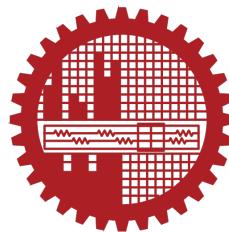


CSE-326 Report
Medical Facilities Assistant
System

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1 Introduction

Our project aims at resolving some issues at the medical sector in Bangladesh that are faced by the common people willing to get medical and diagnostic facilities. Through our system, we try to help the common people to easily get appointments of doctors as well as diagnostic facilities. This system will also help the doctors to maintain their schedules easily because if they reschedule or cancel any appointment, the corresponding patient will be notified instantly through this system. As a result there will be no overhead to inform the patients through another medium and the patients will be able to take decision on changed schedule prior to appointment date. Moreover, as we try to apply online payment system, the whole process can be more transparent and easily audited. The system also helps hospitals and doctors to maintain their service usage statistics and organize their whole system digitally.

Besides the appointment part, this system also includes the facility of keeping reminder for medicines so that patients don't forget to take medicines at correct time.

The system is going to be built in **Android** platform so that users can get access to the software from their mobile phones. There will also be a **web based framework** for hospitals to update and maintain their service information.

2 System Overview

2.1 Subsystems

Account Creation and Log in Subsystem

Patients can create account after being verified via sms. At most one account can be created using a mobile phone number.

Doctors need to provide their medical license no. which must be verified by the admin to get included in the system.

After verification, users will be notified and then they can log in to the system.

Appointment Service Subsystem

Appointment Service Patient Module -

Patients can make appointment request. They can search various facilities and they can choose appointment time from available slots. They can view and reschedule their appointments within a certain time period. They can pay bill through bkash and credit card. They can also provide their feedback on the service.

Appointment Service Doctor Module -

Doctors will be able to view appointment list and patients' medical records. They will be able to reschedule/cancel any of their appointment time slot. Patients will get notified of the changed schedule and patients who paid bill earlier will get refunded. They will also be able to see the feedback of the users taking their service.

Appointment Service Hospital Module -

Hospital Manager will see appointment list of the facilities taken from that hospital, will be able to update hospital facilities and update schedule of the facilities. Hospital receptionist will schedule the appointments of those patients who come to hospital directly and will clear their bills when received.

Reminder Service Subsystem

Patients will be able to set reminder manually by adding medicine information and marking intake time or they can add all medicines in a prescription from an appointment taken previously.

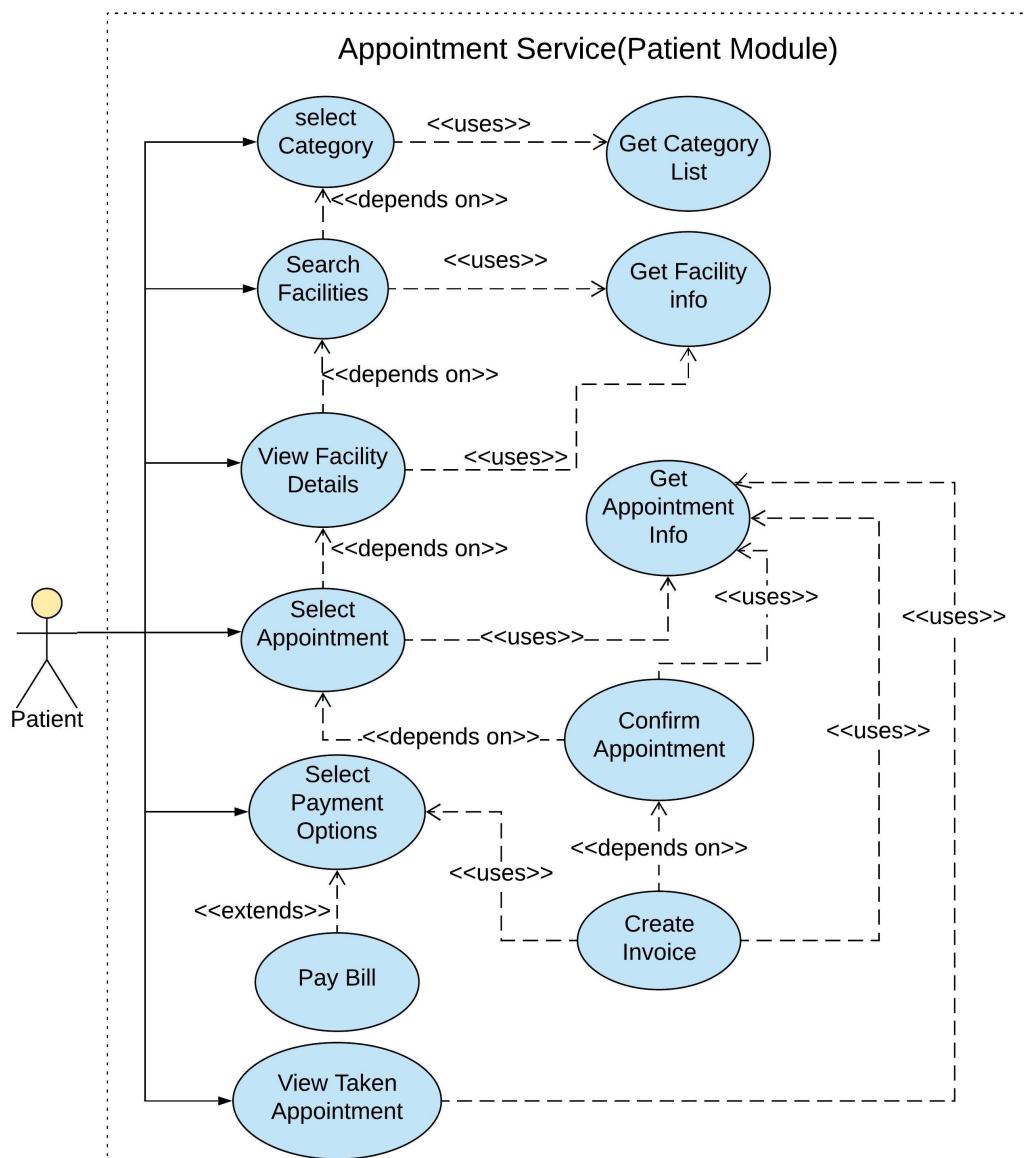
The system will notify user on required time .

