Department of Computer Science and Engineering, University of Chittagong

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Course Title	Mobile Apps Development Lab
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Report number	02
Group	E

Submitted to:

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1. Introduction

This is the High-Level Architectural Design (HLAD) document for Medical Management System (MMS). High-Level Architecture Design explains the architecture that would be used to develop a system. The architecture diagram provides an overview of an entire system, identifying the main components that would be developed for the product and their interfaces. Medical Management System is an online-based mobile app that helps patients to give necessary information. The system will manage a variety of users' information including patients, doctors, nurses, administrator profiles, and records of patients securely. It will be designed to access information from home and get updates quickly.

The purpose of this document is to provide an abstract design of the Medical Management System (MMS). This document includes the conceptual architectural design of the system and also the system model from external, structural, interactional and behavioral perspectives.

This document is composed of seven sections. Section 2 describes the architectural pattern of the system, the activity diagram of the system is shown in section 3, Section 4 shows the class diagram of the system, the Sequence diagram for the system is illustrated in section 5, Section 6 represents the state machine diagram of the system, and the conclusion for this document is given in section 7.

2. Architectural Pattern

An Architectural Pattern expresses a fundamental structural organization or schema for software systems. It provides a set of predefined subsystems, specifies their responsibilities, and includes rules and guidelines for organizing the relationships between them. It also addresses various issues, such as performance, availability, reliability, maintainability and security of a system.

To ensure security we decided to use a 3-tier architecture pattern in Medical Management System (MMS). The functions of the MMS are separated into three layers. The presentation layer handles the user interaction whereas Application-layer controls the system functionality by performing detailed processing and the data access layer includes managing read and write access to a database. The architectural pattern of the MMS system is graphically shown in figure 2.1.

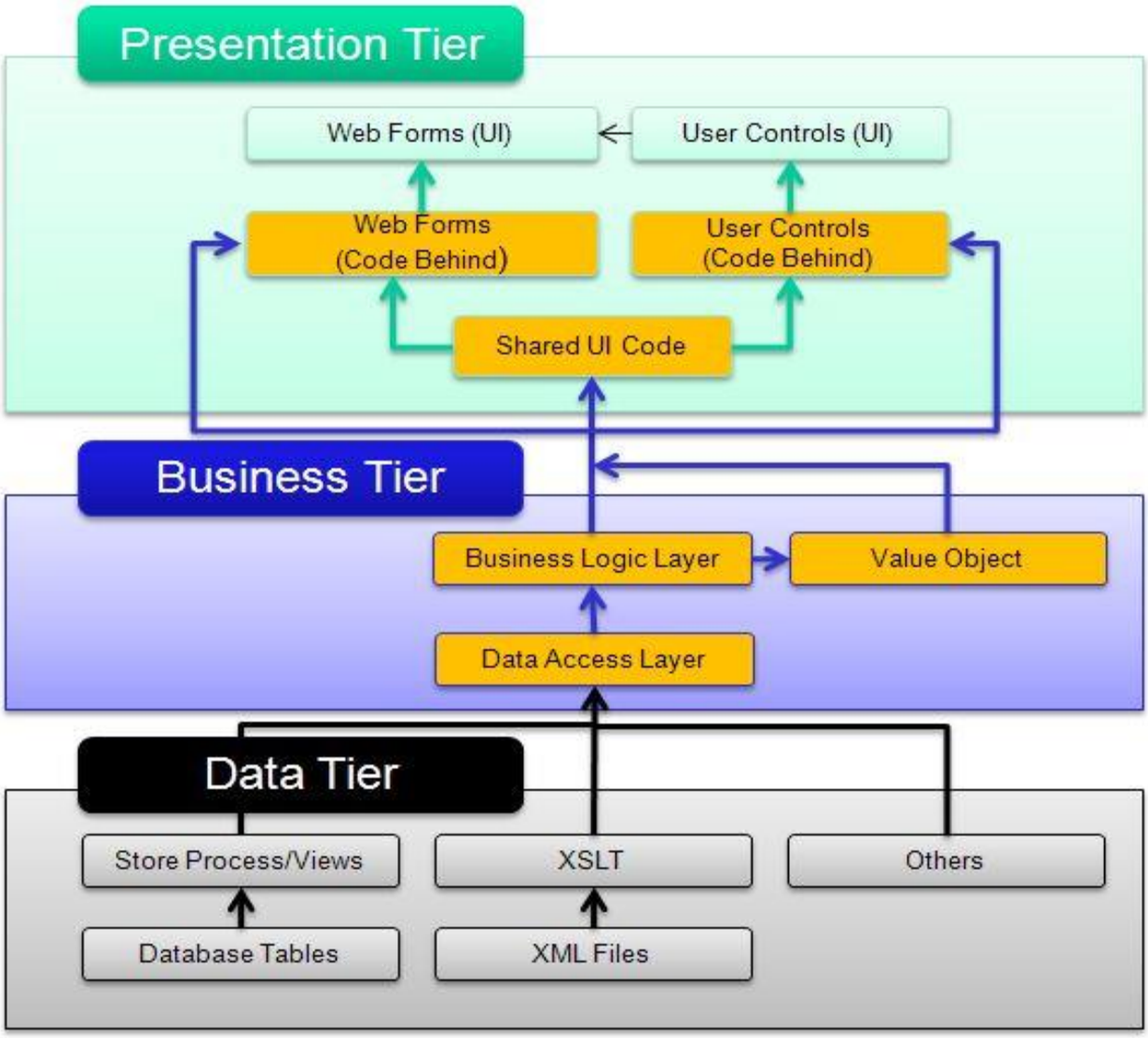

Figure 2.1: Architectural Pattern

3. Activity Diagram

Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency. It describes the system from an external perspective showing the process view of the system architectural pattern.

An activity diagram shows business and software processes as a progression of actions. These actions can be carried out by people, software components or computers. Activity diagrams are used to describe business processes and use cases as well as to document the implementation of system processes.

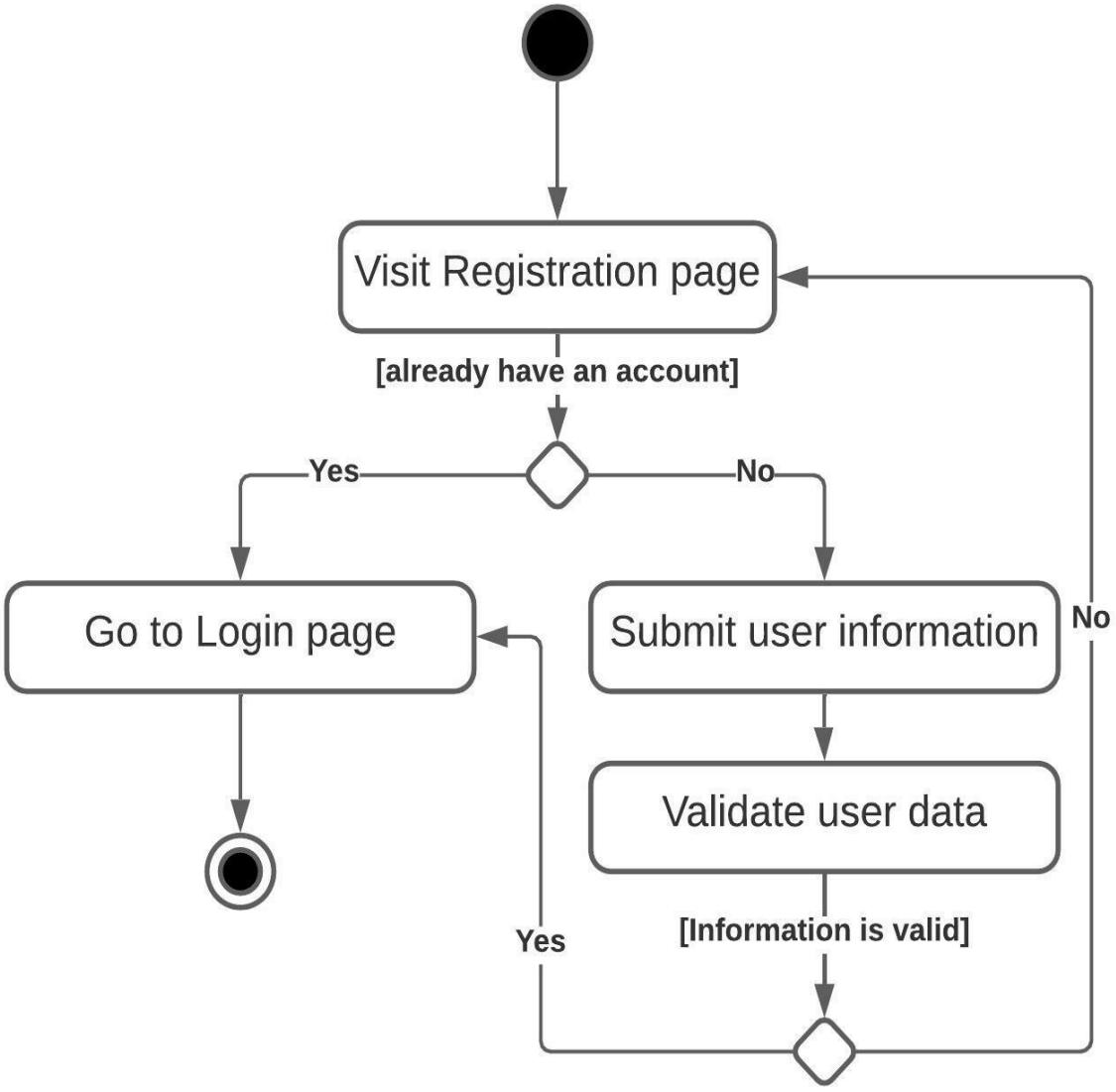

Figure 3.1: Make Registration (UC1)

