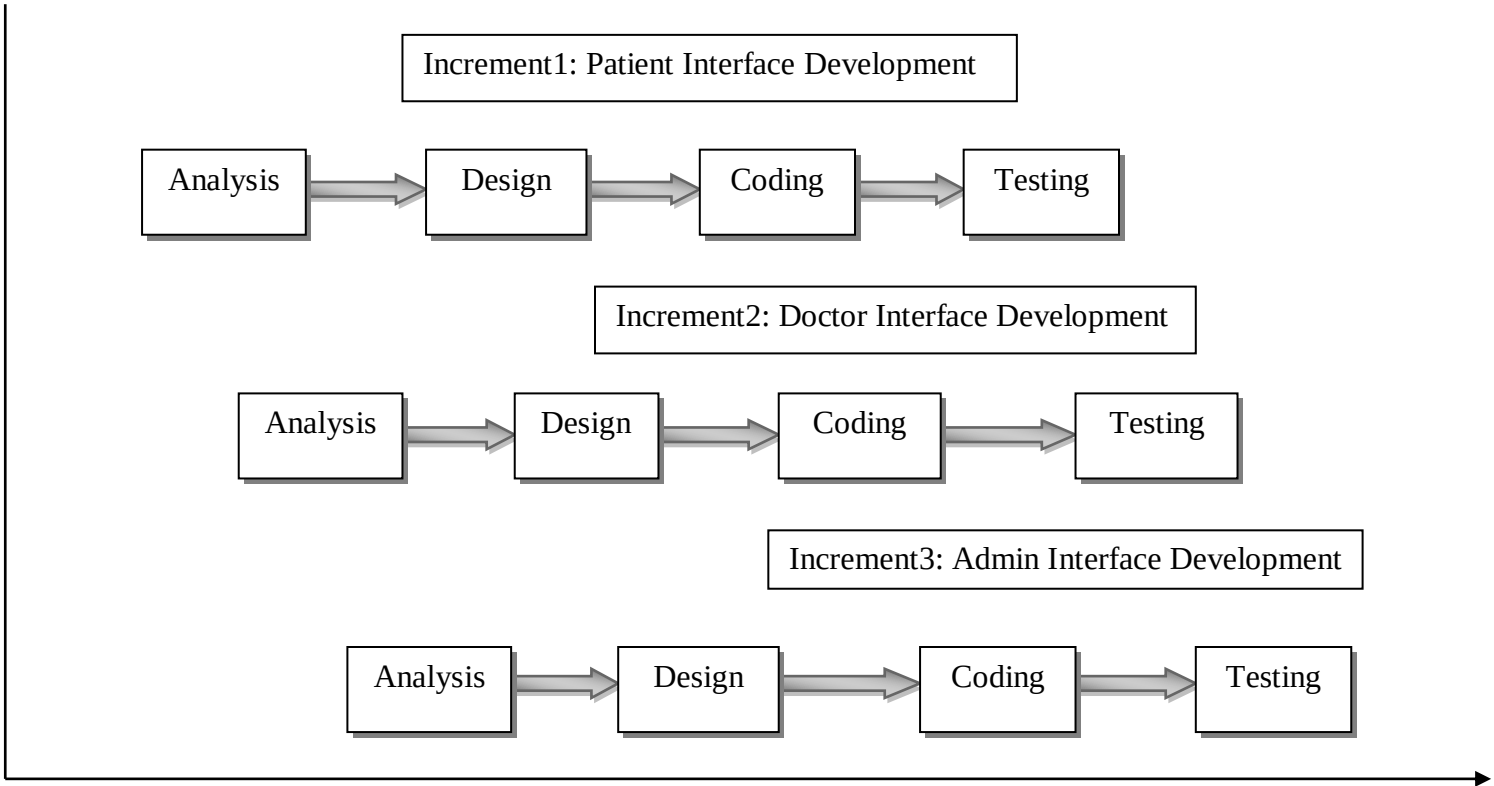

Figure 1: Incremental model

3.2 REASONS FOR USING INCREMENTAL MODEL

- Development of software is easy and fast.
- Requirements are defined clearly.
- Changes can be done though out the development phases.
- It is flexible so changing requirements and scope is easier.[2]

3.3 TOOLS AND TECHNOLOGIES TO BE USED

- Adobe Photoshop CC 2014 – template design
- E-draw – system design and models
- Netbeans IDE 8.2 – text editor
- MySQL – database management
- Apache – server
- Microsoft Word – Documentation
- PHP – Server side validation
- HTML, CSS, Bootstrap – UI and further styling

4. SYSTEM DESIGN AND UML MODELS

4.1 USE CASE DIAGRAM

The use case diagram is a UML model that represents the interaction of a user with the system.

In this project, the patient registers a new account for the website or logs into the site if they already have an account. The patient is allowed to book appointments by choosing doctors at their will. The patient also has the freedom to edit and manage their profile. The doctor is registered beforehand by the admin so he can log into his profile. The doctor is able to view all appointments booked for them. They can also manage their profile. Both the admin and operator need to log in to access the system. The operator does the job of entering prescriptions of the appointments completed.