2.2 Actors

1. Patient
2. Doctor
3. Hospital Manager
4. Receptionist
5. Admin
6. System

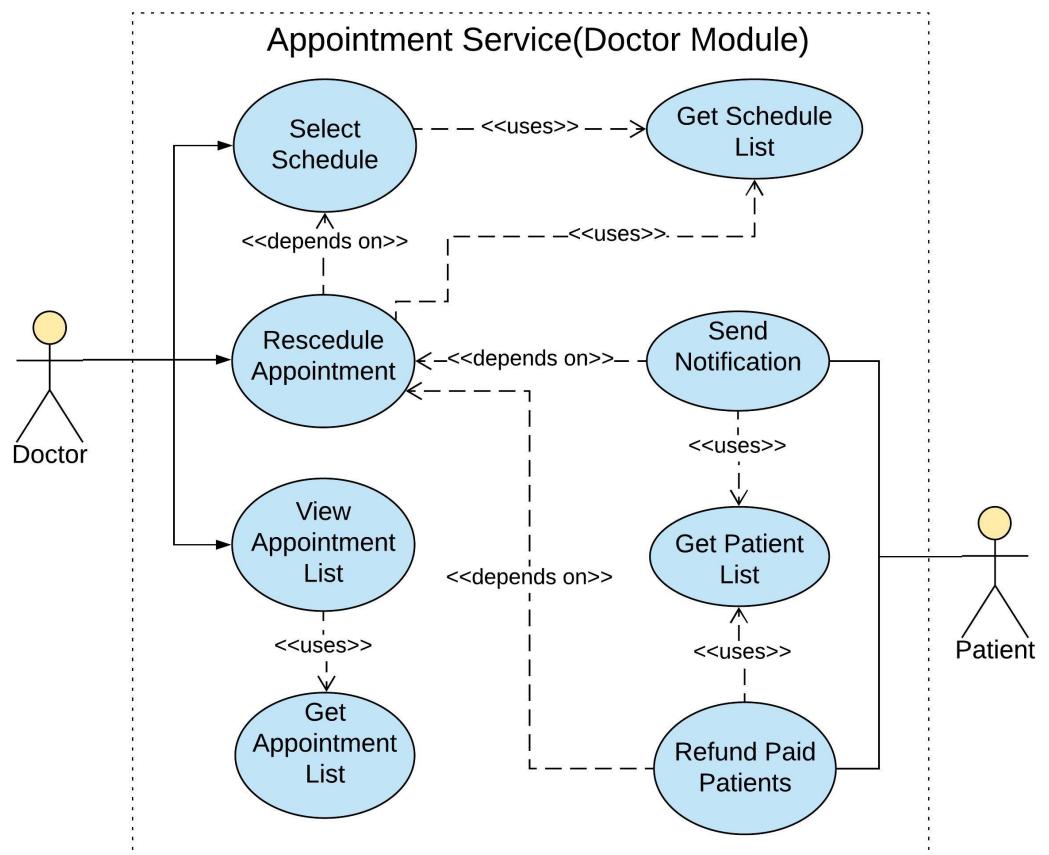
3 Use Case

3.1 Appointment Service(Patient Module)



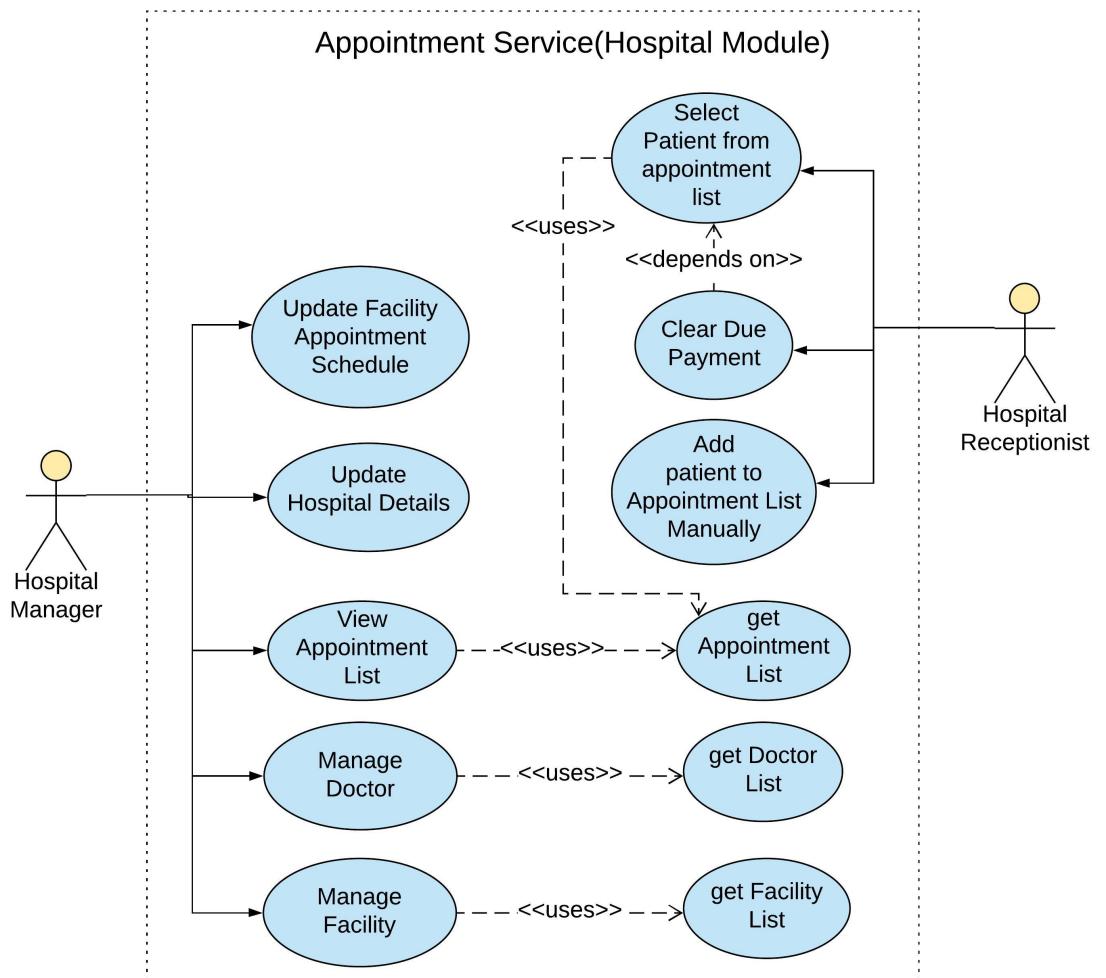
Patients will search either doctor or hospital facilities using different categories. They can choose any of the available slots to their liking. They can pay in advance for the appointment. An invoice would be generated for each booked appointment. A patient can also cancel any booked appointment. In that case, if he/she has paid advance for the appointment and cancels within a certain time limit prior to the scheduled appointment, he/she will get refund.