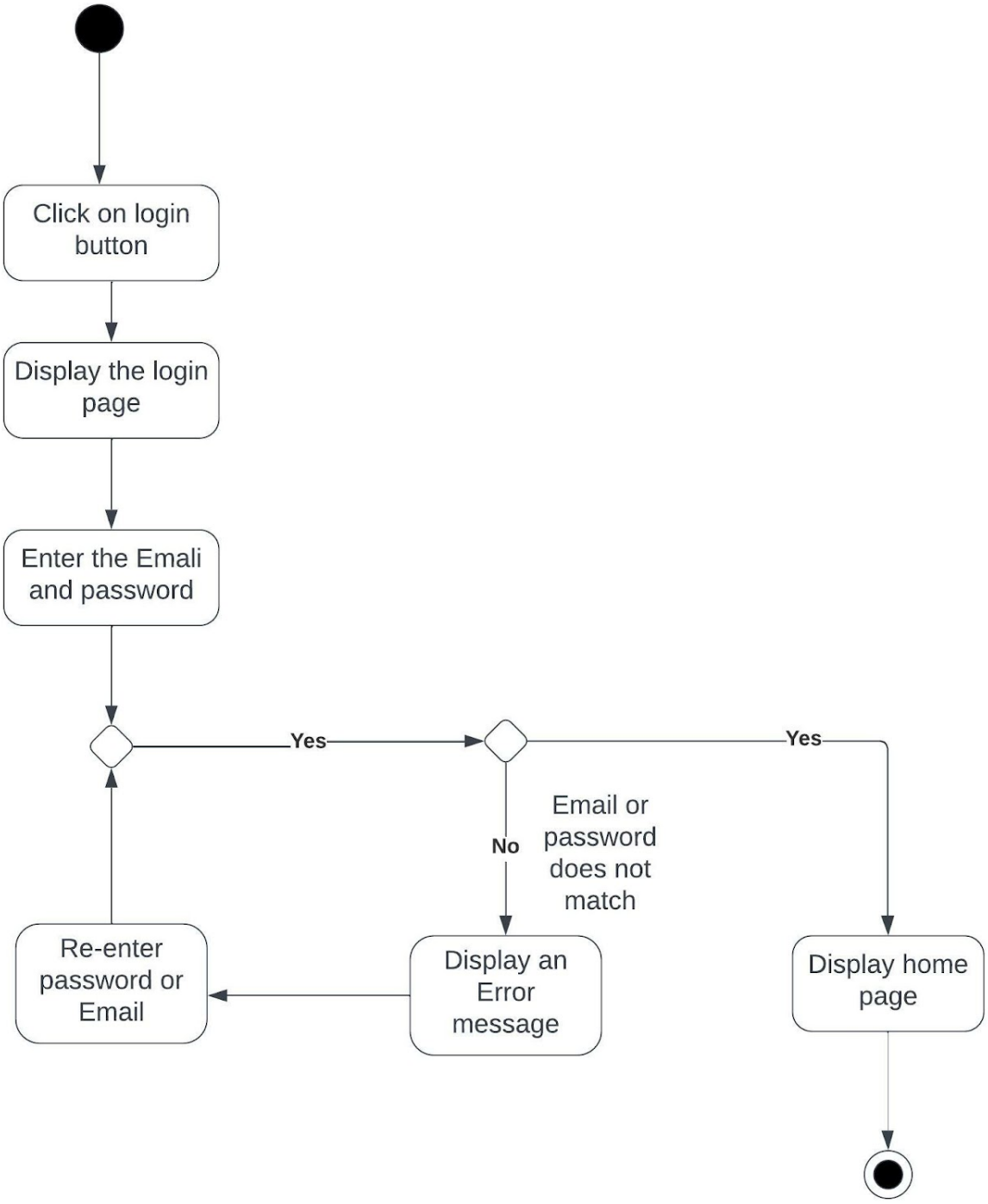

Figure 3.2: Login to the system (UC2)

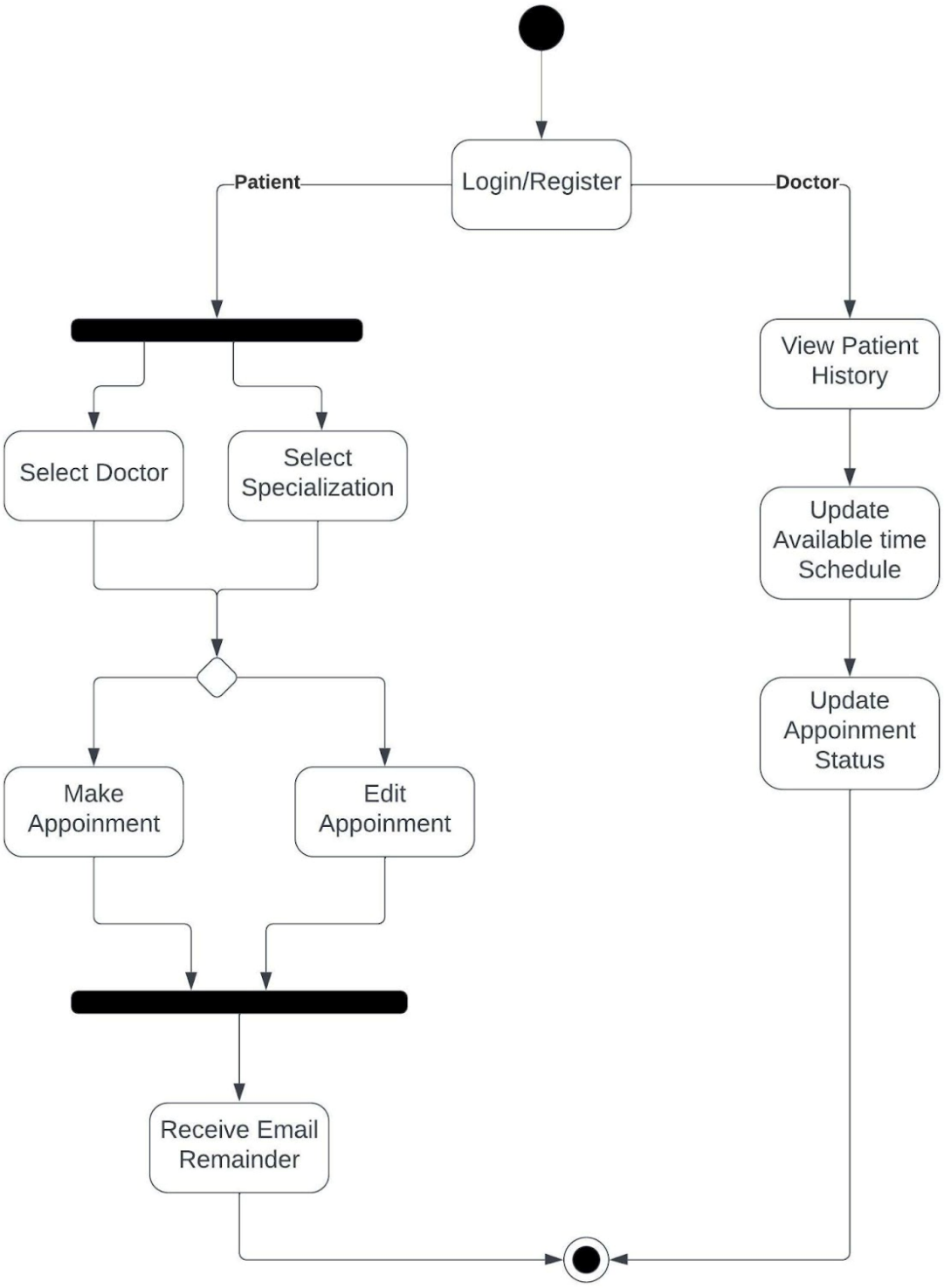

Figure 3.3: Make Appointment (UC3)