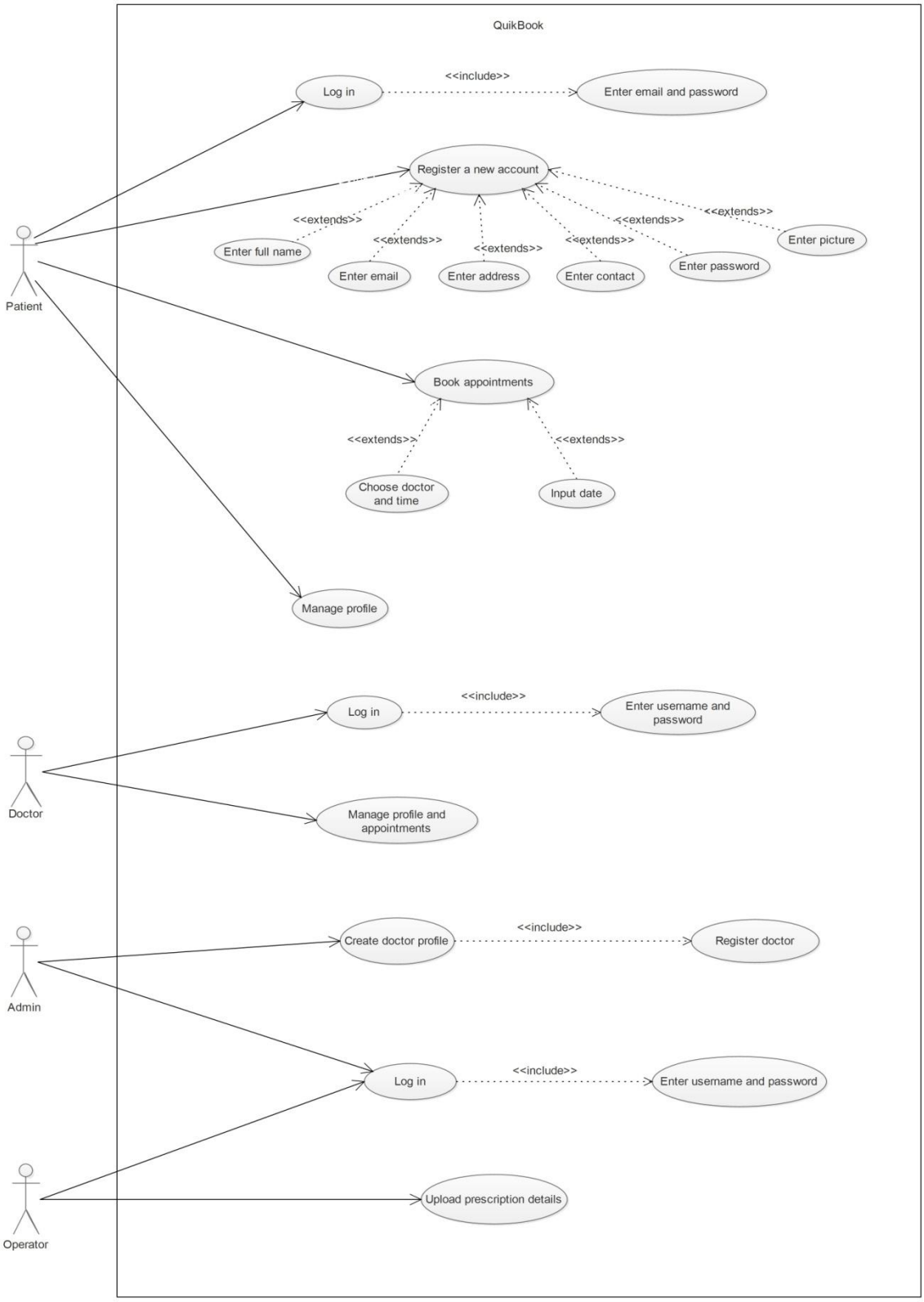

Figure 2: Use case diagram

4.2 ER DIAGRAM

The E-R diagram shows the relationship between entities stored in a database. For our project, it is illustrated as follows:

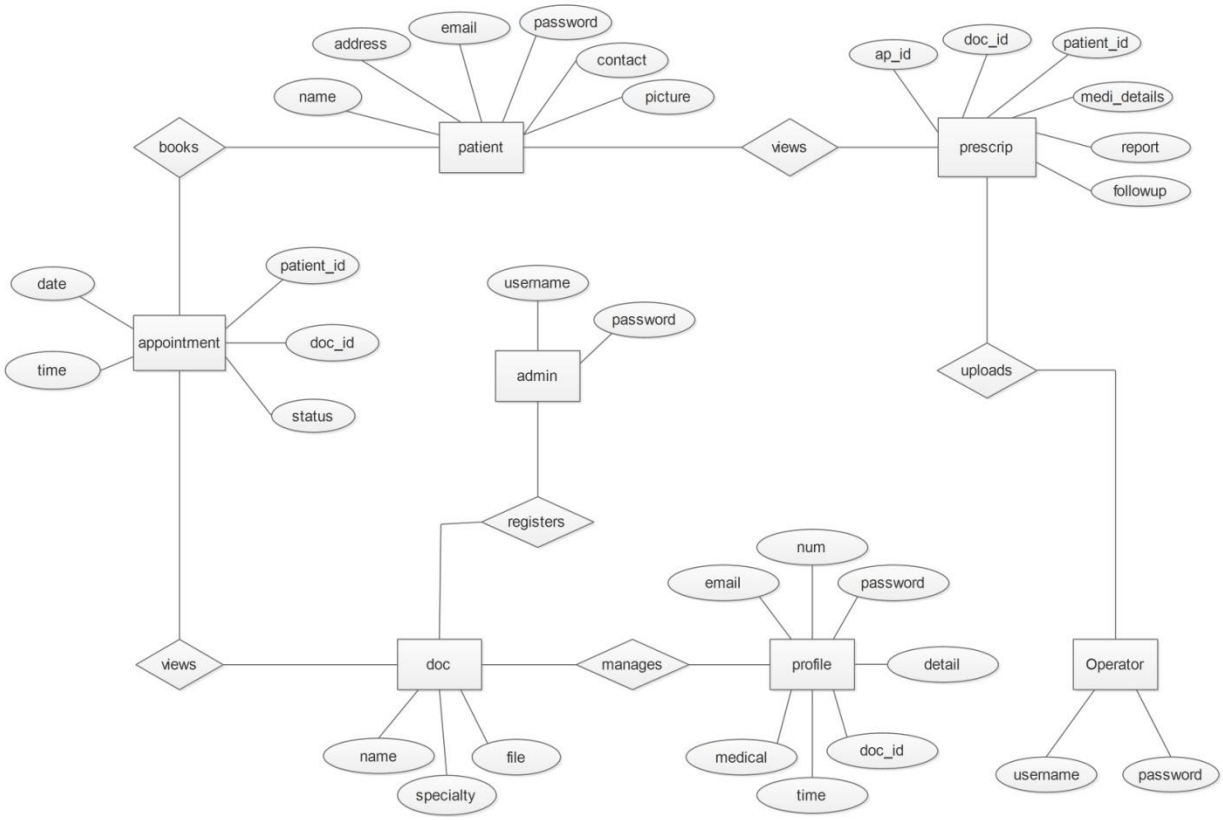

Figure 3: ER diagram

4.3 DOMAIN MODEL

Domain model describes concepts in problem domain and is important to represent meaningful concepts that are understandable by everyone.

The domain model for this project is illustrated as below:

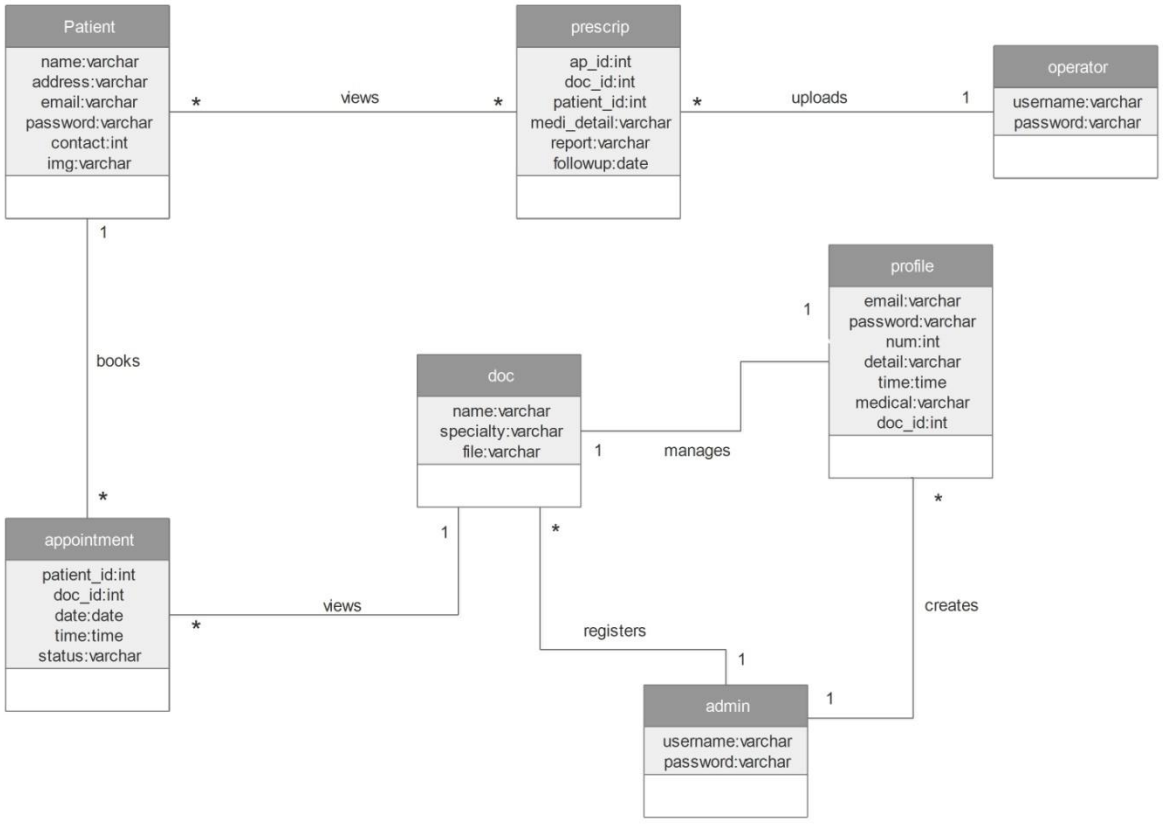

Figure 4: Domain model

4.4 ACTIVITY DIAGRAM

Activity diagram represents the sequential flow of actions visually. The activity diagrams for our project are illustrated as follows:

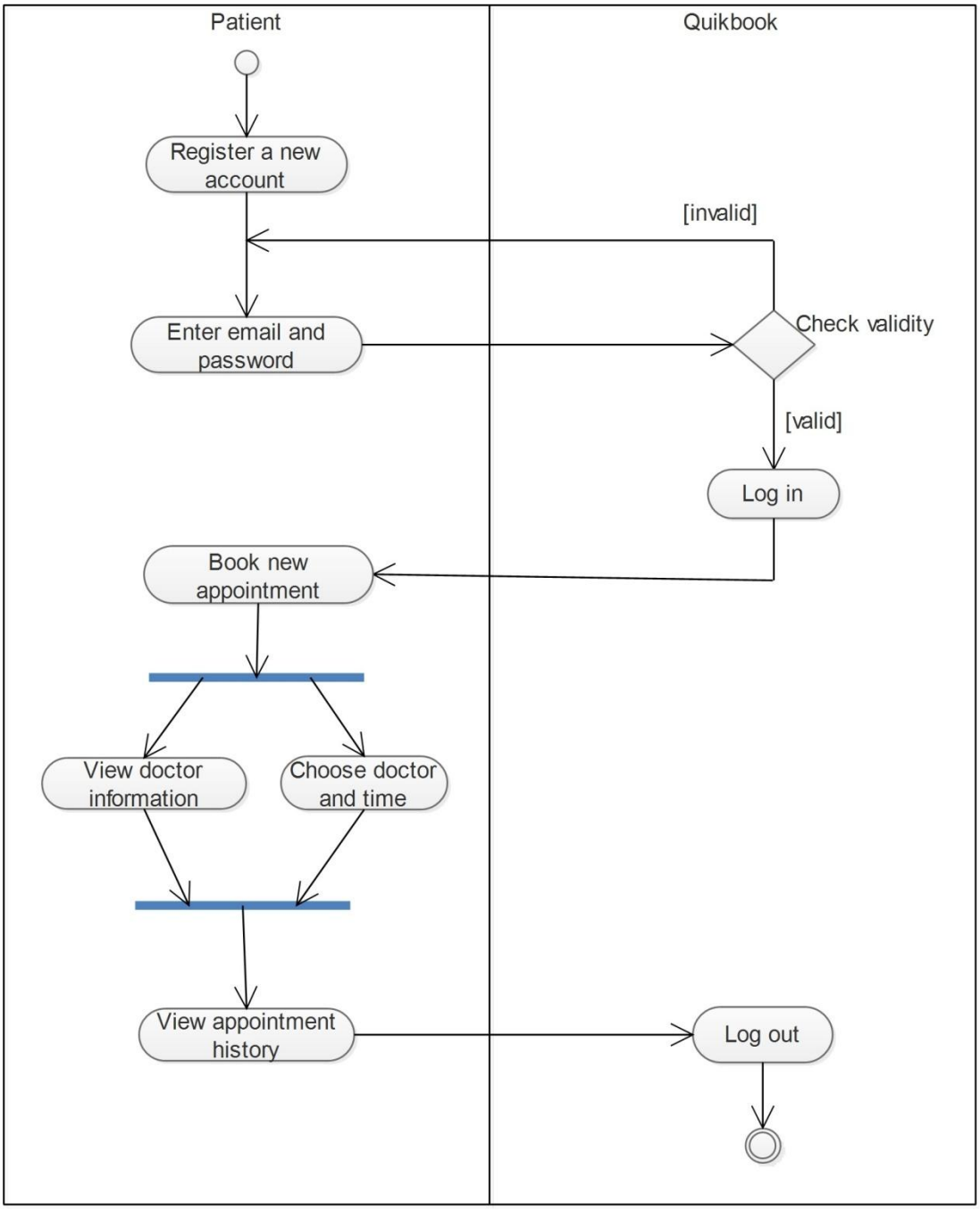

Figure 5: Activity diagram for register, login and booking appointment

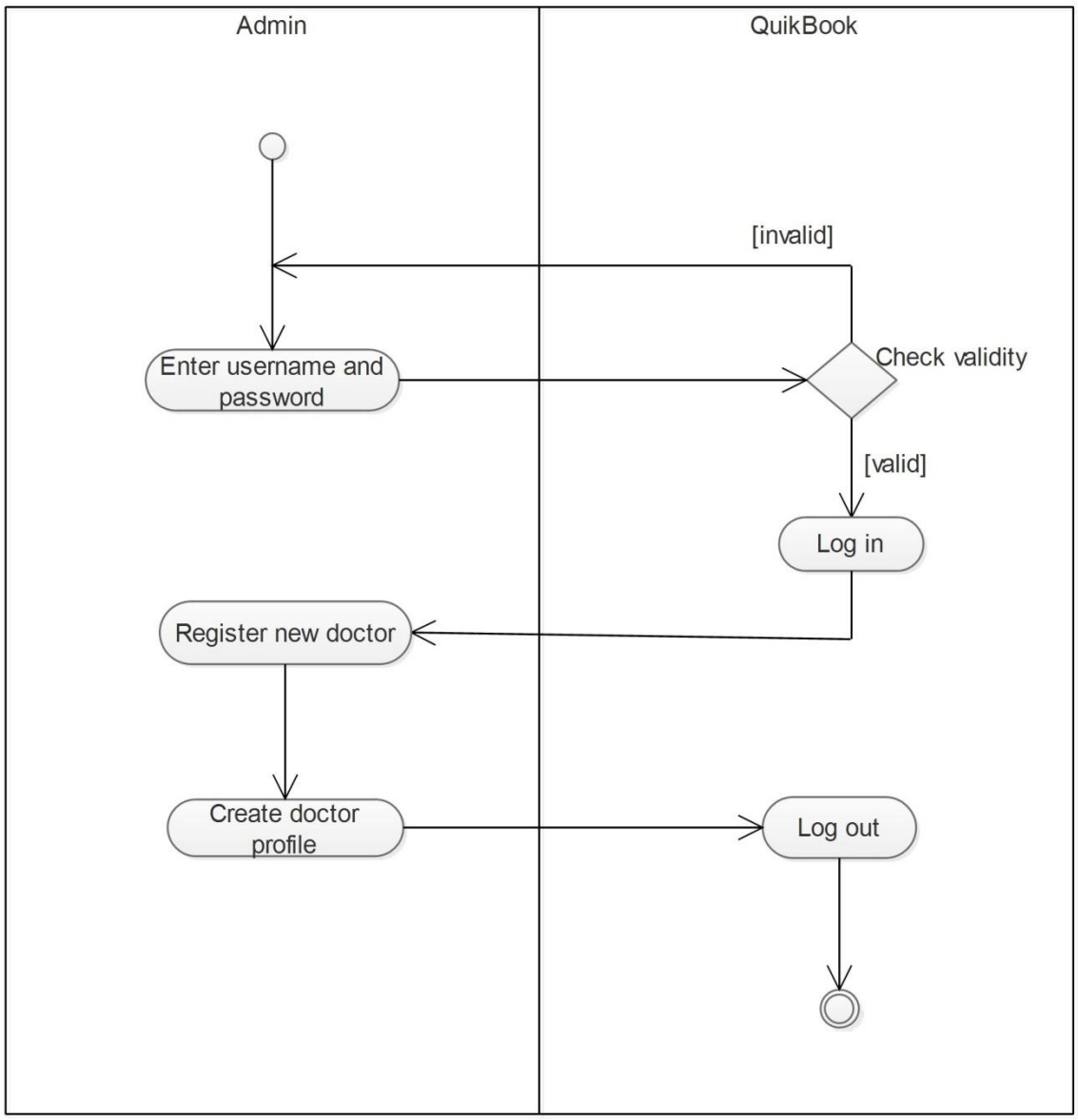

Figure 6: Activity diagram for login of admin and registering doctors

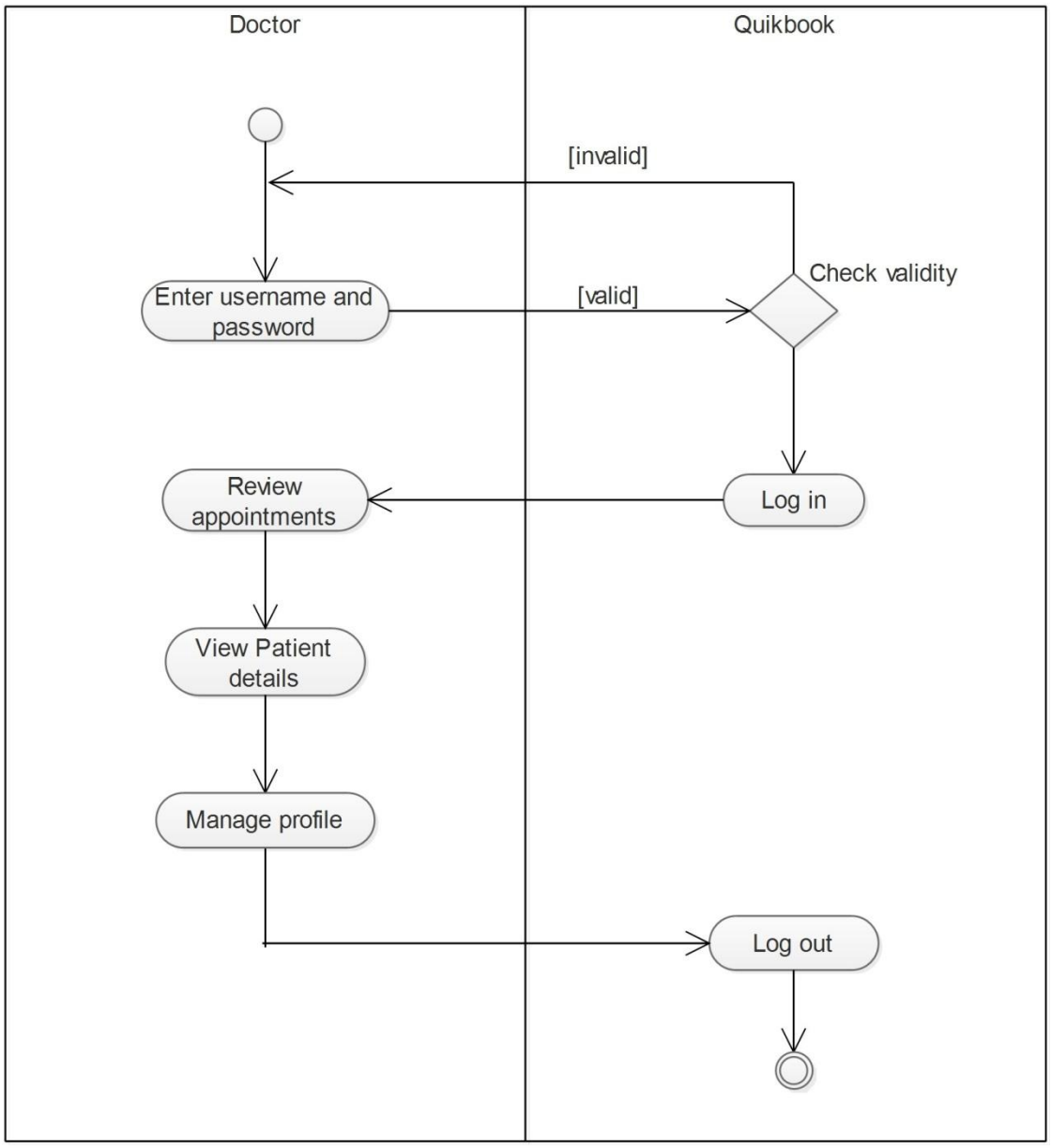

Figure 7: Activity diagram for login, managing appointments and profile

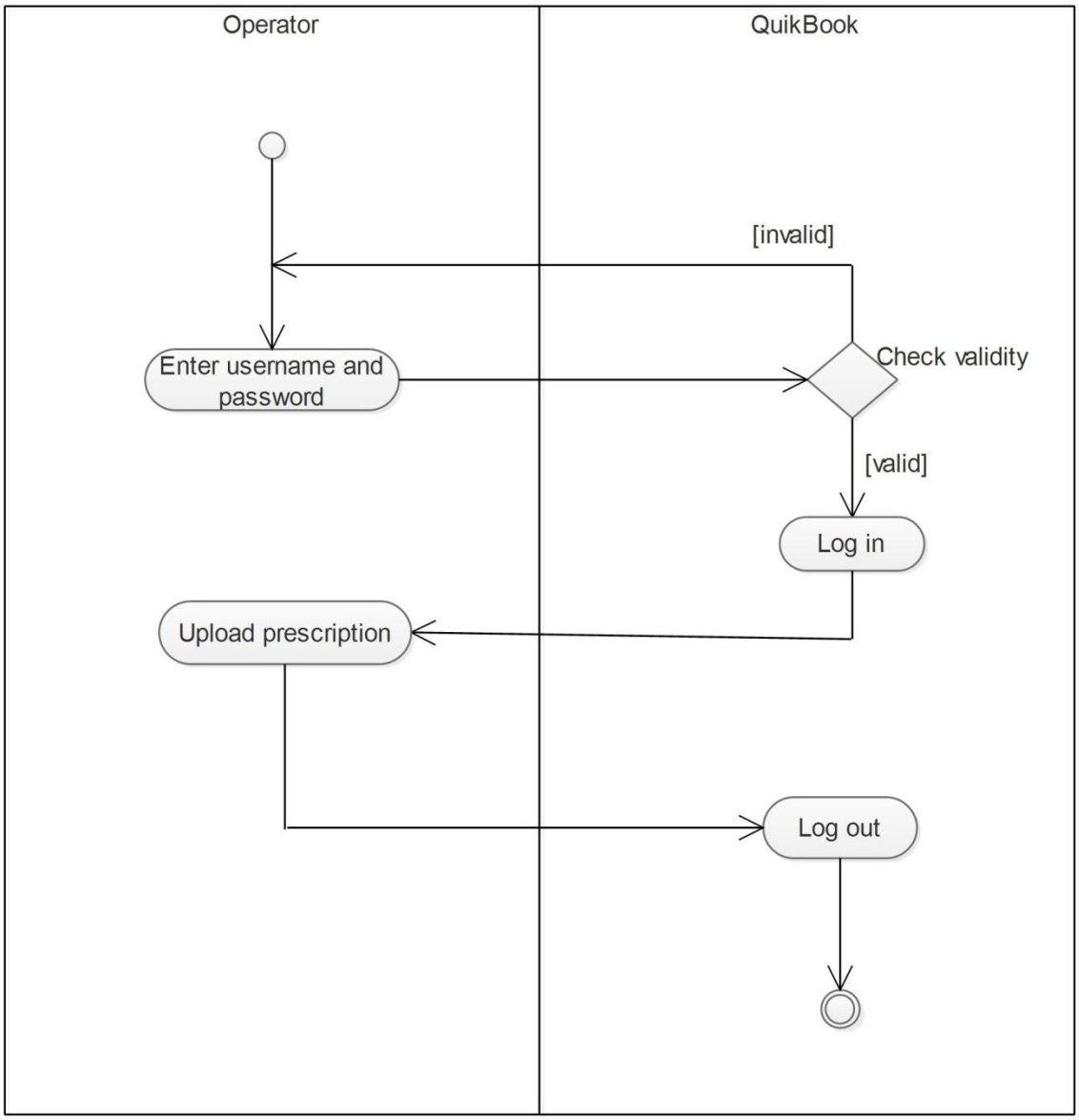

Figure 8: Activity diagram for login and uploading prescriptions

4.5 SEQUENCE DIAGRAM

Sequence diagram is an interaction diagram that describes interactions among classes in terms of an exchange of messages over time. [5]

4.5.1 SEQUENCE DIAGRAM FOR REGISTRATION AND LOGIN