3.2 Appointment Service(Doctor Module)



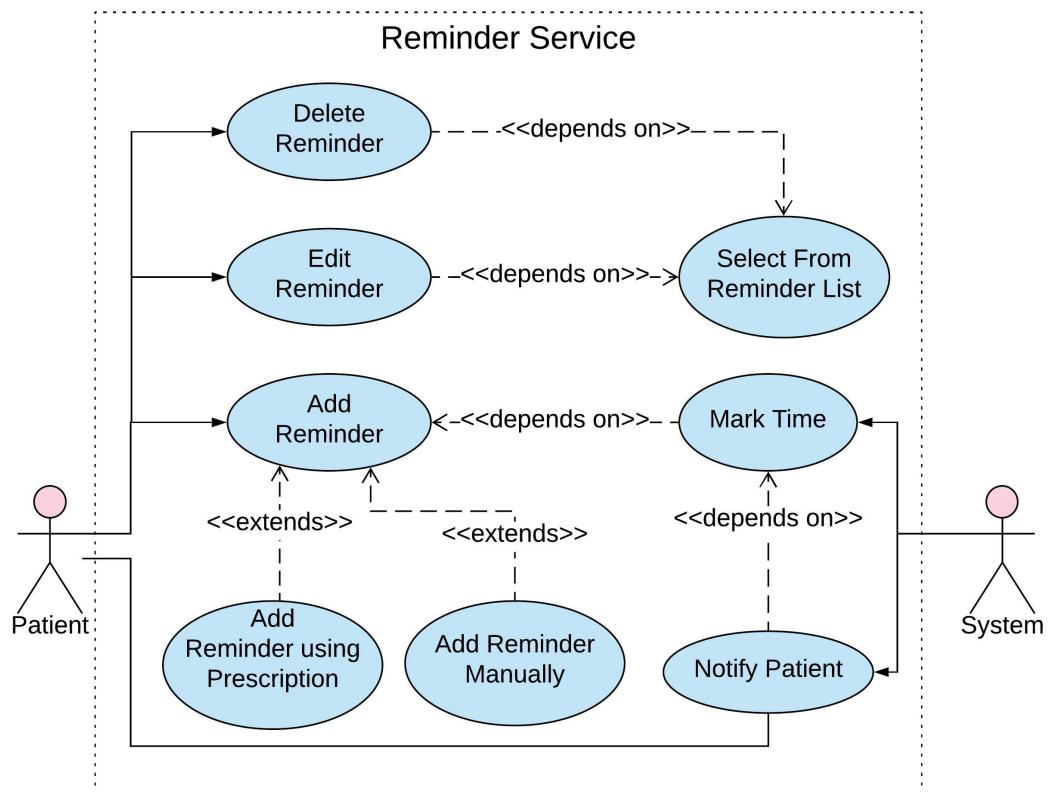
Doctors will be able to see their schedule and the details of the patients who booked appointments. They can update their schedule or cancel any booked appointments. Upon cancelling any paid appointments, paid patients would be refunded.

3.3 Appointment Service(Hospital Module)



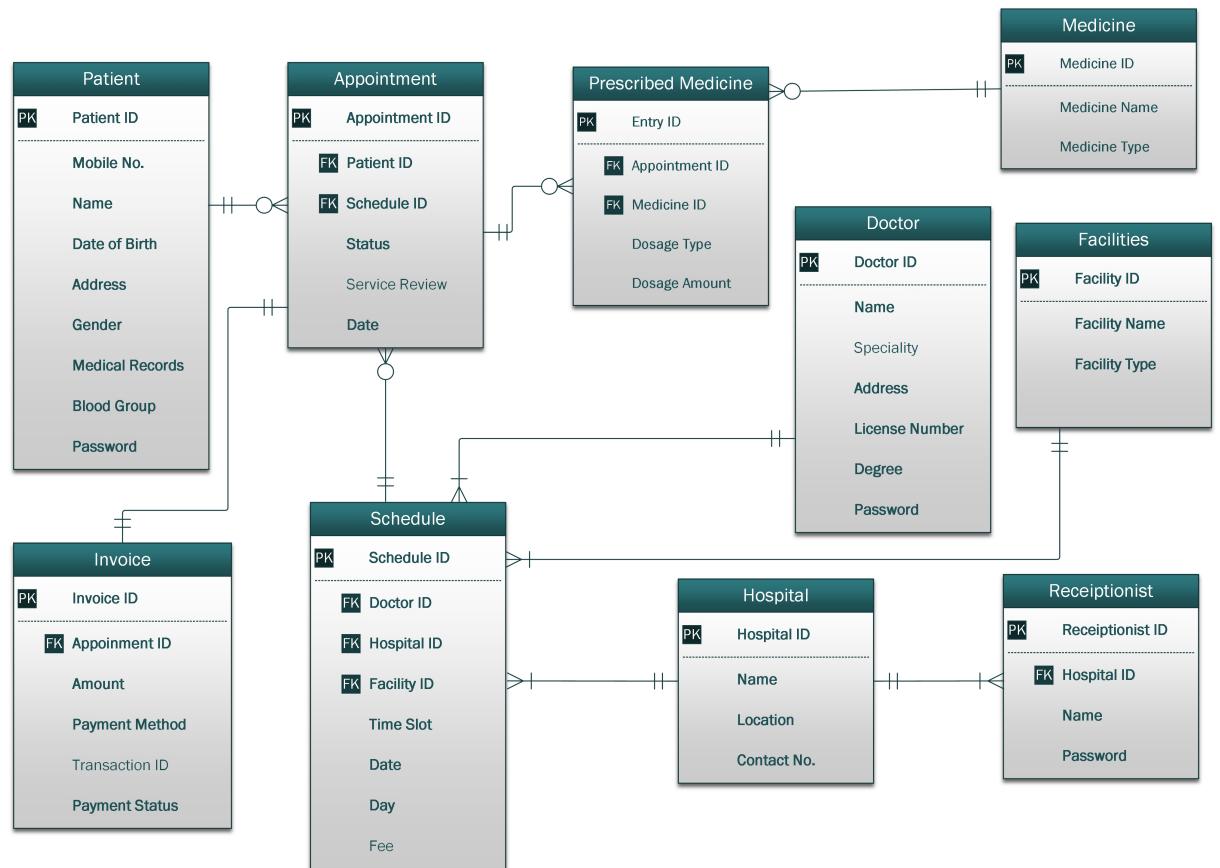
Hospital manager will be able to see the schedule of different diagnostic services as well as the doctors and the details of the patients who booked appointments for any kind of service. They can update the schedule of the diagnostic services, update hospital details. They can manage doctor and facility details. Receptionists will be in charge of scheduling appointments for those patients who come directly to hospital and clearing the due bill of the patients.

