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MEDICAL MANAGEMENT SYSTEM

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Medical Management System

Knowledge is power, but knowledge without application is useless

Medical Management System

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1. Executive Summary

1.1 Project Overview

Our project consists of a Web-based application for a Management System for Hospitals with its main points being setting appointments online, keeping medical records for each patient in a digital form instead of on paper, how they are now, keeping records of hospitalizations and emergencies and also showing timetables for medical personnel.

The implementation of the idea will work closely with polyclinics by having access at their databases for patients they forward to our system. Polyclinic's receptionists, which will have their own account in our system, will be the ones to set appointments for their patients depending on the hospital doctor's timetable and also share the medical records of the patient with that doctor. After the specialist doctor finishes the appointments, updated patient records are sent back for download.

Each doctor will have his/her own account where he/she can add patients, set appointments (this is done by polyclinic's receptionists mainly/mostly), cancel them, write appointment notes which are added to patient records, check the medical records of a patient, check hospitalized patients' progress. In addition the specialist doctor can send requests to the hospital receptionist to reserve a bed to hospitalize a patient, if he sees it necessary after an appointment.

Also, in our system we will keep track of each doctor's timetable and display how the shifts are going to be. Besides doctors, higher ups in administrate will have their own accounts, where they can make changes in timetables, shifts and in personnel such as adding/removing doctors, nurses and receptionists.

Hospital receptionists will also have accounts but mostly of an observing nature, they won't be able to make any changes but only check hospitalization information, inform on them during visiting hours but also add new entries for people who come for an emergency and reserve beds for patients who will be hospitalized.

Nurses will have their own accounts, where they see hospitalized patients in their ward and submit reports on their progress.

In addition, the project will consist of a separate part for the emergency section of the hospital to hold records of when the patient comes, his basic personal information, what were his symptoms. This information as we said will be added by the hospital receptionists and doctors on duty call.

The project is intended towards public hospitals.

1.2 Purpose and Scope of this Specification

The purpose of our project is to facilitate the way the hospitals in our country work. The idea came while thinking about the numerous problems the health department faces such as people waiting in long lines and medical records getting lost and not being kept in order. Our Management System aims to remove such long lines by people leaving appointments at a specific time when the doctor is available and holding all records of patient activity in the

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hospital in digitalized form. Such activity includes not only appointments but also emergency entries, hospitalizations, shifts. Thus records will be less likely to get lost or get mixed up.

In scope:

- Modification of the way patient records are being kept in a hospital
- Modification of the way appointments at the doctor's office are reserved
- Modification of the way hospitalized patients' progress are kept
- Modification of the way the shifts are displayed
- Modification of the way emergency entries are kept

Out of scope:

- Modifications of the administrative part of the Hospital

2. Product/Service Description

2.1 Product Context

This project is about a Medical Management System available for hospitals. It is not an independent system because it has a accessible database with polyclinics, so it is depended on the polyclinic.

2.2 User Characteristics

In this project there are five types of users:

- Administrator
 - Polyclinic Receptionist
 - Specialist Doctor
 - Hospital Receptionist
 - Nurses
- a. Administrator

The administrator of our software will be created initially by the programmers. Afterwards, the account will be given to one of the top members of hospital hierarchy whom can be The Dean of the hospital or hospital Administrators. He/she will be in charge of scheduling of timetables. Also, another task of admin is adding or removing staff members such as : doctors, receptionists and nurses.

- b. Polyclinic Receptionist

In this project the polyclinic receptionist is not a member of the hospital. He/she is only needed to set appointments to the specialist doctor and along with it also download the updated patients' medical history after appointment is finished.

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c. Specialist Doctor

The specialist doctor is the one that receives the appointments from polyclinic receptionist. He/she can: fill finished appointment form, send request for hospitalization, see patient records or even cancel appointment, write progress notes for hospitalized patients and release them after no need of hospitalization.

In cases where the patient comes to emergency without being sent from polyclinic receptionist, the specialist doctor in duty call can create a new entry in the emergency section, edit it later in case not all data was known at the moment of emergency and add that person as his own patient.

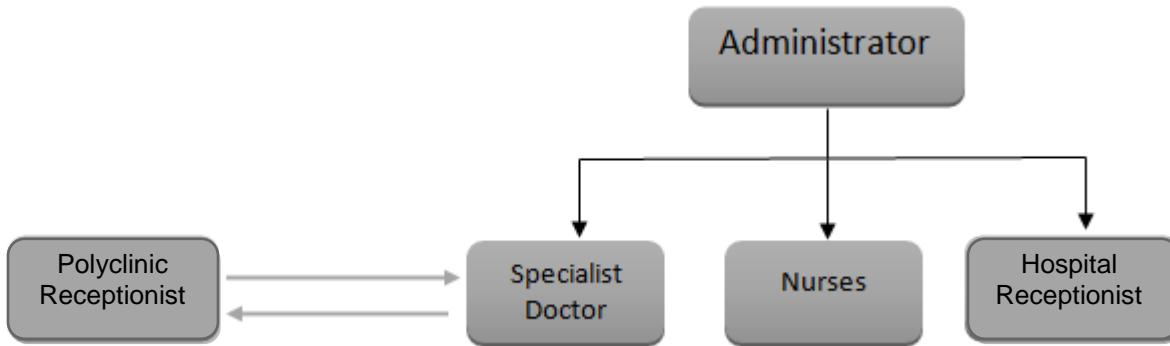
d. Hospital Receptionist

Hospital receptionists' job is to reserve beds after receiving a request for hospitalization, to see hospitalized patient information to inform during visiting hours and to create a new entry in emergency section and edit it later if necessary. They can release patients from hospitalization.

e. Nurses

The nurses are divided in different wards. They are in specialist doctors' supervision and can also fill patient progress when hospitalized and read doctor progress notes. Just like doctors and receptionists, they can also release patients from hospitalization.

Here is a diagram on how these users are connected with each-other:



2.3 Assumptions

- It is assumed that everything is done according the law.
- It is assumed that the doctors insert properly the patients' diagnoses and prescription.
- It is assumed that the timetables of hospitals' staff are set properly.
- It is assumed that doctors are coordinated in schedules for emergency.
- It is assumed that a patient knows the time of the appointment.

2.4 Constraints

- A management system should be implemented at polyclinics too.

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- Access to polyclinics' databases is a must (will be done using XML).
- Patients should have medical records at the corresponding polyclinic.
- Patients should go to polyclinic first and then forwarded to us if necessary.
- Only the doctor attending to a patient can have access to that patient's records
- Only the nurses of that ward can have access to that patient's progress during hospitalization.
- Only higher ups in the hospital can make changes such as add/remove staff, change timetables and shift schedules
- Receptionists can only see hospitalization information but cannot make any changes
- Each doctor should have a PC in his/her office
- Internet connection should be stable and available at all times

3. Requirements

3.1 Functional Requirements

The requirement numbering has a scheme - FR_## (FR for Functional Requirement).

Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
FR_01	The web application has different views for each type of user, each one of them having different functionalities accordingly.	<ul style="list-style-type: none">- A view for polyclinic receptionists- A view for specialist doctors- A view for hospital receptionists- A view for nurses- A view for the administrator	2	6.05.2018	Xheni Vogli/Greisa Ajdini
FR_02	All the accounts for each type of user are secured with a password.	The password is stored in the database by firstly hashing it, so that only the user knows it.	1	6.05.2018	Greisa Ajdini/Xheni Vogli
FR_03	Each user will be uniquely identifiable by his/her own id.	It guarantees that each user is uniquely identifiable (no two users have the same id, thus no ambiguity).	1	6.05.2018	Xheni Vogli/Greisa Ajdini

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Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
FR_04	Admin can add, remove or edit doctors, receptionists and nurses, as well set the timetable for doctors and nurses.	Admin is the only user responsible for updating or editing users (beside users themselves): doctor, receptionists and nurse.	1	10.05.2018	Xheni Vogli/Greisa Ajdini
FR_05	Admin has restricted access to all patients' records.	Admin has no right to have sensitive information about any of the patients.	1	12.05.2018	Greisa Ajdini/ Xheni Vogli
FR_06	All the patients' profiles that are added by the doctor or the receptionist have to obey the validation rules determined by the system itself.	Every attribute that is inserted into the database must strictly stick to the rules previously set.	1	8.05.2018	Greisa Ajdini/ Xheni Vogli
FR_07	Not only the polyclinic receptionist, but also the specialist doctor is able to set appointments for patients.	The polyclinic receptionist and the specialist doctor have the right to set appointments.	3	15.05.2018	Xheni Vogli/Greisa Ajdini
FR_08	Each specialist doctor has the right to cancel his/her appointment.	If the doctor can't reach the time set for an appointment for different reasons, he is able to cancel it.	3	20.05.2018	Greisa Ajdini/ Xheni Vogli
FR_09	Once the specialist doctor cancels a patient's appointment, the patient is notified about this fact by email.	An email is sent automatically when the appointment has been cancelled.	3	15.05.2018	Greisa Ajdini/ Xheni Vogli
FR_10	The polyclinic receptionist must export the anamnesis of the patient whom he/she is making an appointment for.	This is a must, because otherwise there won't be any information about the patient in the system.	1	23.05.2018	Xheni Vogli/Greisa Ajdini
FR_11	After updating the anamnesis of a patient, the records are shown in a downloadable format XML at the page of the polyclinic receptionist.	For changes in the anamnesis of a patient, the XML format file is shown at the page of the polyclinic receptionist.	2	25.05.2018	Greisa Ajdini/ Xheni Vogli

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Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
FR_12	Hospital receptionists can only add personal information when creating a new entry for a patient that comes to the emergency ward.	Receptionist fills in the formalities for each new patient that comes in the emergency.	2	21.05.2018	Xheni Vogli/Greisa Ajdini
FR_13	The specialist doctor at the emergency ward adds a new patient after examining him/her.	The specialist doctor has the right to add a new patient, when in emergency ward.	2	24.05.2018	Greisa Ajdini/ Xheni Vogli
FR_14	The specialist doctor writes progress for the hospitalized patients.	Specialist doctor can keep notes digitally for his/her patients when hospitalized.	2	25.05.2018	Xheni Vogli/Greisa Ajdini
FR_15	Hospital receptionist has restricted access to all patients' records.	Receptionist has no right to have sensitive information about any of the patients.	1	25.05.2018	Greisa Ajdini/ Xheni Vogli
FR_16	The system generates automatically reports for statistical purposes.	Reports, such as for number of hospitalization and number of appointments in a special ward, number of emergencies in a month are generated in PDF format.	3	27.05.2018	Greisa Ajdini/ Xheni Vogli
FR_17	Admin is the only one who can access the automatically generated reports for statistical purposes.	All others users don't have any access to the reports.	2	26.05.2018	Xheni Vogli/Greisa Ajdini
FR_18	Admin can search doctors, nurses and receptionists without any limitation, but not patients.	Getting information for doctors, nurses and receptionists, but not for patients (ethical issues).	2	24.05.2018	Xheni Vogli/Greisa Ajdini
FR_19	When doctors are logged in, they can search their patients, hospitalized, emergency.	Searches can be done by patient ID, name, surname, wards.	3	26.05.2018	Greisa Ajdini/ Xheni Vogli

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Req#	Requirement	Comments	Prio rity	Date Rvwd	SME Reviewed / Approved
FR_20	The specialist doctor has a dedicated page where they can view the hospitalized patients.	This page will contain the ID, name, surname, room and also information on the patient's records and his/her progress written by the nurse.	2	27.05.2018	Greisa Ajdini/ Xheni Vogli
FR_21	The hospital receptionist assigns the room and bed to the patient waiting to be hospitalized.	When the specialist doctor makes a room request the receptionist views the rooms' availability for that specific ward and assigns one to that patient.	1	26.05.2018	Xheni Vogli/Greisa Ajdini
FR_22	The hospital receptionist can search for a hospitalized patient in order to find his/her room during the visiting hours.	Using name/surname/ID of a patient the receptionist can easily find in which room the patient is.	3	26.05.2018	Greisa Ajdini/ Xheni Vogli
FR_23	The nurse can search for a patient that is assigned to her (that is in her ward).	Using name/surname/ID of a patient the nurse can easily find that patient.	3	25.05.2018	Xheni Vogli/Greisa Ajdini
FR_24	The specialist doctor sends a request for hospitalization whenever he/she considers it necessary for the patient's case.	The specialist doctor makes the request for hospitalization and the nurse proceeds later with assigning the room.	2	23.05.2018	Xheni Vogli/Greisa Ajdini
FR_25	Nurses have restricted access to the patients' records and can only see the progress of the patients in their ward.	Nurses have no right to obtain sensitive information about any of the patients that don't belong to their ward.	2	24.05.2018	Greisa Ajdini/ Xheni Vogli
FR_26	The hospitalized patients can be released from the hospital receptionist, the Specialist Doctor assigned to that patient and the nurses of that specific ward.	Only the hospital receptionist, patient's own doctor and nurse of that specific ward have the right to release the hospitalized patient.	1	26.05.2018	Xheni Vogli/Greisa Ajdini

3.2 Non-Functional Requirements

3.2.1 Product Requirements

3.2.1.1 Usability Requirements

- The software is very user-friendly which makes it very easy to work with.
- Admin will be the only person that can register staff members. The system has the right instructions to make this step easier.
- After registration, admin can edit or delete receptionists, doctors and nurses.
- After changing the given password, nurses, receptionists and doctors are the only ones with access to their accounts.
- The system is conceptualized to be easy to learn and to use.

3.2.1.2 User Interface Requirements

The user interface of the web-based application will be executable to browsers like Chrome and Mozilla. Before entering the system each of our users: admin, nurse, receptionists or doctors will face each a login interface where he/she must provide the medical ID and password. After this step each user, will be sent to his/hers own appropriate view.

- Admin will have a view of a table of all medical specialties in the hospital with corresponding doctors and the option to Add/Remove/Edit doctors.
- Polyclinic Receptionist will have an interface where he/she can add an appointment according to the availability of the specialist doctors and also download the records of the patients.
- Hospital Receptionist will have an interface where he/she can assign a bed for the patient to be hospitalized and also releases the patient when the hospitalization period ends.
- Doctors will have a view of his/hers timetable, the hospitalized patients and an interface where he/she can complete the appointment data for each patient and the progress for each hospitalized patient.
- Nurse will have a view of all hospitalized patients and a module of all tasks (medications / tests) given by the specialist doctor for each patient.

3.2.1.3 Efficiency Requirements

3.2.1.3.1 Performance Requirements

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- The software will be based on web and has to be run from a web server.
- The software shall support all the workers in the hospital who must have access in the system at any time.
- The software will take initial load time depending on internet connection strength which also depends on the media from which the product is run.
- The performance will depend upon hardware components of each user.
- Registration of data for each entity shall be processed in a few milliseconds

3.2.1.3.1.1 Capacity

This project will require constantly export and import of patients data between different databases. This process will most probably increase the time of execution and maybe will make a queue of requests and responds from the database.

3.2.1.3.1.2 Availability

- The software will be active and utilized 24 hours on every day of the week.
- Since the project is built up on a specific hospital, the geographic coverage area of the software will be only inside the hospital.
- The system is made to decrease the lines of wait in hospitals so each patient must have scheduled an appointment in correct procedures. The unscheduled patients can only be accepted in emergency ward.
- The system is not available for patients.
- The system will be reliable because the failures would cause unwanted queues.

3.2.1.3.1.3 Latency

The project is based on internet connection so the most common problem that would cause delays will be the internet latency.

3.2.1.4 Manageability/Maintainability Requirements

3.2.1.4.1 Monitoring

The best will be done by our team to have a reliable and robust system, but there can be unexpected cases when the application malfunctions (due to bugs, attacks, etc). To make sure that these cases will not happen we will be in continuous discussion with our supervisor and tester.

3.2.1.4.2 Maintenance

MySQL is used for maintaining the database and the Apache server takes care of the site. In case of a failure, a re-initialization of the program is recommended. If it is not the case, that means that the server may be down, so the user needs to wait for the system administrator to start the server.

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For emergent cases of breakdown, we will provide the software with the backup of the web application and the database. The application shall be easy to extend. The code shall be written in a way that it favors implementation of new functions and additions of new lines of code. Also, modularity in the organization provides for a better maintenance.

3.2.1.4.3 Operations

Some normal and special operations required by each user are:

- Admin
 - Add/Remove/Edit doctors
 - Add/Remove/Edit receptionists
 - Add/Remove/Edit nurses
 - Update his/her own profile
 - View/Set timetable for doctors and nurses
 - Access automatically-generated reports
- Hospital Receptionist
 - Update his/her own profile
 - Edit and add new entry in emergency
 - Views the timetables
 - Views the hospitalized patients
 - Reserves a bed for the patients to be hospitalized
- Polyclinic Receptionist
 - Export current patient anamnesis to the specialist doctor
 - Download the patient anamnesis from the specialist doctor
 - Update his/her own profile
 - Set appointments
- Specialist doctor
 - Update the patient anamnesis
 - Update his/her own profile
 - Add patient in case of emergency
 - Search a patient
 - Cancel an appointment
- Nurse
 - Search a patient
 - Add data to a patient progress

3.2.1.5 Dependability Requirements

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- “Ministry of Health and Social Protection” should implement a completely functional management system in polyclinics first, before implementing our system in hospitals.
- We need continuous access to polyclinics’ databases. We can’t treat a patient without importing his medical records first from polyclinics. This is done by the corresponding polyclinic’s receptionist forwarding it to us when leaving an appointment for a patient at our hospital.

3.2.2 Organizational Requirements

3.2.2.1 Environmental Requirements

By the administrative point of view, every document such as: patient’s personal info, prescriptions, anamnesis, etc. must be imported and obtained by the polyclinic receptionist from the polyclinic’s system into our system, because otherwise it can’t be proceeded with other phases of medication by the doctors of other specialties. Of course the polyclinic’s system must take into consideration that all other legal and ethical issues concerning confidentiality for patient’s sensitive information aren’t exploited.

3.2.2.2 Data Management Requirements

- The data that this application will deal with varies from personal information of the patient, to specific and detailed medical records.
- Rules are set to access and maintain this data. Depending in the user’s level of accessibility, the range of access will vary from basic data, like appointments timetable, to full and specific medical data.
- To maximize data management performance, data entities and their relationships will be well defined.
- Since this application will deal with large set of data, the frequency of data usage will be of high levels, so this system will guarantee firm stability.

3.2.3 External Requirements

3.2.3.1 Security Requirements

Knowing that this application will deal with sensitive data, is of primary obligation to assure the safety and inviolability of the datasets.

- Login authentication is the first step that protects the system from unauthorized access. Every user will have his/her own ID and password, stored in a secure database. Depending in the user’s category, the access in system’s data, modalities and functions are restricted. This means that a user cannot use this system outside of his/her work scope.
- The data that will be stored in this system are of most sensitive, including individual and medical records for each and every patient. Under the privacy policy, the dataset will be encrypted, safe from unauthorized usage and stored for unlimited period of time.

The methods that will be used to insert and store data in the database, will assure stability, check data integrity and prevent injections from inside or outside of the system.

4. Software Analysis & Design

4.1 User Scenarios (General)

Nr.	User Story Name	Description
1.	User signs in	Using ID and password to access the system, nurses, doctors, admin and receptionists sign in.
2.	User signs out	Admin, nurse, receptionist, doctor signs out of the system
3.	User changes password	Admin, nurse, receptionist, doctor enters new password
4.	User edits and views profile	Admin, receptionist, nurse and doctor can view, edit and update personal information.
5.	Admin views/edits/removes Doctors, Nurses, Receptionists	Admin can view, edit and remove doctors and nurses according to specific wards, hospital receptionists.
6.	Admin adds new user	Admin is the only user that can add a new user (doctor, nurse, receptionists).
7.	Admin sets the timetable	Admin is the only user that sets the timetable for doctors and nurses.
8.	Admin views monthly reports	Admin is the only user that can view monthly reports.
9.	Admin searches doctors, nurses and receptionists	Admin can search by ID, name, surname or ward each doctor or nurse and by ID, name or surname the receptionists.
10.	Specialist doctor sets new appointment	Specialist doctor sets new appointments with another doctor for that patient if needed
11.	Specialist doctor finishes appointment	Specialist doctor fills a form on how the visit went and this is added to the patient's medical records
12.	Specialist doctor cancels appointment	Specialist doctor has an emergency and cancels the appointment
13.	Specialist doctor checks patient records	Specialist doctor sees all the patients records including all his previous visits, prescriptions,

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		diagnosis etc.
14.	Specialist doctor reads nurses progress notes	Specialist doctor sees all the patients' progress since he was hospitalized based on what the nurse notes
15.	Specialist doctor sends request for hospitalization	Specialist doctor sends request for bed to the hospital receptionist
16.	Specialist doctor writes doctor notes at hospitalized patient progress	Specialist doctor writes his own notes to patient progress that is read by the nurses
17.	Specialist doctor searches for a patient	Specialist doctor searches by ID, name or surname of patient
18.	Specialist doctor, nurse or hospital receptionist searches for hospitalized patients	Specialist doctor, nurse or hospital receptionist searches by patient ID or bed
19.	Specialist doctor or hospital receptionist adds new emergency entry	Specialist doctor or hospital receptionist adds new entry in emergency section
20.	Specialist doctor adds as patient from emergency	Specialist doctor that attends to that emergency adds patient as his own
21.	Specialist doctor or hospital receptionist edits emergency entry	Specialist doctor or hospital receptionist edits emergency entry if they were not correct when person first arrived
22.	Specialist doctor, nurse or hospital receptionist releases from the hospital patients	Specialist doctor, nurse or hospital receptionist discharges patient from hospital
23.	Specialist doctor and nurse see their own timetable	Specialist doctor and nurse can see their week's shift and duty call
24.	Hospital receptionist reserves bed	Hospital receptionist reserves the found bed for the incoming request
25.	Nurse writes patients progress.	Nurse has access to write patients progress as set by the specialist doctor.
26.	Nurse reads doctors' progress notes.	Nurse, from time to time, needs to check the doctors program for any changes.
27.	Polyclinic Receptionist sets appointments	Polyclinic Receptionist inserts patient's ID, chooses date, time and doctor for appointment and uploads patient's records.
28.	Polyclinic Receptionist downloads patient's records	Polyclinic Receptionist downloads updated records after appointment is finished.

4.2 User Scenarios (Detailed)

Scenario 1 → User signs in

- User enters ID
- User enters password
- If ID and password match, user is signed in
- Else user must re-enter them

Scenario 2 → User signs out

- Provided the user is signed in
- User is signed out of the system

Scenario 3 → User changes password

- User enter new password
- User retypes new password

Scenario 4 → User edits and views profile

- User can view his/her profile
- User can edit, change and update his/her profile

Scenario 5 → Admin views/edits/deletes Doctors, Nurses, Receptionists

- Provided that the admin is signed in
- Views information about which nurse and doctor is assigned to which ward
- Views information about the hospital and polyclinic receptionists

Scenario 6.1 → Admin adds new user (Receptionists)

- Admin chooses the type “Polyclinic Receptionist” or “Hospital Receptionist”
- Admin enters data in the form: ID, Name, Surname.

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- If data is entered accordingly and correctly then the user is created in the system and added to the database as well
- Else data must be re-entered once again from the beginning

Scenario 6.2 → Admin adds new user (Specialist Doctor & Nurse)

- Admin chooses to add the “Specialist Doctor” option
- Admin completes the form containing: ID, Name, Surname and Ward.
- If data is entered accordingly and correctly then the user is created in the system and added to the database as well
- Else data must be re-entered once again from the beginning

Scenario 7 → Admin sets the timetable

- Admin chooses the user to set his/her timetable
- Admin selects the shift for all the days of that week
- Admin selects the day for the duty call of that specific user

Scenario 8 → Admin views monthly reports

- Admin can view the auto-generated reports for the number of hospitalizations, appointments and emergency cases of specific wards for that month
- Admin can also download the reports as PDF file

Scenario 9 → Admin searches Doctors, Nurses and Receptionists

- Admin can search for users by ID, name, surname or ward
- Information related to that ID, name, surname, or ward is shown, provided that the entered word exists anywhere in the database except for the patient's data
- Else no information is shown to the admin

Scenario 10 → Specialist doctor sets new appointment

- User realizes patients needs an appointment with another doctor
- User gives patient ID, selects ward category, date and time
- User selects an available doctor from the list of available doctors

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- User confirms appointment

Scenario 11 → Specialist doctor finishes appointment

- User has appointment with patient
- User finishes appointment
- User fills the form with the information on how the appointment went
- User saves appointment notes, which are added to patient records

Scenario 12 → Specialist doctor cancels appointment

- User cancels appointment
- Auto-generated email is sent to inform patient

Scenario 13 → Specialist doctor checks patient records

- User opens patient records received from polyclinic database
- User reads patient records

Scenario 14 → Specialist doctor reads nurse's progress notes

- User opens hospitalized patients progress
- User reads previous notes from the nurse and his own notes

Scenario 15 → Specialist doctor sends request for hospitalization

- User has appointment with patient
- User finishes appointment with patient
- User completes finished appointment form
- User sends request for hospitalization at end of form since it is needed
- Request is sent to hospital receptionist

Scenario 16 → Specialist doctor writes doctor notes at hospitalized patient progress

- User opens hospitalized patient progress
- User reads previous notes
- User adds new doctor notes to progress
- User saves updated progress

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Scenario 17 → Specialist doctor searches for a patient

- User writes ID, name, surname of patient that he is searching for in the search input field
- User is shown a list of all entries that contain his search keyword
- If there is nothing found, user is shown a message telling him that

Scenario 18 → Specialist doctor, nurse or hospital receptionist searches for hospitalized patients

- User writes patient ID or bed of hospitalized patient that he is searching for in the search input field
- User is shown a list of all entries that contain his search keyword
- If there is nothing found, user is shown a message telling him that

Scenario 19 → Specialist doctor or hospital receptionist adds new emergency entry

- User adds new patient in Emergency section.
- User completes the form with patient's data.

Scenario 20 → Specialist doctor adds as patient from emergency

- User attends to patient in emergency
- User fills all missing patient information
- User adds person as his own patient

Scenario 21 → Specialist doctor or hospital receptionist edits emergency entry

- User fills form with updated information on the person who came to the emergency
- If form fields are not completed correctly, user must recomplete it
- If form fields are completed correctly, changes are saved

Scenario 22 → Specialist doctor, nurse or hospital receptionist releases from the hospital patients

- User is informed that a recovered patient needs to be released.
- User releases the patient from hospitalization.

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Scenario 23→ Specialist doctor and nurse see their own timetable

- User views the information about his/her timetable.

Scenario 24 → Hospital Receptionist reserves a bed

- User receives request for hospitalization from a specialist doctor.
- User searches for an available bed.
- User reserves the bed found.

Scenario 25→ Nurse writes patient progress

- User opens hospitalized patient progress
- User reads previous notes
- User adds new nurse notes to progress
- User saves updated progress

Scenario 26→ Nurse reads doctor program notes

- User opens hospitalized patients progress
- User reads previous notes from the doctor and his own notes

Scenario 27 → Polyclinic Receptionist sets Appointment

- User gives patient ID
- User selects ward category
- User selects date and time
- User selects an available doctor from the list of available doctors
- User confirms appointment

Scenario 28 → Polyclinic Receptionist downloads updated medical records

- After finished appointment, user receives updated patient records
- User downloads updated patient records

4.3 Use Cases

Use Case 1

Name	User signs in
Summary	User enters the system by providing genuine credentials
Actor	Admin, Polyclinic Receptionist, Specialist Doctor, Nurse, Hospital Receptionist
Description	User provides ID and password
Precondition	User must have an existing account
Alternatives	The same user can sign in only once at a time
Post condition	User enters the system

Use Case 2

Name	User signs out
Summary	User signs out of the system
Actor	Admin, Polyclinic Receptionist, Specialist Doctor, Nurse, Hospital Receptionist
Description	User signs out of the system when he/she no longer needs to interact with the system
Precondition	User is signed in
Alternatives	
Post condition	User has no longer access to the system until he/she is signed in

Use Case 3

Name	User changes password
Summary	User saves a new password
Actor	Admin, Polyclinic Receptionist, Specialist Doctor, Nurse, Hospital Receptionist
Description	User enters a new password

Medical Management System

Precondition	Admin is signed in
Alternatives	
Post condition	The new password is saved

Use Case 4

Name	User edits and views profile
Summary	User can edit and view his/her profile
Actor	Admin, Polyclinic Receptionist, Specialist Doctor, Nurse, Hospital Receptionist
Description	User views and changes, updates his/her personal data
Precondition	User is signed in
Alternatives	
Post condition	User's data have been viewed/revised/checked/changed/updated

Use Case 5

Name	Admin views/edits/deletes users
Summary	Admin views/edits/deletes users
Actor	Admin
Description	Admin can view/edit and delete each doctor, nurse according to wards and also hospital receptionists
Precondition	Admin is signed in
Alternatives	Information on patients cannot be provided to the admin
Post condition	User information is displayed and changed

Use Case 6

Name	Admin adds new user
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Medical Management System

Summary	Admin adds new user
Actor	Admin
Description	Admin chooses the type of the receptionist and enters data to fill in the form; in the case of doctor and nurse only ID, name, surname and ward are completed in the form. If data is entered correctly then the user is created in the system
Precondition	Admin is signed in and the user to be added doesn't exist
Alternatives	No two users with the same ID should exist
Post condition	New user is created

Use Case 7

Name	Admin sets the timetable
Summary	Admin sets the timetable
Actor	Admin
Description	Admin chooses a user and assigns a shift number for each day of the week; if this user is a specialist doctor or a nurse the duty call date is also set
Precondition	Admin is signed in
Alternatives	
Post condition	The timetable is set

Use Case 8

Name	Admin views monthly reports
Summary	Admin views monthly reports
Actor	Admin
Description	Admin can view the auto-generated reports for the number of hospitalizations, appointments and emergency cases of

Medical Management System

	specific wards for that month. Admin can also download the reports as a PDF file.
Precondition	Admin is signed in
Alternatives	
Post condition	Information on auto-generated reports is displayed

Use Case 9

Name	Admin searches doctors, nurses and receptionists
Summary	Admin can search for users by ID, name, surname, ward
Actor	Admin
Description	Admin searches by ID/name/surname/ward. Information related to that ID, name, surname, or ward is shown, provided that the entered word exists anywhere in the database except for the patient's data
Precondition	Admin is signed in
Alternatives	
Post condition	Information on the searched term/words is displayed

Use Case 10

Name	Specialist doctor sets new appointment
Summary	Specialist Doctor adds new appointments for patients
Actor	Specialist Doctor
Description	Specialist Doctor fills a form with patient data and leaves appointment at a specific time and date
Precondition	Specialist Doctor must be allowed to create new appointments

Medical Management System

Alternatives	Patient can leave appointment through the polyclinic receptionist
Post condition	Patient records are sent to the new doctor

Use Case 11

Name	Specialist doctor finishes appointment
Summary	Specialist Doctor must keep record of finished appointment
Actor	Specialist Doctor
Description	Specialist Doctor fills a form with information on how the visit went
Precondition	An appointment must be made
Alternatives	
Post condition	Appointment information must be added to previous patient records

Use Case 12

Name	Specialist doctor cancels appointment
Summary	Specialist Doctor cancels appointment with patient
Actor	Specialist Doctor
Description	Specialist Doctor cancels the appointment with patient and patient is notified by text or email
Precondition	Specialist Doctor must have an existing appointment with the patient
Alternatives	
Post condition	Appointment is rescheduled through polyclinic receptionist

Use Case 13

Name	Specialist doctor checks patient record
Summary	Specialist Doctor can look at his patients'

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	records
Actor	Specialist Doctor
Description	Specialist Doctor can see all the patients records including all his previous visits, diagnoses, prescriptions etc.
Precondition	Patient must have records saved in the database
Alternatives	Specialist Doctor must have access to the patient's records, patient must be under the care of this doctor
Post condition	

Use Case 14

Name	Specialist doctor reads nurses progress notes
Summary	Specialist Doctor looks at the progress of a hospitalized patient
Actor	Specialist Doctor
Description	Specialist Doctor can see all the patients' progress since he was hospitalized based on the notes
Precondition	Patient must be hospitalized at the hospital Specialist Doctor must have access to the patient's records, patient must be under the care of this doctor
Alternatives	
Post condition	

Use Case 15

Name	Specialist doctor sends request for hospitalization
Summary	Specialist Doctor can send request to reserve a bed
Actor	Specialist Doctor
Description	Specialist Doctor can send request for

Medical Management System

	hospitalization to the receptionist which informs the doctor back which room he/she reserved
Precondition	Specialist Doctor chooses to hospitalize patient after an appointment with him
Alternatives	
Post condition	Patient is in the system as hospitalized patient

Use Case 16

Name	Specialist doctor writes doctor notes at hospitalized patient progress
Summary	Specialist Doctor adds notes to hospitalized patient's progress
Actor	Specialist Doctor
Description	Specialist Doctor can write notes in the progress of a patient based on nurse notes
Precondition	Patient must be hospitalized at our hospital Patient must be under the care of the doctor
Alternatives	
Post condition	Progress is changed

Use Case 17

Name	Specialist doctor searches for a patient
Summary	Specialist Doctor searched for the data of a patient
Actor	Specialist Doctor
Description	Specialist Doctor can search for a patient only through his ID, name and surname
Precondition	Patient must be part of our system Patient must be in the care of this doctor in order to appear in the search results
Alternatives	
Post condition	The searched patient is shown if exists

Use Case 18

Name	Specialist doctor, nurse or hospital receptionist searches for hospitalized patients
Summary	User searches for a current hospitalized patient.
Actor	Specialist doctor, nurse, hospital receptionist
Description	User searches with patient id or bed number for a patient in the hospital and the profile and room information is shown.
Precondition	Patient must be hospitalized Patient must be under the care of that doctor Patient must be part of the same ward as nurse
Alternatives	
Post condition	A patient is found.