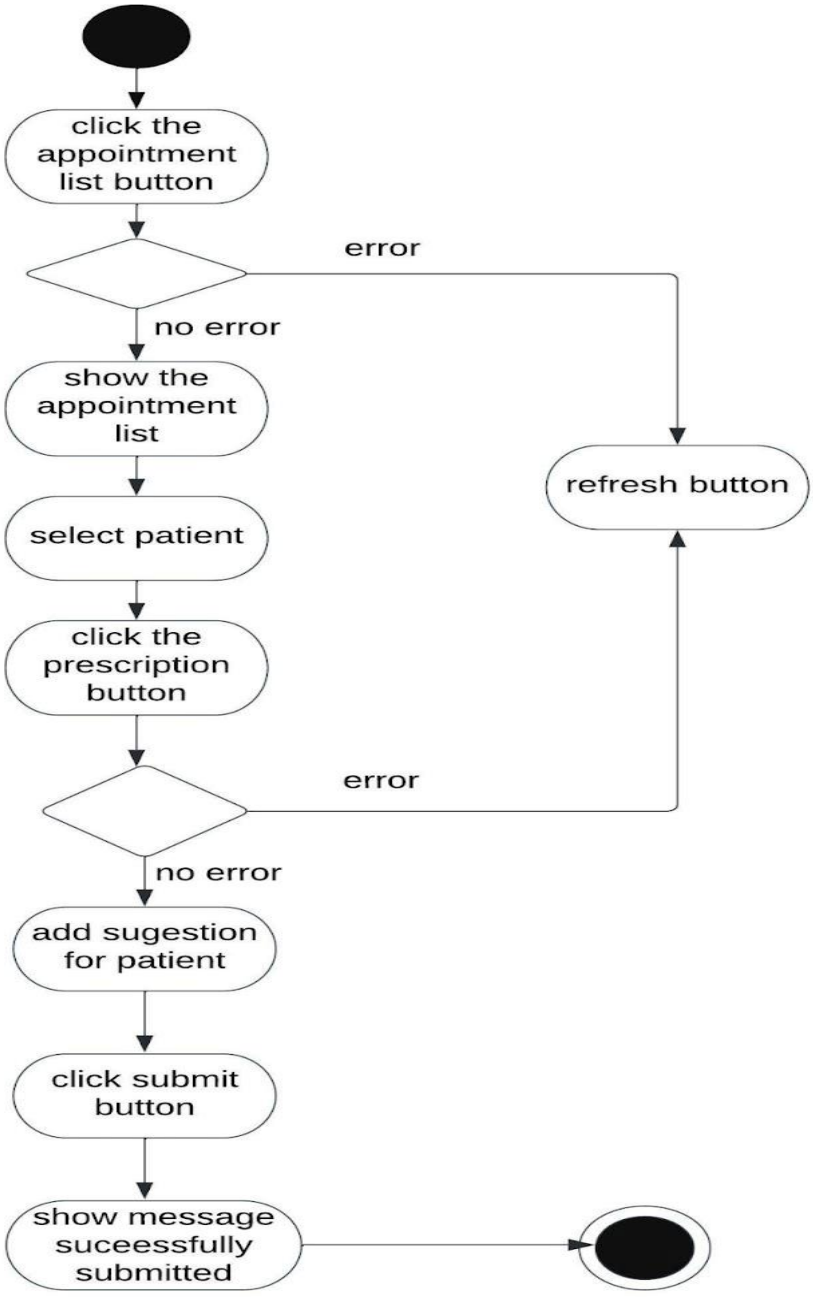

Figure 3.4: Generate Digital Prescription (UC4)

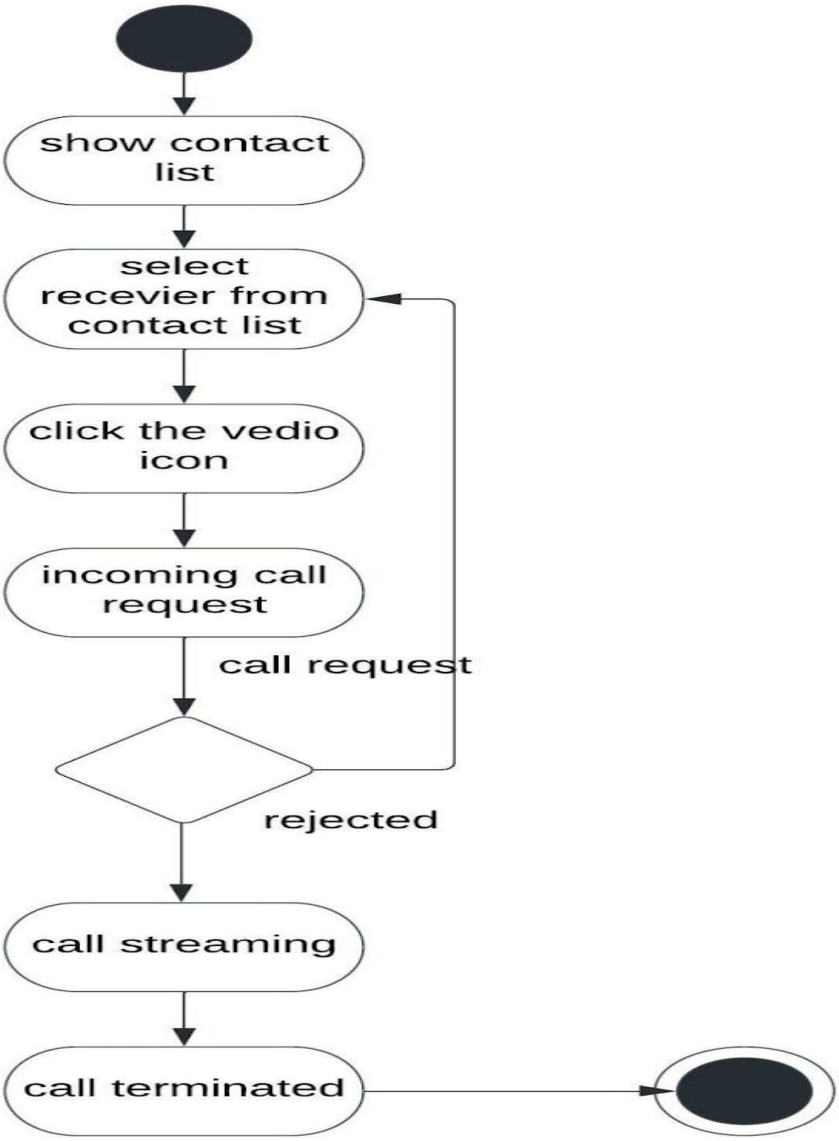

Figure 3.5: Communicate Via Tele meeting (UC5)

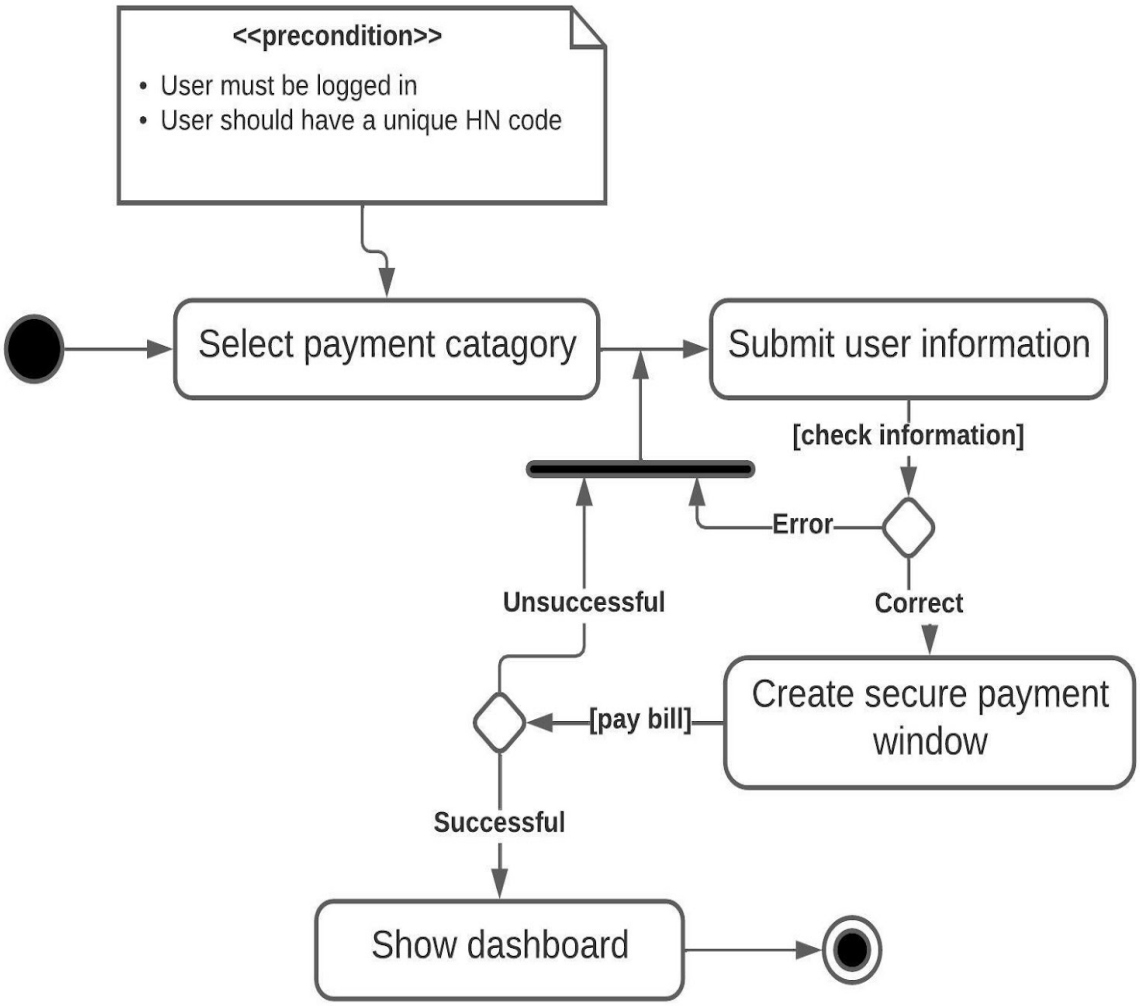

Figure 3.6: Pay via Online Payment (UC6)