3.4 Reminder Service



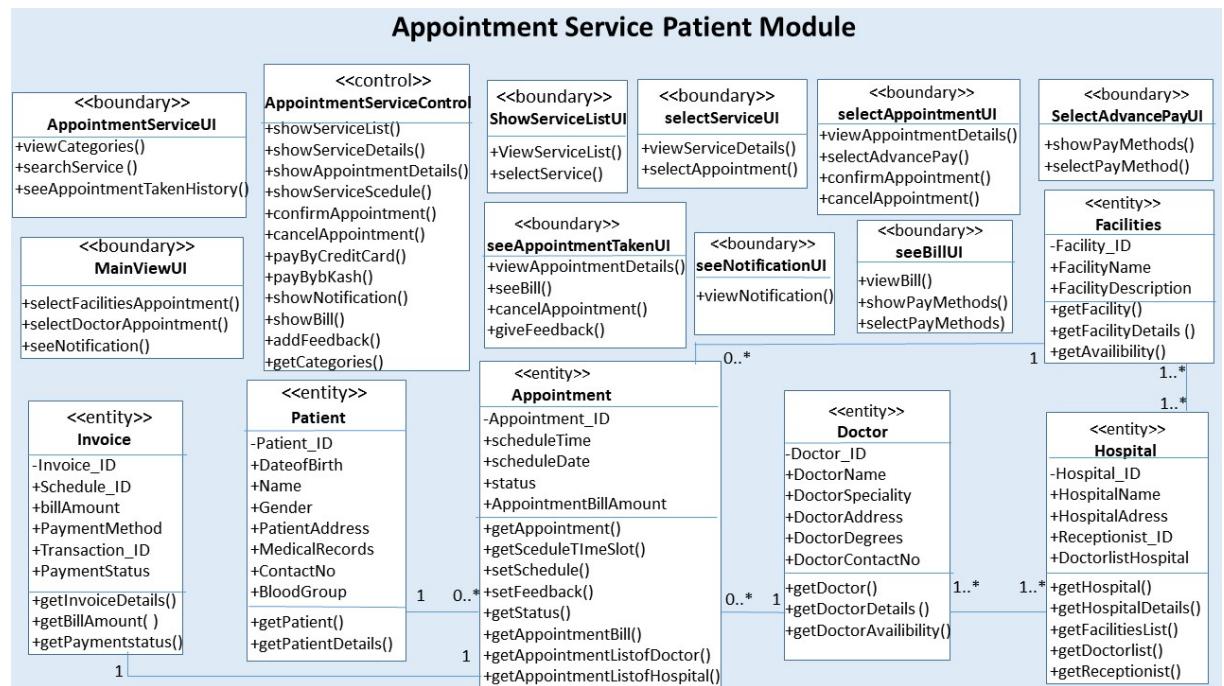
Patients can either add reminder for a particular medicine manually, or they can add reminders for all the medicines in a prescription during a doctor visit. This reminder would be stored locally in the patient's phone. System would keep track of time to notify the user.