Use Case 19

Name	Specialist doctor or hospital receptionist adds new emergency entry
Summary	Specialist doctor or hospital receptionist adds new patient in emergency ward
Actor	Specialist doctor, hospital receptionist
Description	Specialist doctor or hospital receptionist fills a form with patient data
Precondition	Hospital Receptionist and specialist doctor must be allowed to create new patients
Alternatives	
Post condition	New emergency entry is added to the database

Use Case 20

Name	Specialist doctor adds as patient from emergency
Summary	Specialist Doctor adds emergency patient as his own
Actor	Specialist Doctor
Description	In case of emergencies, when the patient doesn't have any appointment and is not registered in our system, the user that attends to that person can add him as his own patient
Precondition	Patient must come to the hospital for an emergency and registered as emergency patient
Alternatives	
Post condition	Patient is now part of our system and shows in that doctors' list of patients

Use Case 21

Name	Specialist doctor or hospital receptionist edits emergency entry
Summary	Specialist doctor or hospital receptionist edit emergency entry data.
Actor	Specialist doctor, hospital receptionist
Description	Specialist doctor or hospital receptionist edits the previous data stored in emergency.
Precondition	Patient must exist as emergency entry in order to have what to edit.
Alternatives	
Post condition	Doctor can add this patient has his own.

Use Case 22

Name	Specialist doctor, nurse or hospital receptionist releases from the hospital
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Medical Management System

	patients
Summary	Specialist doctor, nurse or hospital receptionist discharges a patient
Actor	Hospital Receptionist, Nurse, Specialist Doctor
Description	Specialist doctor, nurse or hospital receptionist has the power to release a patient from hospitalization after this patient has recovered
Precondition	Nurse must have patient in his ward to discharge him Doctor must have patient under his care to discharge him
Alternatives	
Post condition	Patient is discharged.

Use Case 23

Name	Specialist doctor and nurse see their own timetable
Summary	Specialist doctor or nurse look at their personal timetable
Actor	Specialist doctor, nurse
Description	Specialist doctor or nurse can see their timetable to know which shift they are on or when they're on duty call
Precondition	
Alternatives	
Post condition	Timetable is viewed from doctor and nurse

Use Case 24

Name	Hospital Receptionist reserves bed
Summary	Hospital Receptionist reserves a bed if one available
Actor	Hospital Receptionist

Medical Management System

Description	Hospital Receptionist, after receiving a hospitalization request from a doctor, reserves a bed if there is one free.
Precondition	Hospital Receptionist must have received a request for bed.
Alternatives	
Post condition	Bed is reserved for that patient.

Use Case 25

Name	Nurse writes patient progress
Summary	Nurse adds notes to hospitalized patient's progress
Actor	Nurse
Description	Nurse can write notes in the progress of a patient based on doctor notes
Precondition	Patient must be hospitalized at our hospital Patient must be under the same ward as nurse
Alternatives	
Post condition	Progress is changed

Use Case 26

Name	Nurse reads doctors' progress notes
Summary	Nurse looks at the progress of a hospitalized patient
Actor	Nurse
Description	Nurse can see all the patients' progress since he was hospitalized based on the notes
Precondition	Patient must be hospitalized at the hospital Patient must be under the same ward as patient
Alternatives	
Post condition	

Use Case 27

Name	Polyclinic Receptionist sets Appointment
Summary	User insert patient's ID, chooses date, time and doctor for appointment and uploads patient's records.
Actor	Polyclinic Receptionist
Description	User inserts patient's ID, uploads medical records. Save those data and after selects Hospital Ward and sets date and time for the appointment.
Precondition	User must be logged in
Alternatives	
Post condition	Appointment is set and patient's records are stored in the system.

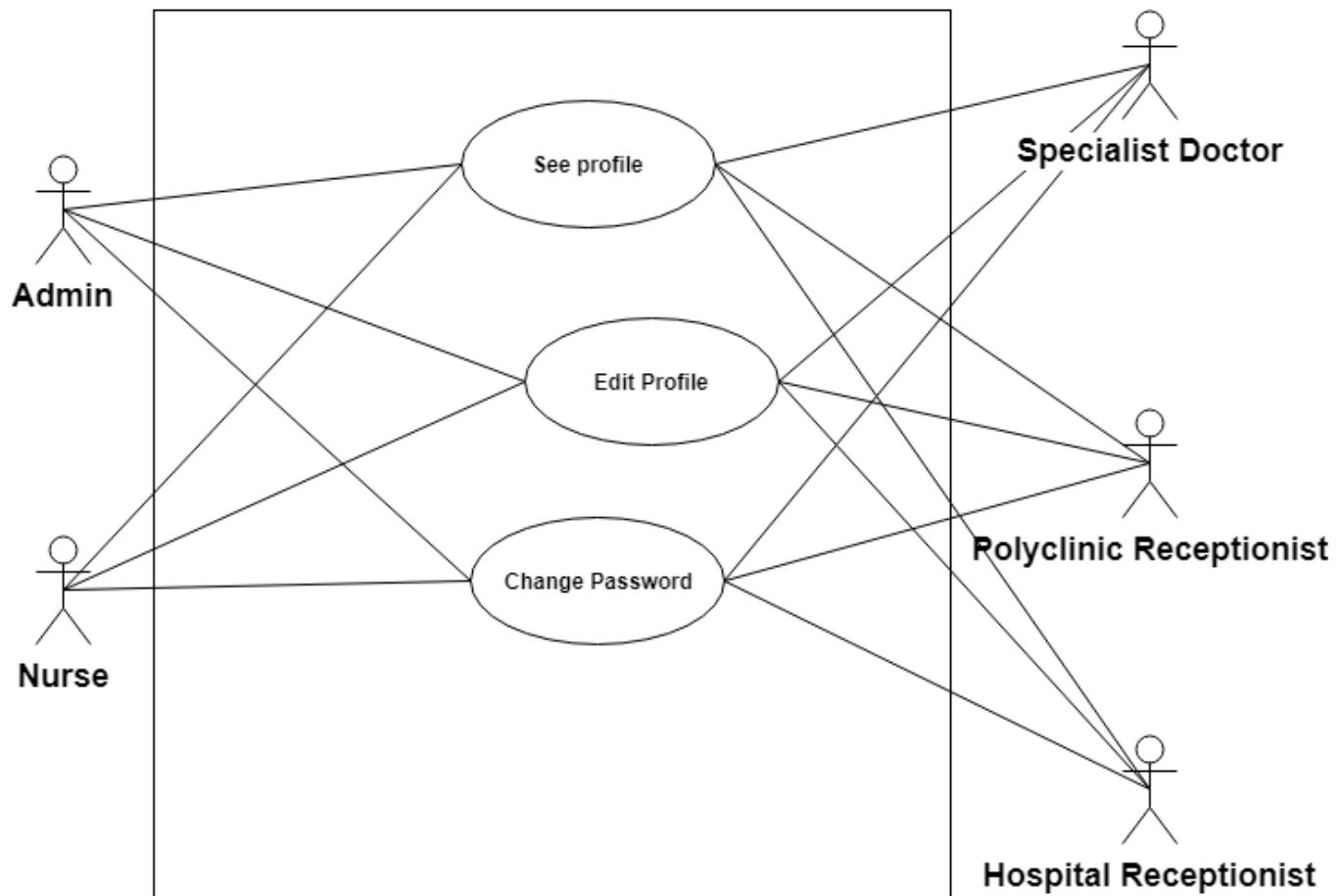
Use Case 28

Name	Polyclinic receptionist downloads Patient Records
Summary	Polyclinic Receptionist downloads patient records from hospital's database.
Actor	Polyclinic Receptionist
Description	The updated medical records of a patient are available for download, after his/her appointment is finished.
Precondition	User must be logged in. Patient records must exist within the system.
Alternatives	
Post condition	Medical records of the patient are updated and exchanged between hospital and clinic.

4.4 Use Case Diagrams

Corresponds to these use cases: 3 and 4

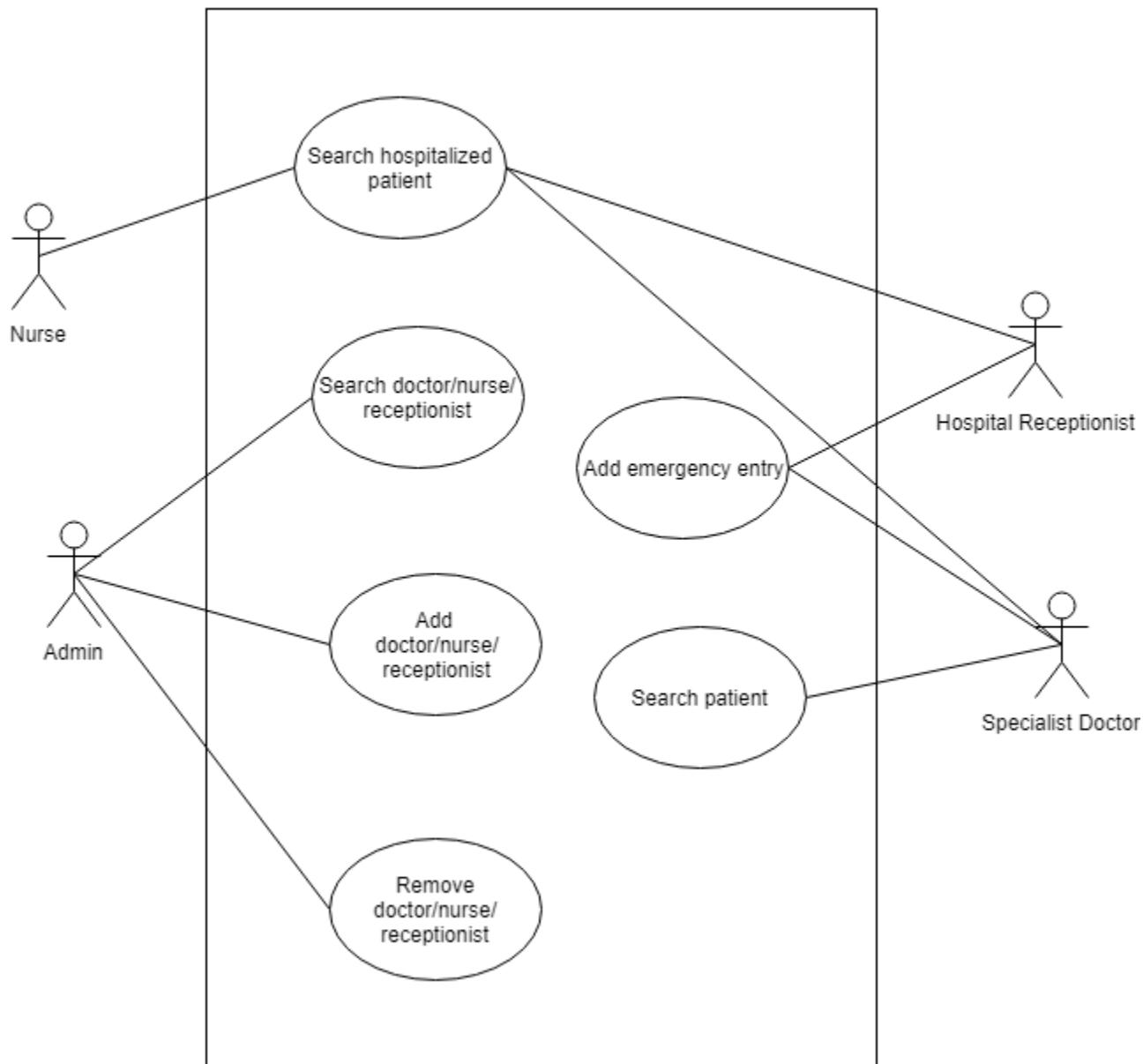
Profile Operations



Medical Management System

Corresponds to these use cases: 9, 17, 18, 19, 20

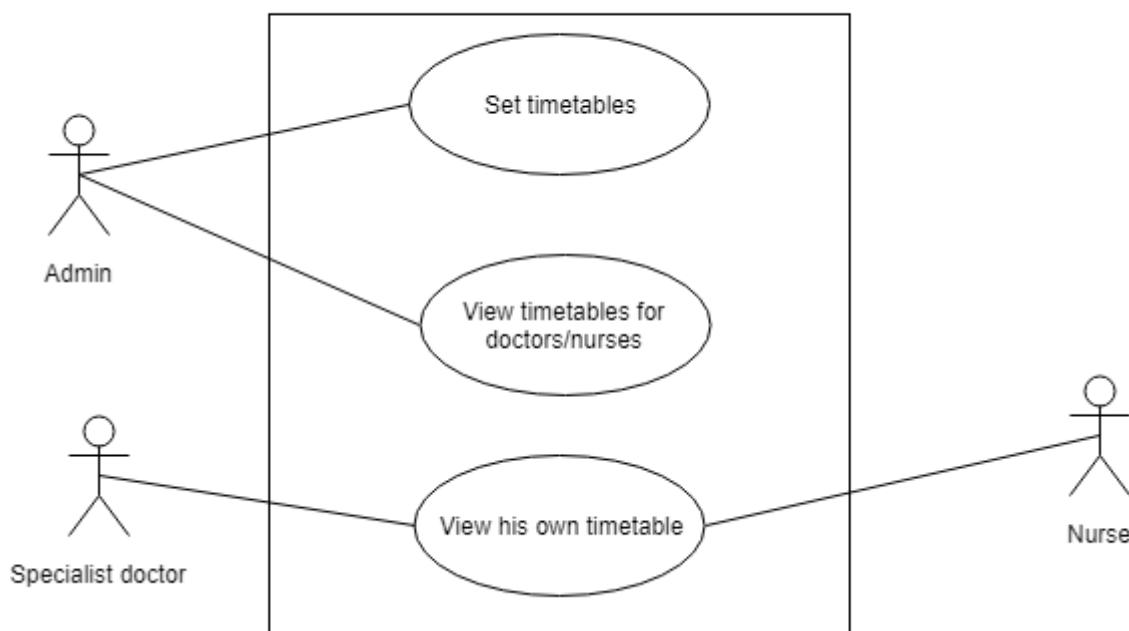
Add/Remove/Search Users



Medical Management System

Corresponds to these use cases: 7, 23

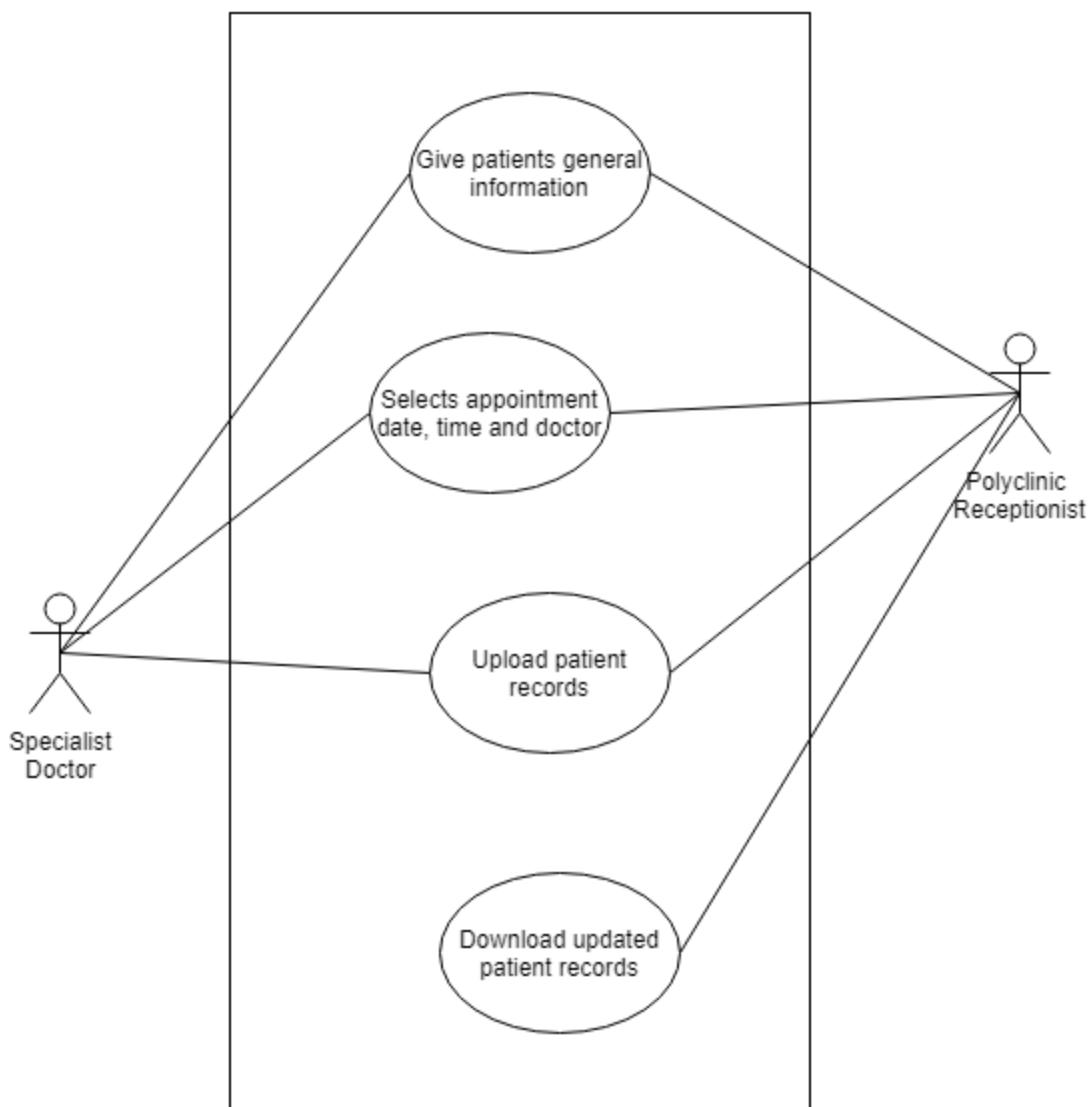
Timetables



Medical Management System

Corresponds to these use cases: 10, 13, 27, 28

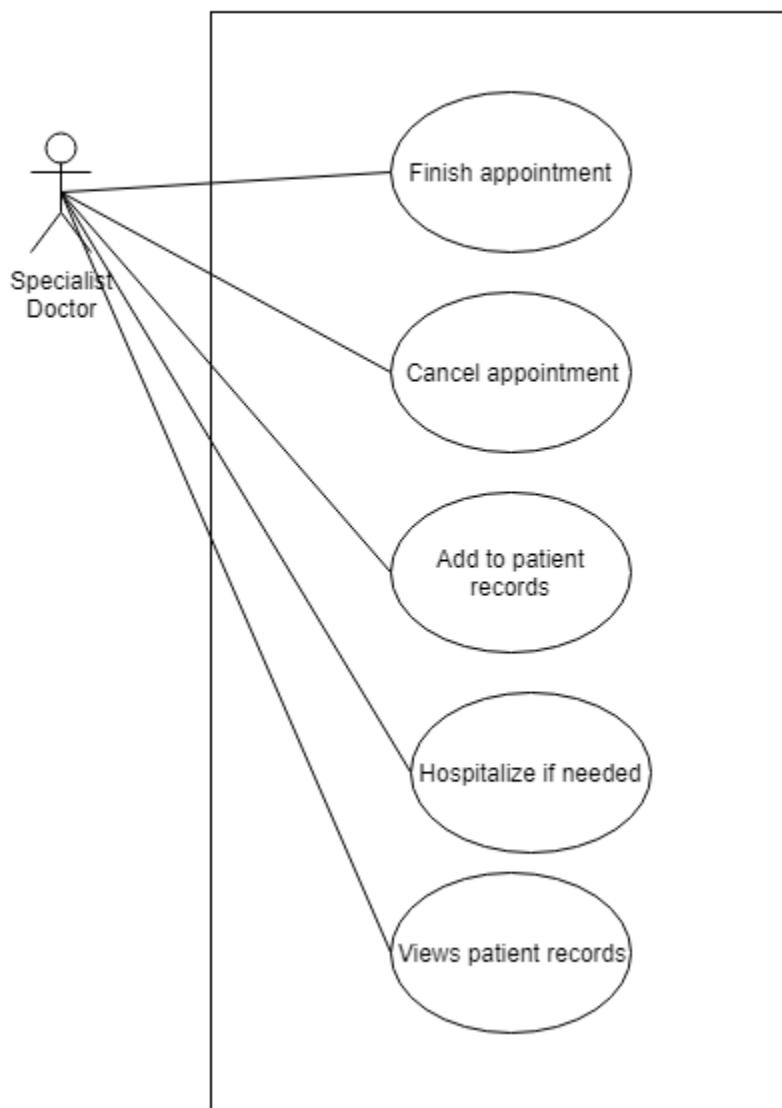
Set Appointment



Medical Management System

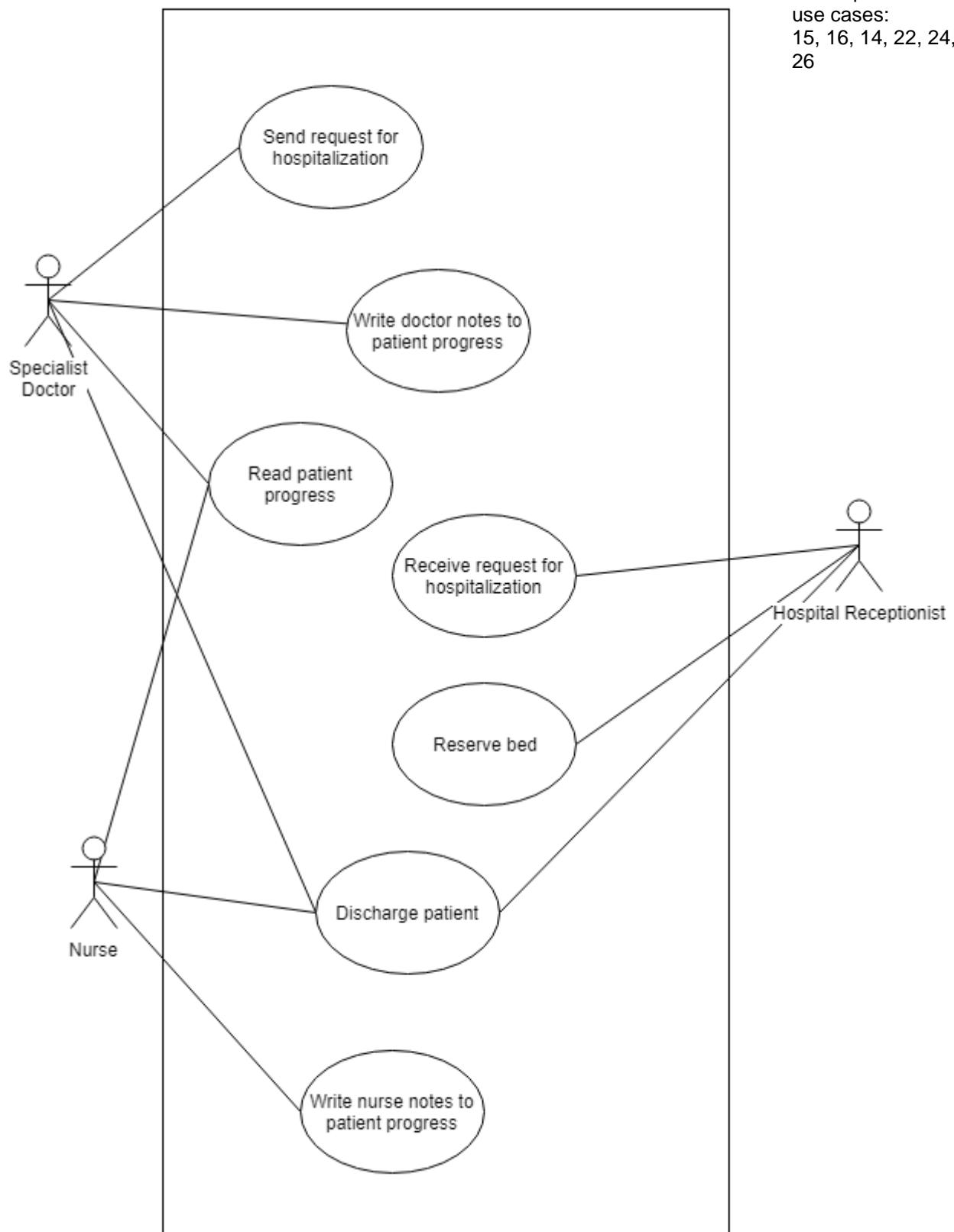
Corresponds to these use cases: 11, 12, 13, 15, 16