The diagram below describes the interactions a patient has with the system registering a new account and logging into the account. The patient provides details requested by the system which in turn, is stored in the system database named “doctor”. This data is used to confirm the validity of the patient when they try to log in.

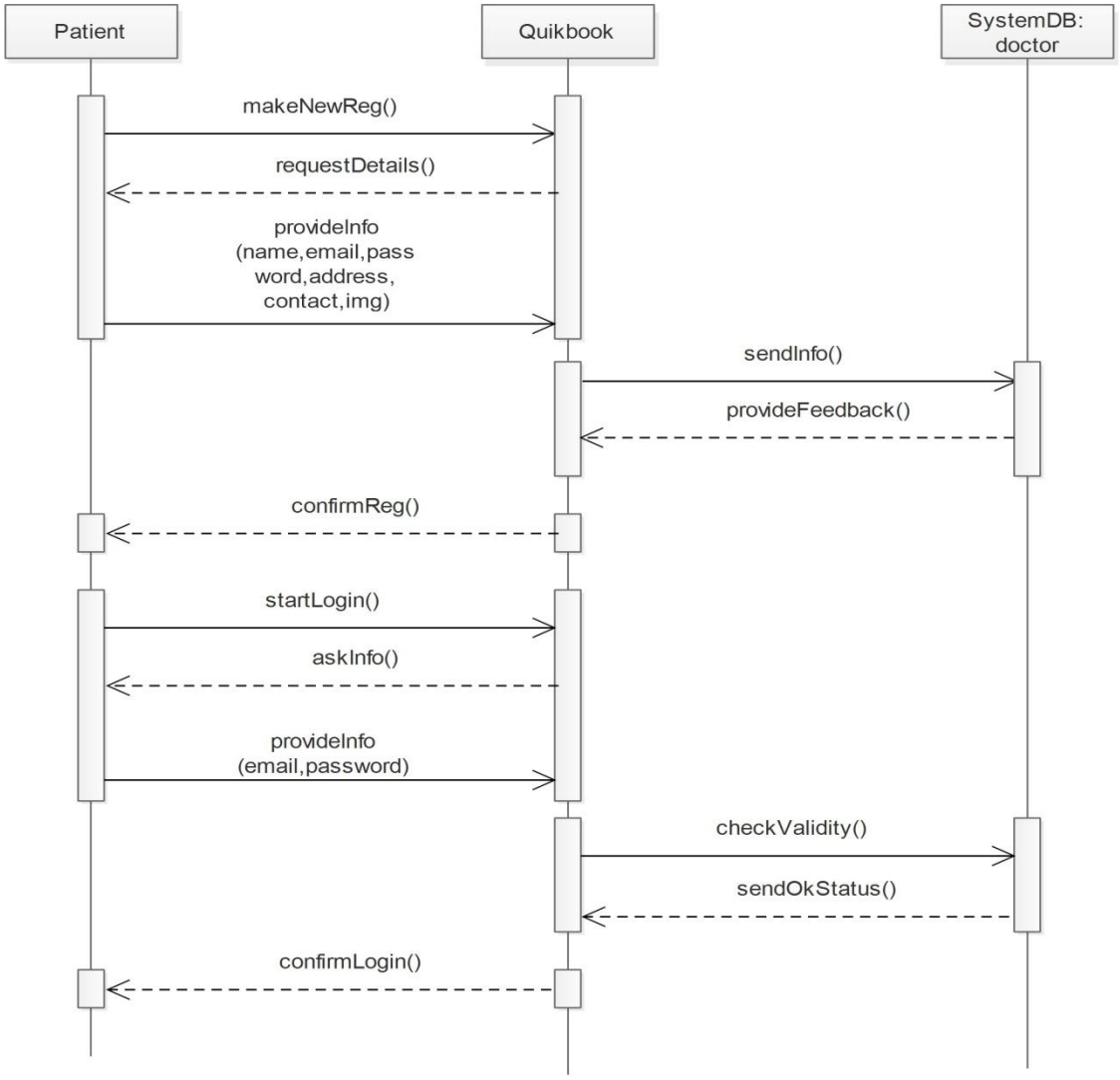

Figure 9: Sequence diagram for registration and login

4.5.2 SEQUENCE DIAGRAM FOR REGISTERING NEW DOCTOR AND PROFILE

The diagram below describes the interactions an admin has with the system registering a new doctor into the website. The admin also creates a profile for every doctor by providing details requested by the system which in turn, is stored in the system database named “doctor”.