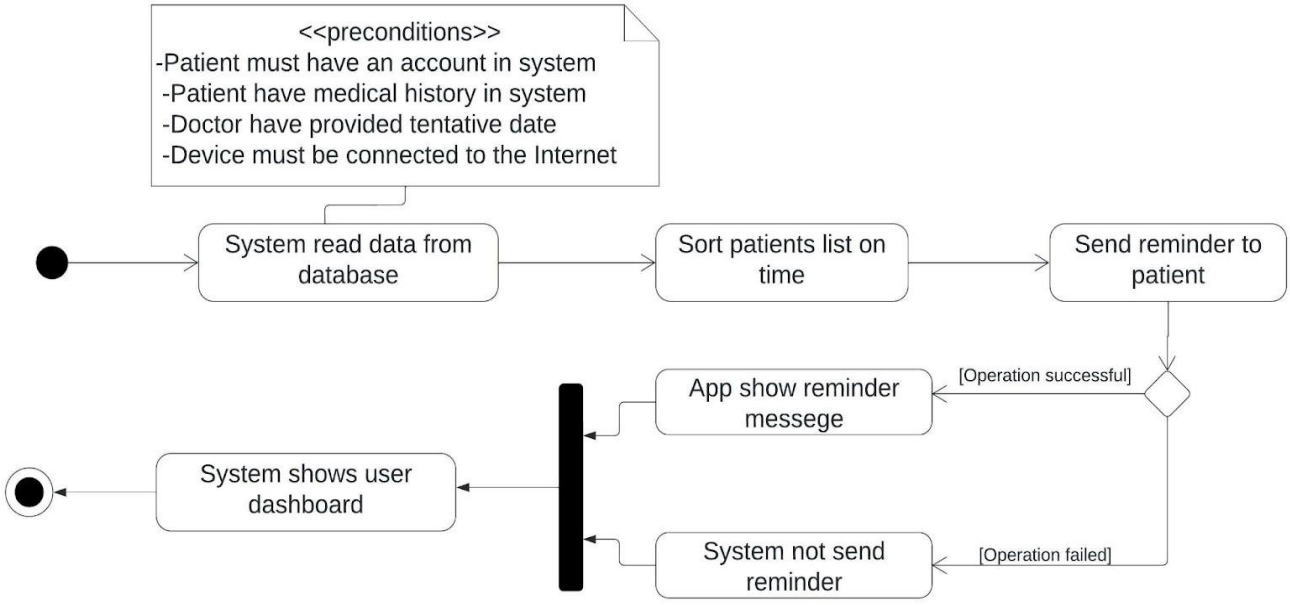

Figure 3.7: Send Reminder (UC7)

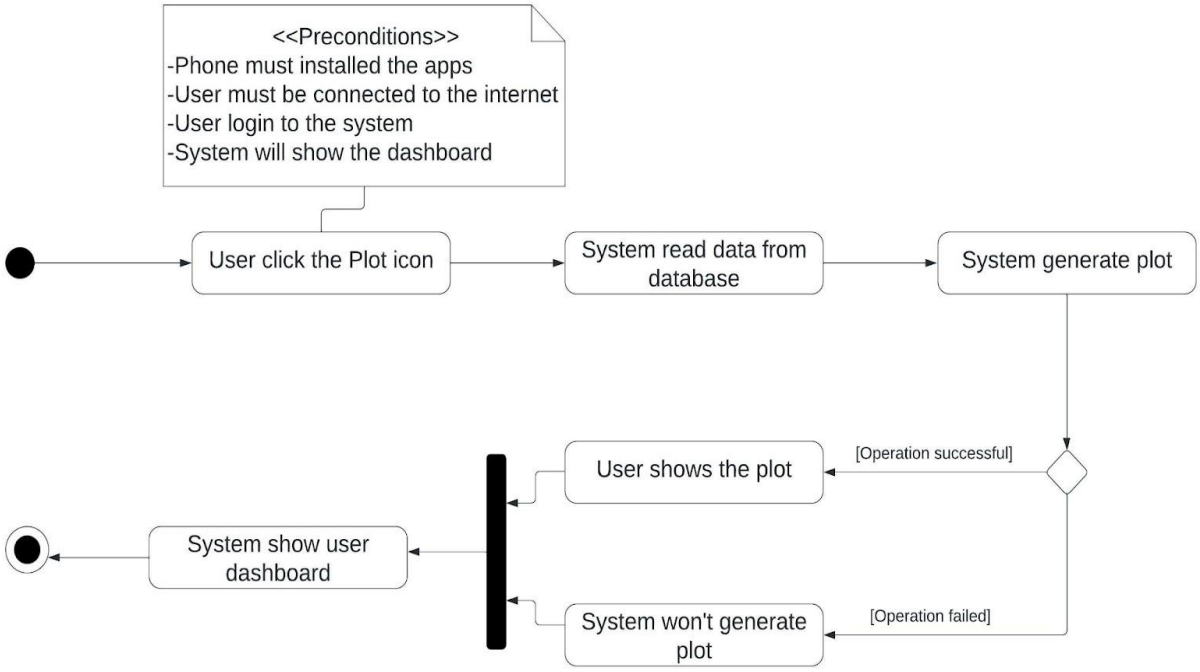

Figure 3.8: Generate Plot (UC8)

4. Conceptual Class Diagram

A conceptual class diagram is used to provide a generalize overview of a system. A conceptual class diagram is a design artifact, where many things may have been optimized away. It helps developer to understand external relationship between different classes. Conceptual class diagram provide different perspectival view of system including associational, external relational etc.

In this section we incorporate the relation between the entity classes in figure 4.1 and full conceptualize diagram of our proposed Medical system in figure 4.2. Here, we presented 3-tier based conceptual class architecture for our proposed eight use cases.