Appointment



Medical Management System

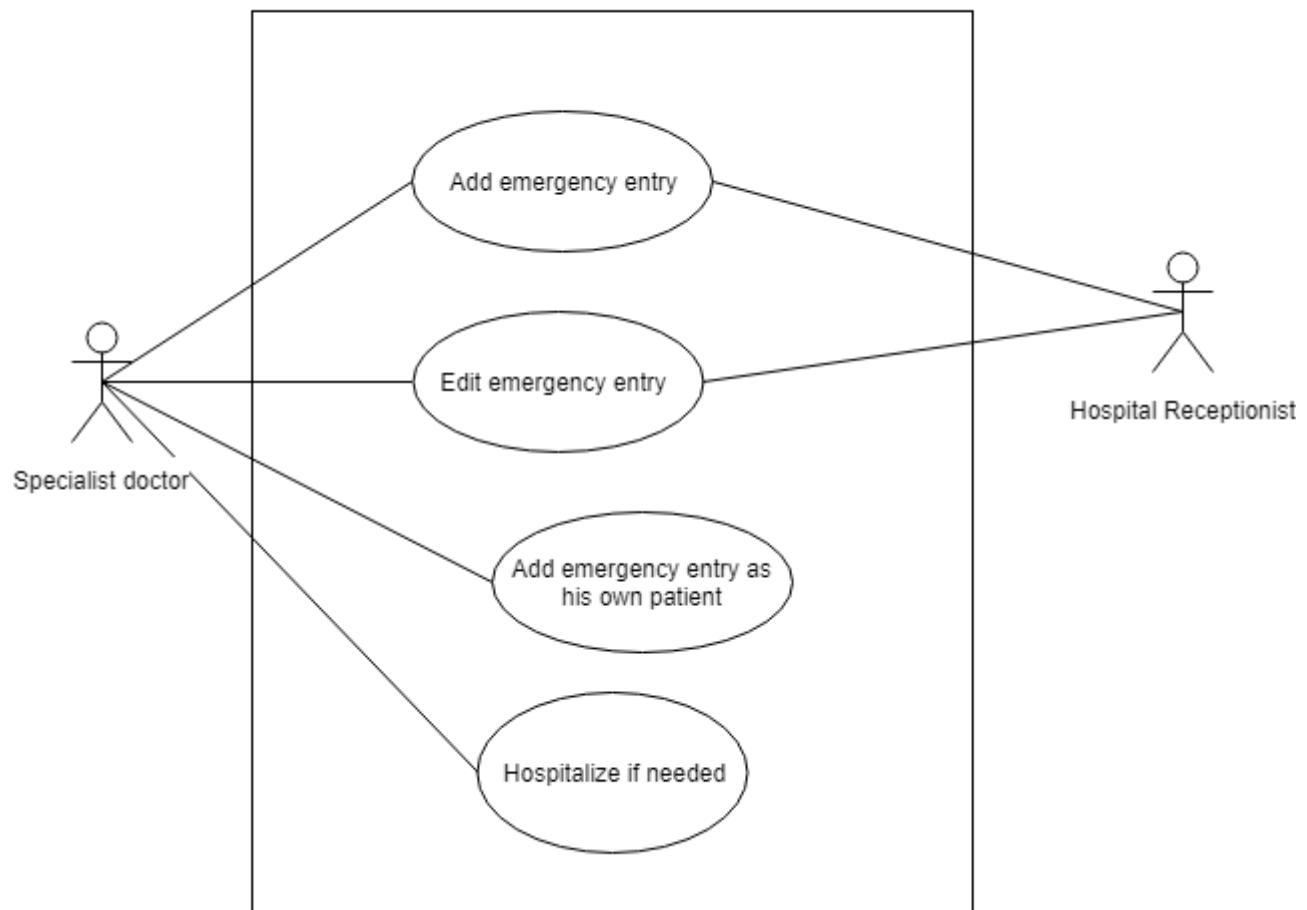
Hospitalization



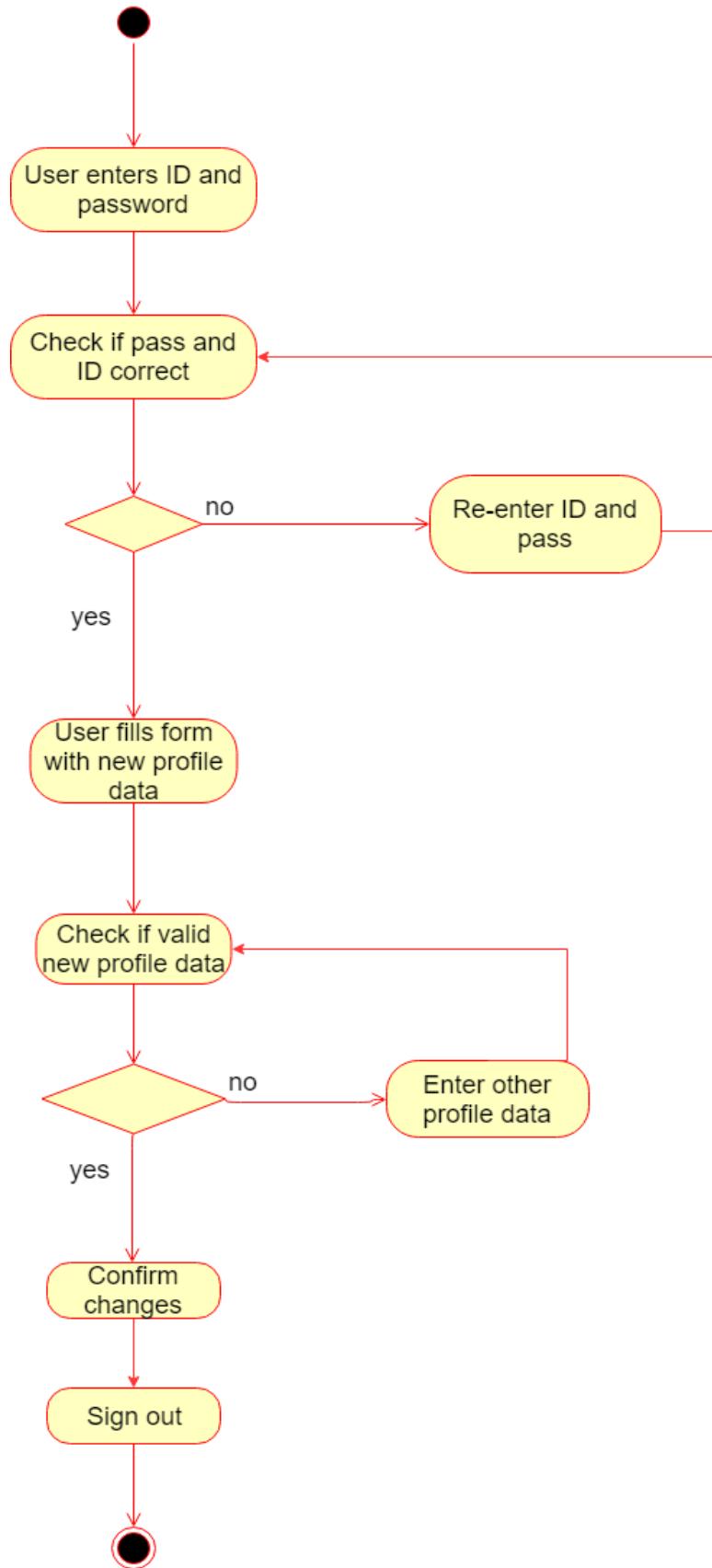
Medical Management System

Corresponds to these use cases: 15, 19, 20, 21

Emergency cases



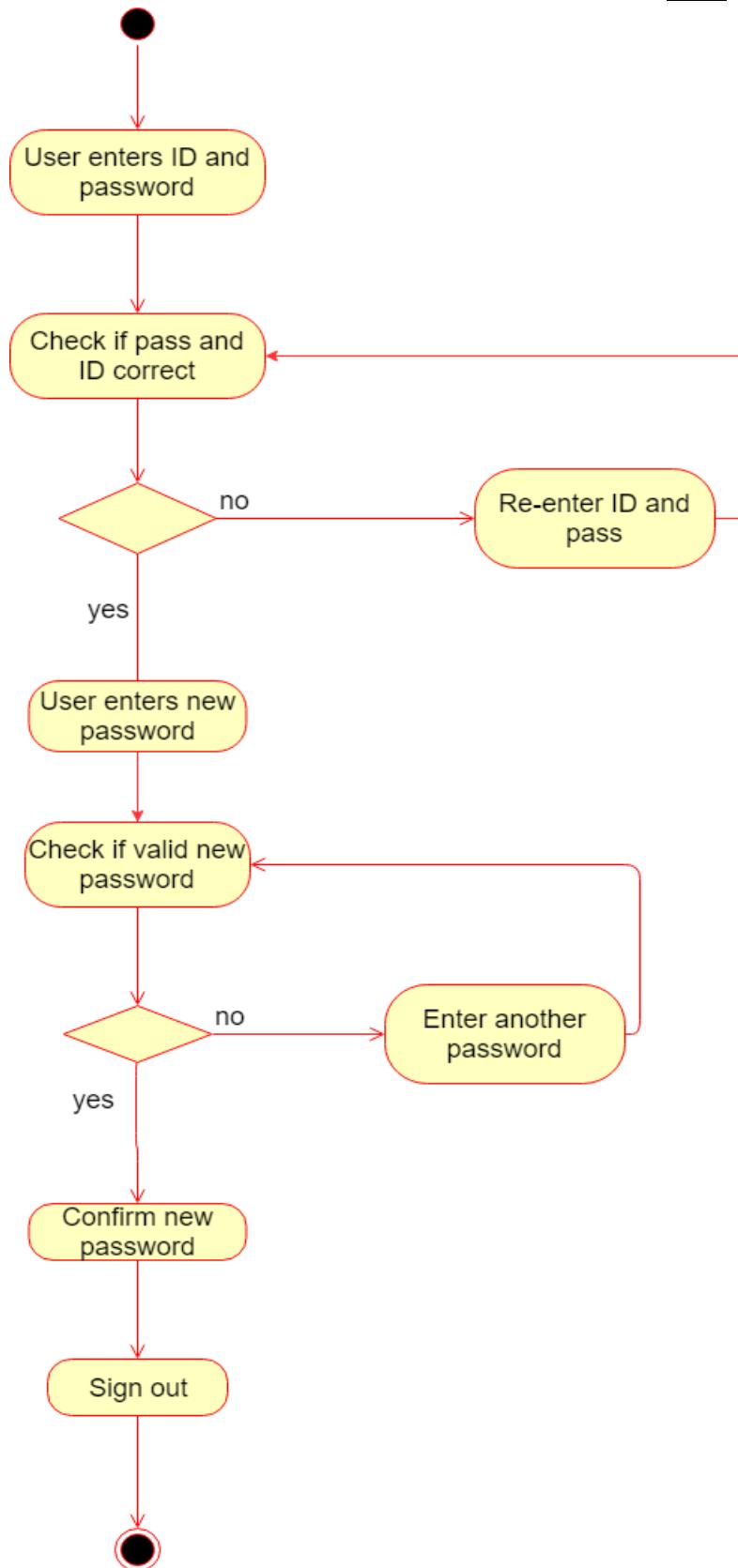
4.5 Activity Diagrams/Swimlane

Edit Profile AD1

Medical Management System

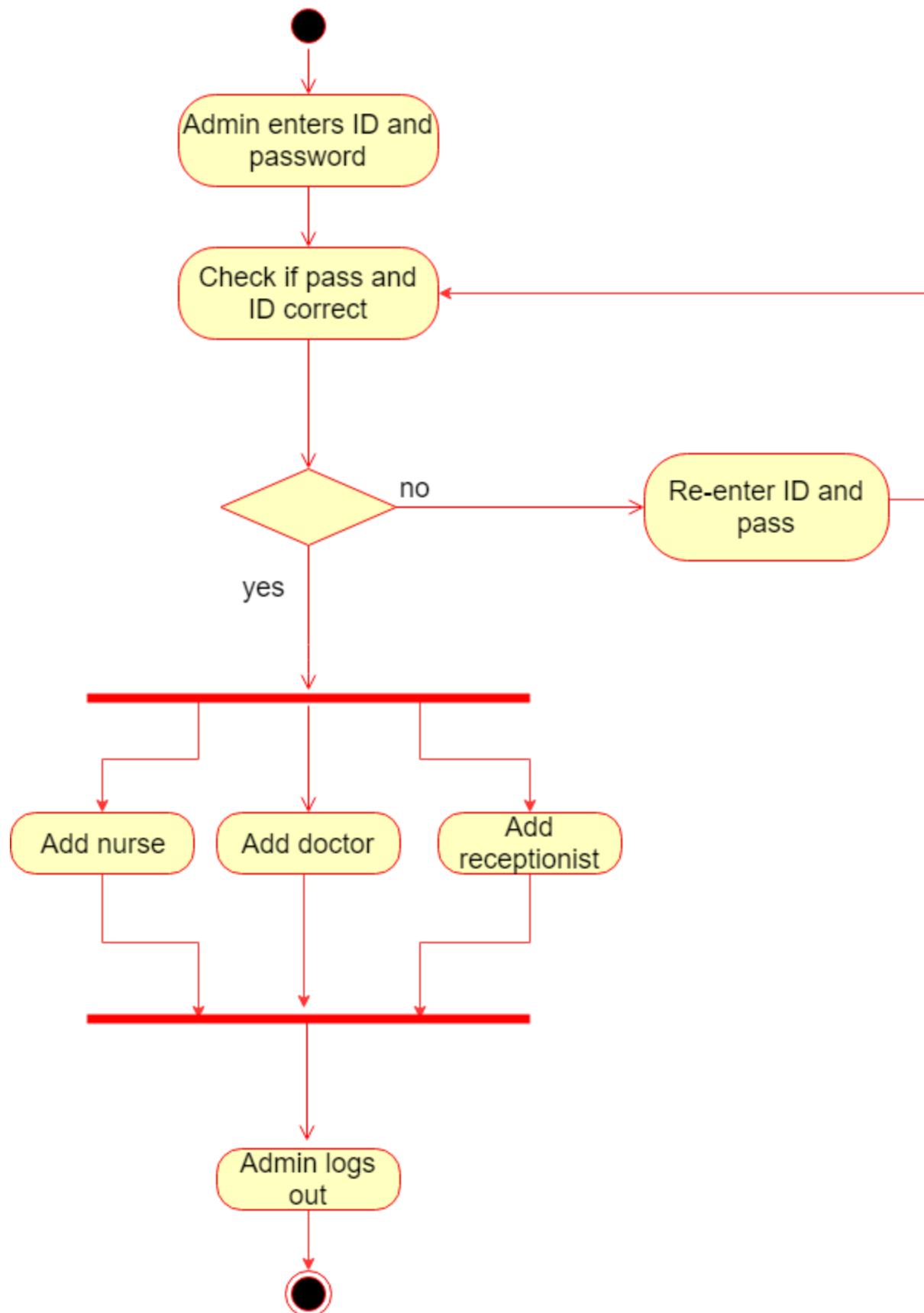
Change Password

AD2



Medical Management System

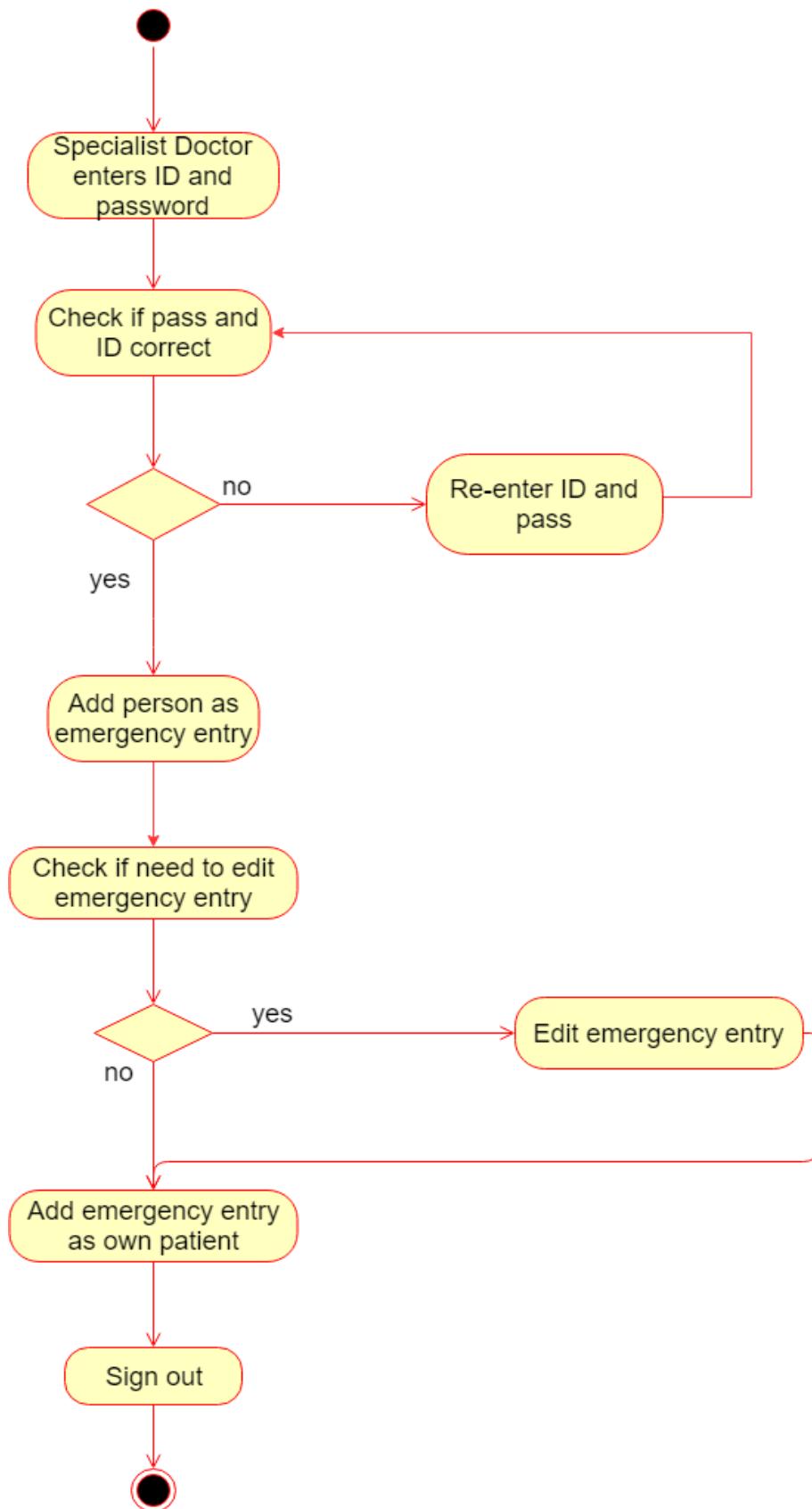
Add User **AD3**



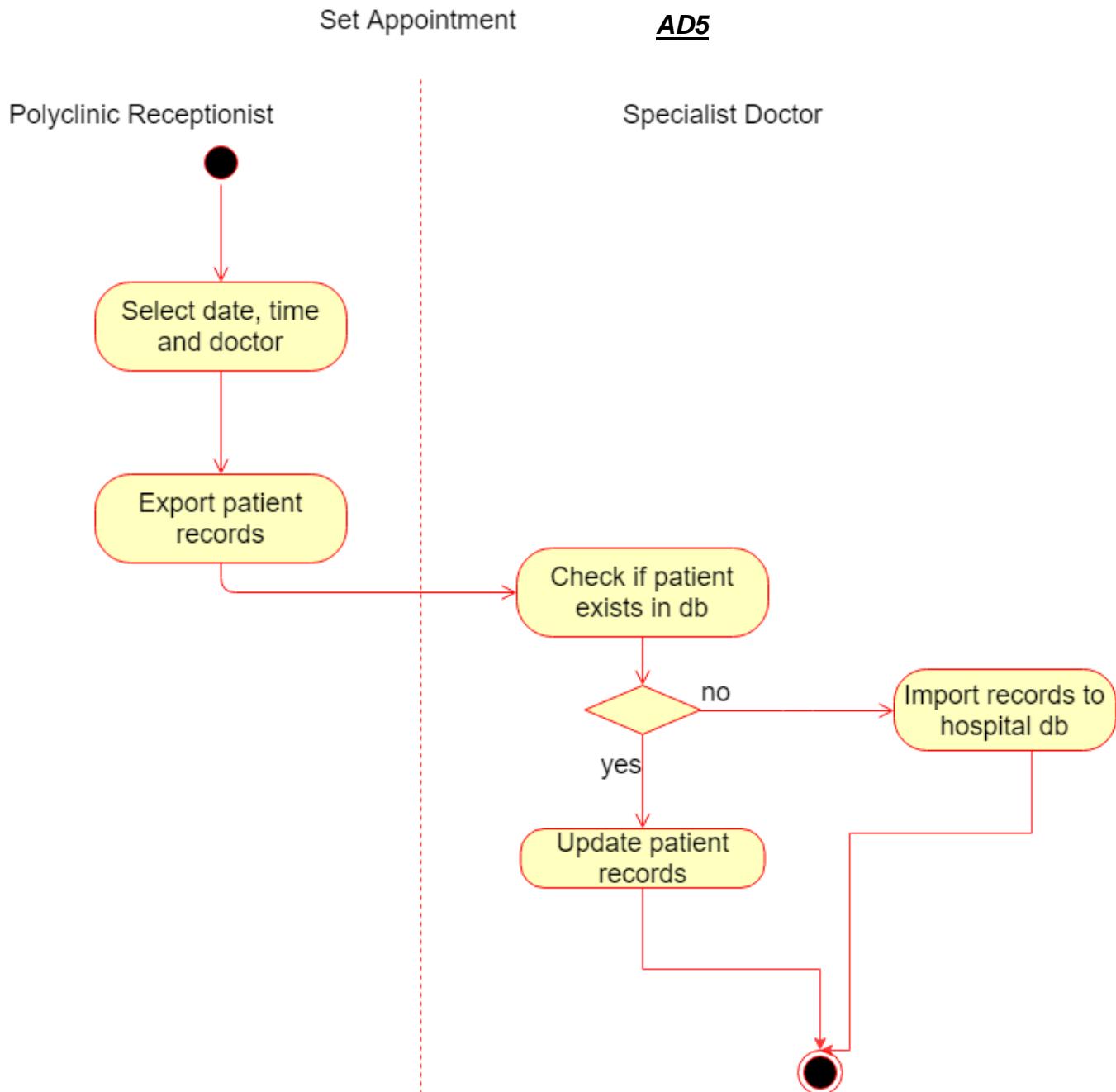
Medical Management System

Add Patient

AD4

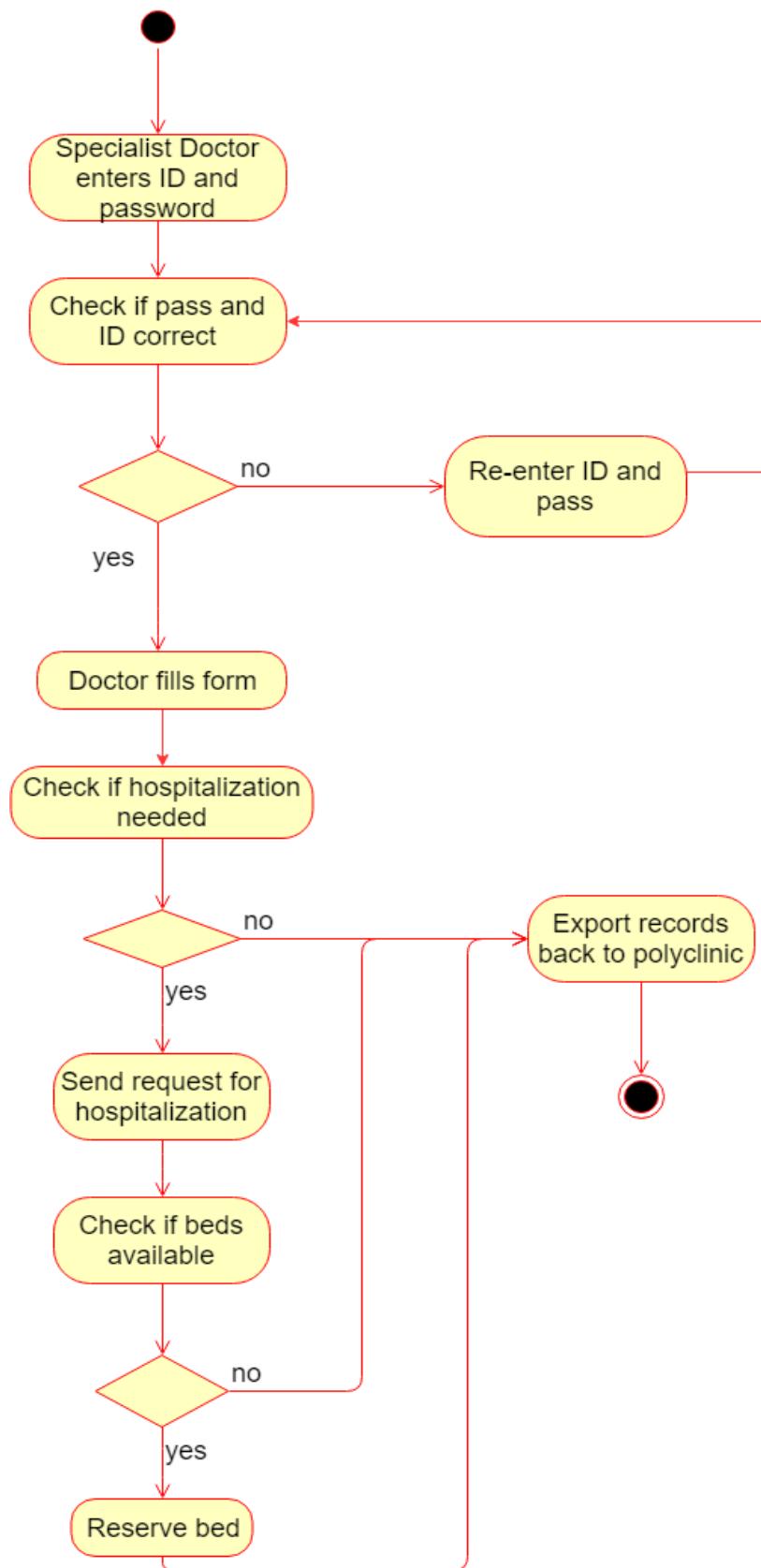


Medical Management System

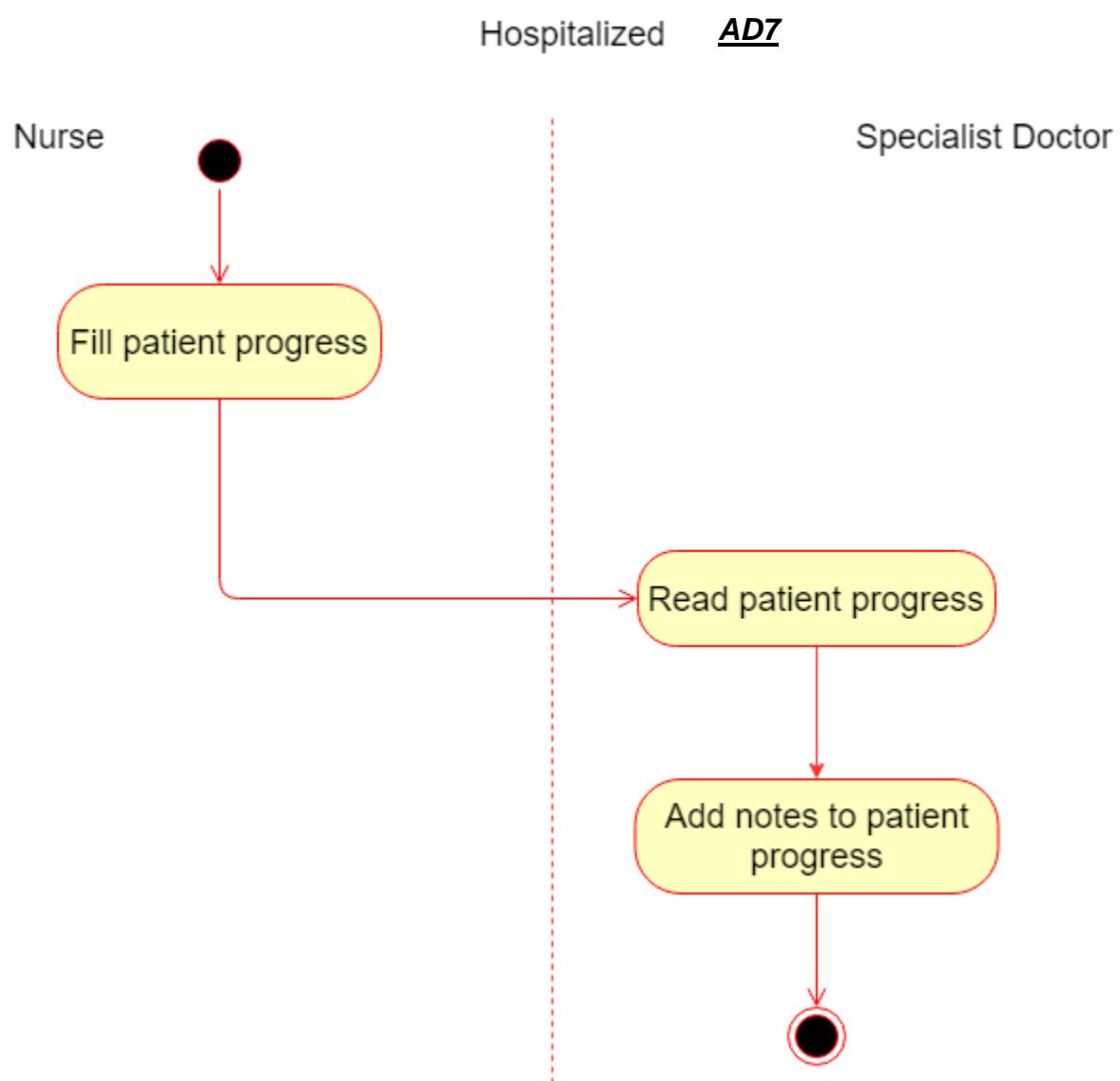


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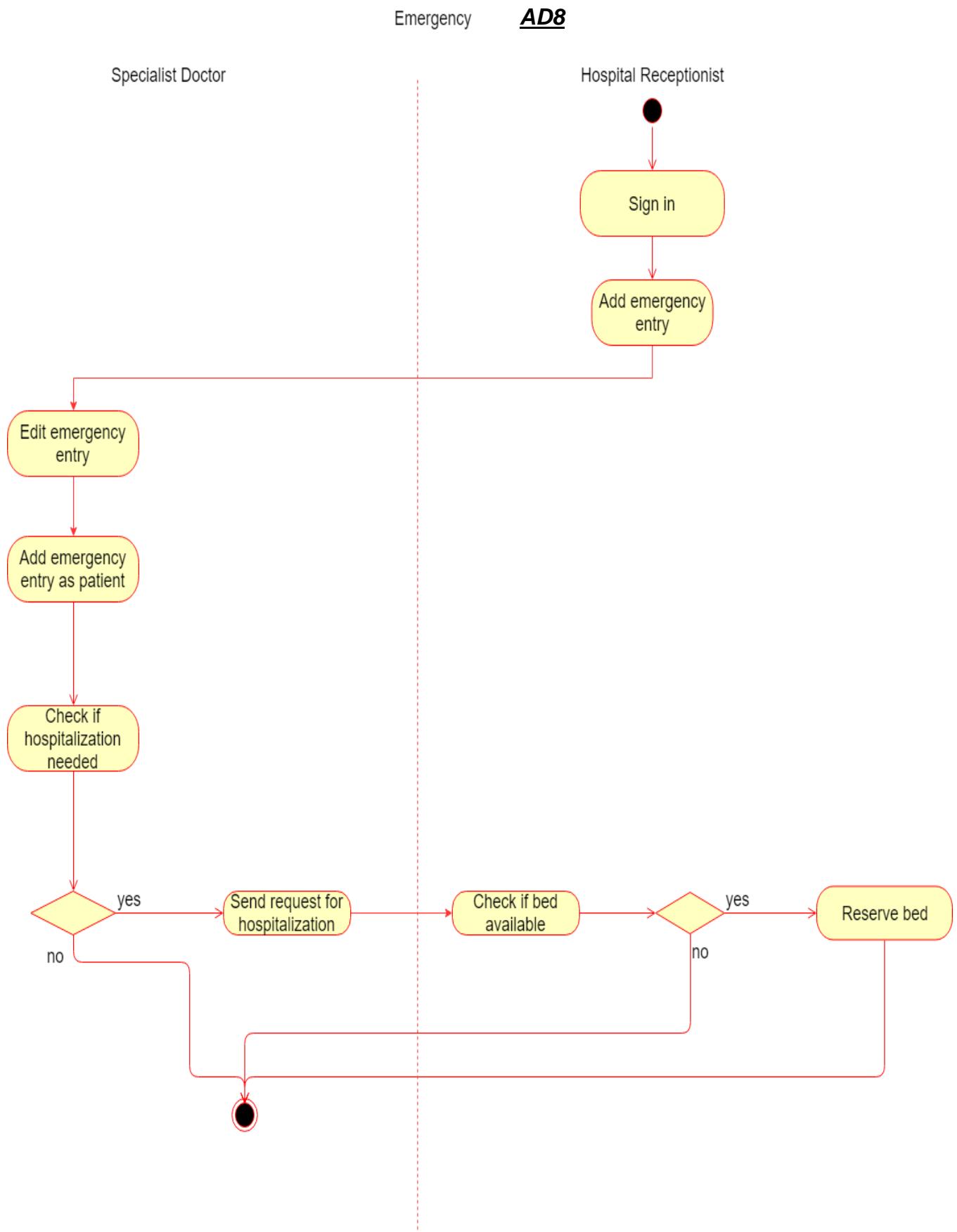
Finish appointment **AD6**