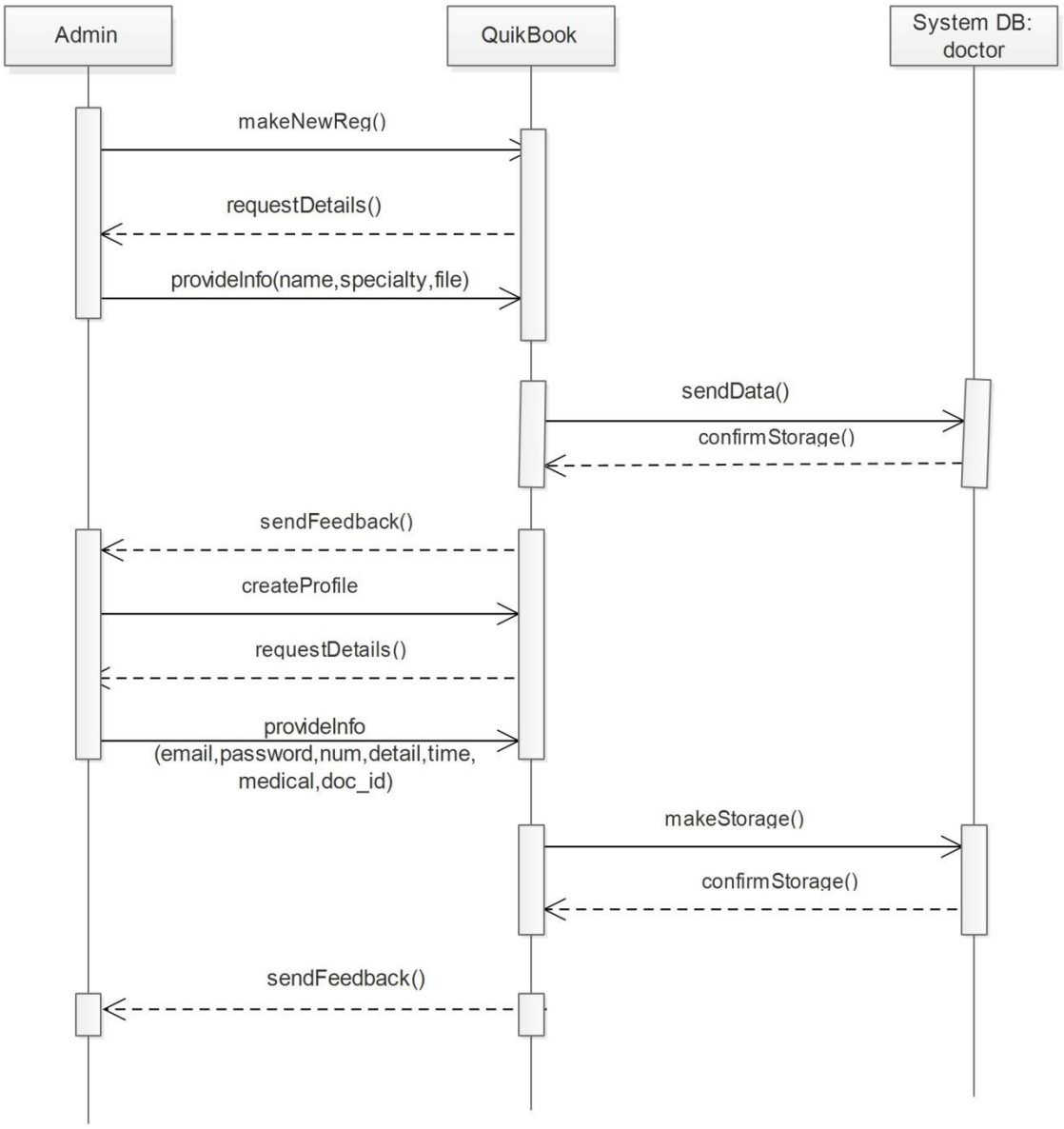

Figure 10: Sequence diagram for registering new doctor and creating profile

4.5.3 SEQUENCE DIAGRAM FOR BOOKING NEW APPOINTMENT

The diagram below describes the interaction a patient has with the system while booking a new appointment. The patient is asked by the system to choose doctor, time and date to make the appointment. These details are stored in the system database as well.

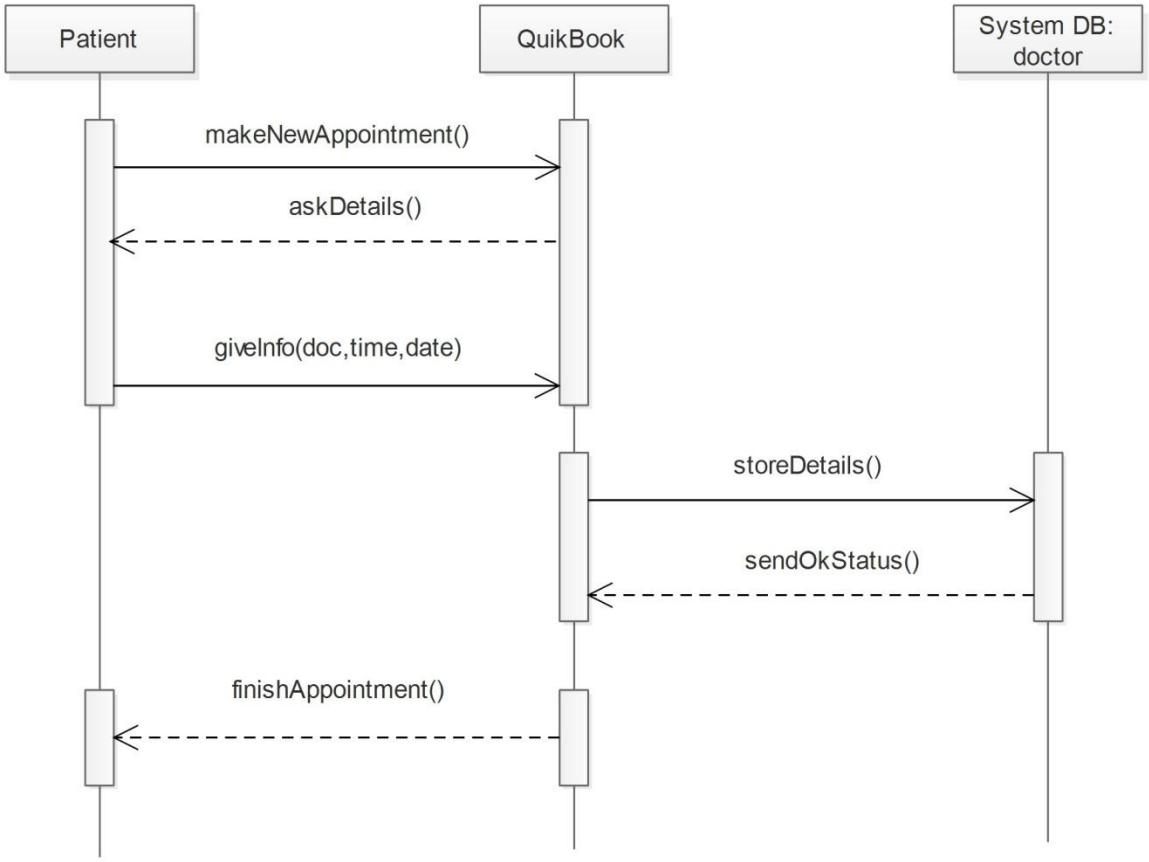

Figure 11: Sequence diagram for booking new appointment

4.5.4 SEQUENCE DIAGRAM FOR UPLOADING PRESCRIPTIONS

The diagram below describes the interaction an artist has with the system while uploading a prescription. The operator is has to provide the medicine details, report and follow up date of the appointment. These details are stored in the system database as well.