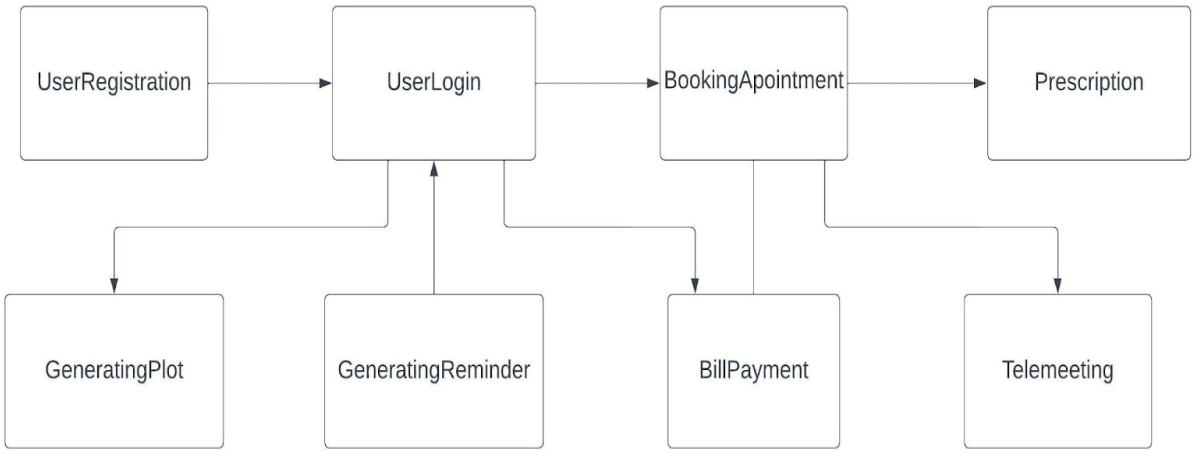

Figure 4.1: Relational Class diagram

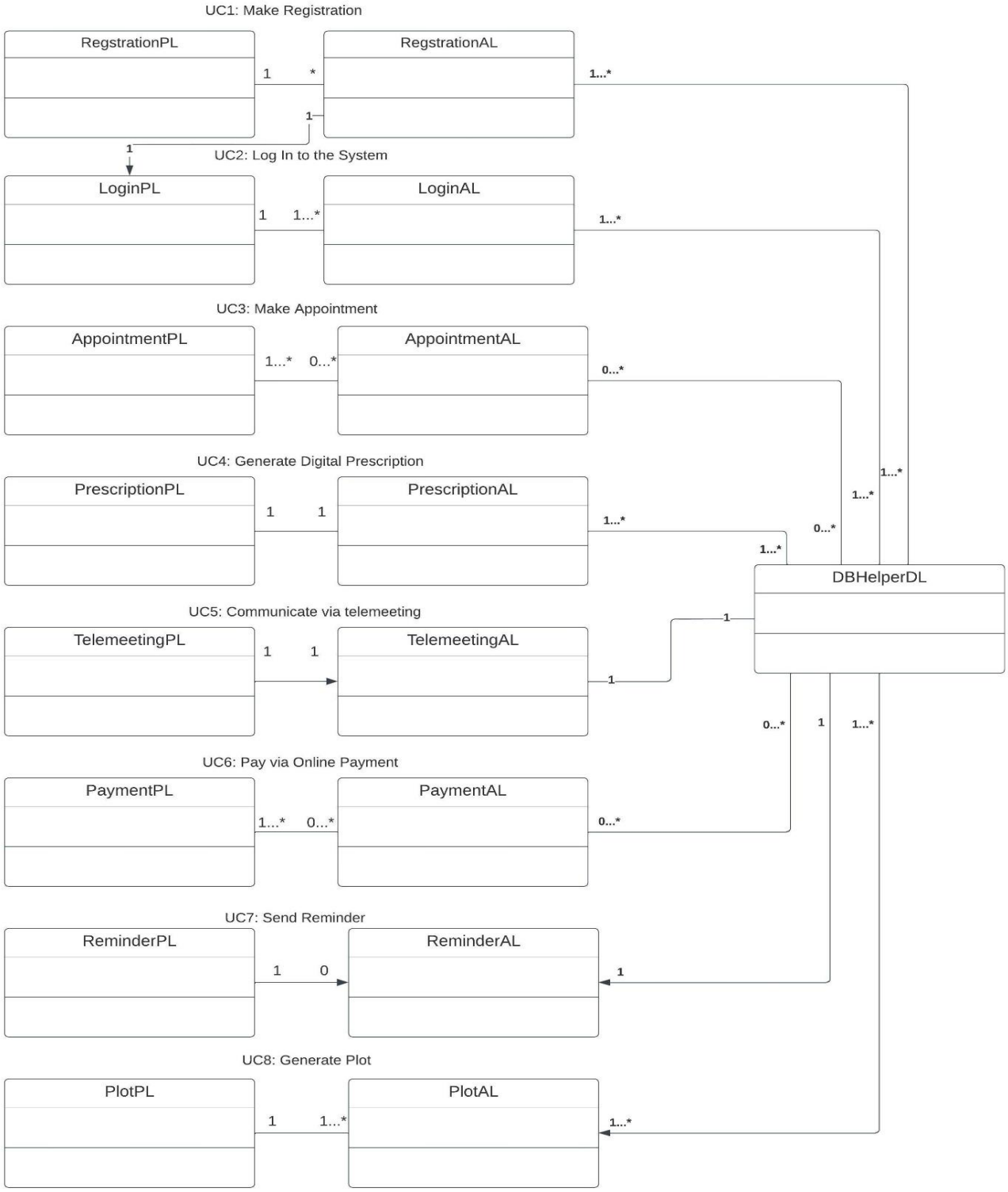

Figure 4.2: Conceptual Class diagram

5. Sequence Diagram

A sequence diagram shows object interactions arranged in time sequence. It portrays the classes and objects involved and the sequence of messages exchanged between the objects for carrying out the functionality of the system. It depicts the objects involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of scenario. Sequence diagrams are typically associated with use case realizations in the logical view of the system under development. Sequence diagrams are sometimes called event diagrams or event scenarios.

For a particular scenario of a use case, the diagrams show the events that external actors generate, their order, and possible inter-system events. All systems are treated as a black box; the diagram places emphasis on events that cross the system boundary from actors to systems. A system sequence diagram should be done for the main success scenario of the use case, and frequent or complex alternative scenarios. It is used for showing the logical view of the system. Sequence Diagrams for MMS System is demonstrated in Figure 5.1 through 5.8

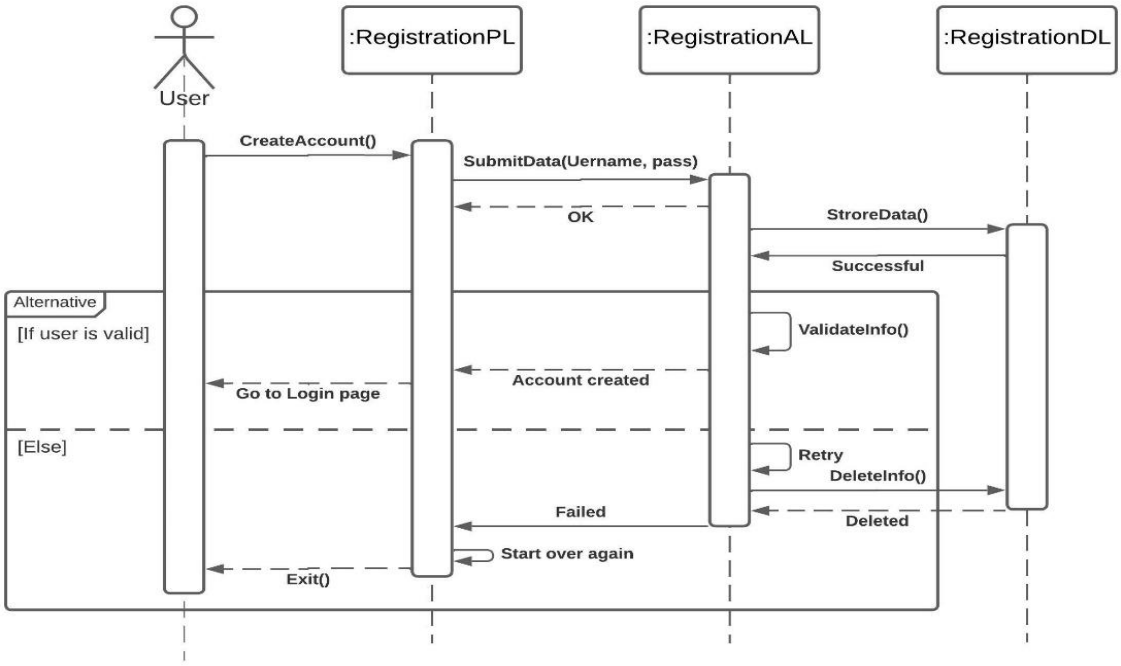

Figure 5.1: Make Registration (UC1)

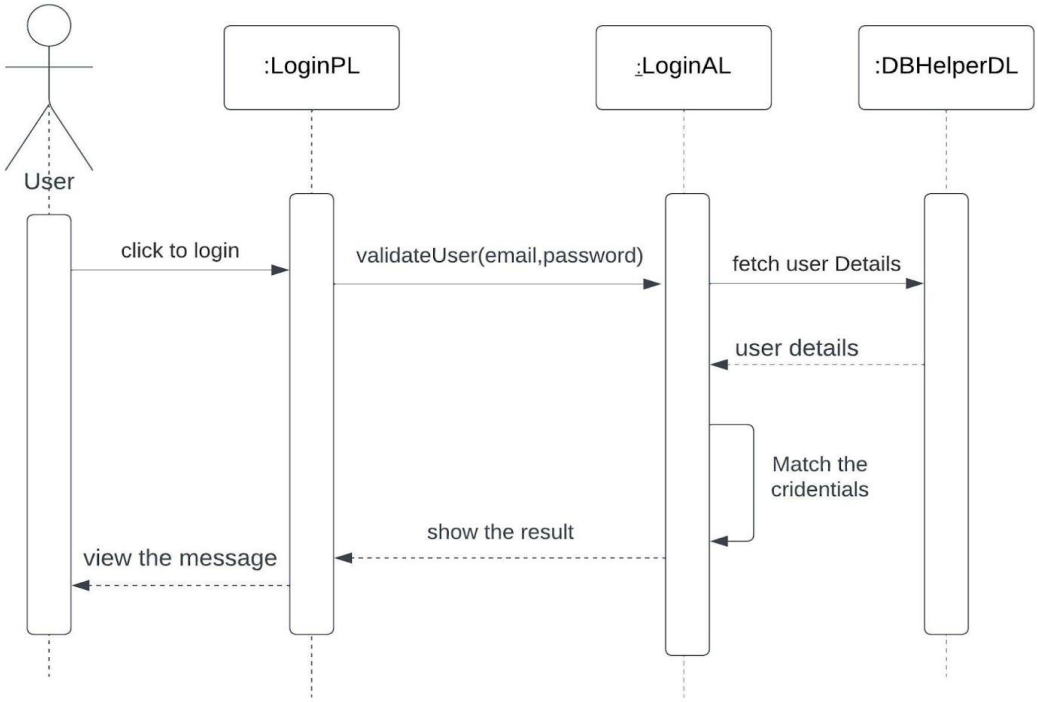

Figure 5.2: Login to the system (UC2

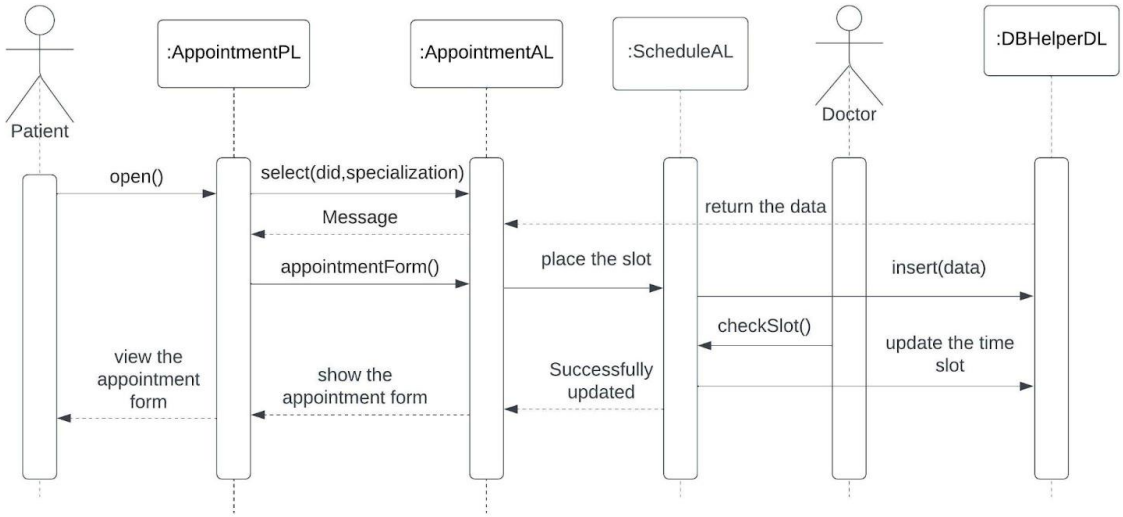

Figure 5.3: Make Appointment (UC3)