Medical Management System

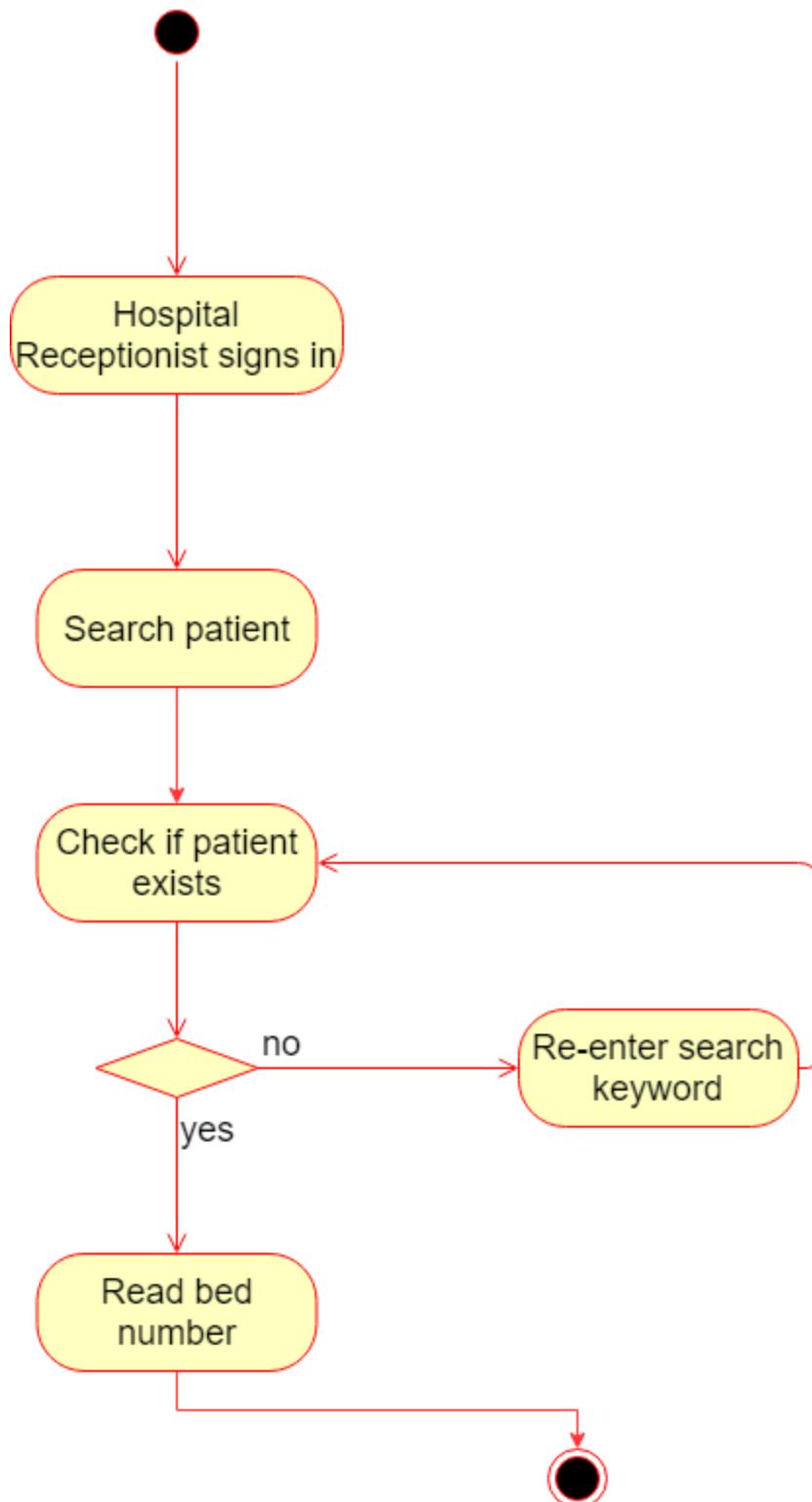


Medical Management System



Medical Management System

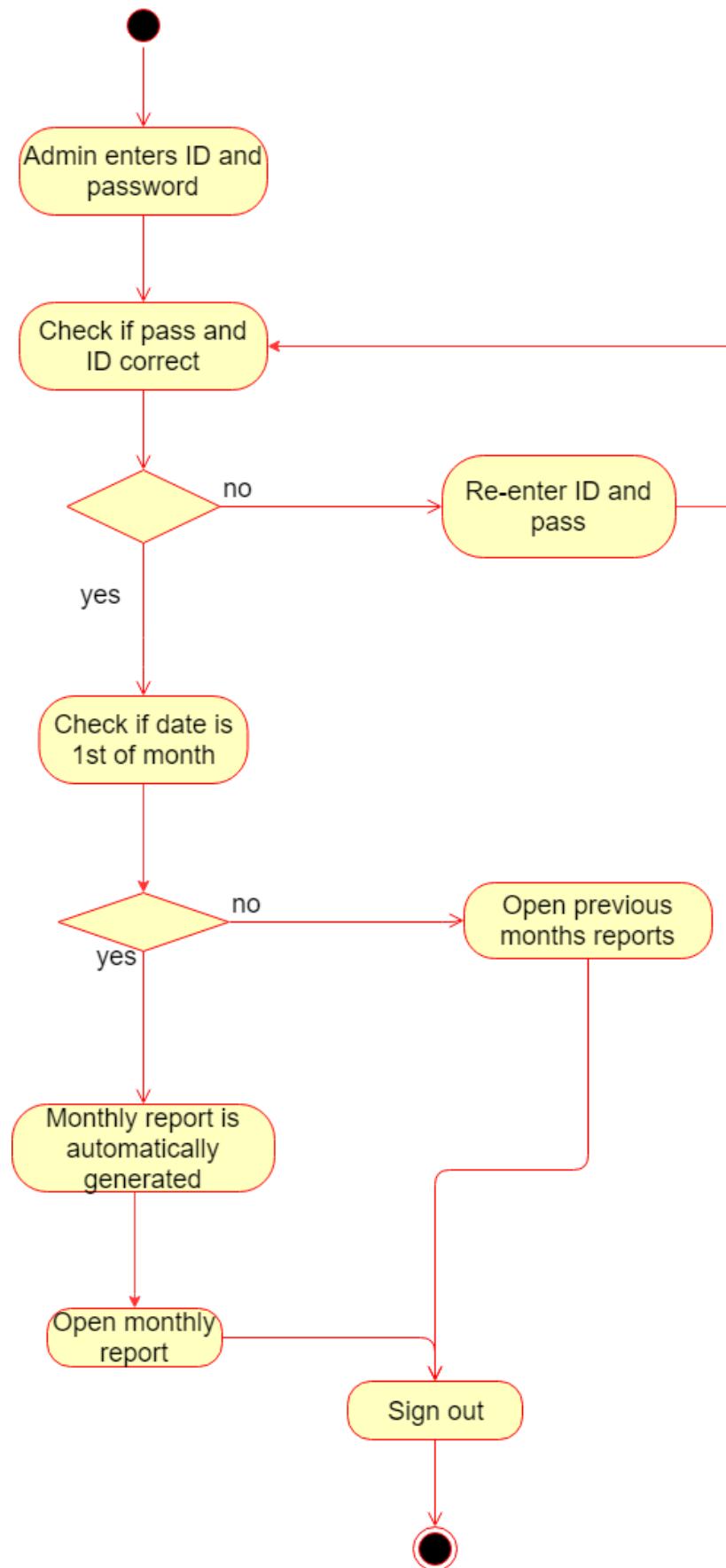
Visiting Hours AD9



Medical Management System

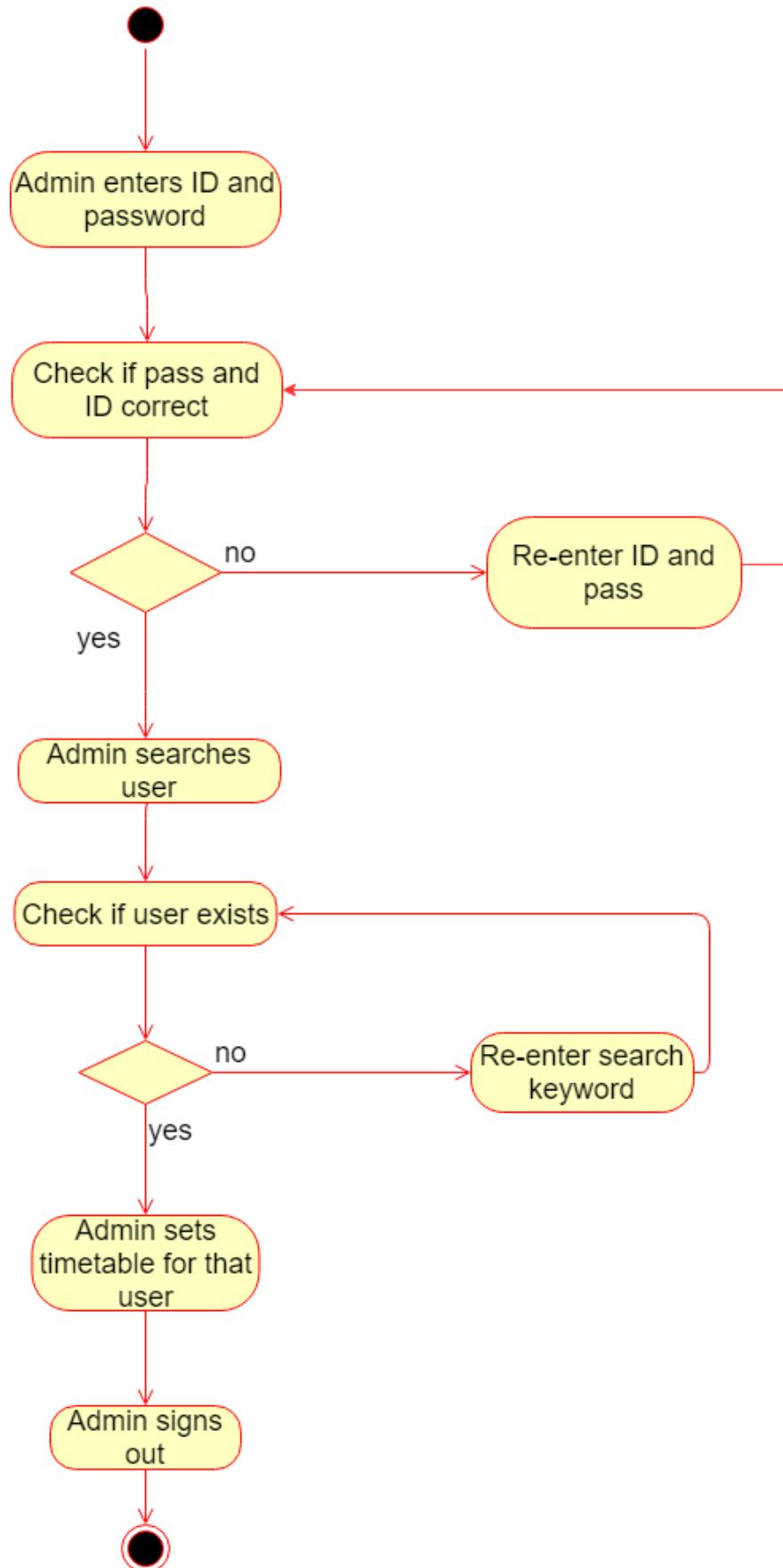
Reports

AD10

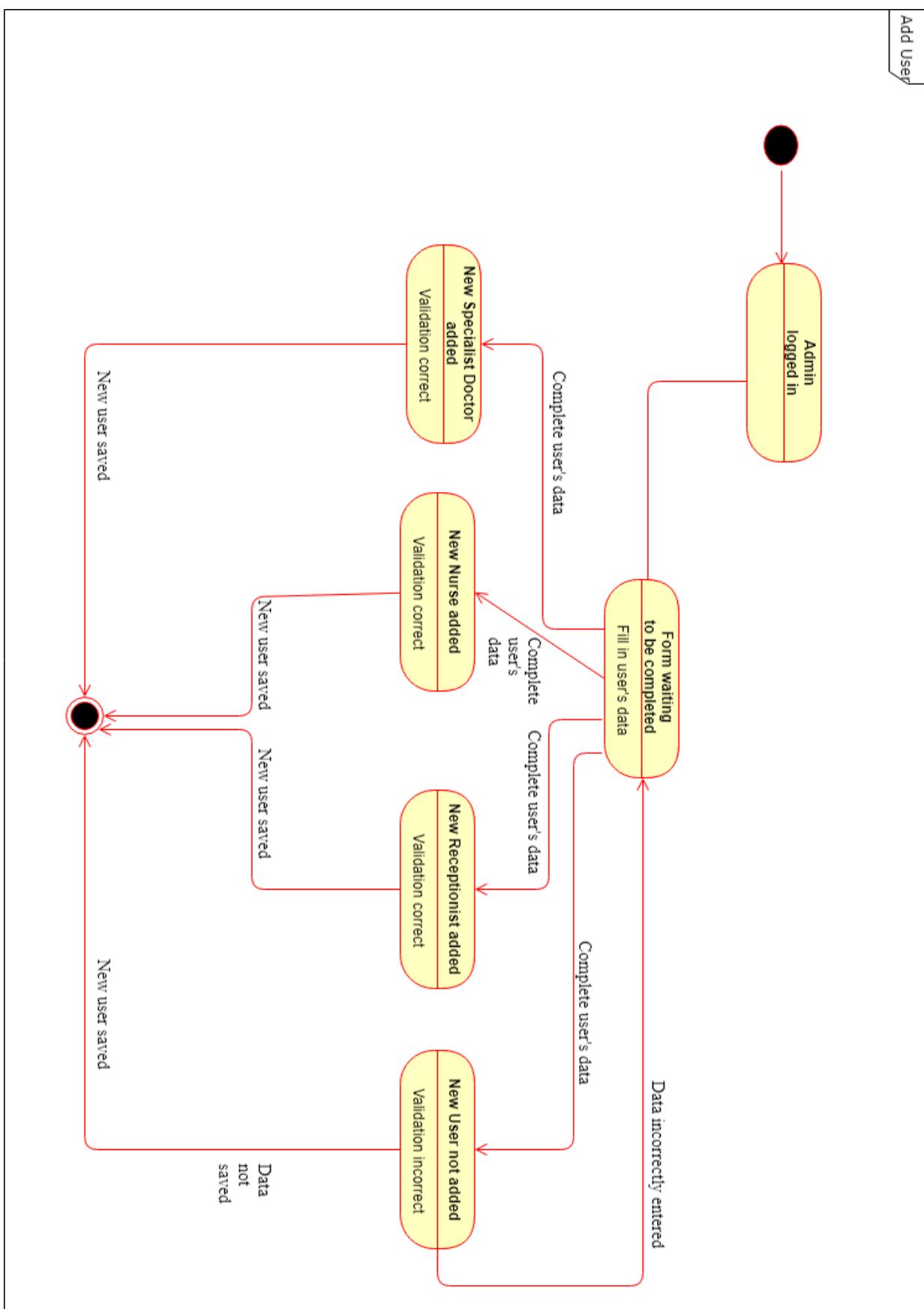


Medical Management System

Timetable :AD11

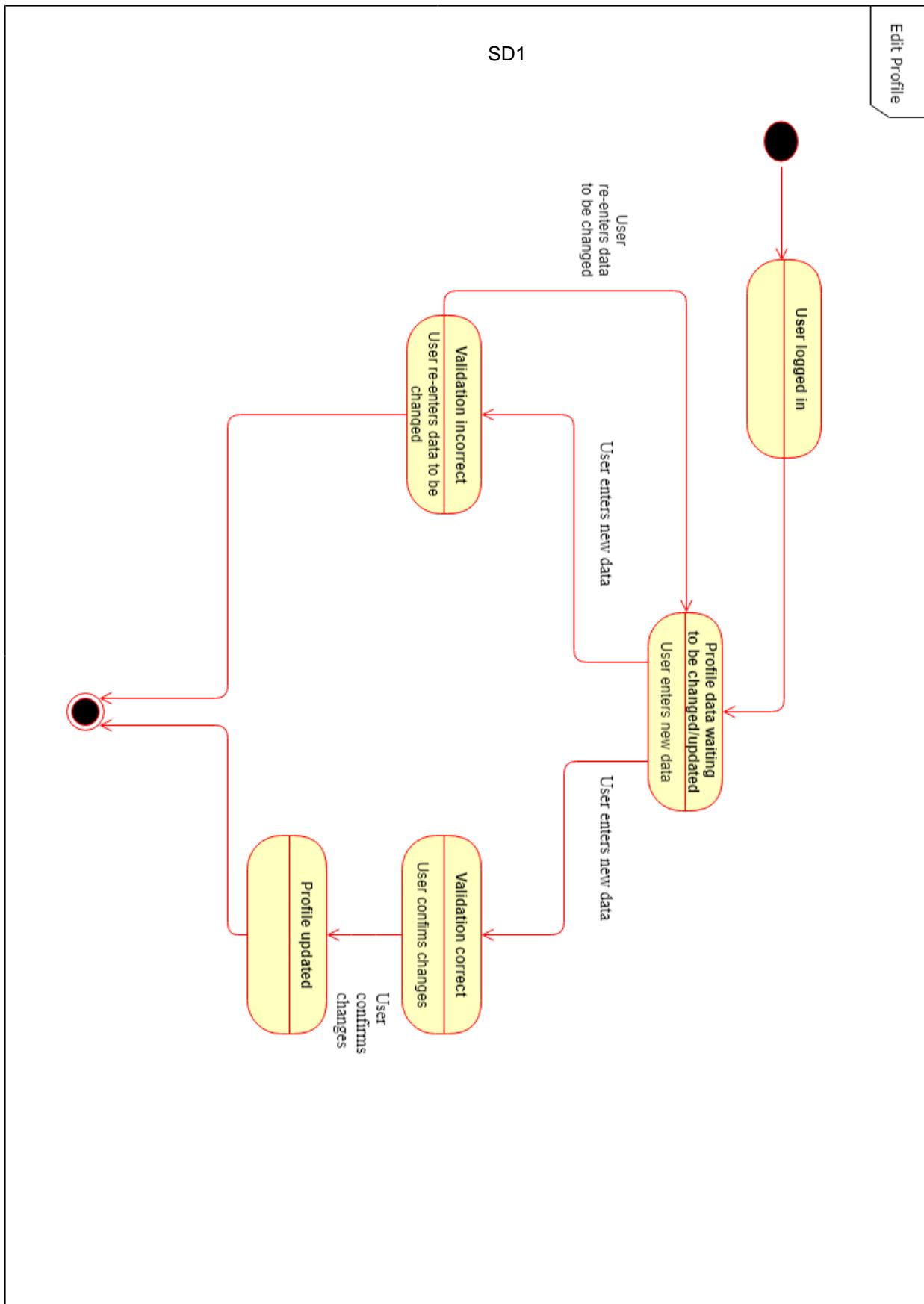


4.6 State Diagrams

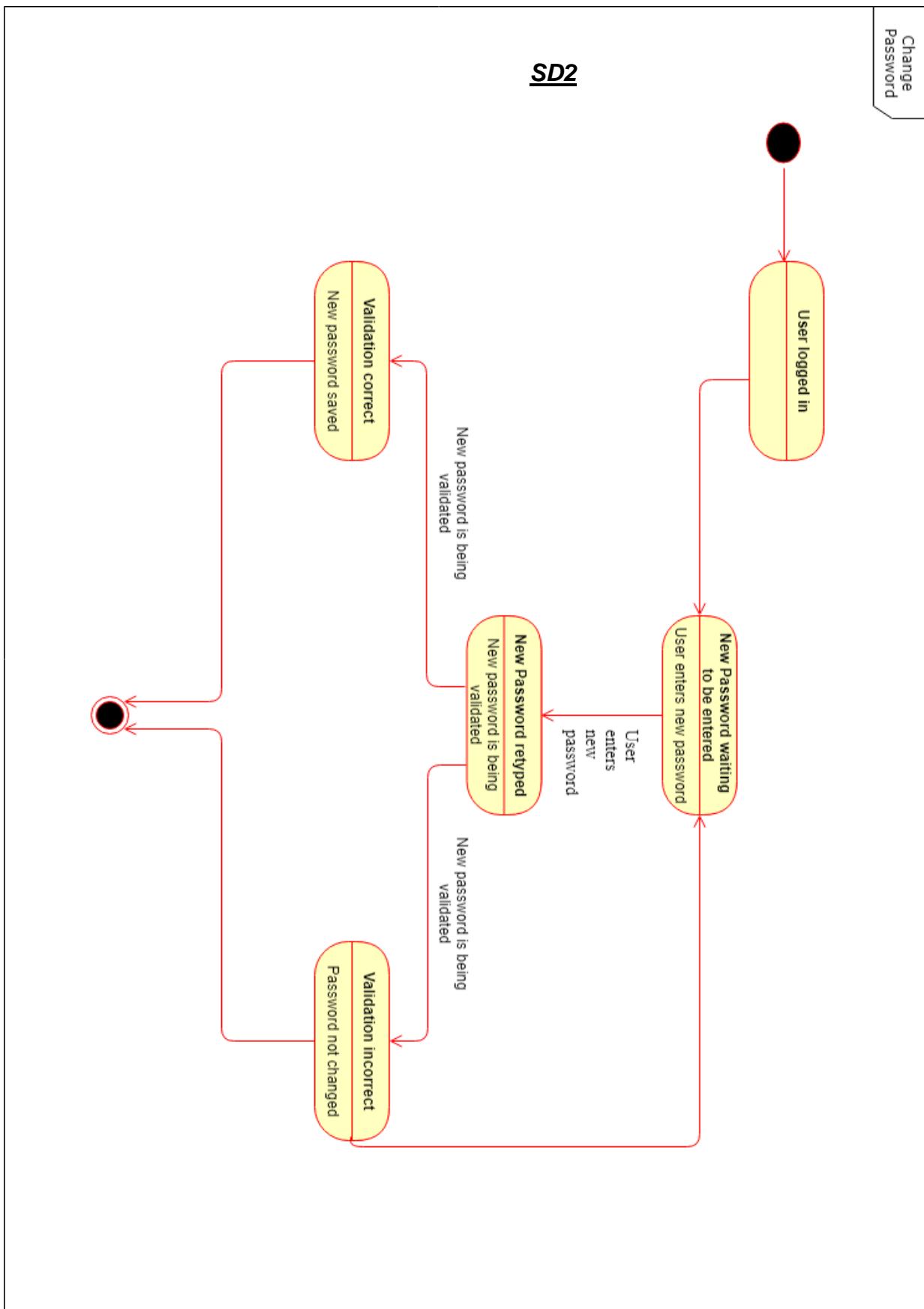
SD3

Add User

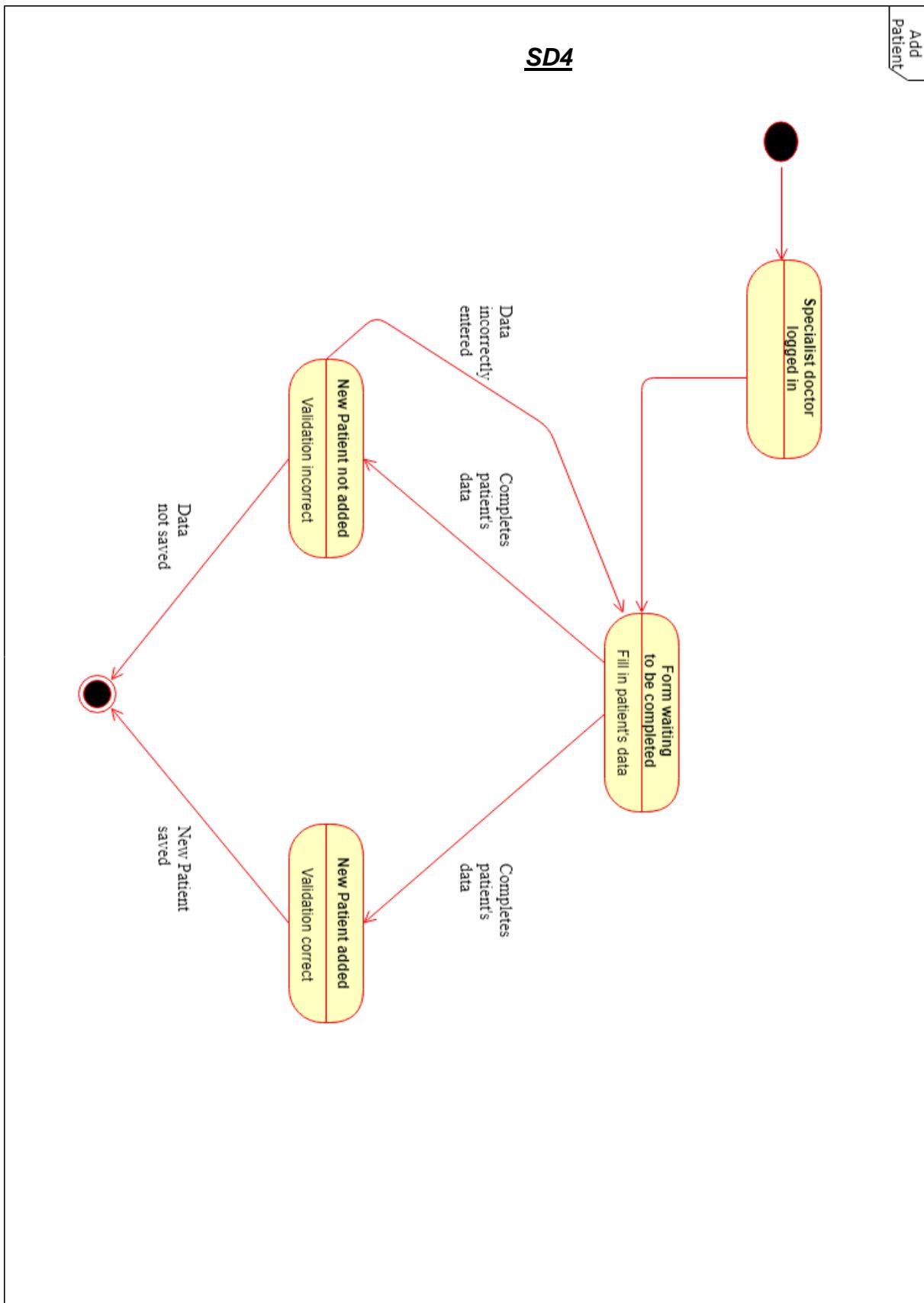
Medical Management System



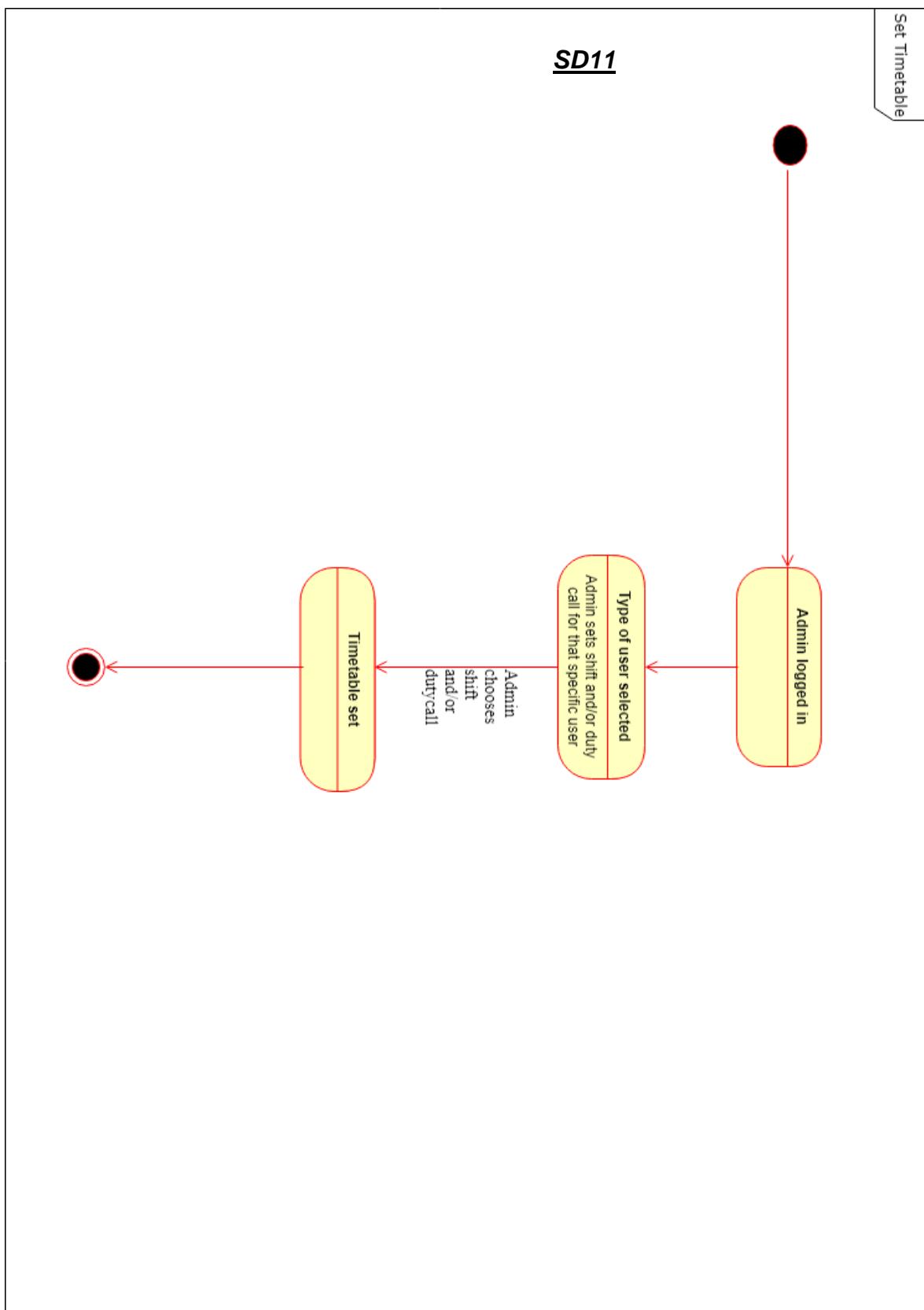
Medical Management System



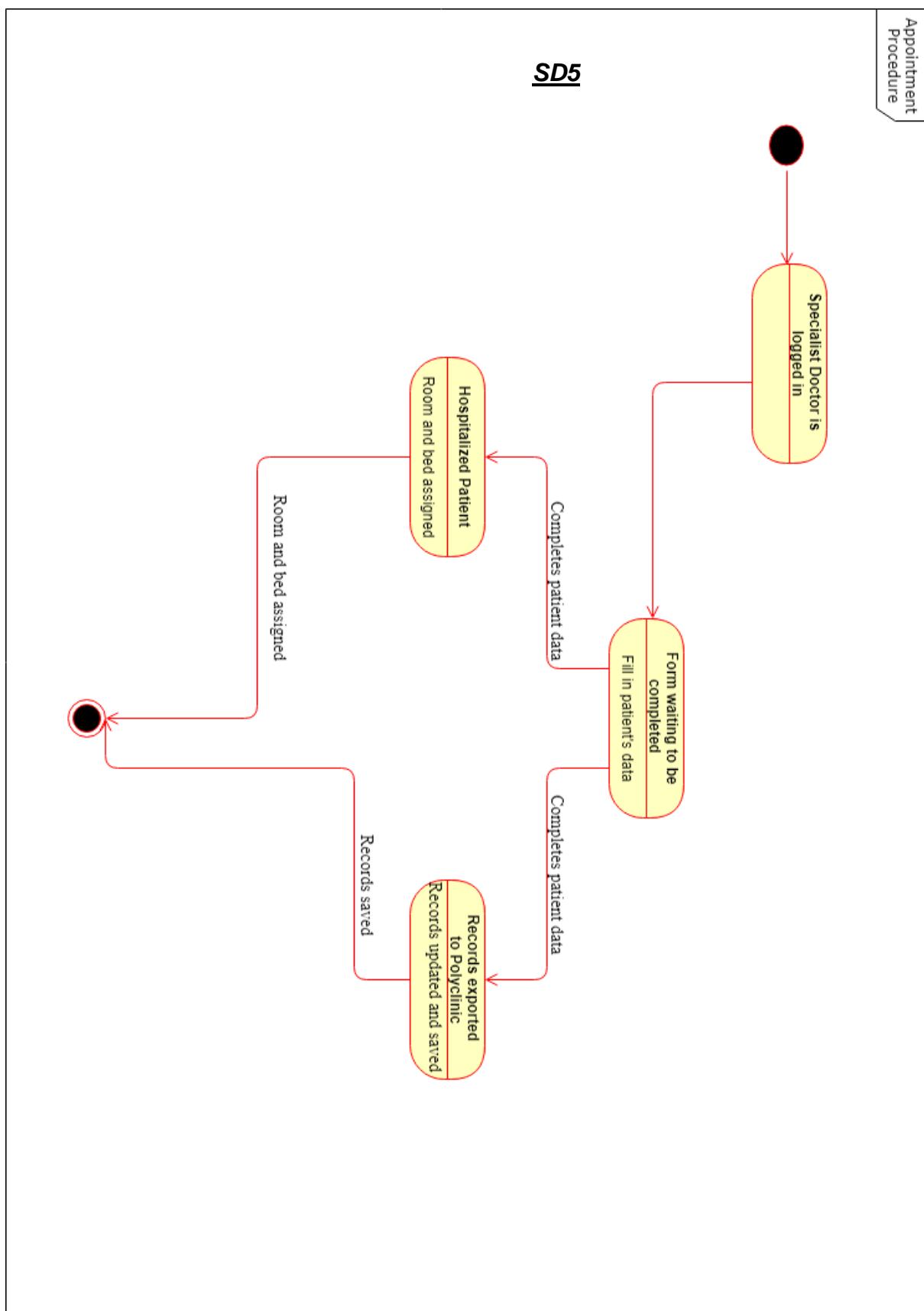
Medical Management System



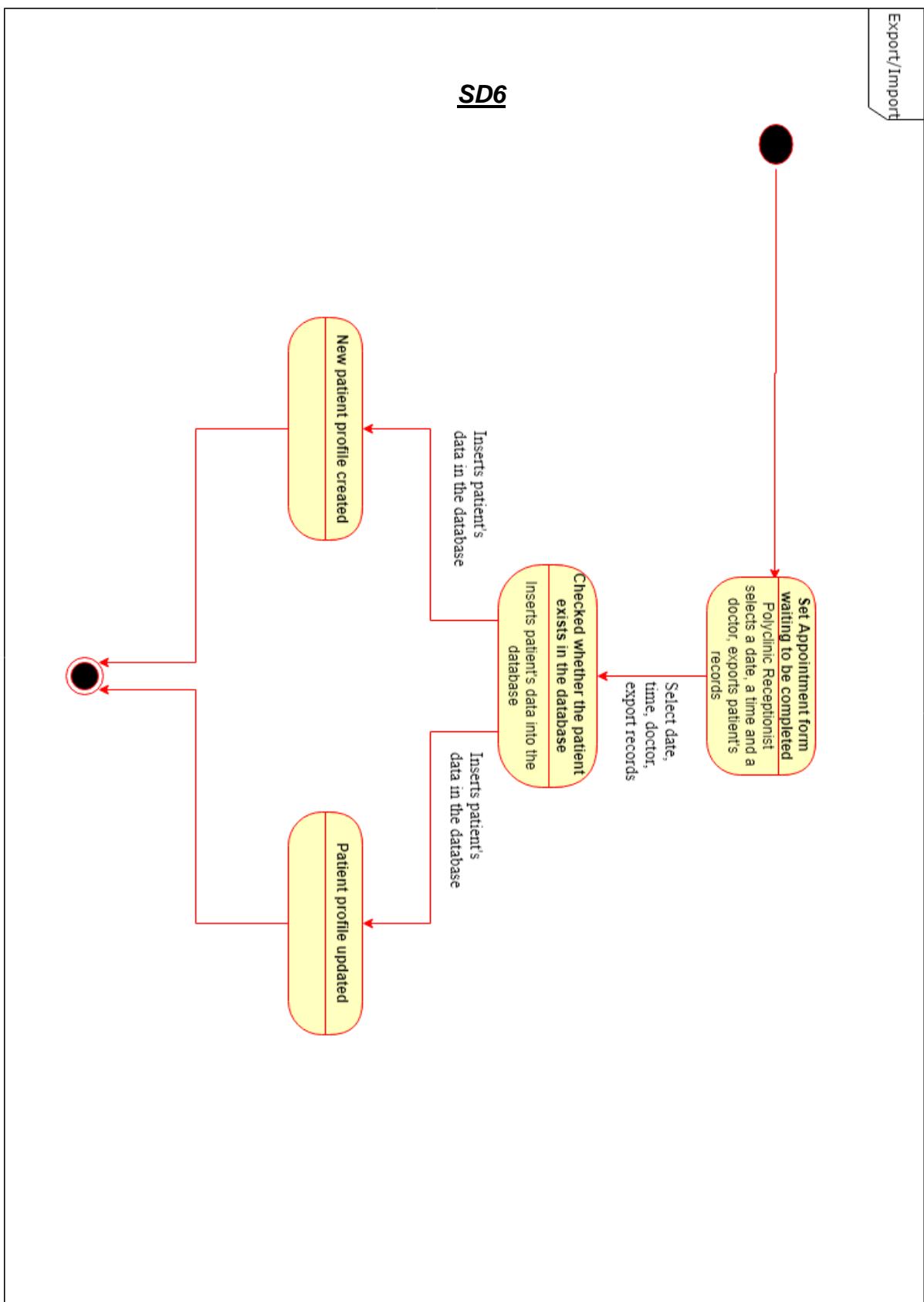
Medical Management System



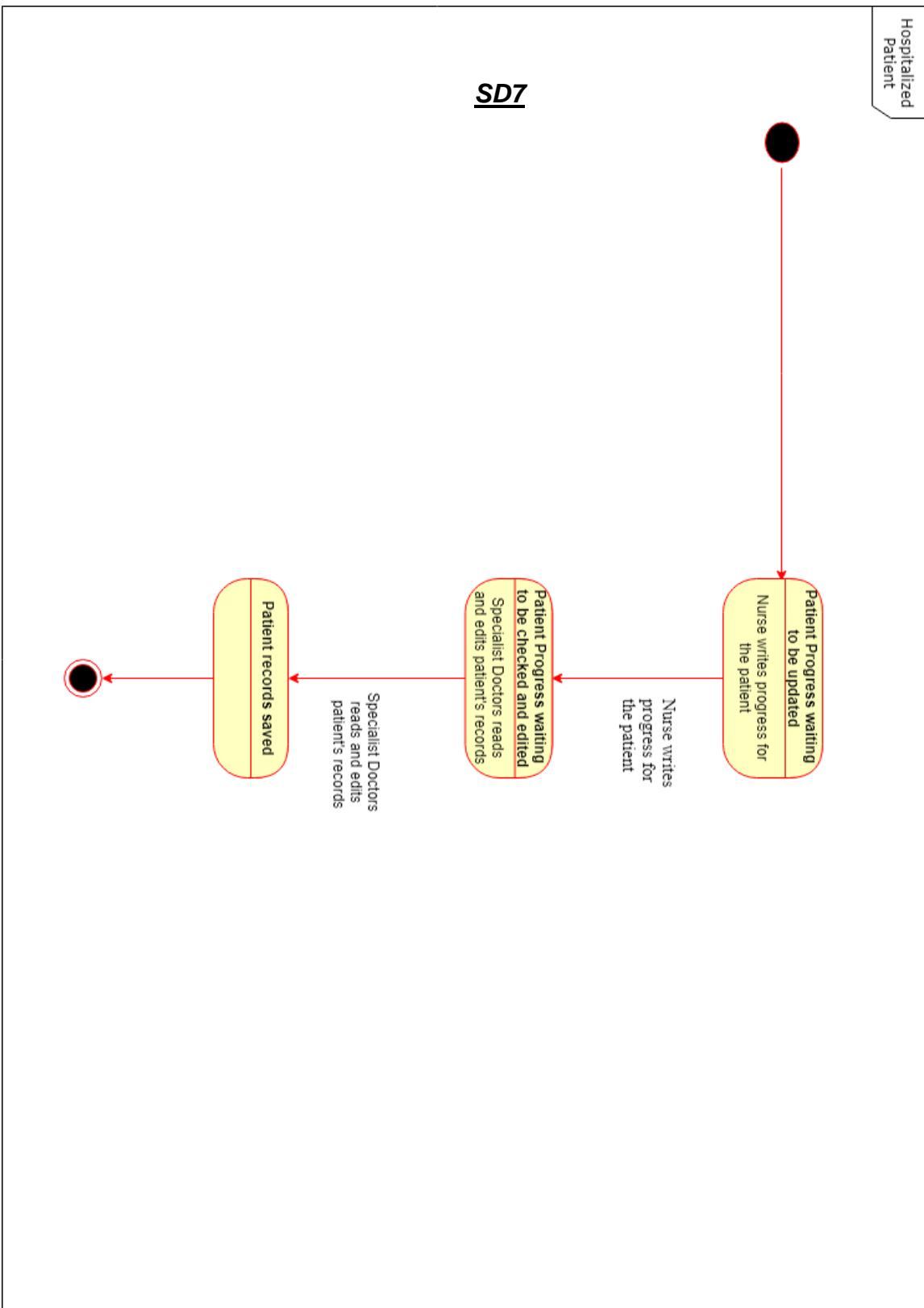
Medical Management System



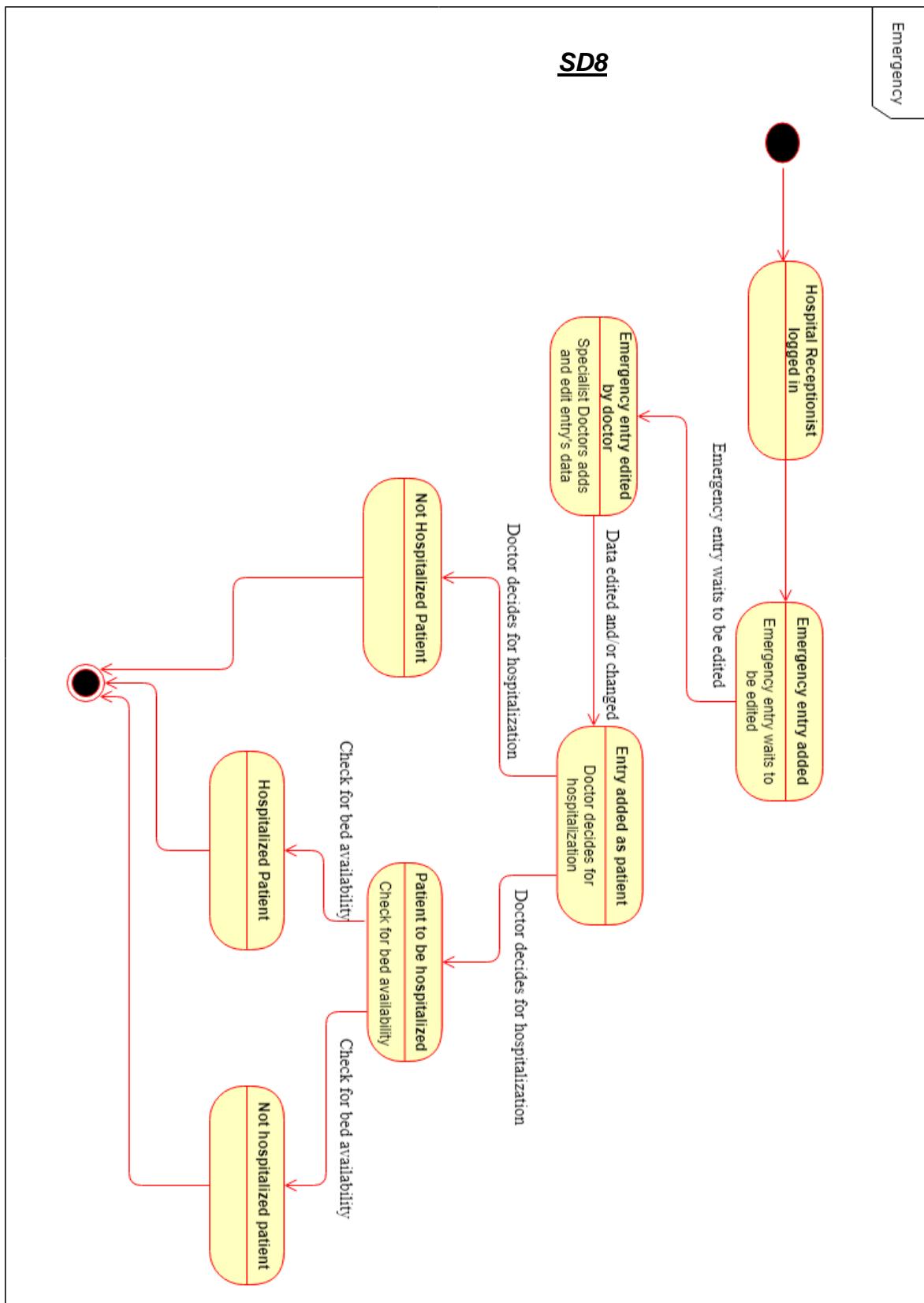