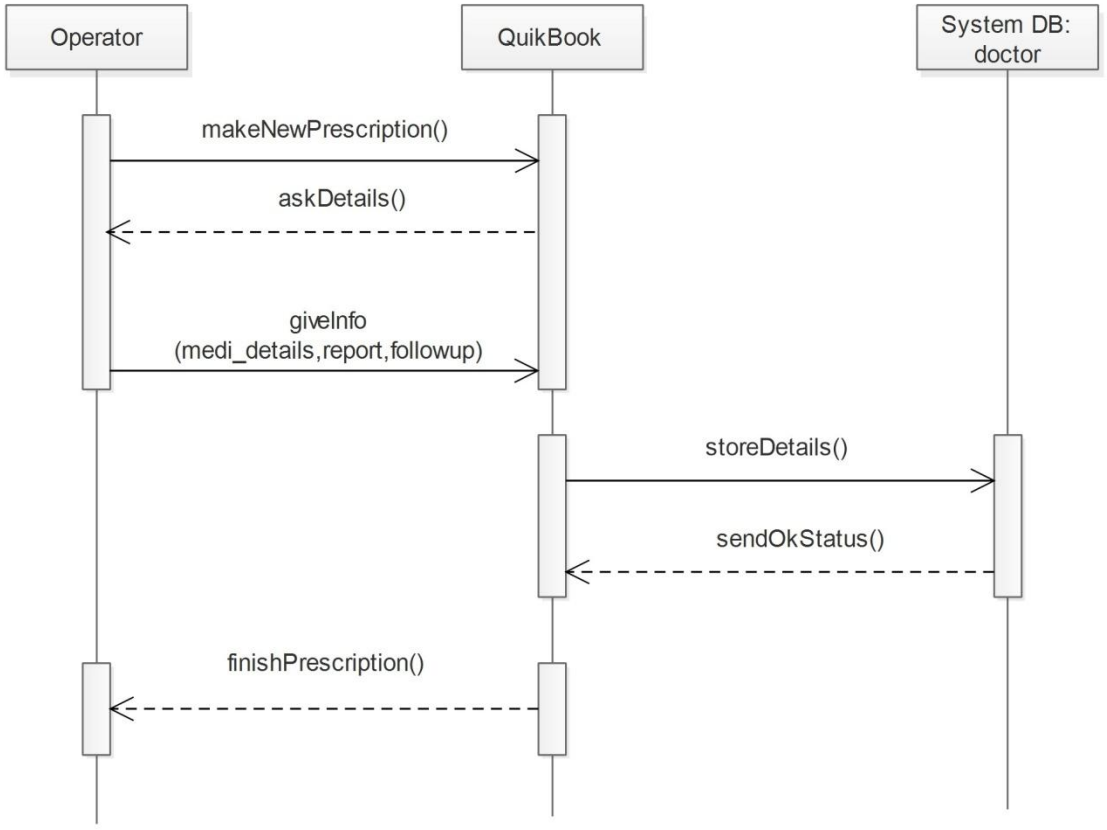

Figure 12: Sequence diagram for uploading prescriptions

5. TIME SCHEDULE ESTIMATION

The time schedule for the project has been estimated according to the stages involved in the development of the system. Our project is estimated to be completed in around 3 months.

5.1 INCREMENT 1

ID	Task Name	Start	Finish	Duration
1	Requirement Analysis and Specification	2019/8/11	2019/8/13	3.0 d.
2	Design System	2019/8/14	2019/8/22	9.0 d.
3	Implementation	2019/8/23	2019/9/1	10.0 d.
4	Testing and Debugging	2019/9/2	2019/9/4	3.0 d.
6	Prepare Prilminary Documentation	2019/8/11	2019/9/4	25.0 d.

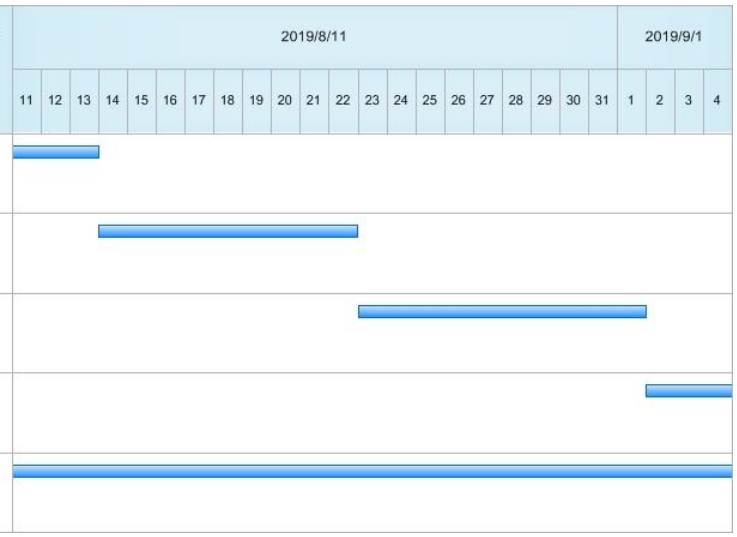

Figure 13: Gantt chart for Increment 1

5.2 INCREMENT 2

Figure 14: Gantt chart for Increment 2

5.3 INCREMENT 3

Figure 15: Gantt chart for Increment 3

6. WORK DIVISION

S.N.	ROLE	NAME	KEY ACTIVITIES
1.	Developer	• Priyanka Panjiyar • Anisha Maharjan	• Layout creation • Front end development • Back end development • Database Management • Appointment system
2.	Project Manager	• Anisha Maharjan • Priyanka Panjiyar	• Project planning • Work allocation • Documentation • Presentation
3.	Tester	• Geena Yadav	• Testing working of website • Authentication • User experience check • Feasibility of website

Table 1: Work Division

7. TESTING

S.N	System	Test	Expected Result	Outcome
1.	Registration	Register a new account.	Patient can register new account by filling the form.	Successful
2.	Login	Log into existing account.	Patient, doctor, admin and operator can login using email/username and password.	Successful
3.	Appointment	Book a new appointment.	Patient can book appointments.	Successful
4.	Prescription	Upload prescription.	Operator can upload prescriptions of completed appointments.	Successful
5.	Profile	Edit personal profile.	Patients and doctors can edit the contents of their own profile.	Successful