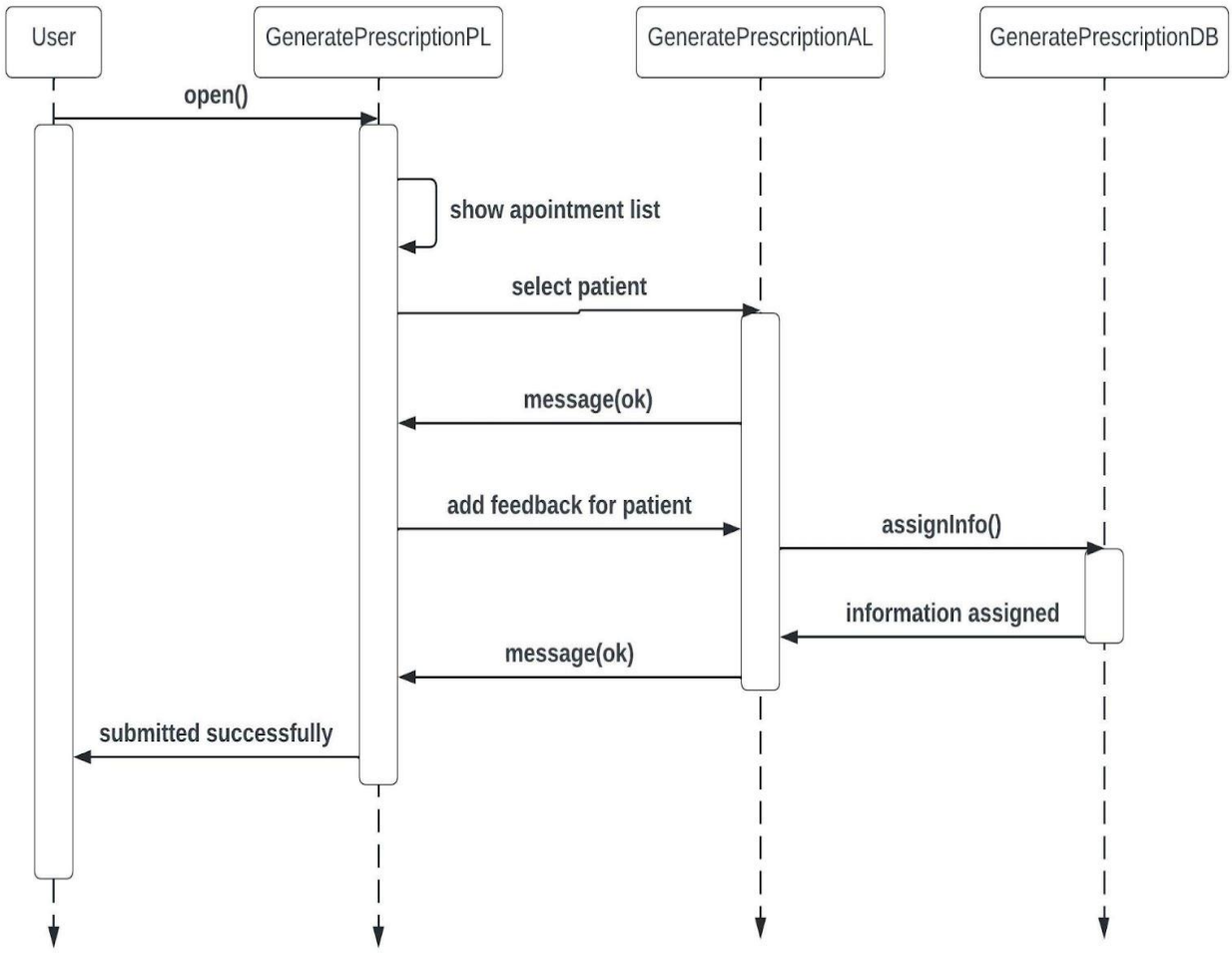

Figure 5.4: Generate Digital Prescription (UC4)

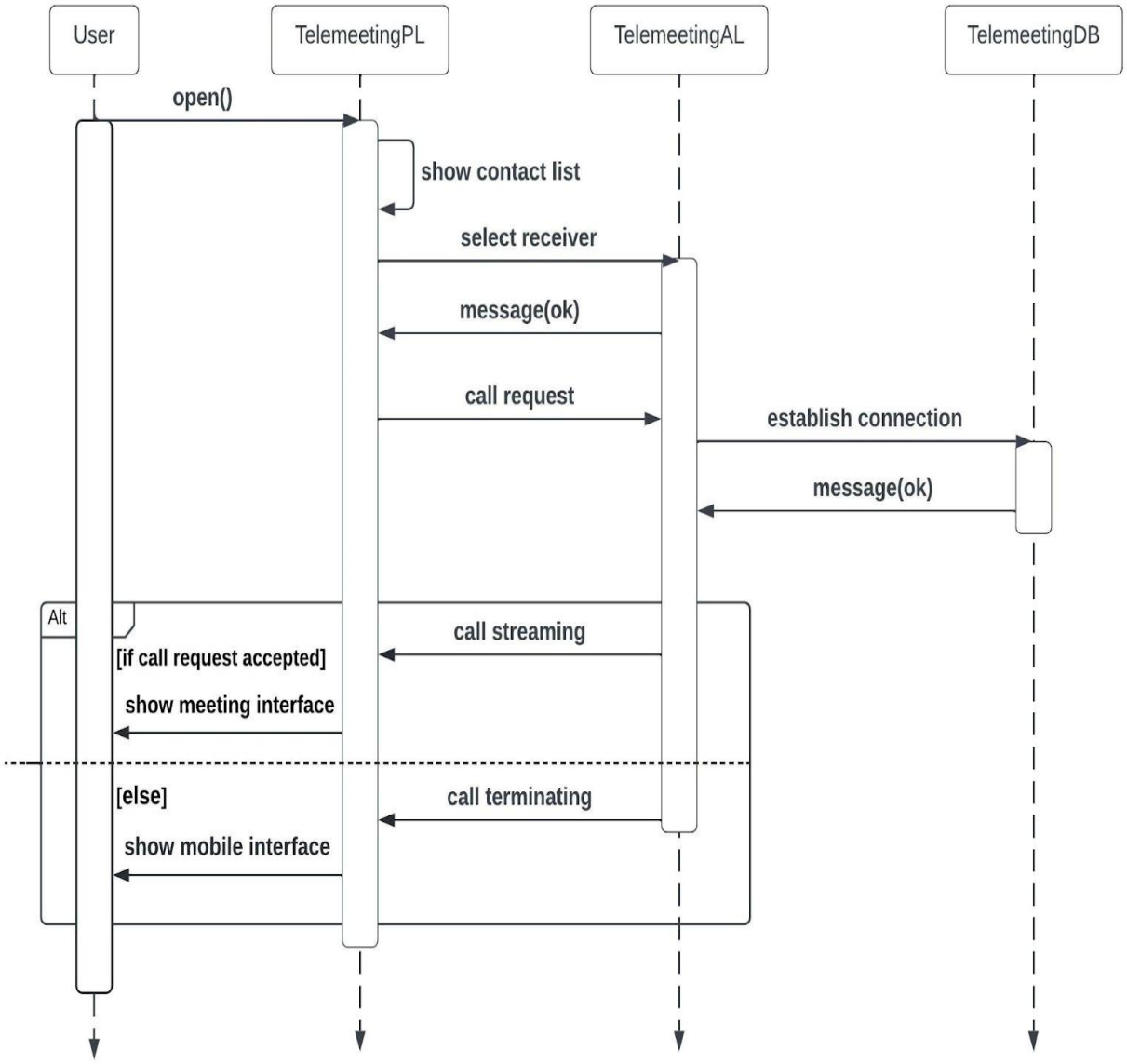

Figure 5.5: Communicate via Tele meeting (UC5)