Medical Management System



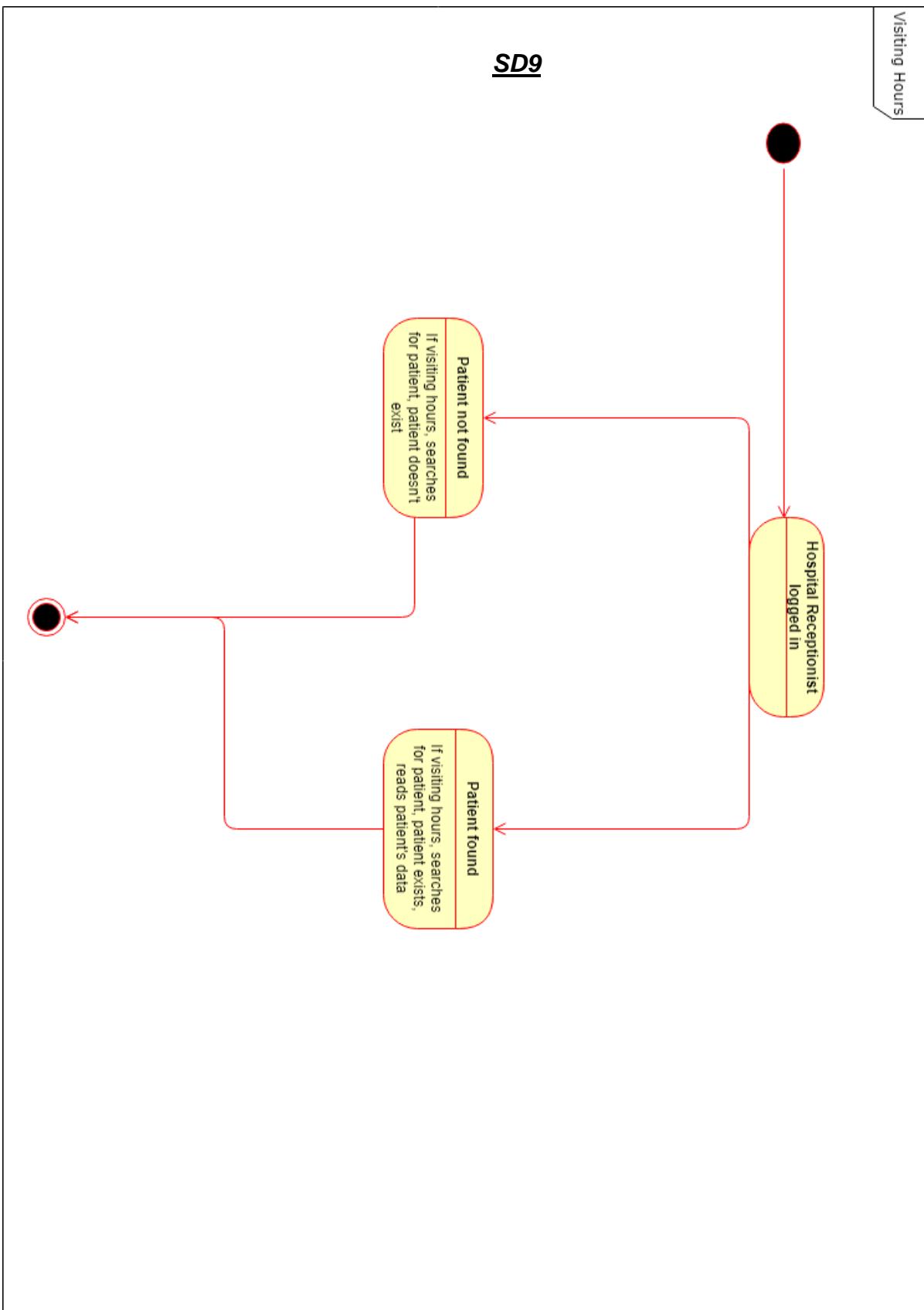
Medical Management System



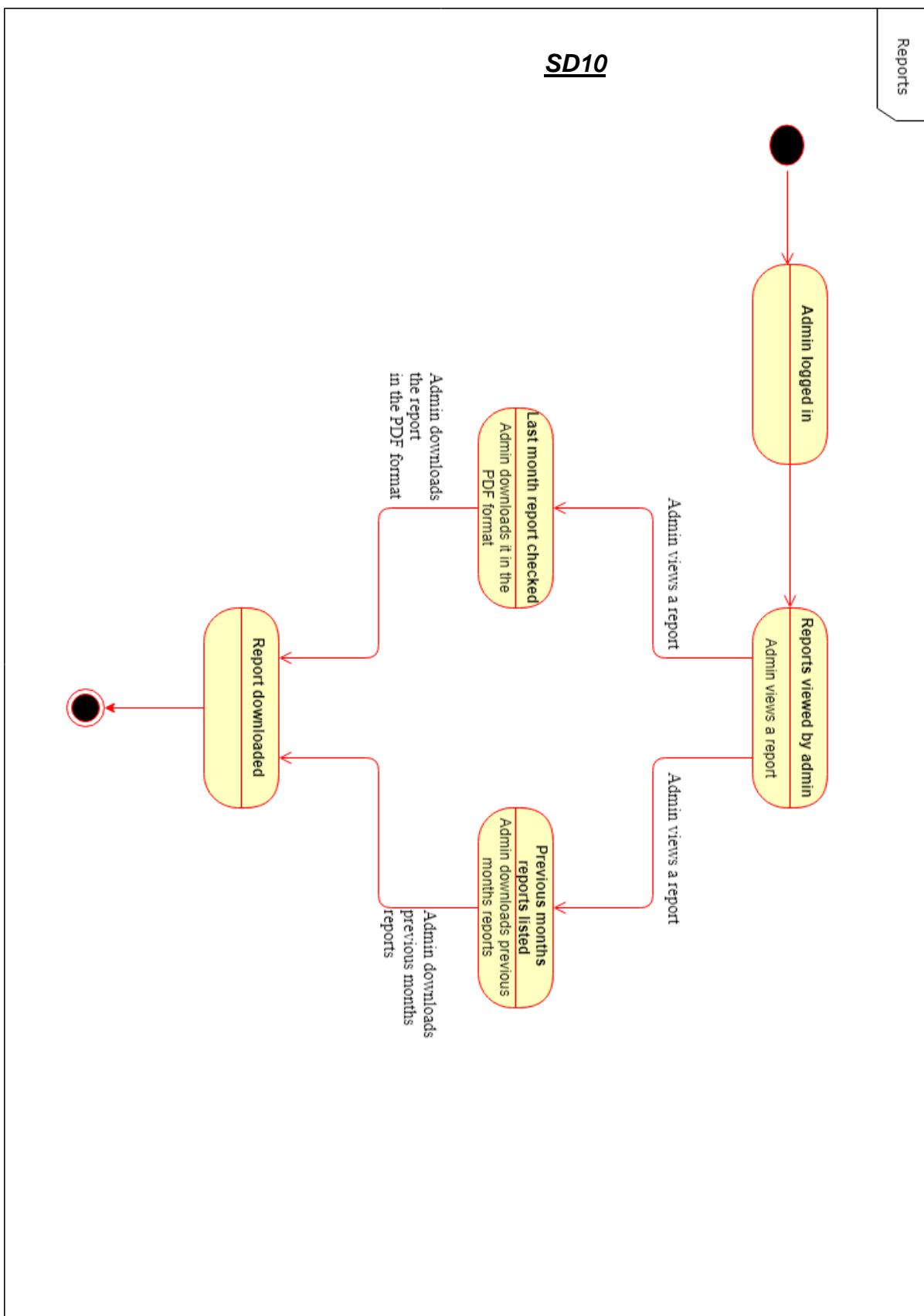
Medical Management System



Medical Management System

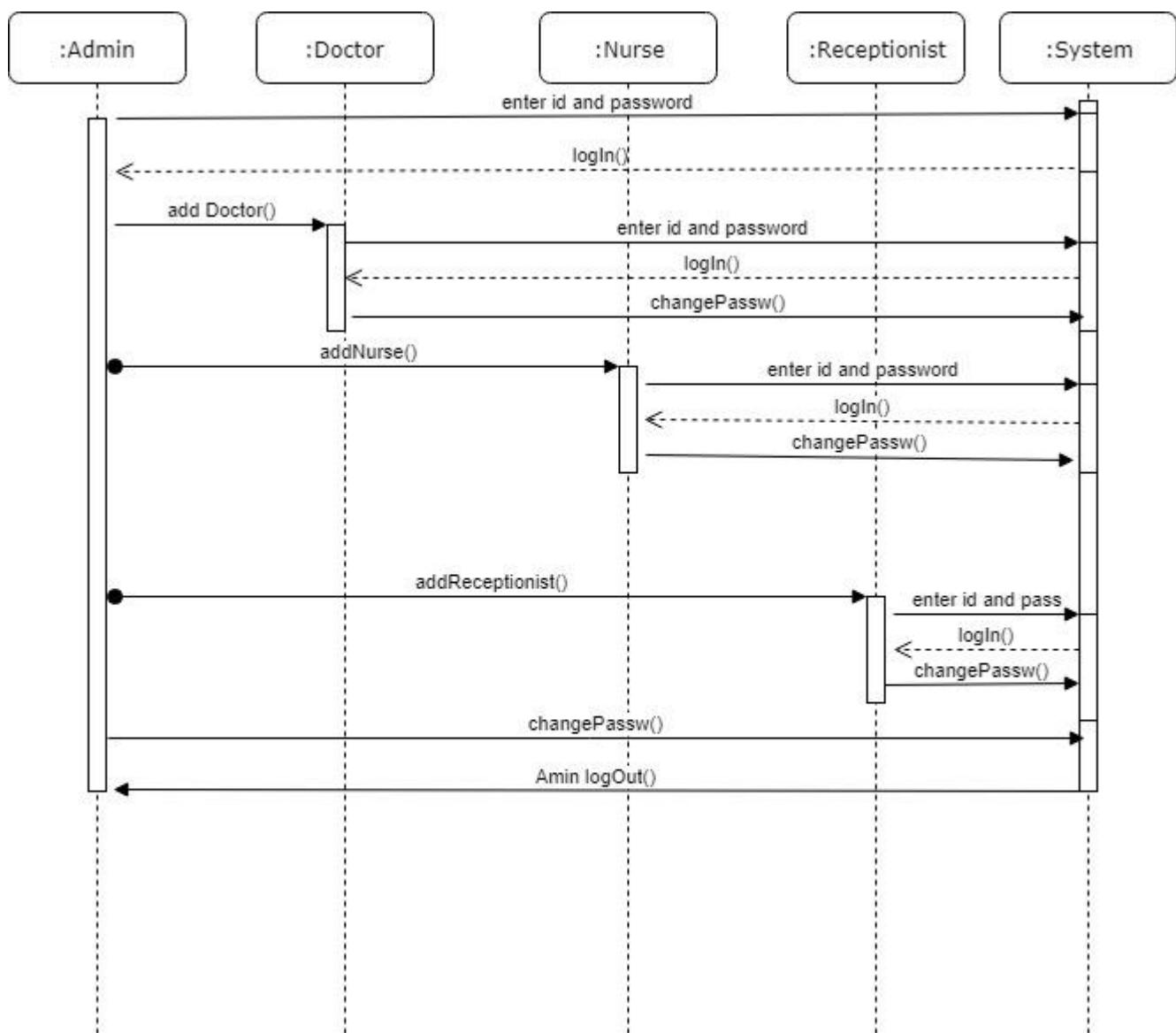


Medical Management System



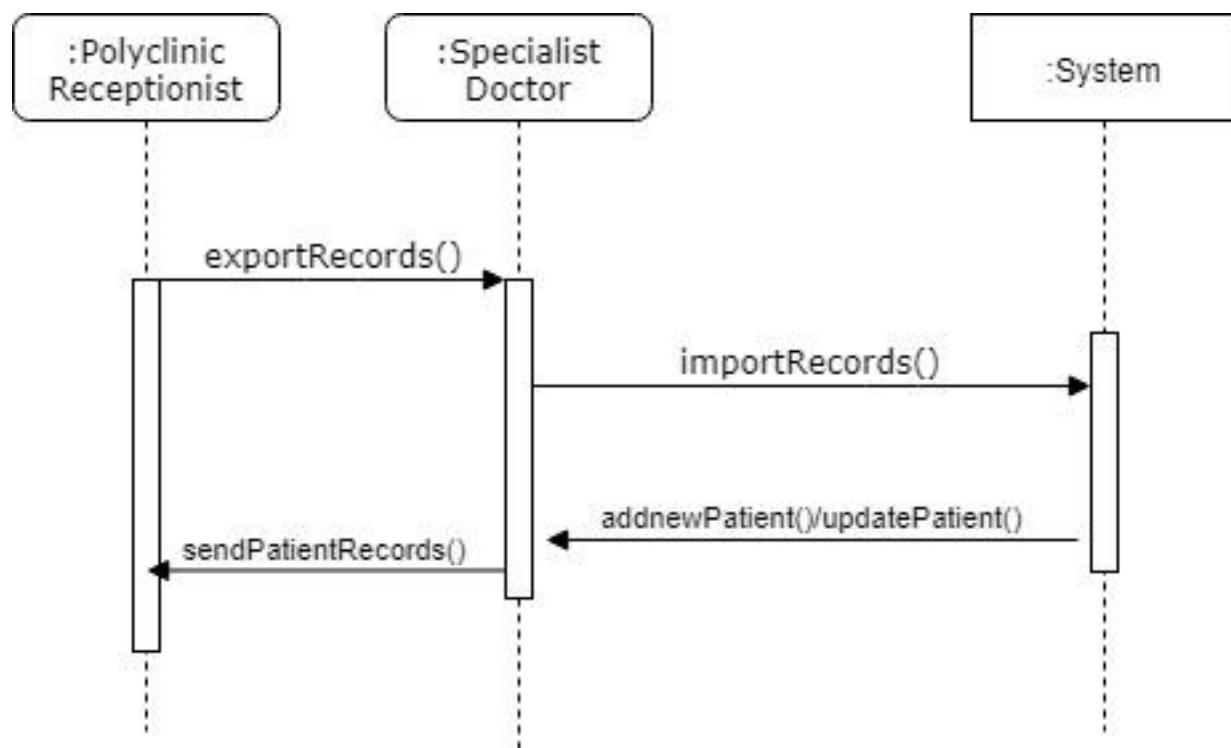
4.7 Sequence Diagrams

Add User : SQD1, SQD2 , SQD3



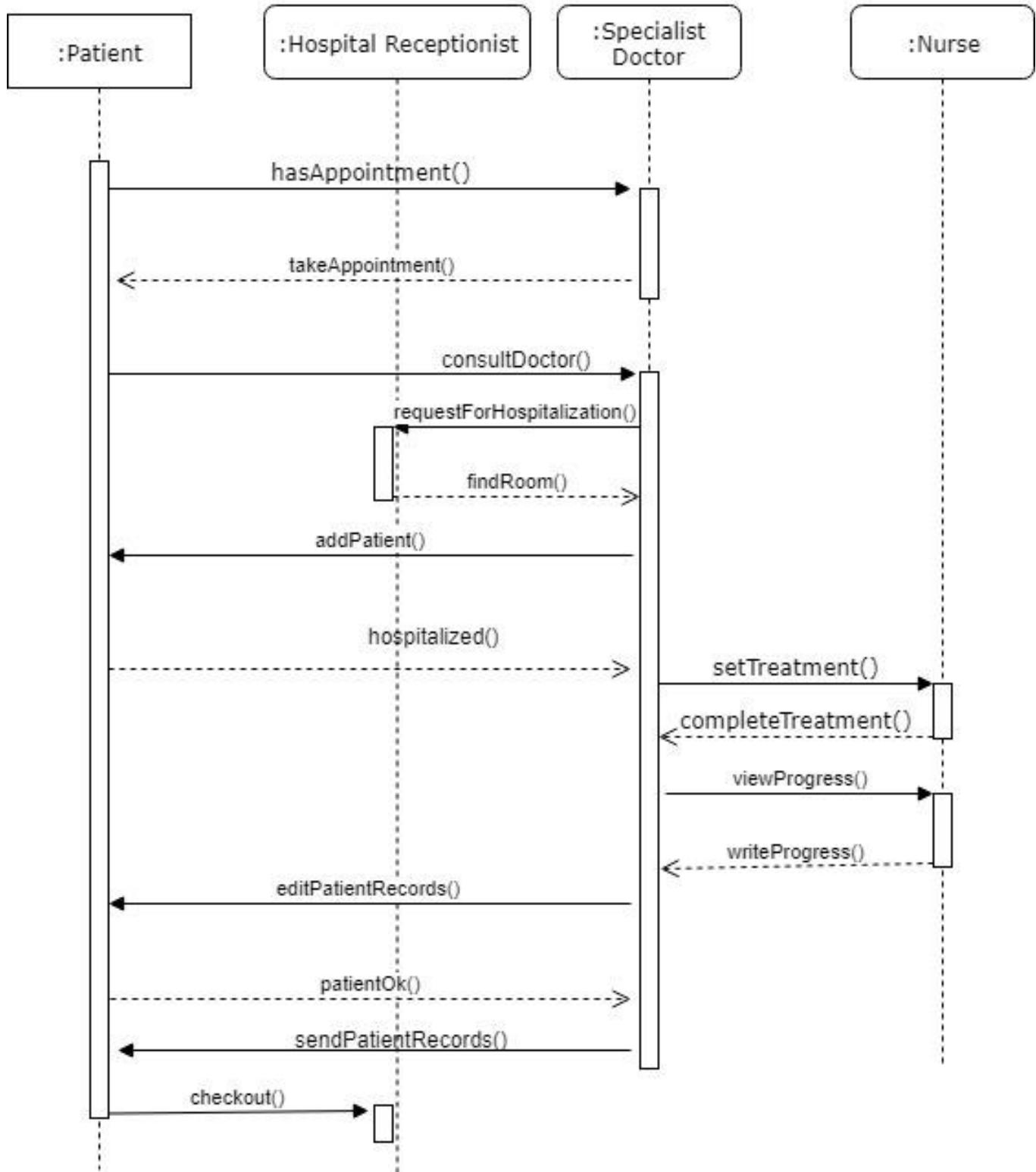
Medical Management System

Import/Export : SQD11

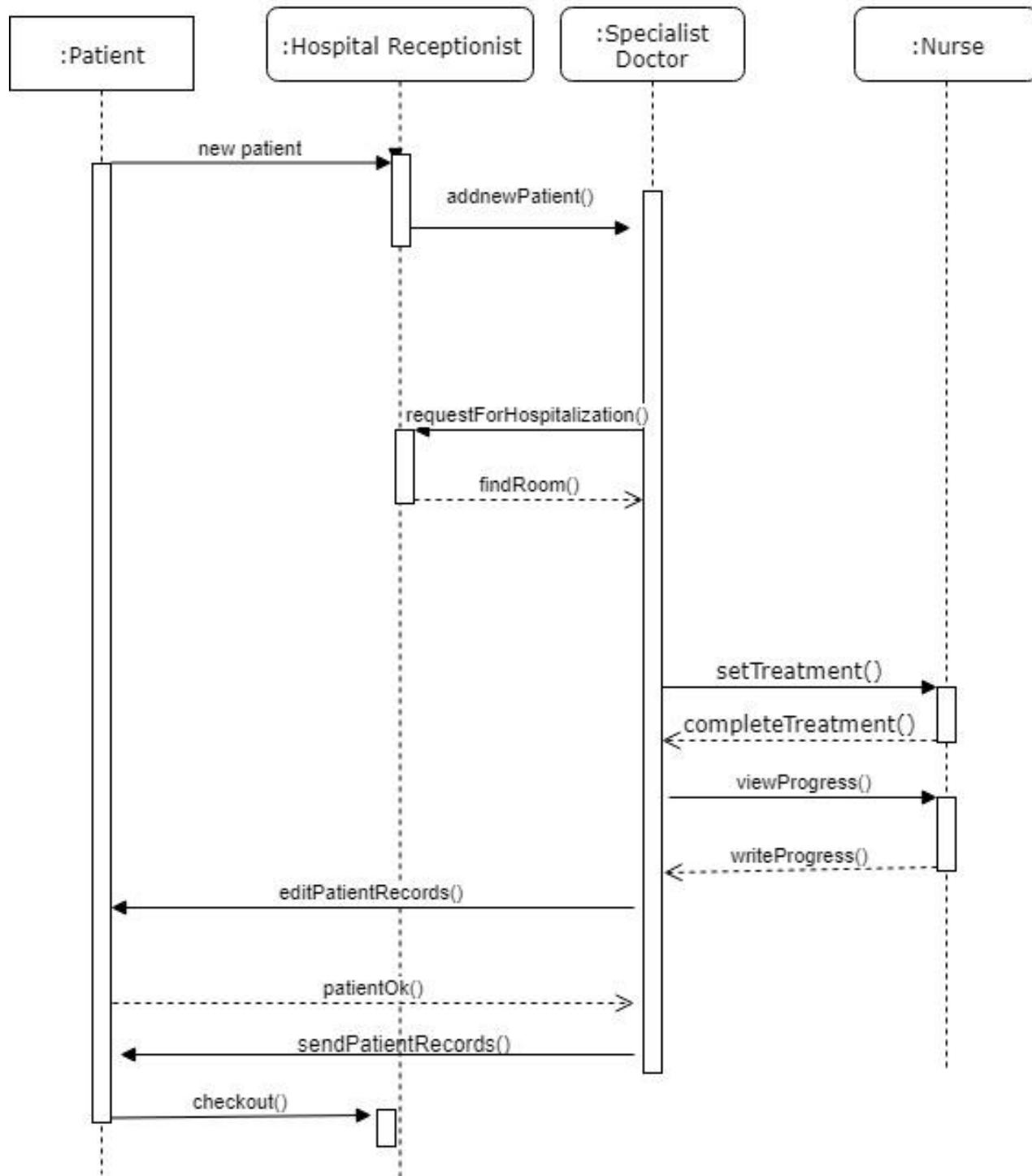


Appointment & Hospitalization

:SQD4 ,SQD5,
SQD6,SQD7,SQD8, SQD10

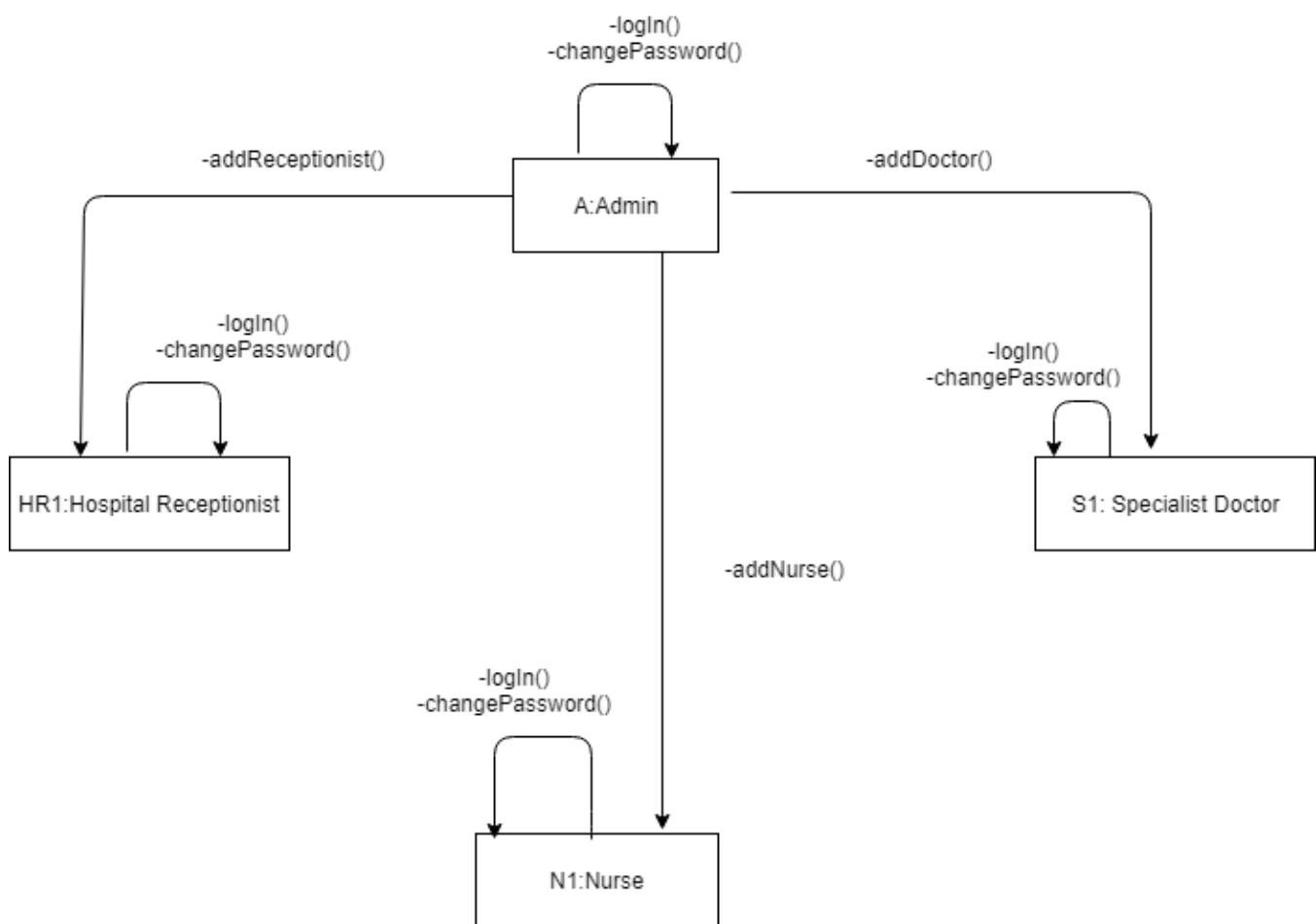


Emergency :SQD9 ,SQD12,



4.8 Collaboration Diagrams

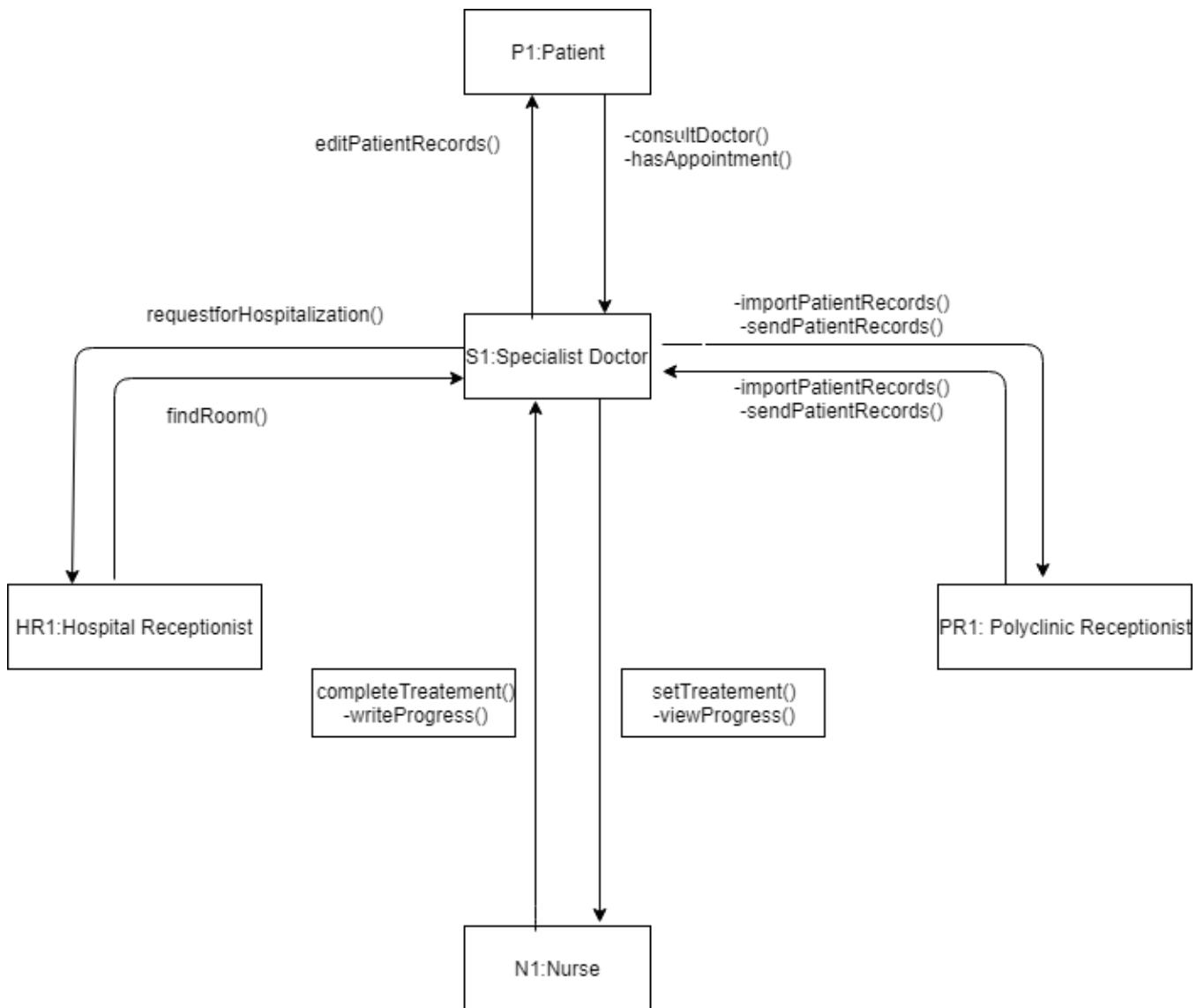
Add User : CD1, CD2, CD3



Medical Management System

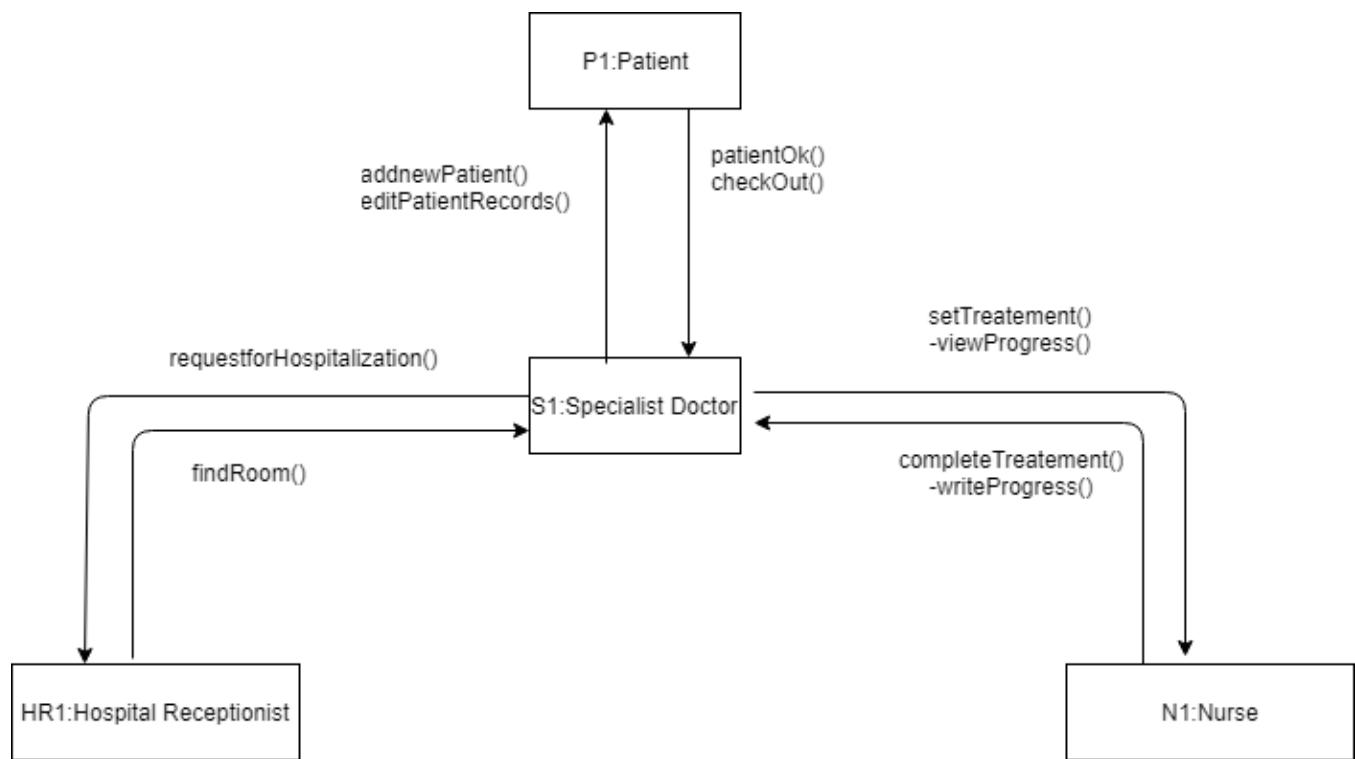
Appointment & Hospitalization :