Table 2: Testing

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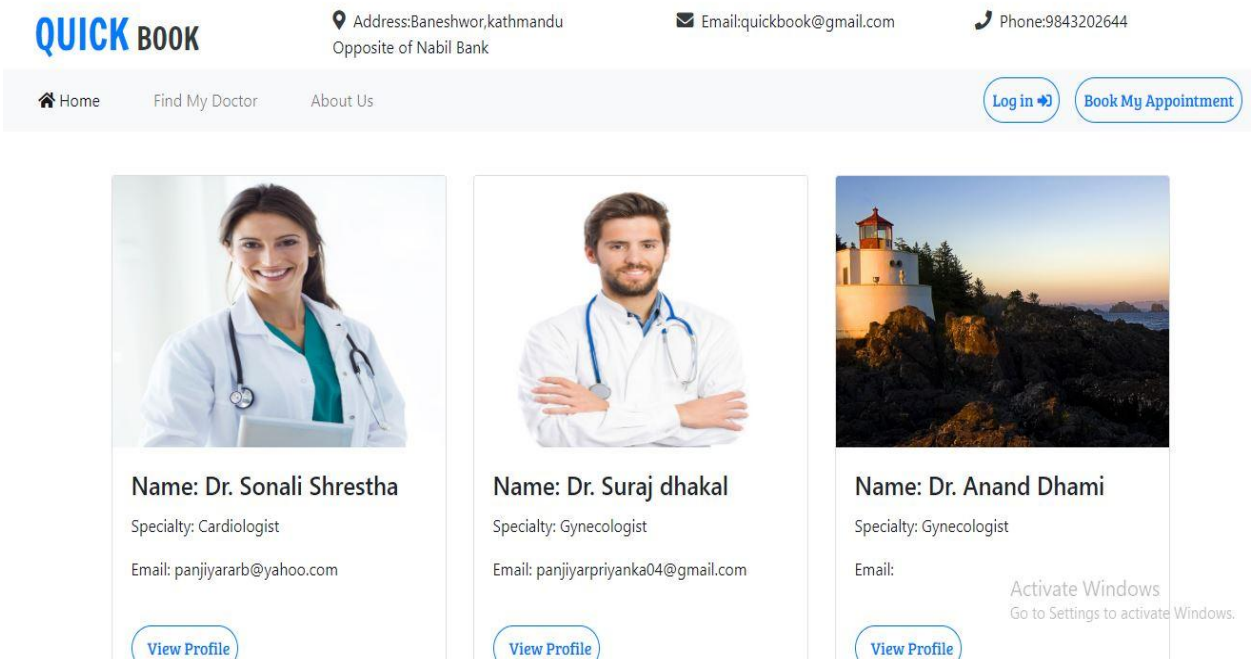
APPENDIX

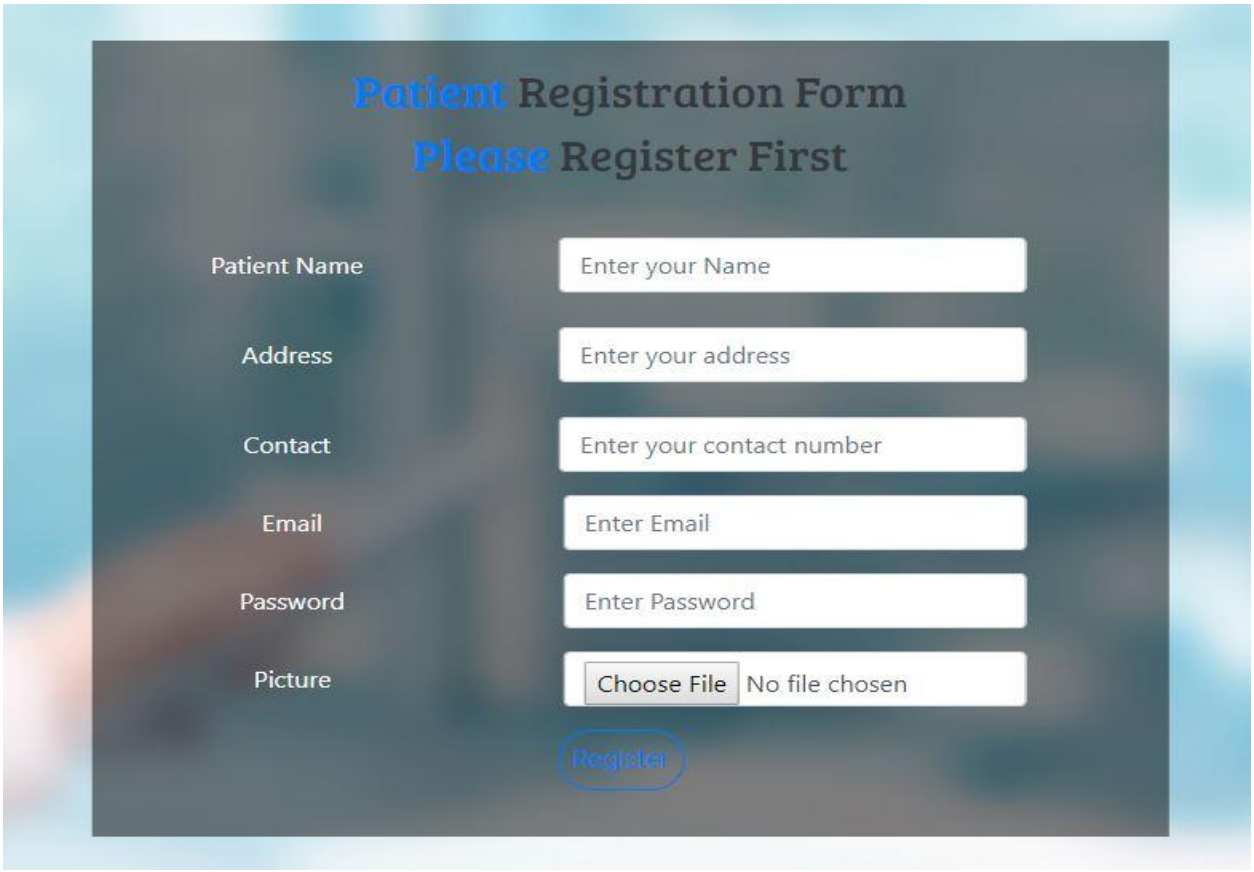
SYSTEM SNAPSHOTS

- Home

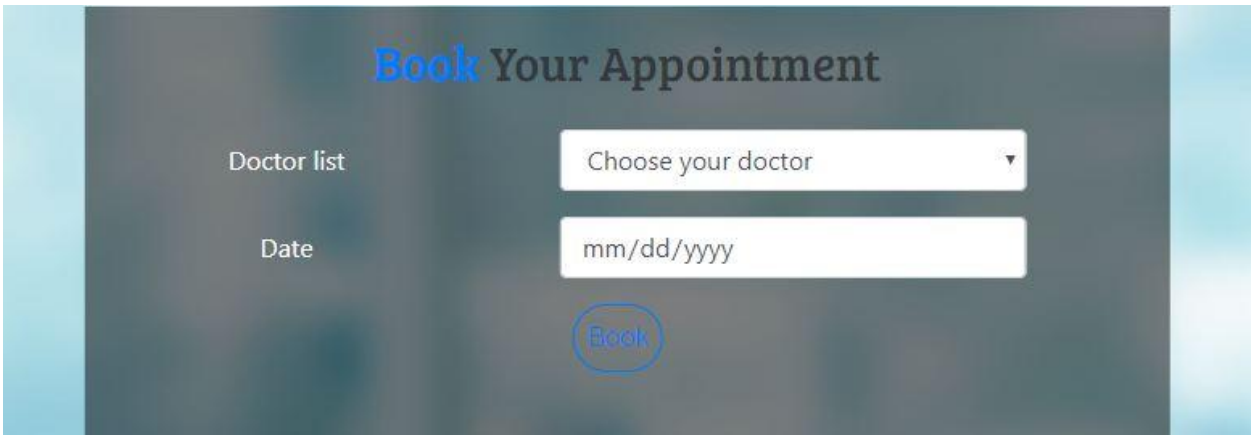
- Find doctor



- Registration



- Appointment



- Login