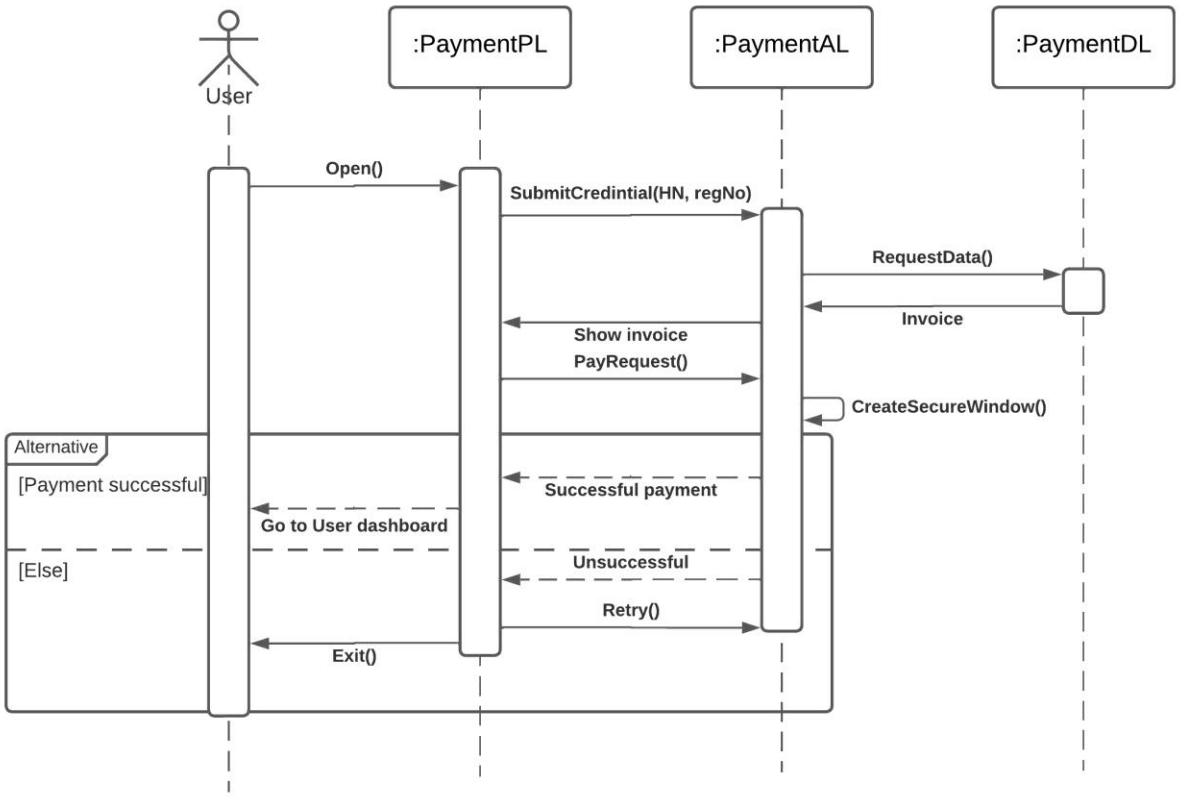

Figure 5.6: Pay via Online Payment (UC6)

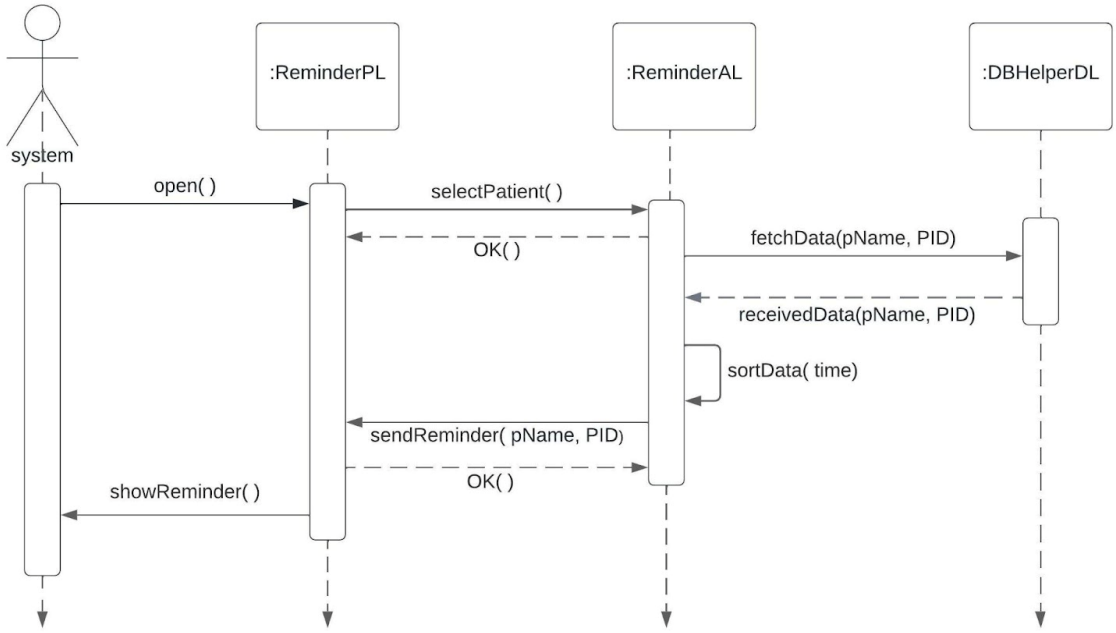

Figure 5.7: Send Reminder (UC7)

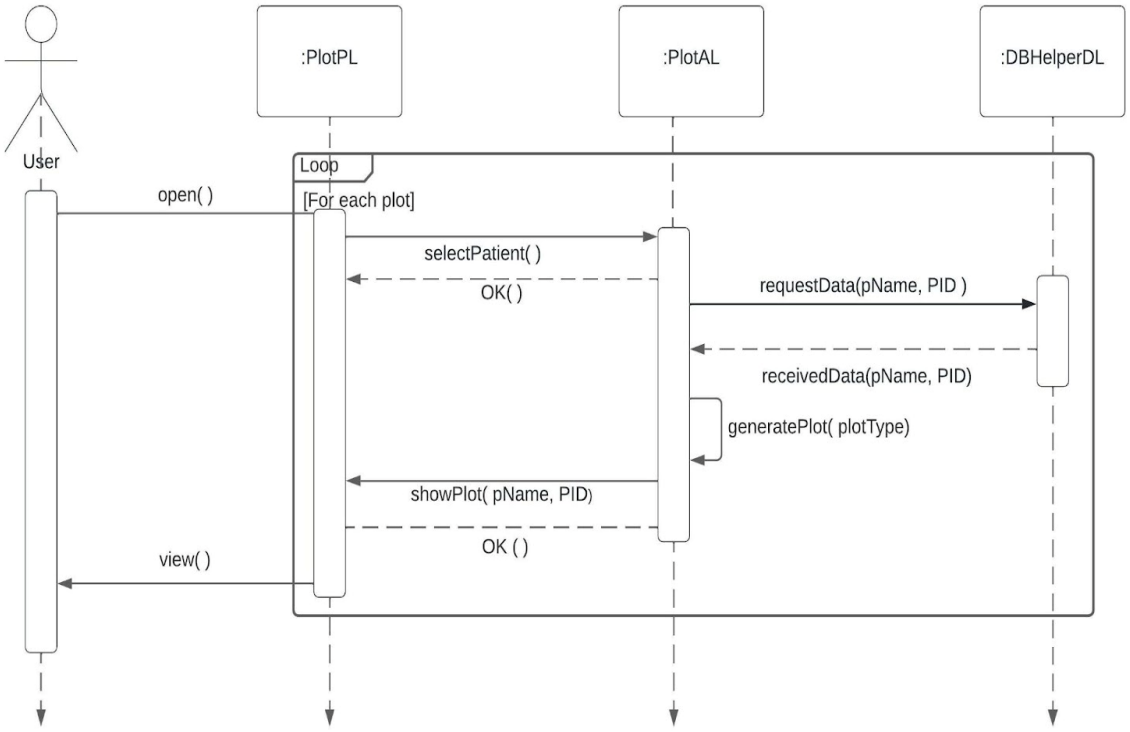

Figure 5.8: Generate Plot (UC8)

6. State Machine Diagram

A state machine diagram models the behavior of a single object, specifying the sequence of events that an object goes through during its lifetime in response to events. State diagrams require that the system described is composed of a finite number of states; sometimes, this is indeed the case, while at other times this is a reasonable abstraction. Many forms of state diagrams exist, which differ slightly and have different semantics.

We have depicted our system sequence diagrams in previous section 5. From the analysis we find out four entities which play dynamic role in our system including Prescription, System, Patient and Doctor. However, we showed a state machine diagram for these entity each in figure 6.1 through 6.4