CD4,CD5,CD6,CD7,CD8,CD10,CD11,CD12



Medical Management System

Emergency : CD9

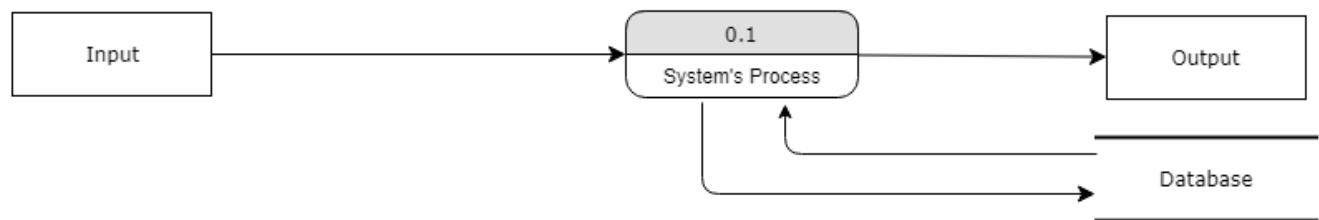


Medical Management System

4.9 Data Flow Diagrams

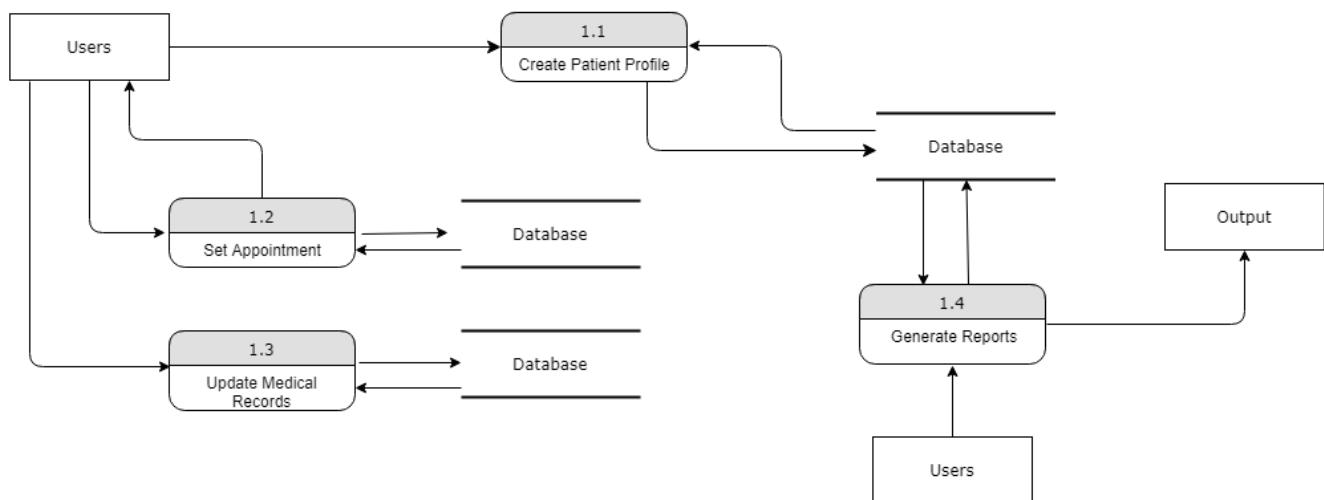
Data Flow Diagram

lvl: 0



Data Flow Diagram

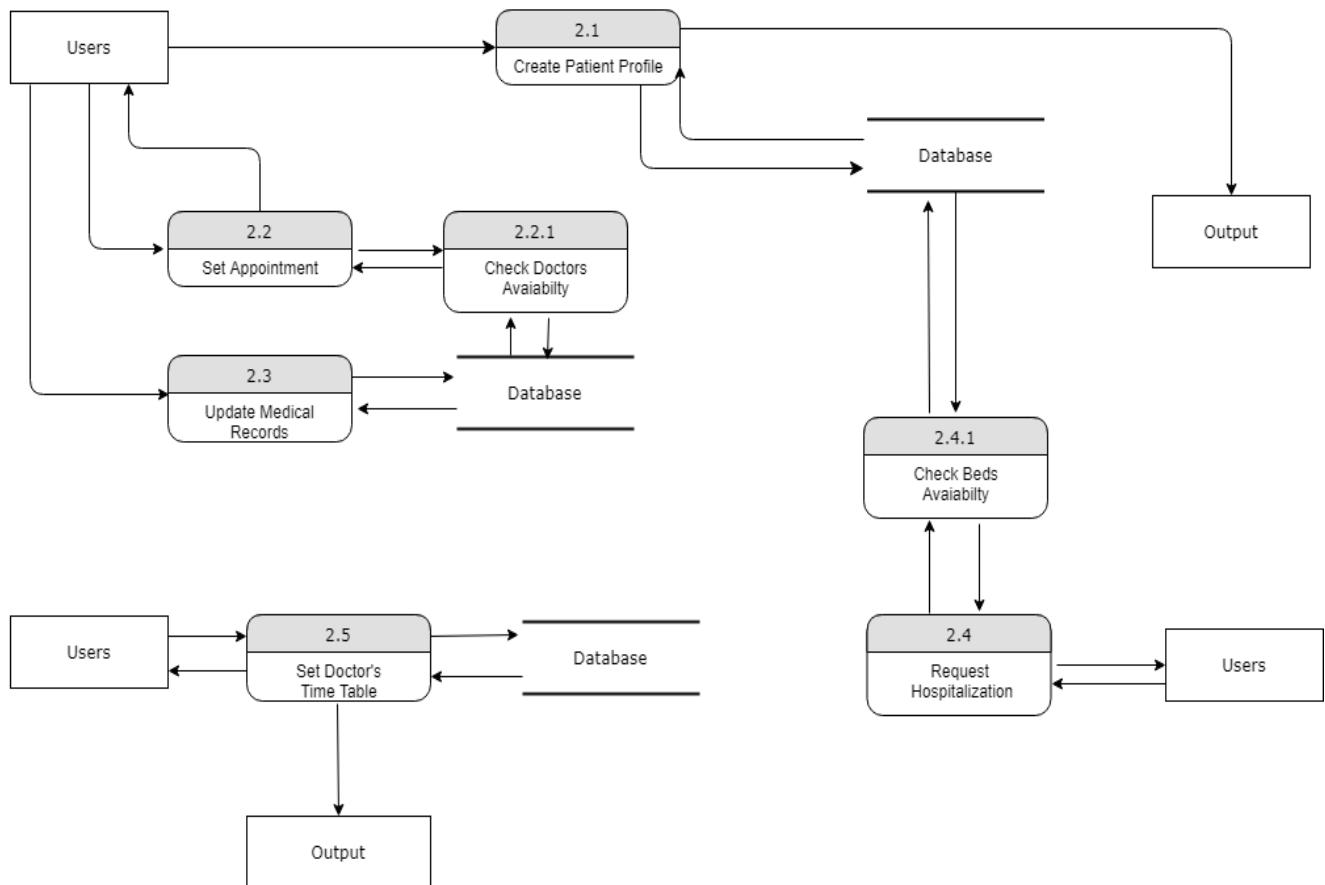
lvl: 1



Medical Management System

Data Flow Diagram

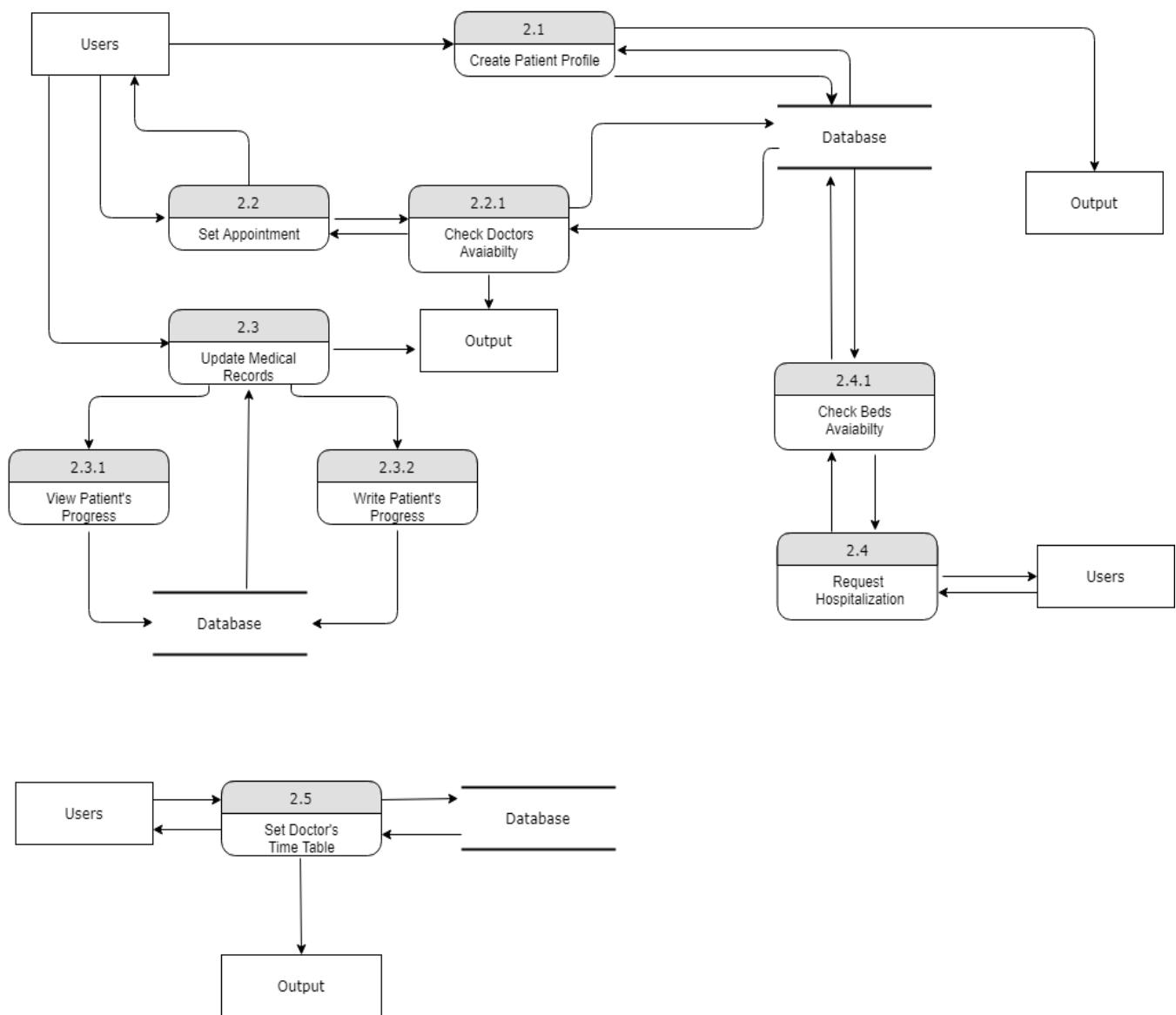
lvl: 2



Medical Management System

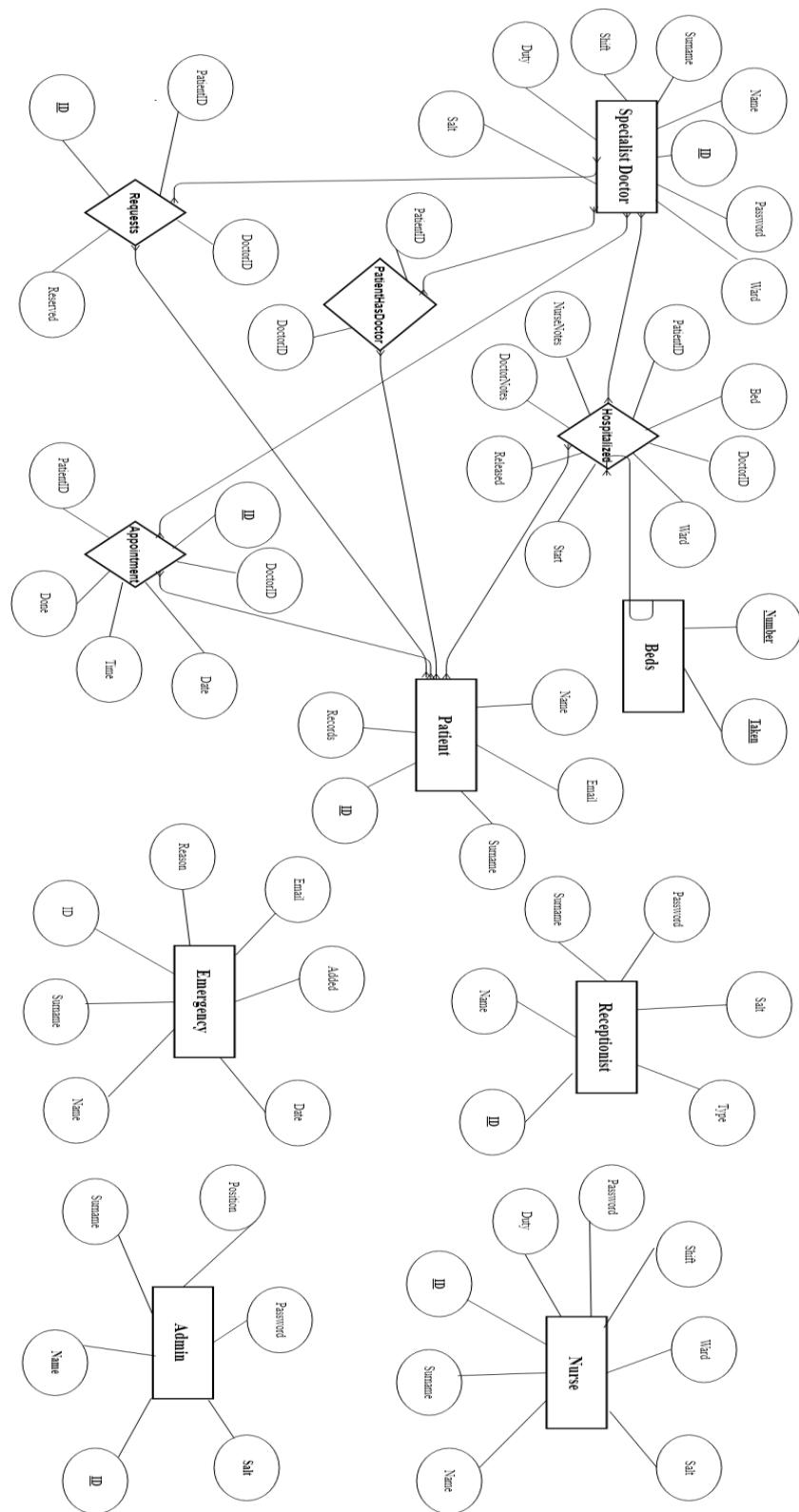
Data Flow Diagram

lvl: 3



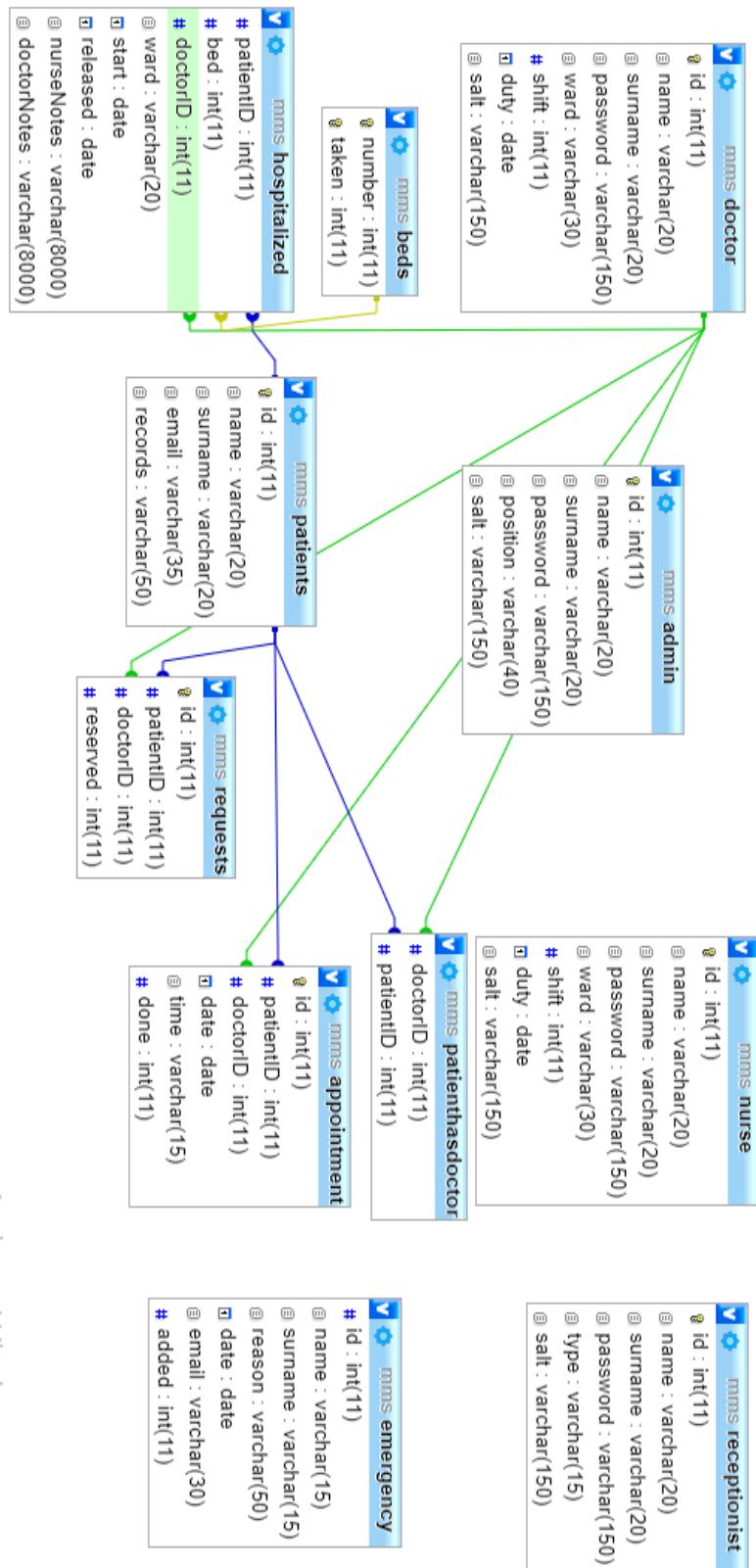
Medical Management System

4.10 ER Diagram



Medical Management System

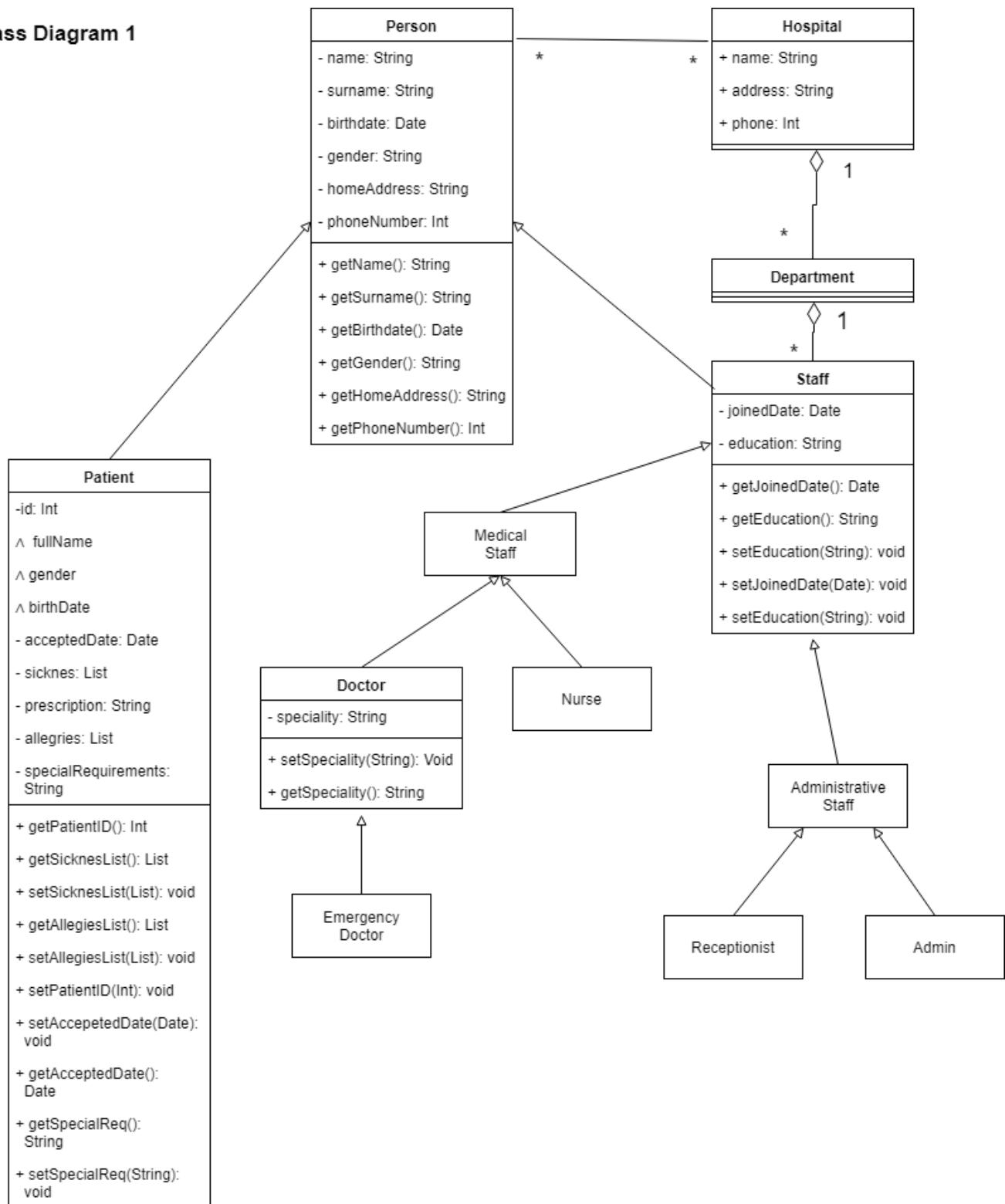
4.11 DB Schema



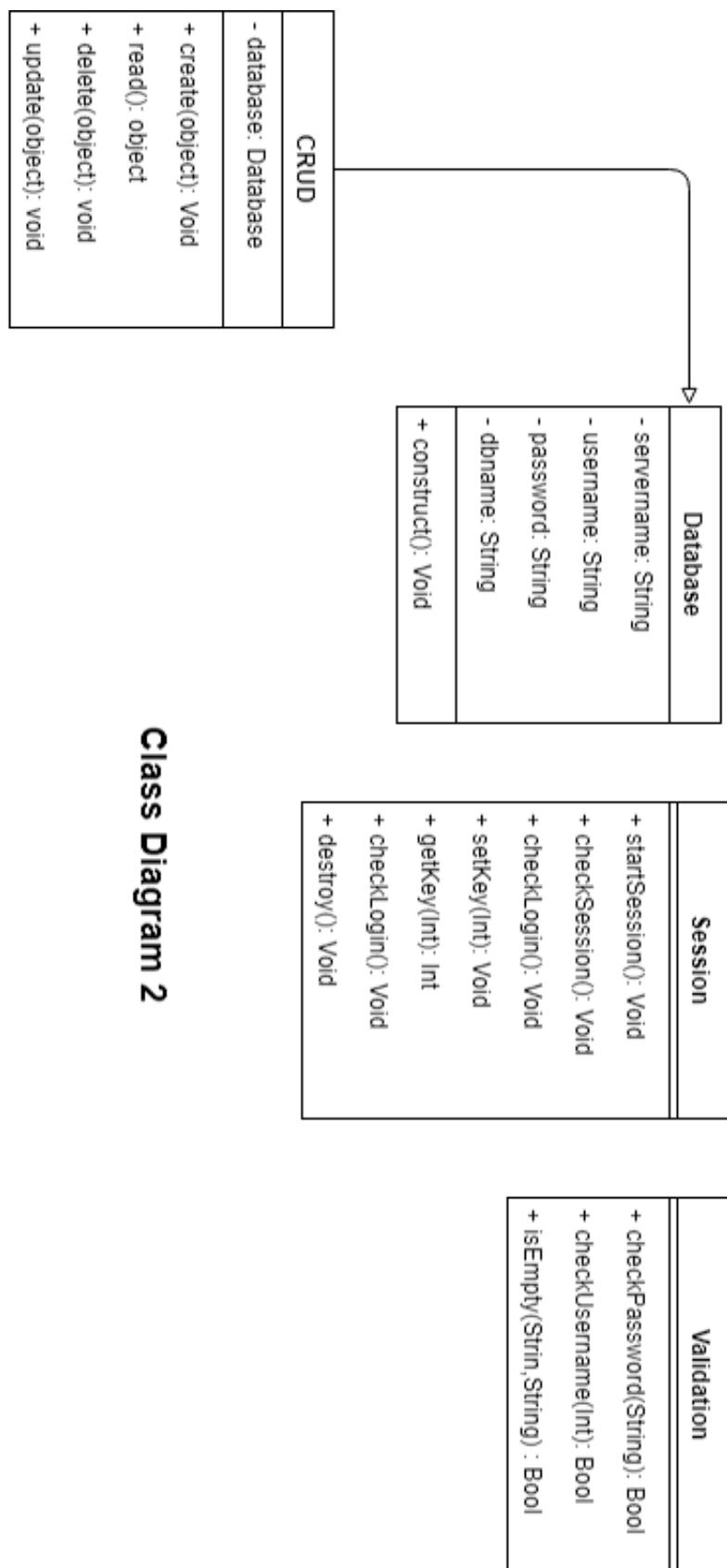
Medical Management System

4.12 Class Diagrams

Class Diagram 1

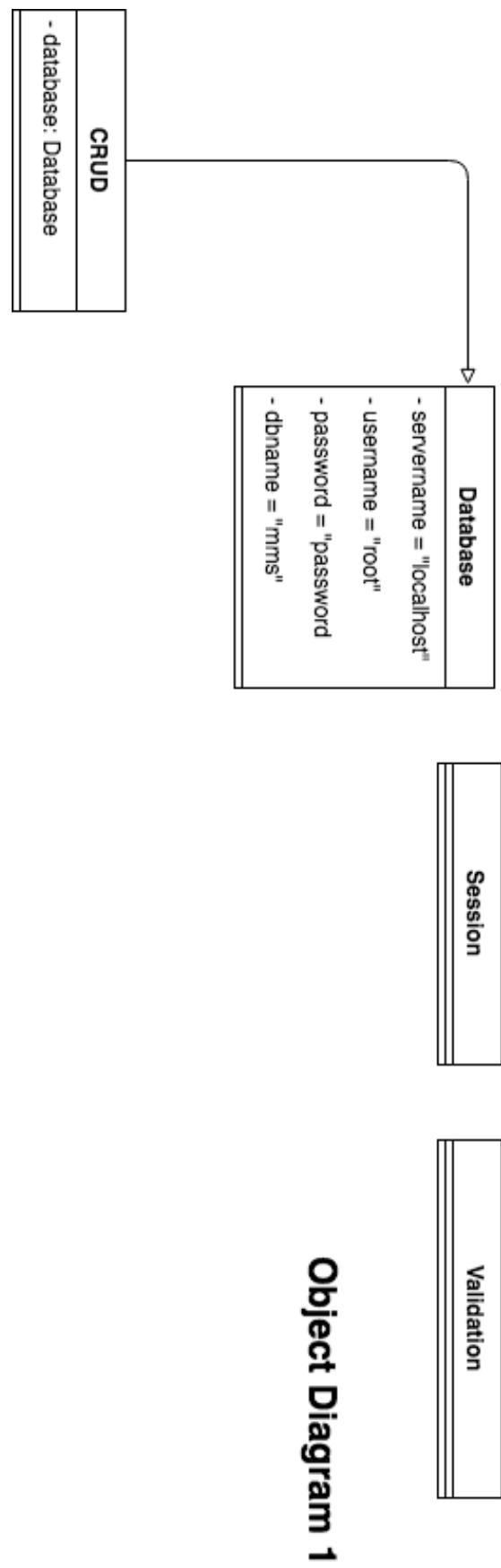