4 Entity Relationship Diagram

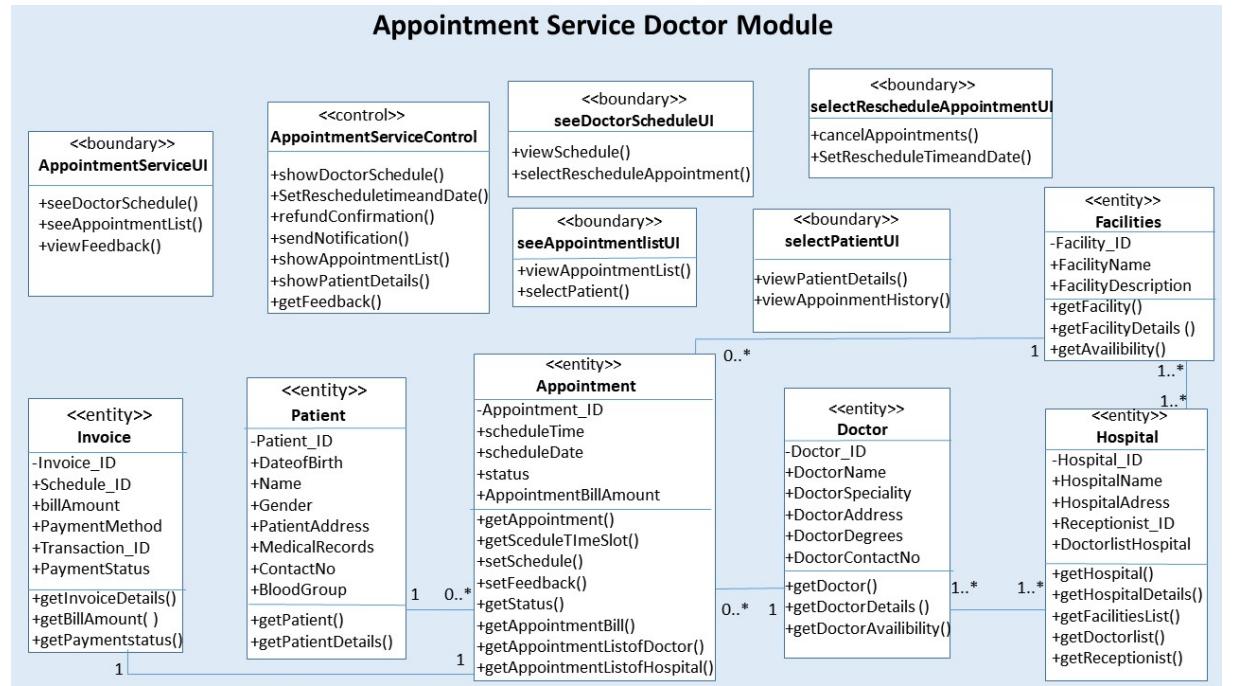


5 Class Diagram

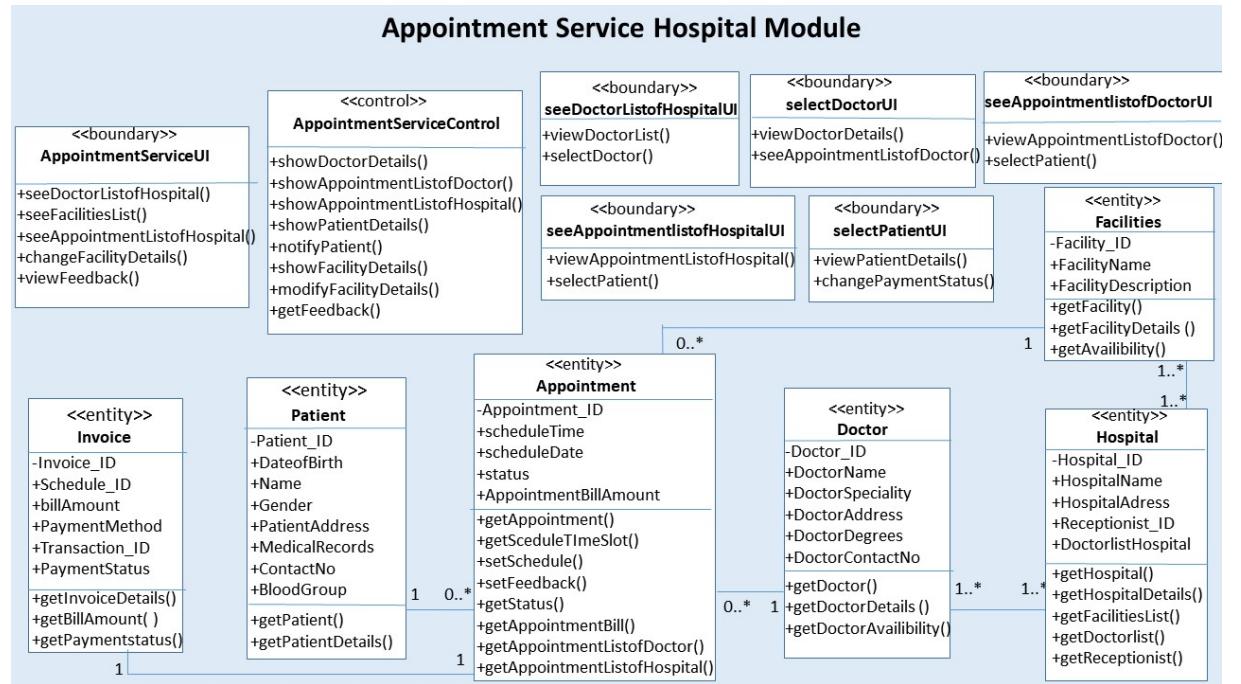
5.1 Appointment Service(Patient Module)



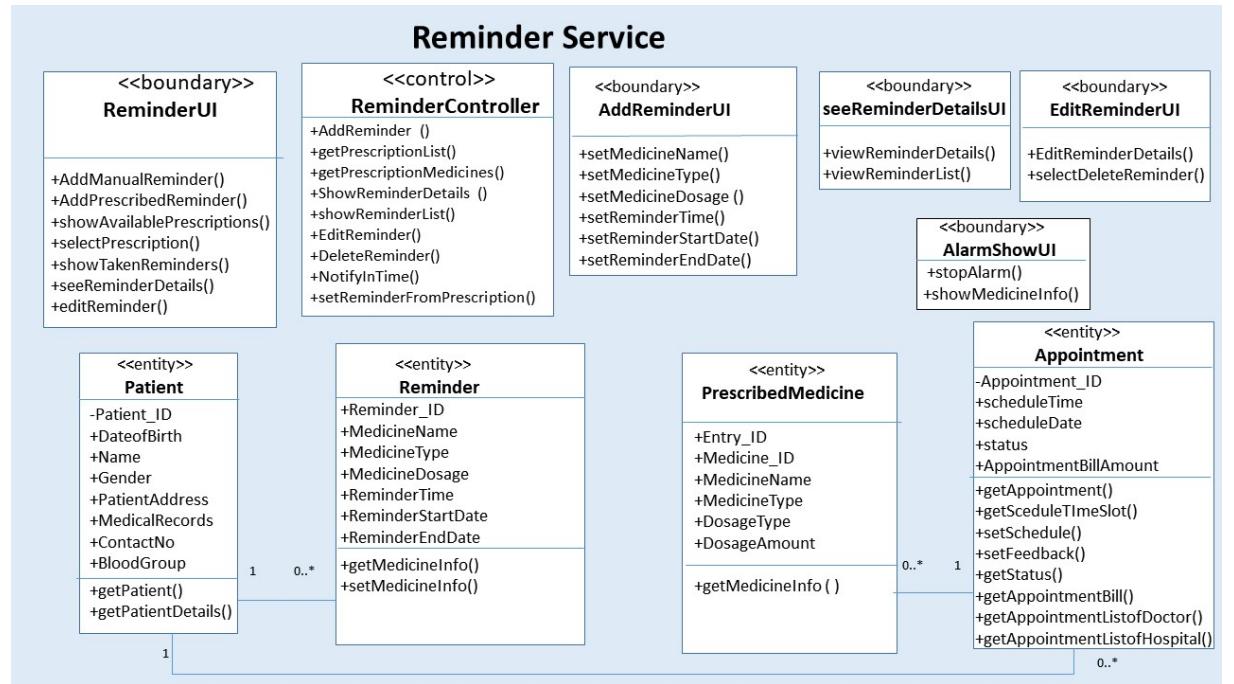
5.2 Appointment Service(Doctor Module)