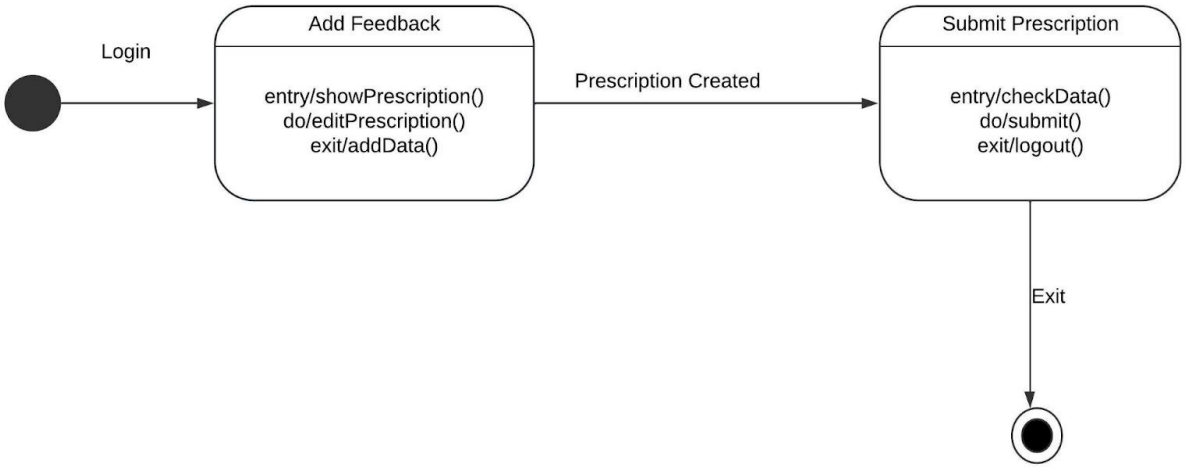

Figure 6.1: State machine diagram for Prescription object

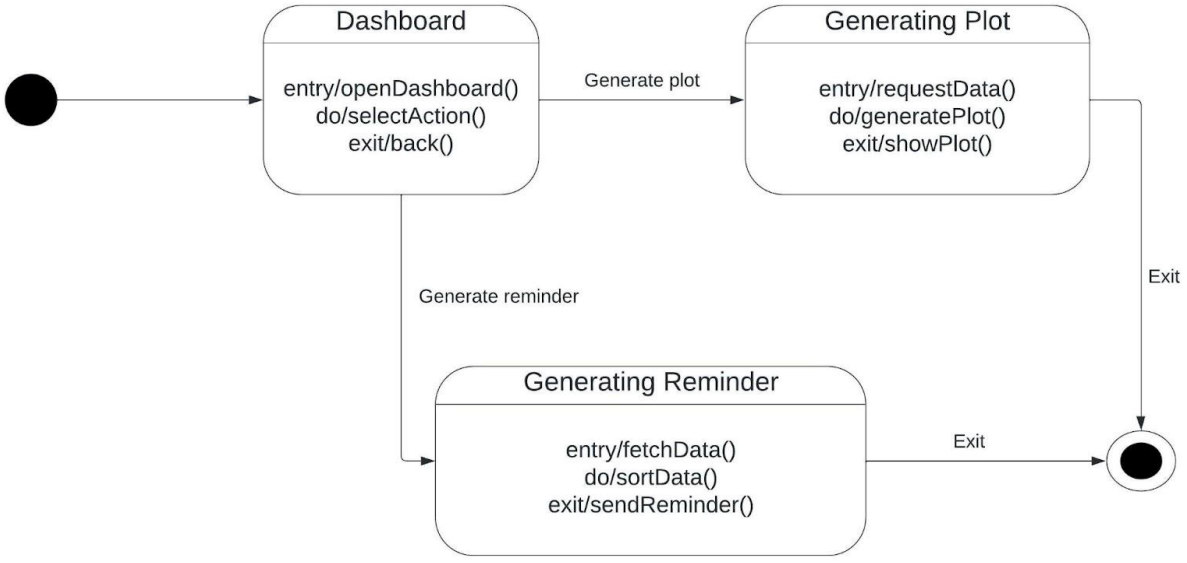

Figure 6.2: State machine diagram for System object

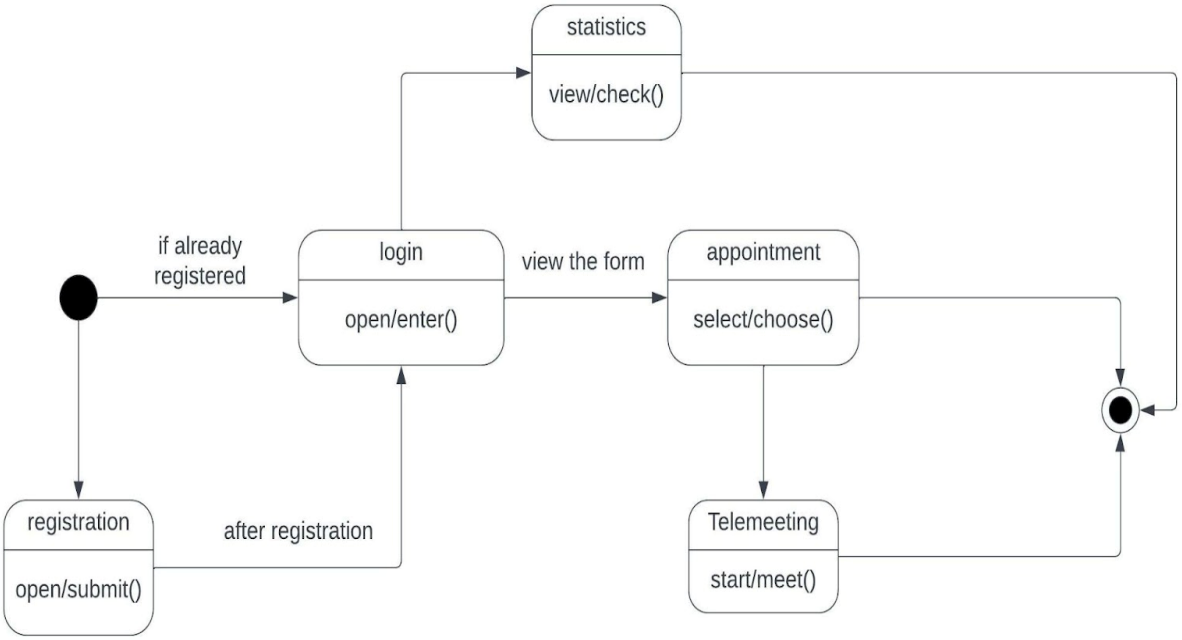

Figure 6.3: State machine diagram for Patient object

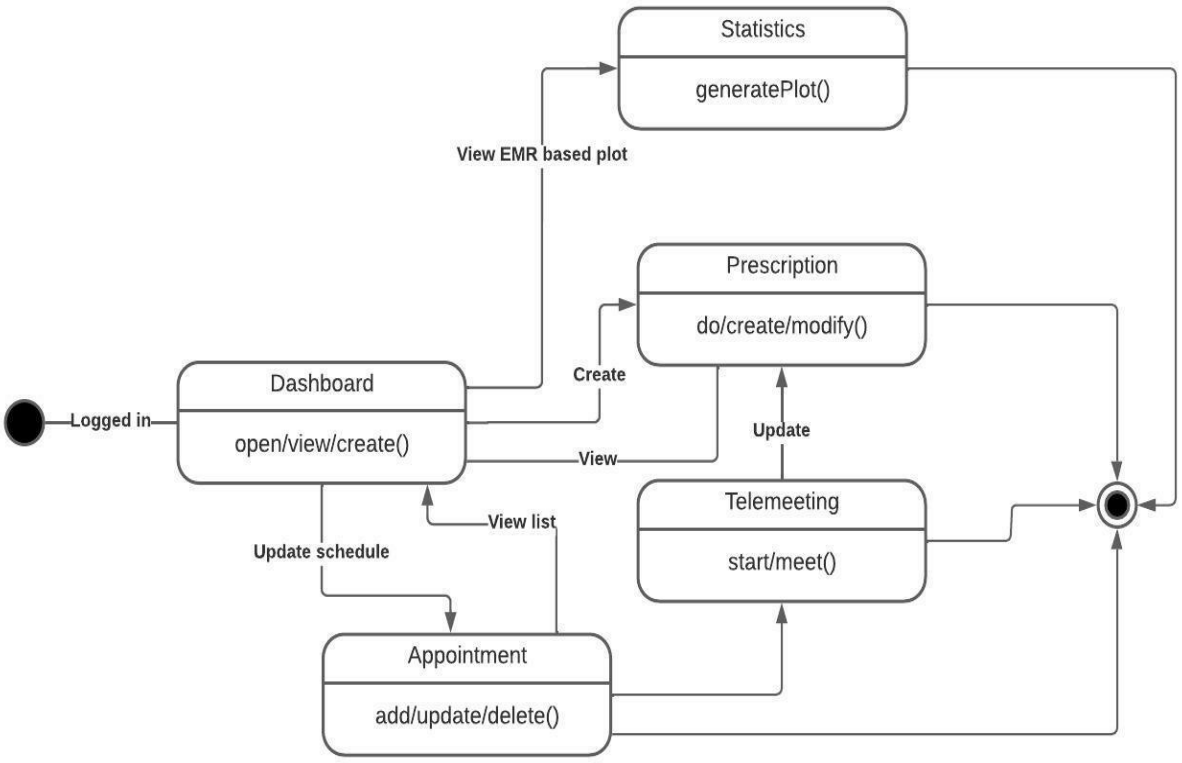

Figure 6.4: State machine diagram for Doctor Object

7. Conclusion

A High-Level Architectural Design (HLAD) document gives the abstract structure of the system. In the Detailed Design (DD) document we present the detailed architecture of the system and the static and dynamic architecture of its main components. The HLAD for the Medical Management System will help to design the system efficiently and also gives a brief overview of the system from external, structural, interactional and behavioral perspectives.

****** The contributions of team member are mentioned bellow ******

Name	Contribution	
	Individual	**Combined**
Md. Akram Hossain (18701071)	Figure: 3.1, 3.6, 5.1, 5.6, 6.4	Figure: 4.1, 4.2
Abdul Aziz (18701032)	Figure: 3.7, 3.8, 5.7, 5.8, 6.2	
Rofiqul Islam (17701101)	Figure: 3.4, 3.5, 5.4, 5.5, 6.1	
Md. Mohsin Hossain (18701057)	Figure: 3.2, 3.3, 5.2, 5.3, 6.3	