Medical Management System

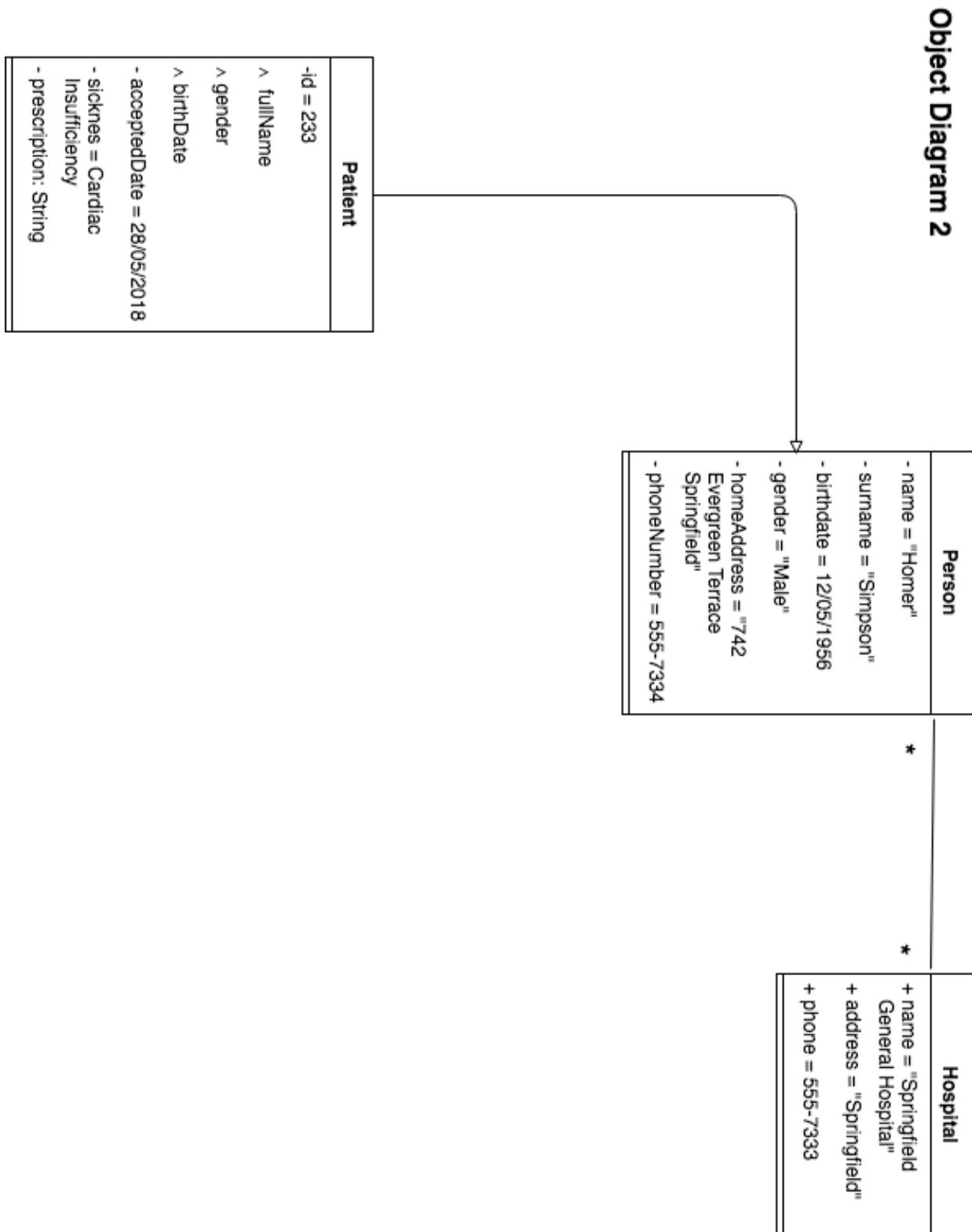


Class Diagram 2

4.13 Object Diagrams

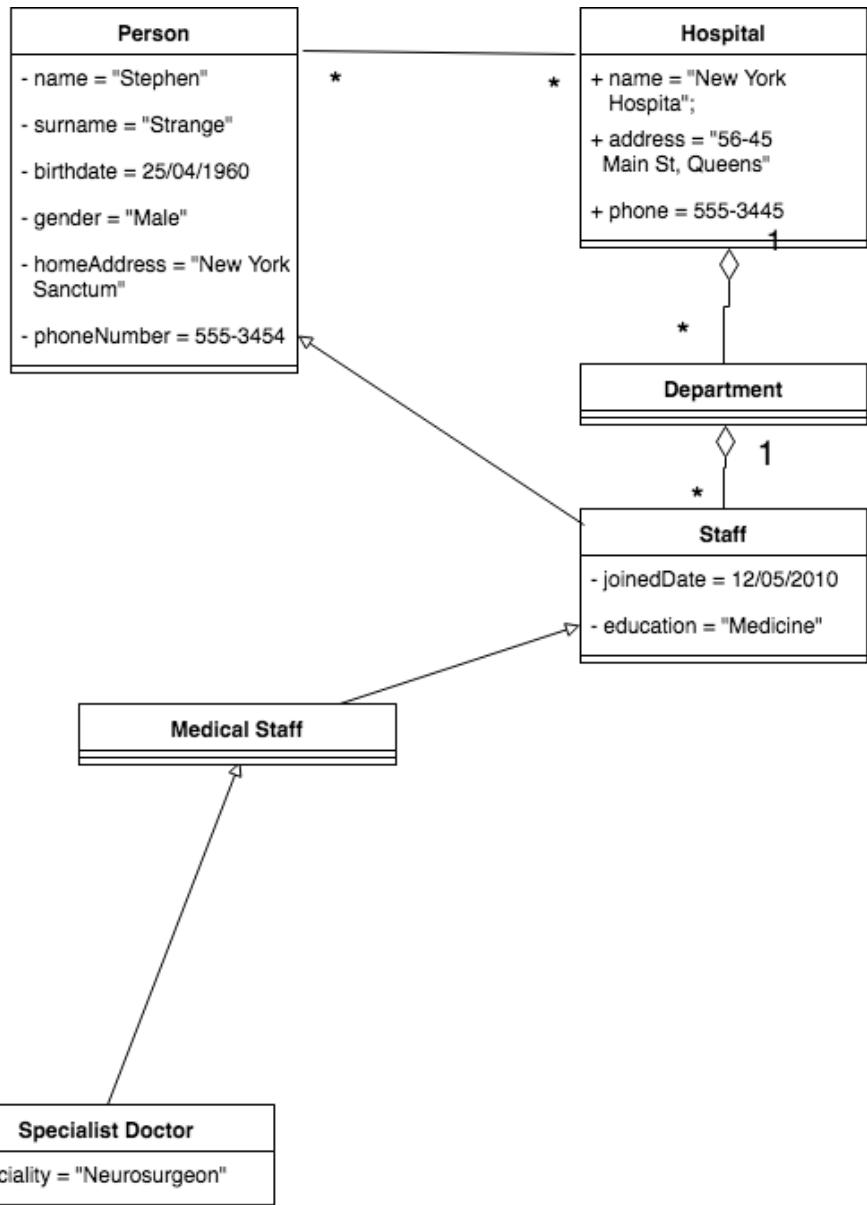


Medical Management System



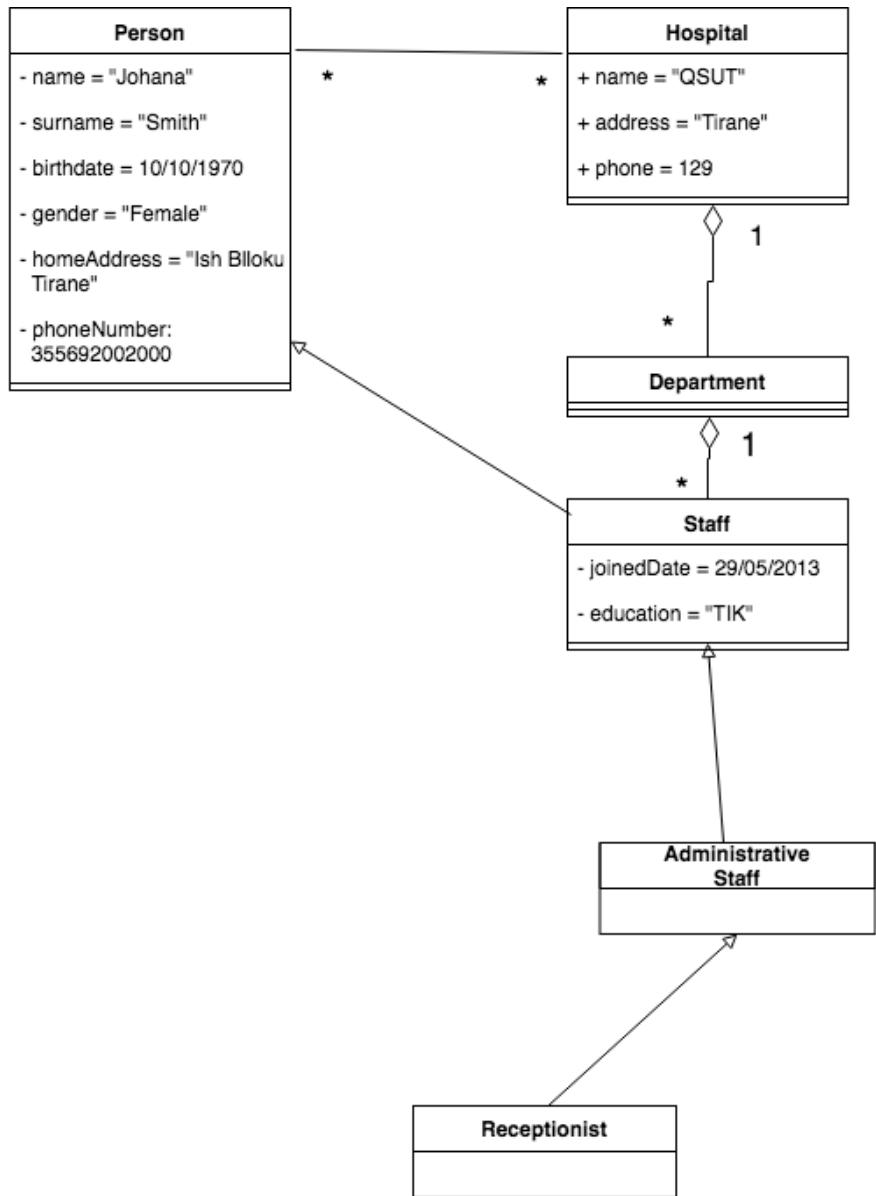
Medical Management System

Object Diagram 3



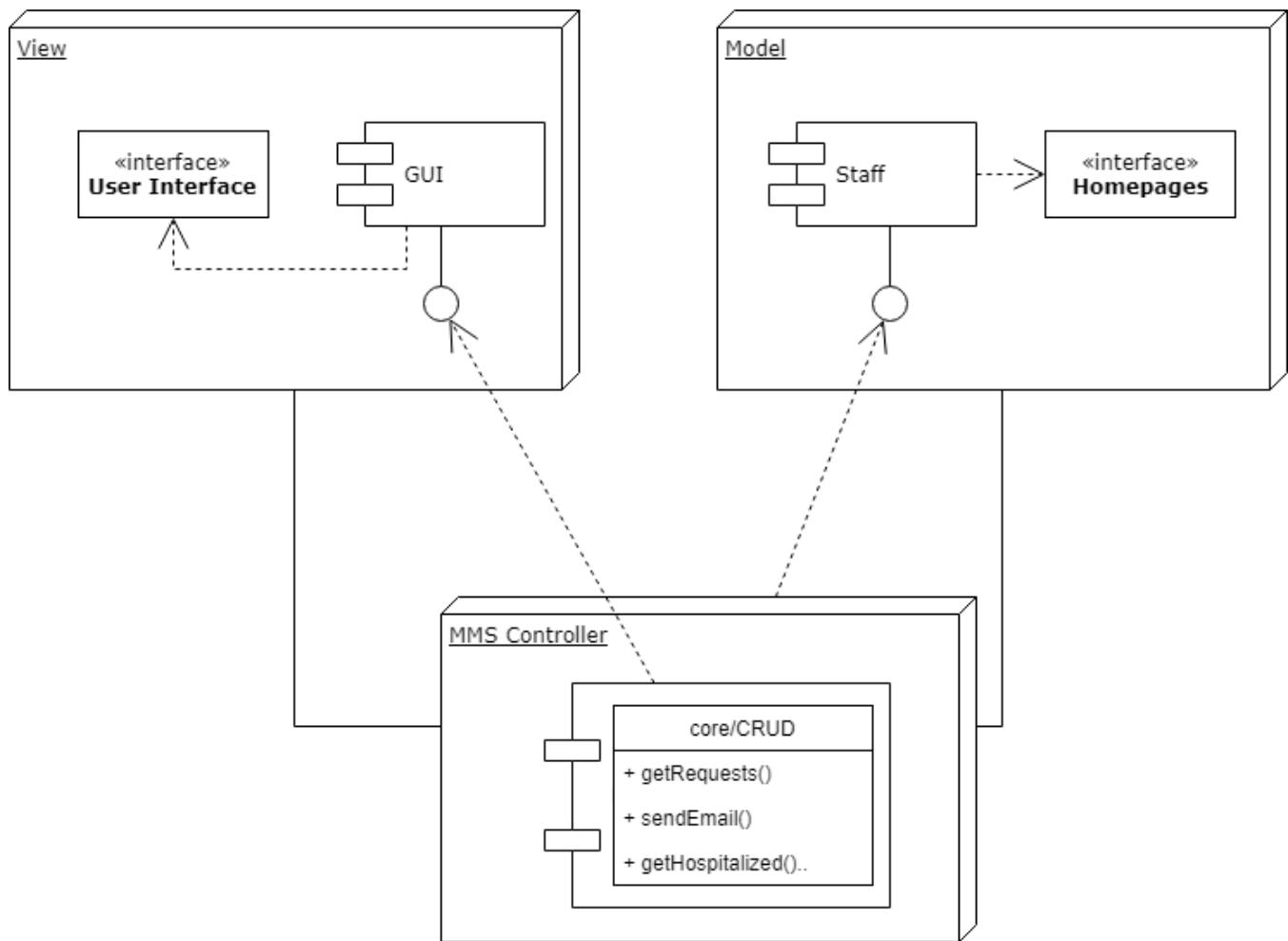
Medical Management System

Object Diagram 4



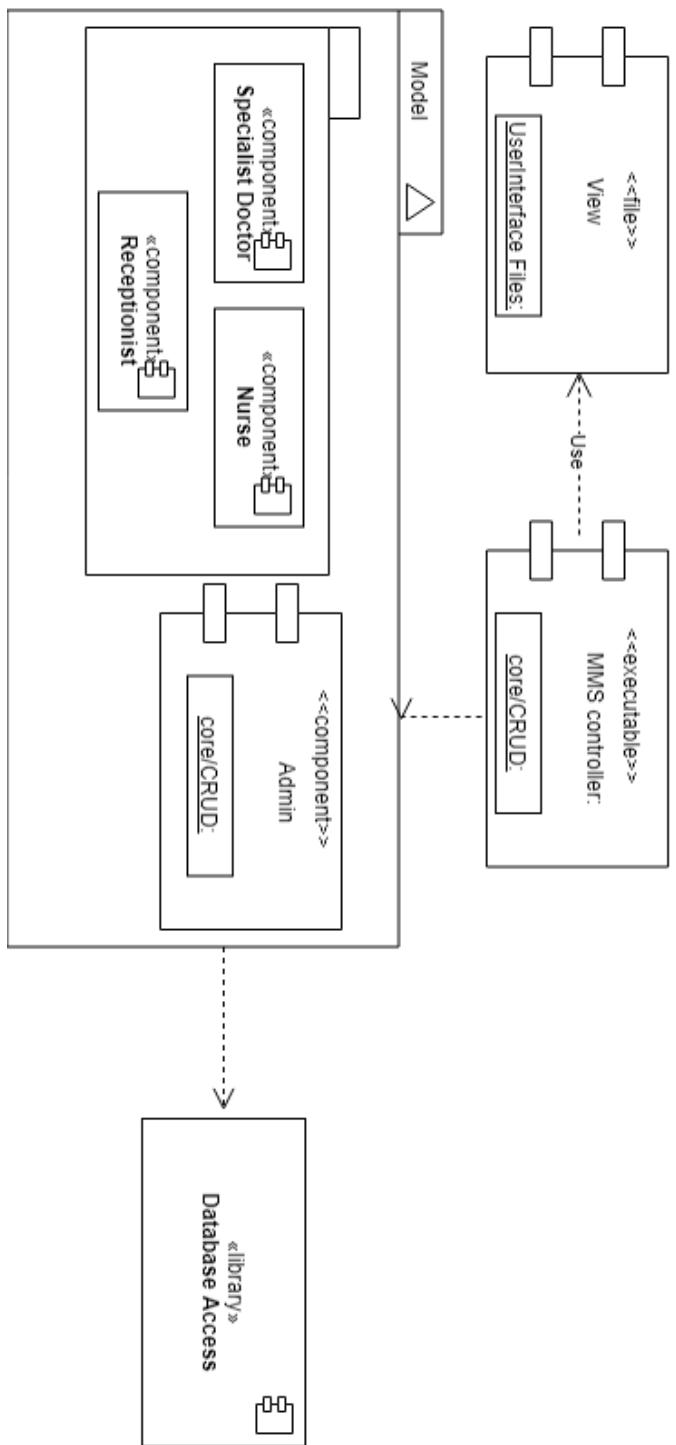
Medical Management System

4.14 Component Diagram



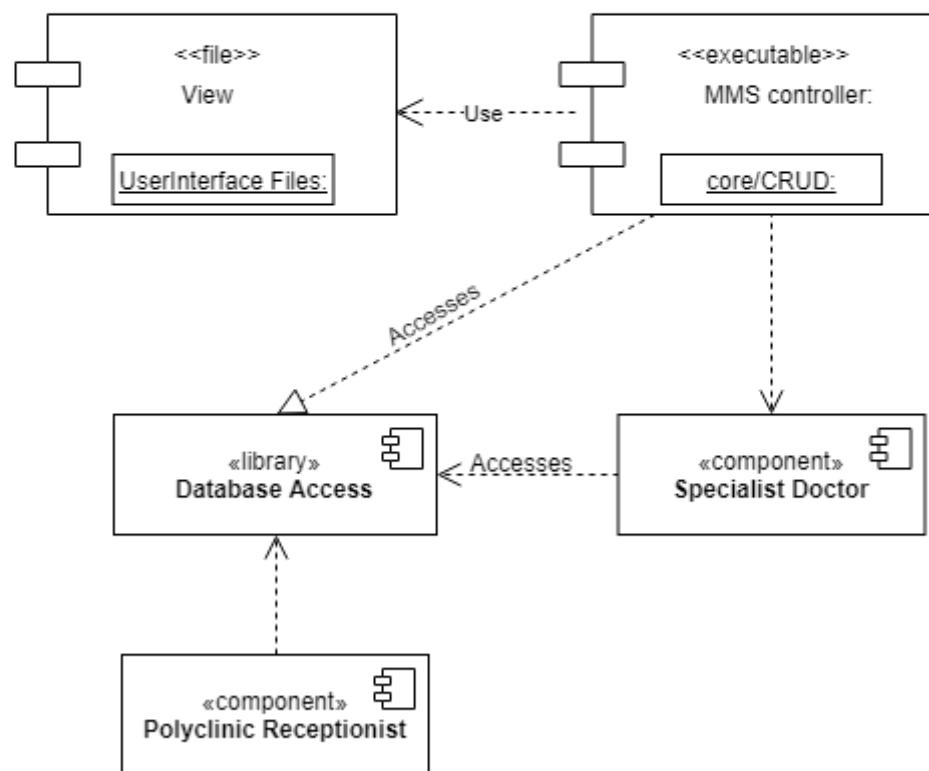
Medical Management System

<<model>>



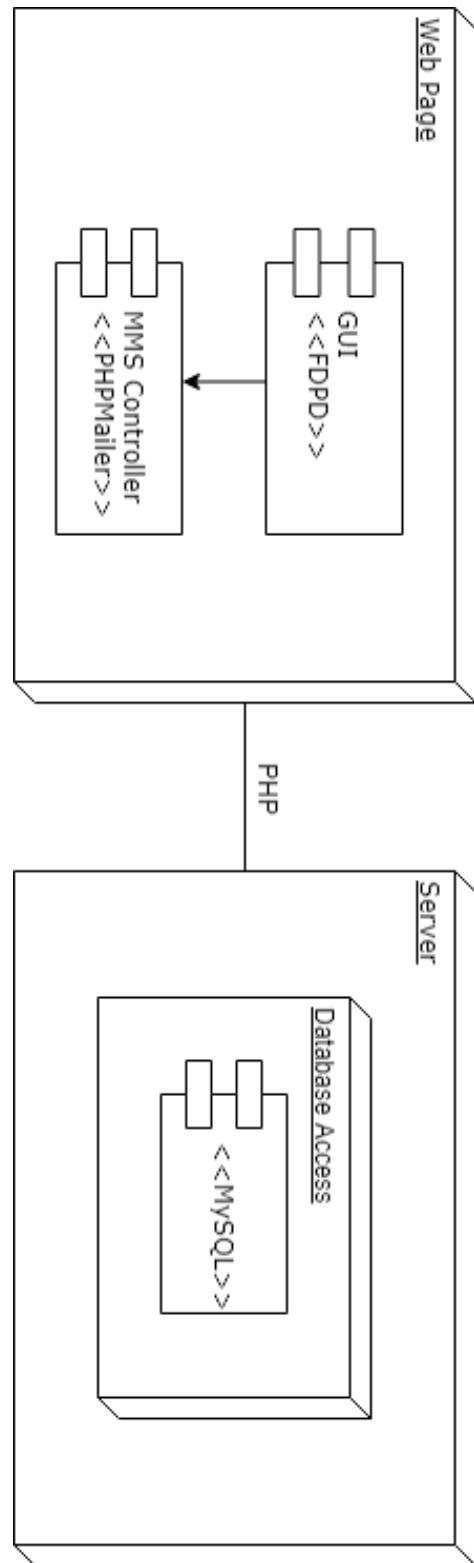
Medical Management System

<<model>>



Medical Management System

4.15 Deployment Diagram



5. Implementation technology

The project consists of a Web-based Application, which is created using client and server side programming.