5.3 Appointment Service(Hospital Module)

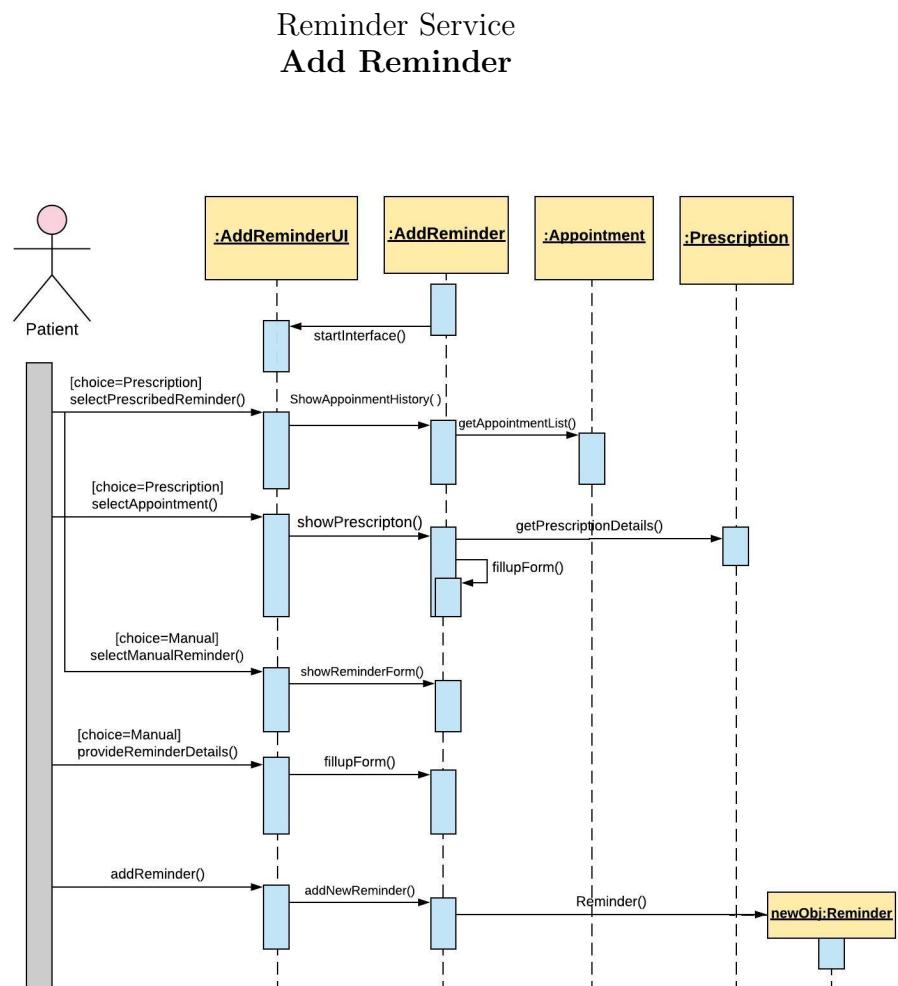


5.4 Reminder Service



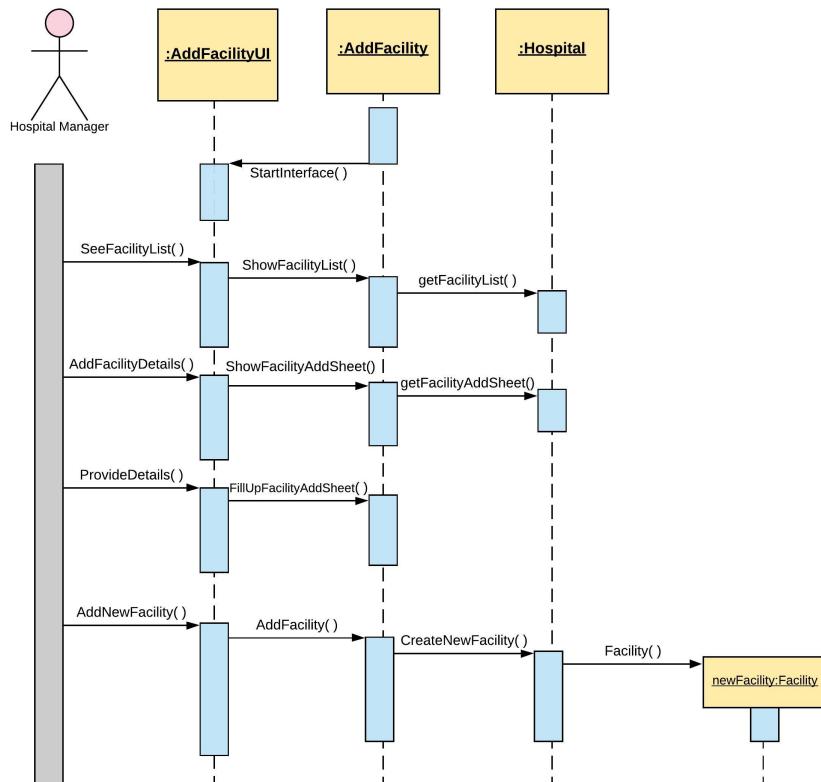
6 Sequence Diagram

6.1 Sequence Diagram - 1



6.2 Sequence Diagram - 2

Appointment Service(Hospital Module)
Add Facility

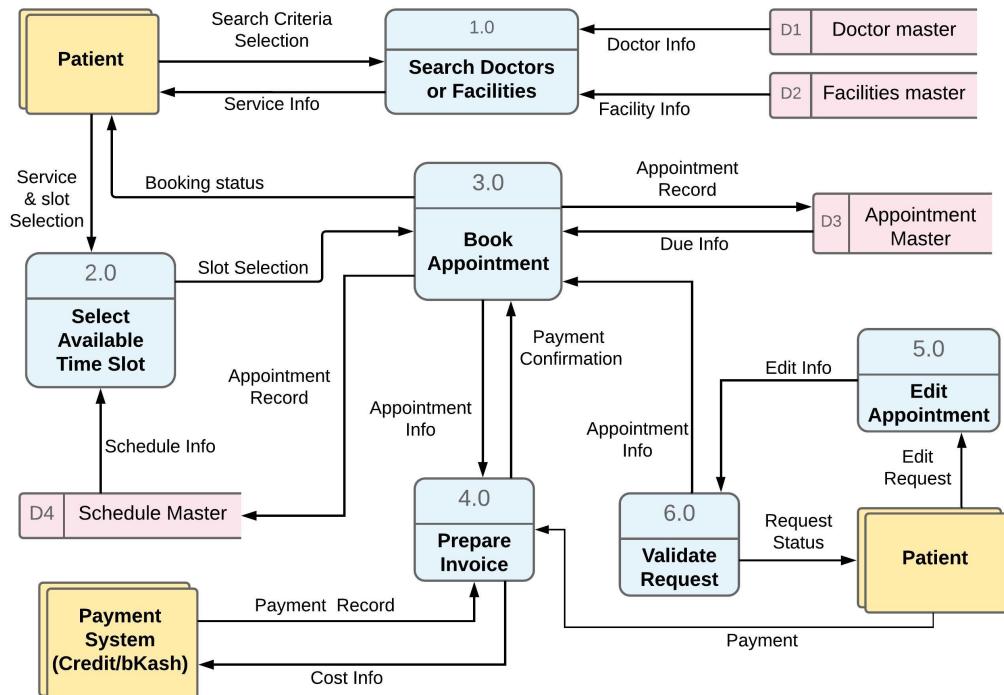


7 Data Flow Diagram

7.1 DFD -1

Patients can search facilities and make appointment request after choosing appointment time from available slots. They can edit their appointments within a certain time period. They can pay bill while making appointment request or later.

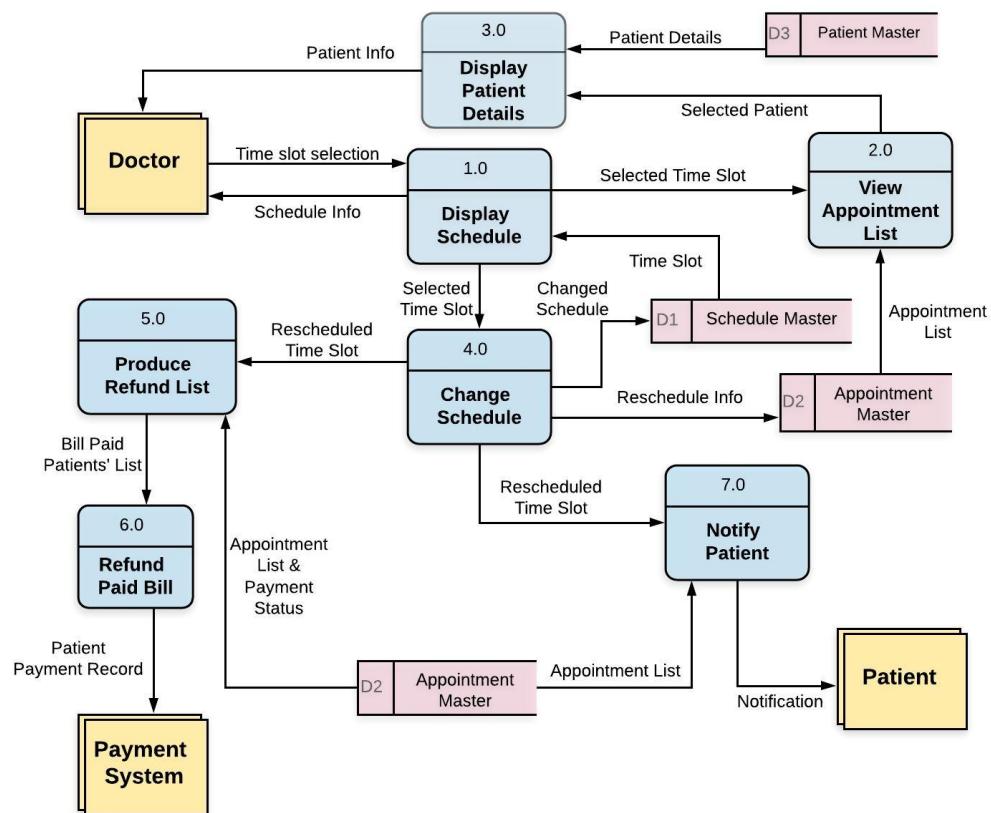
Appointment Service(Patient Module)



7.2 DFD - 2

Doctors will be able to view appointment list and patients details. They will be able to reschedule or cancel any of their scheduled time slot. Patients will get notified of the changed schedule and patients who paid bill earlier will get refunded.

Appointment Service(Doctor Module)



8 Gantt Chart

ID	Task Name	Start	Finish	Duration	May 2019		Jun 2019			Jul 2019					
					4/21	4/28	5/5	5/12	5/19	5/26	6/2	6/9	6/16	6/23	6/30
1	Software Design	4/22/2019	5/3/2019	2w											
2	Interface Design	5/6/2019	5/10/2019	1w											
3	I/O Design	5/13/2019	5/17/2019	1w											
4	Prototype Design	5/20/2019	5/31/2019	2w											
5	Database Creation	4/22/2019	4/26/2019	1w											
6	Development of System Modules	4/29/2019	6/14/2019	7w											
7	Integration of System Modules	6/17/2019	7/5/2019	3w											
8	Unit Testing	6/17/2019	7/5/2019	3w											
9	Beta Testing	7/8/2019	7/19/2019	2w											
10	Modification	6/17/2019	7/26/2019	6w											

9 Implementation

We have implemented **Reminder Service** subsystem.

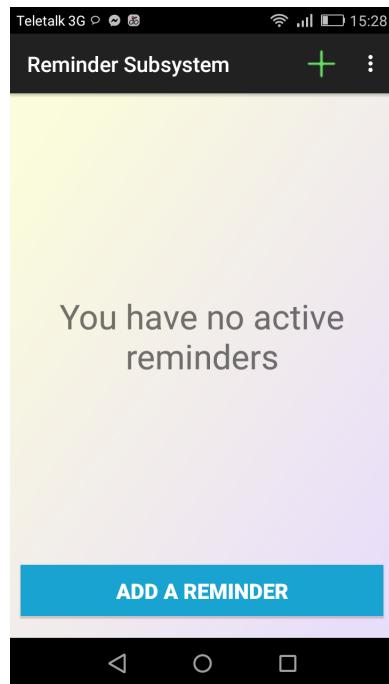
This subsystem is implemented in **Android Studio** and can work in any android operated mobile phone.

Using Reminder Service subsystem, a patient can manually add reminder for medicine. A patient should provide the following information to add a reminder-

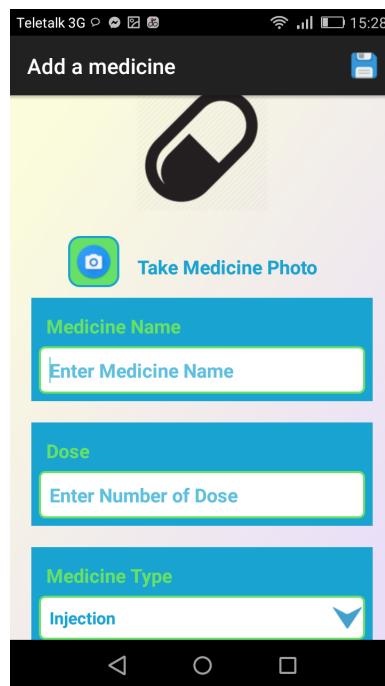
- Medicine image(optional)
- Medicine name
- Dosage number
- Medicine Type
- Time to take medicine
- Start date
- End Date

Patient can **take photos** of the **prescription** or the **medicine** itself and add reminder accordingly.

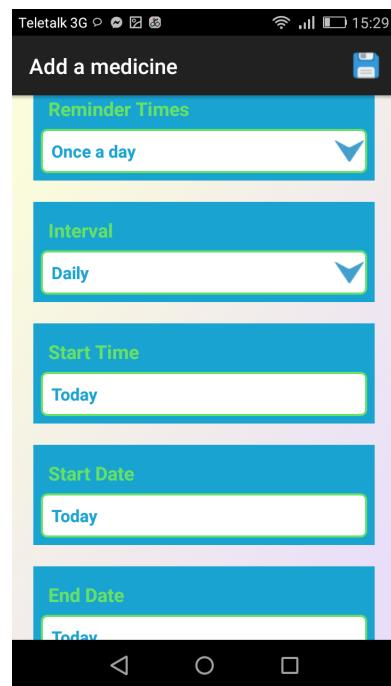
Following are the screen shots of the interface of the reminder subsystem.



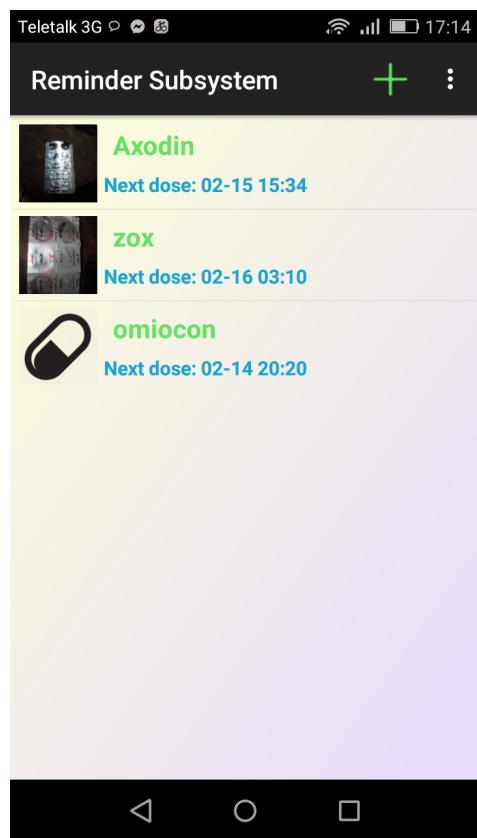
(a) Initial interface



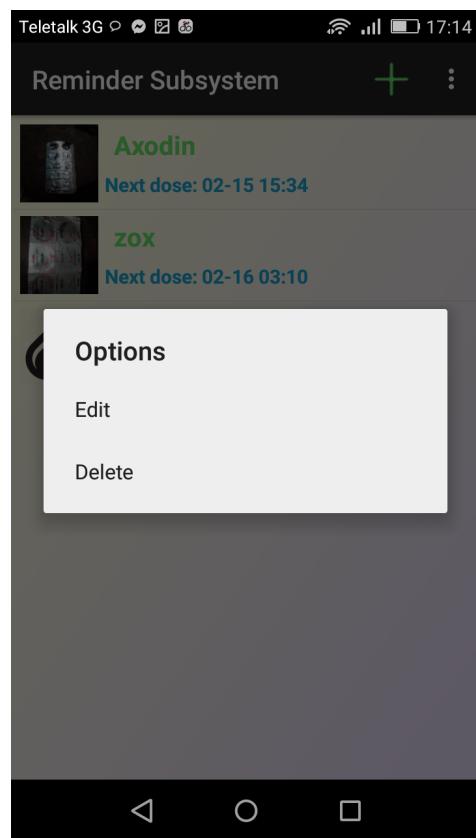
(b) Add reminder interface



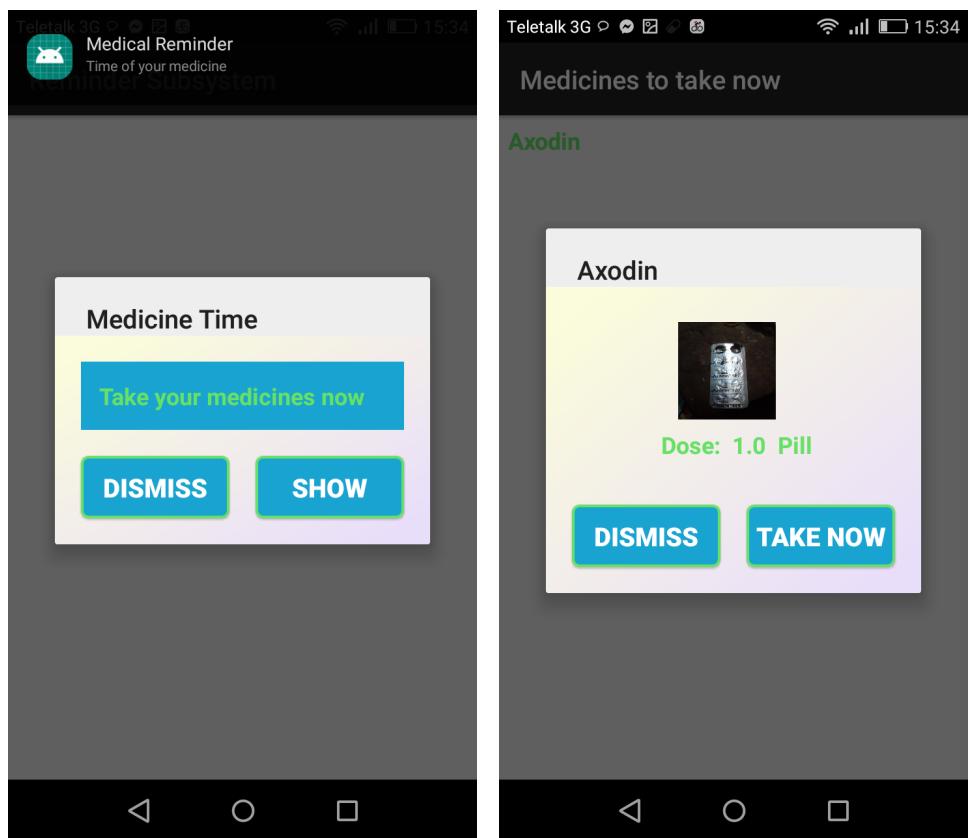
(c) Add reminder interface



(d) Interface after adding reminder



(e) Interface to edit or delete any reminder



(f) Interface after getting reminder notification

(g) Interface after deciding to see medicine

10 Conclusion

As the number of mobile phone users is growing rapidly in Bangladesh and we are going to deal with one of the basic needs of human, our software carries much opportunities. There are some scopes for expanding our system in future. For example, we can also involve the pharmacy or medical store owners in this system so that people can get medicines delivered to their doorsteps. Furthermore, if this system can be integrated with blood donor finding Application Program Interface(API), patients can find and connect to nearby appropriate blood donors easily. Again, our system enables hospitals and doctors to organize their services digitally without any hassles. Having direct feedback from the users of the system, they can improve their services further giving them access to more users. If implemented correctly, this system has huge potential in connecting all the components of medical sector in the present context of our country.