The chosen architecture is server-side HTML web application. The client-side programming languages used are: HTML 5, CSS 3, XML, JavaScript; server-side: PHP 7.1.10.

The IDE that was used for developing the application is PhpStorm 2017.1.5.

The libraries that were used to make the application easy to use and to add desired functionalities are FPDF and PHPMailer-5.2.26.

MySQL is used for accessing, updating and maintaining the database and the Apache server takes care of the site.

The user interface of the web-based application is executable to browsers like Chrome, Mozilla, etc. The software is run from a web server.

The technology used for the application has made it easy to be extended. The code is written in a way that it favours implementation of new functions and additions of new lines of code. Also, modularity in the organization provides for a better maintenance.

6. SPM

Project Name: MMS

Members: Greisa Ajdini, Jola Koçi, Jorgen Konini, Orald Veizi, Xheni Vogli

Start: 9/03/2018

End: 1/06/2018

No.	Activity	Duration	Dependencies
1	Ideas Discussion	5	
2	Technology	7	1
3	Project Description	7	1,2
4	Requirements (functional and non-functional)	8	3
5	Software Analysis, Use Case Diagrams	8	3,4
6	Behavioral Diagrams	7	5
7	Structural Diagrams	9	6
8	Doctor Interface	8	7
9	Nurse Interface	5	8
10	Receptionist/Admin Interface	6	9
11	Import/Export (XML)	4	8,10
12	Design	5	8,9,10
13	Implementation and Network	2	11,12
14	Appendix	3	13

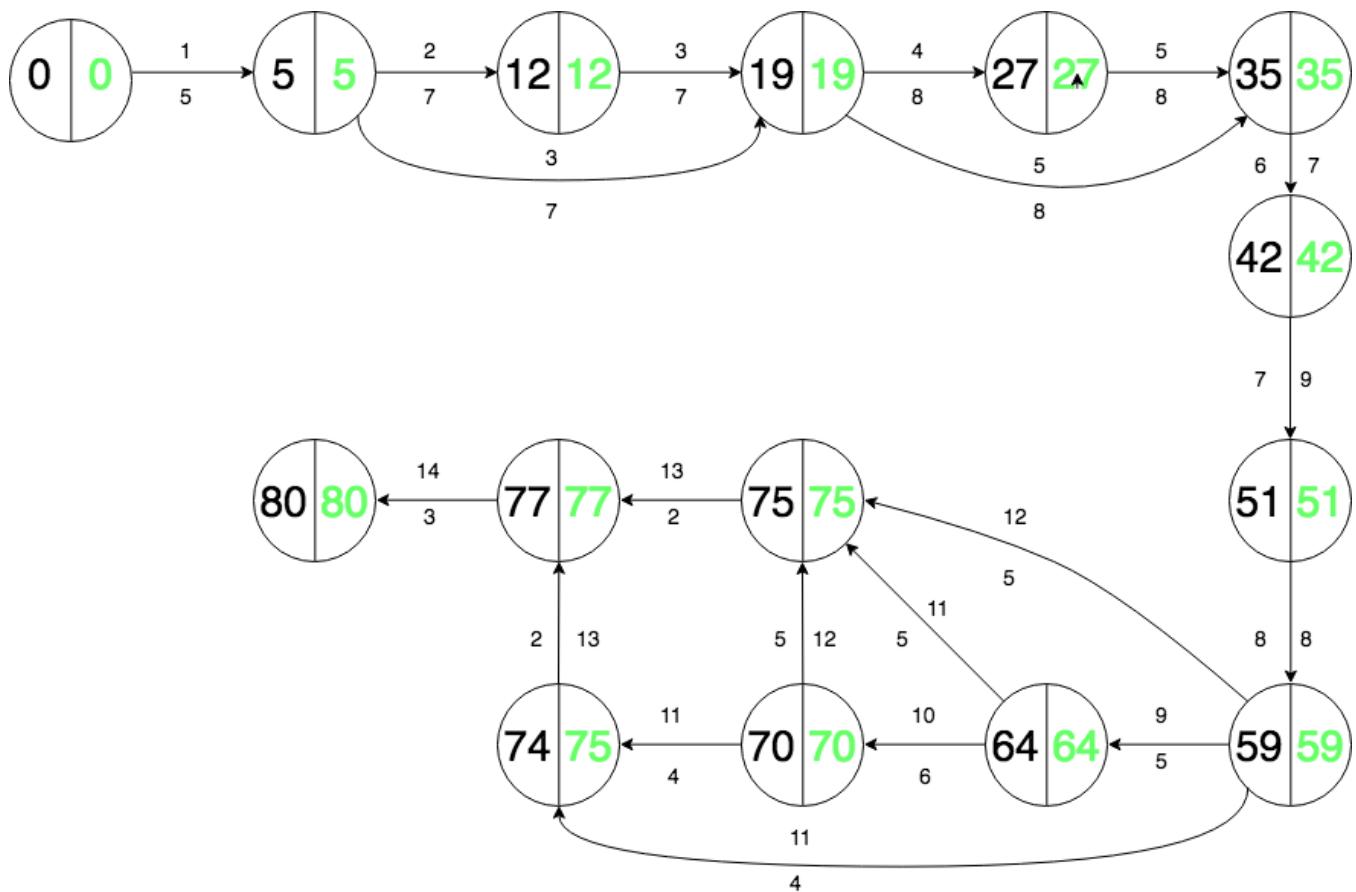
Medical Management System

For a period of approximately 6 months

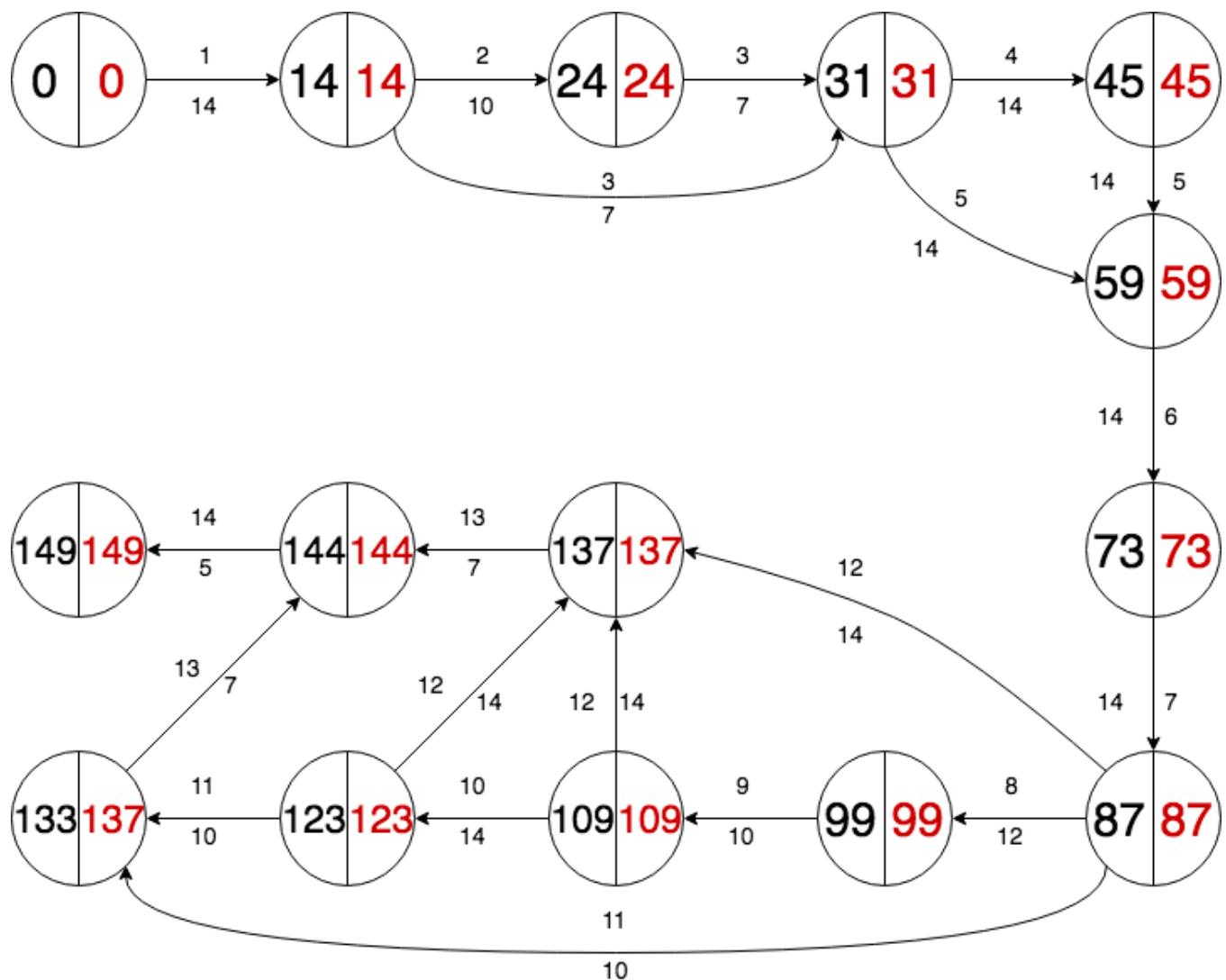
No.	Activity	Duration	Dependencies
1	Ideas Discussion	14	
2	Technology	10	1
3	Project Description	7	1,2
4	Requirements (functional and non-functional)	14	3
5	Software Analysis, Use Case Diagrams	14	3,4
6	Behavioral Diagrams	14	5
7	Structural Diagrams	14	6
8	Doctor Interface	12	7
9	Nurse Interface	10	8
10	Receptionist/Admin Interface	14	9
11	Import/Export (XML)	10	8,10
12	Design	14	8,9,10
13	Implementation and Network	7	11,12
14	Appendix	5	13

Networks

First period



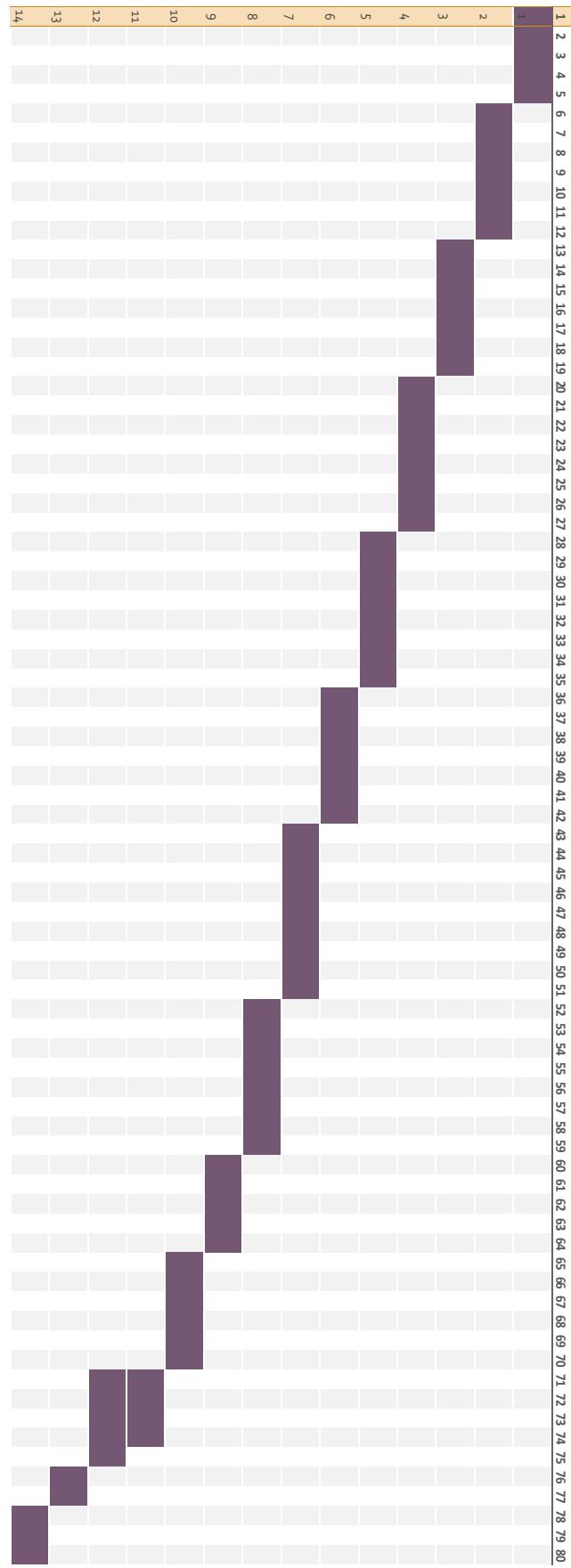
Second period



Medical Management System

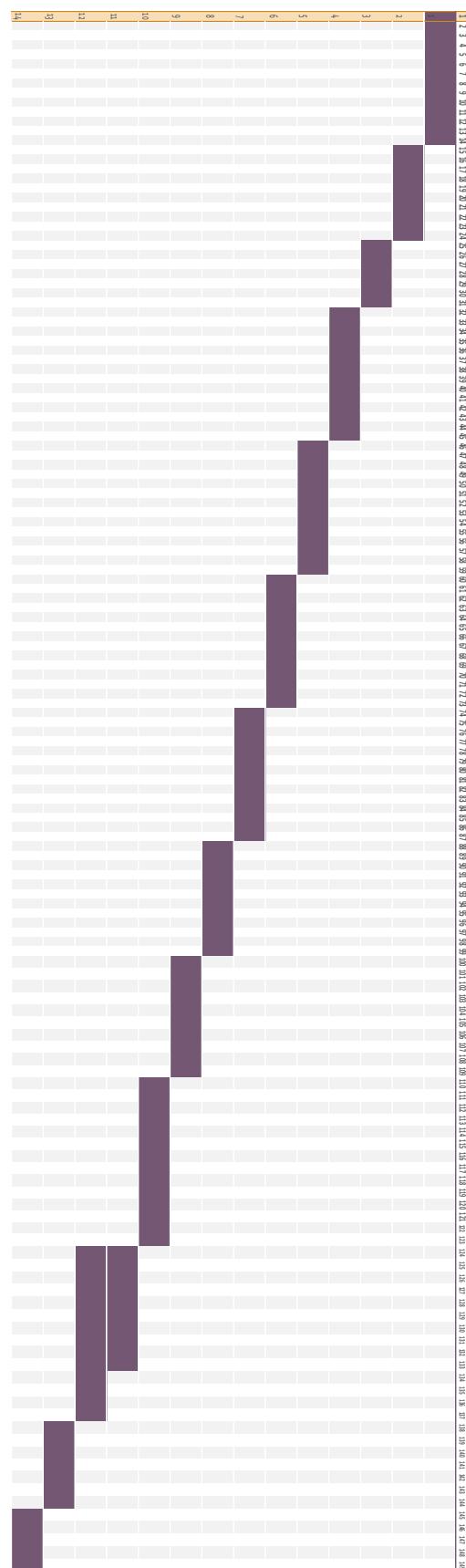
Gantt Charts

First period



Medical Management System

Second period



Appendix

Appendix A Mockups/ Sketches

Admin Homepage

	▼ Departments	▼ Emergency	▼ Nurses	▼ Receptionist	▼ Action
Add new user	Doctor 1:Shift#	Doctor 1: Speciality: Shift#	nurses 1: shift#	receptionist 1:shift#	Edit
Set the timetable	Doctor 2:Shift#	Doctor 2: Speciality: Shift#	nurses 2: shift#	receptionist 2:shift#	Edit
View monthly reports	Doctor 3:Shift#	Doctor 3: Speciality: Shift#	nurses 3: shift#	receptionist 3:shift#	Edit

Home

Add new User ▶

Set the timetable

view monthly reports

Add Staff ▲

Specialist Doctor

Nurse

Receptionist

ID *:

Name*:

Surname*

Password*

Speciality*

Email* :

Office nr

Phone nr*

Add **Cancel**

Add Staff ▲

Specialist Doctor

Nurse

Receptionist

ID *:

Name*:

Surname*

Password*

Depatramtent*

Email* :

Phone nr*

Add **Cancel**

Add Staff ▲

Specialist Doctor

Nurse

Receptionist

Family Doctor

ID *:

Name*:

Surname*

Password*

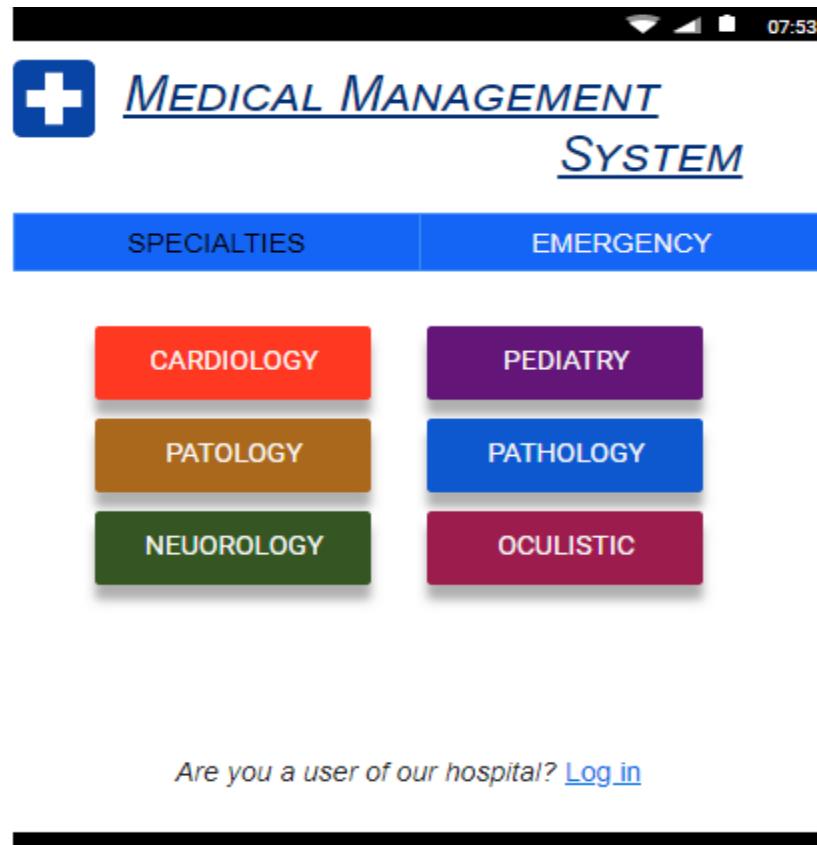
Email* :

Phone nr* :

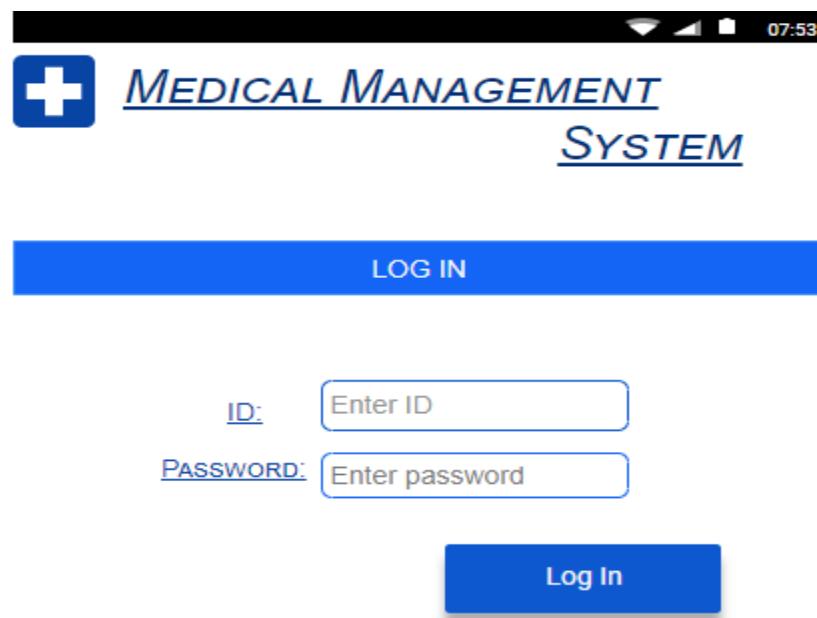
Add **Cancel**

Medical Management System

Homepage



Login page



Medical Management System

Admin sets timetable for doctors

The screenshot shows the MMS interface for setting a doctor's timetable. On the left, a sidebar menu includes Home, Add new User, Set the timetable (which is selected and highlighted in grey), and Monthly Reports. The main content area has a header with 'Select the Staff member' dropdown set to 'Doctor' and 'Select the Doctors' Name' dropdown set to 'John Doe'. Below this, a table displays working hours for Monday and Tuesday. The table has columns for 'Day', 'Visits []', and 'Duty Call [x]'. For Monday, there are no entries. For Tuesday, the 'Visits' field contains 'Visits[x] 8:00-14:00 [] / 14:00 - 20:00[x]' and the 'Duty Call' field is empty.

Admin sets timetable for receptionists

The screenshot shows the MMS interface for setting a receptionist's timetable. The sidebar menu is identical to the previous screenshot. The main content area shows 'Select the Staff member' dropdown set to 'Receptionist' and 'Select the Receptionists' Name' dropdown set to 'John Doe'. A table below lists shifts for Monday and Tuesday. The table has columns for 'Day' and 'Shift'. For Monday, the shift is '1st shift'. For Tuesday, the shift is '2nd shift'. At the bottom right of the table are 'Save' and 'Cancel' buttons.

Medical Management System

Admin sets timetable for nurse

The screenshot shows a web-based application titled "MMS" (Medical Management System). The URL in the browser is "mms/view monthlyreports". On the left, there is a sidebar with links: "Home", "Add new User", "Set the timetable", and "Monthly Reports". The main content area has two dropdown menus: "Select the Staff member" (set to "Nurse") and "Select the Nurses' Name" (set to "John Doe"). Below these are two tables for setting a timetable:

Day	Shift
Monday	1st shift
Tuesday	2nd shift
.	

At the bottom right are "Save" and "Cancel" buttons.

Admin views monthly reports

The screenshot shows a web-based application titled "MMS" (Medical Management System). The URL in the browser is "mms/view monthlyreports". On the left, there is a sidebar with links: "Home", "Add new User", "Set the timetable", and "Monthly Reports". The main content area displays a "List of all Departments:" with six colored buttons: Cardiology (red), Pathology (green), Orthology (red), Pediatry (red), Dermatology (green), and Neurology (red). Each department has two tables under "Hospitalized": "Visits" and "Emergency".

Medical Management System

Set appointment

The screenshot shows a web-based application interface for creating a patient appointment. The top navigation bar includes a back button, forward button, refresh button, and a search bar with a magnifying glass icon. The main title is "PolyclinicReceptionist". The header features a blue ribbon with a plus sign icon and the text "MMS". To the right of the ribbon is a "Create Appointment" button and a search bar with a magnifying glass icon. The main form area contains fields for patient identification: "ID" (input field), "Name" (input field containing "John"), "Surname" (input field containing "Doe"), "Gender" (radio buttons for "F" and "M" with "M" selected), and "Birthday" (input field showing "4/22/2012" and a calendar icon). To the right of these fields is a section labeled "Previous medical condition:" with an empty input field. Below the patient information is a "Prescription:" section with a "UPLOAD" button. At the bottom left is a "SAVE" button, and at the bottom center is a "CLEAR" button with a circular arrow icon.

Import/Export

The screenshot shows a web-based application interface for managing patient data imports and exports. The top navigation bar includes a back button, forward button, refresh button, and a search bar with a magnifying glass icon. The main title is "PolyclinicReceptionist". The header features a blue ribbon with a plus sign icon and the text "MMS". To the right of the ribbon is a "Import/Export data" button and a search bar with a magnifying glass icon. The main form area contains a search section labeled "Search patient by ID:" with an input field and a "Search" button. Below this is a table with columns: "ID", "Name", "Surname", "Gender", and "phone nr". A single row is displayed with the values: "123", "John", "Doe", "Male", and "xxxx". At the bottom of the table are two buttons: "IMPORT DATA" and "EXPORT DATA".

Medical Management System

Select date and time for appointment

Mozilla

mms/view/monthlyreports

MMS Create Appointment

Select the department for the appointment

Department

Time/Day	08:00-08:30	8:30-9:00	9:00-9:30	9:30-10:00	10:00-10:30	10:30-11:00	11:00-11:30	11:30-12:00	12:00-12:30	12:30-13:00	13:00-13:30	13:30-14:00	14:00-14:30	14:30-15:00	15:00-15:30	15:30-16:00	16:00-16:30	16:30-17:00	17:00-17:30	17:30-18:00
Monday	Busy	Free	Busy															Selected		
Tuesday	Free	Busy	Free															Free		
Wednesday	Busy	Free	Free															Free		

CONFIRM

Receptionist's profile

Mozilla

http://moqups.com

RECEPTIONIST

Profile

Emergency

Name: John

Surname: Doe

ID: 12345687N

Password: *****

Edit profile

Medical Management System

Receptionist's timetable

Mozilla

RECEPTIONIST

▼ Time/Day	▼ 08:00 - 08:30	▼ 08:30 - 09:00	▼ 09:00 - 09:30	▼ ...	▼
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					

Add patient at emergency

Mozilla

RECEPTIONIST

Profile

Emergency

▼ Time/Day ▼ 08:00 - 08:30 ▼ 08:30 - 09:00 ▼ 09:00 - 09:30 ▼ ... ▼

Monday					
Tuesday					
Wednesday					

Add patient

Medical Management System

Edit profile

A screenshot of a mobile browser window titled "Mozilla". The address bar shows "http://moqups.com". The main content area has a blue header bar with the text "EDIT PROFILE". Below this, there are five input fields for profile information: "Name" (placeholder "Enter name"), "Surname" (placeholder "Enter surname"), "ID" (placeholder "Enter ID"), "Password" (placeholder "Change password"), and "Re-passw" (placeholder "Retype password"). To the right of these fields is a placeholder image of a mountain landscape and a button labeled "Upload a pic". At the bottom is a large blue "Save" button.

Specialist Doctor's Homepage (appointment's list)

A screenshot of a web browser window titled "Mozilla". The address bar shows "mms/specialistDoctor". The top navigation bar includes links for "Home", "Patients", "Profile", "Hospitalized", and "Timetable", along with a "Search" bar and a magnifying glass icon. A welcome message "Welcome Dr. John Doe" is displayed. Below it, a link "List of 17/04/2018 appointments:" leads to a table. The table has columns for "ID", "Name", "Surname", "Time", and "Actions". It contains four rows of appointment data, each with "Finish" and "Cancel" buttons in the "Actions" column.

ID	Name	Surname	Time	Actions
				<input type="button" value="Finish"/> <input type="button" value="Cancel"/>
				<input type="button" value="Finish"/> <input type="button" value="Cancel"/>
				<input type="button" value="Finish"/> <input type="button" value="Cancel"/>
				<input type="button" value="Finish"/> <input type="button" value="Cancel"/>

Medical Management System

List of hospitalizations

The screenshot shows a web browser window titled "Mozilla" with the URL "mms/specialistDoctor". The page header includes a logo, "MMS", and navigation links: Home, Patients, Profile, Hospitalized (which is highlighted), Timetable, and a search bar. Below the header is the heading "List of hospitalizations:". A table with columns ID, Name, Surname, Room, and Actions is displayed. Each row in the table has four cells under the first four columns and two buttons, "Records" and "Progress", under the "Actions" column.

ID	Name	Surname	Room	Actions
				Records Progress

Add new appointment + Finish appointment

The screenshot displays two side-by-side browser windows. Both windows have a "Mozilla" title bar and a URL bar showing "mms/newAppointment" and "mms/FinishPage" respectively. The left window, titled "Add new Appointment", contains fields for ID (with placeholder "ID"), Name (placeholder "Enter name"), Surname (placeholder "Enter surname"), Choose Doctor (placeholder "Doctor name"), and Choose Date (set to "4/22/2012" with a calendar icon). It also features "Save" and "Cancel" buttons. The right window, titled "Finish appointment", contains fields for ID (placeholder "ID"), Name (placeholder "Enter name"), Surname (placeholder "Enter surname"), Description (empty text area), Prescription (placeholder "Add prescription"), a checked checkbox for "Hospitalization:", an "Upload:" field with "Choose file", and "Save" and "Cancel" buttons. Both windows have a similar header with "MMS" and other navigation links.

Medical Management System

View Profile/Change Password/Edit Profile

The figure consists of three separate browser windows, each titled "Mozilla" and showing a URL like "mms/Profile" or "mms/Change passw".

- Left Window (mms/Profile):** Shows a "PROFILE" section with fields for ID (ID), Name (John), Surname (Doe), Department (Cardiology), and Password (*****). It includes a blue user icon, a "Change password" button, and an "Edit" button.
- Middle Window (mms/Change passw):** Shows password change fields for Old Password, New Password, and Re-Password, each with a visibility toggle. It has "Save" and "Cancel" buttons.
- Right Window (mms/EditProfile):** Shows edit fields for Name (John), Surname (Doe), Department (empty), and an "Upload new Avatar" section with a "Choose" button. It also has "Save" and "Cancel" buttons.

List of patients

This screenshot shows a table titled "List of all patients" with a "New Patient" button at the top right. The table has columns for ID, Name, Surname, B-day, B-place, and Actions (Records, Edit, Delete).

ID	Name	Surname	B-day	B-place	Actions
					Records Edit Delete
					Records Edit Delete
					Records Edit Delete
					Records Edit Delete

Medical Management System

Specialist Doctor's Timetable

Mozilla

mms/specialistDoctor

MMS Home Patients Profile Hospitalized Timetable Search

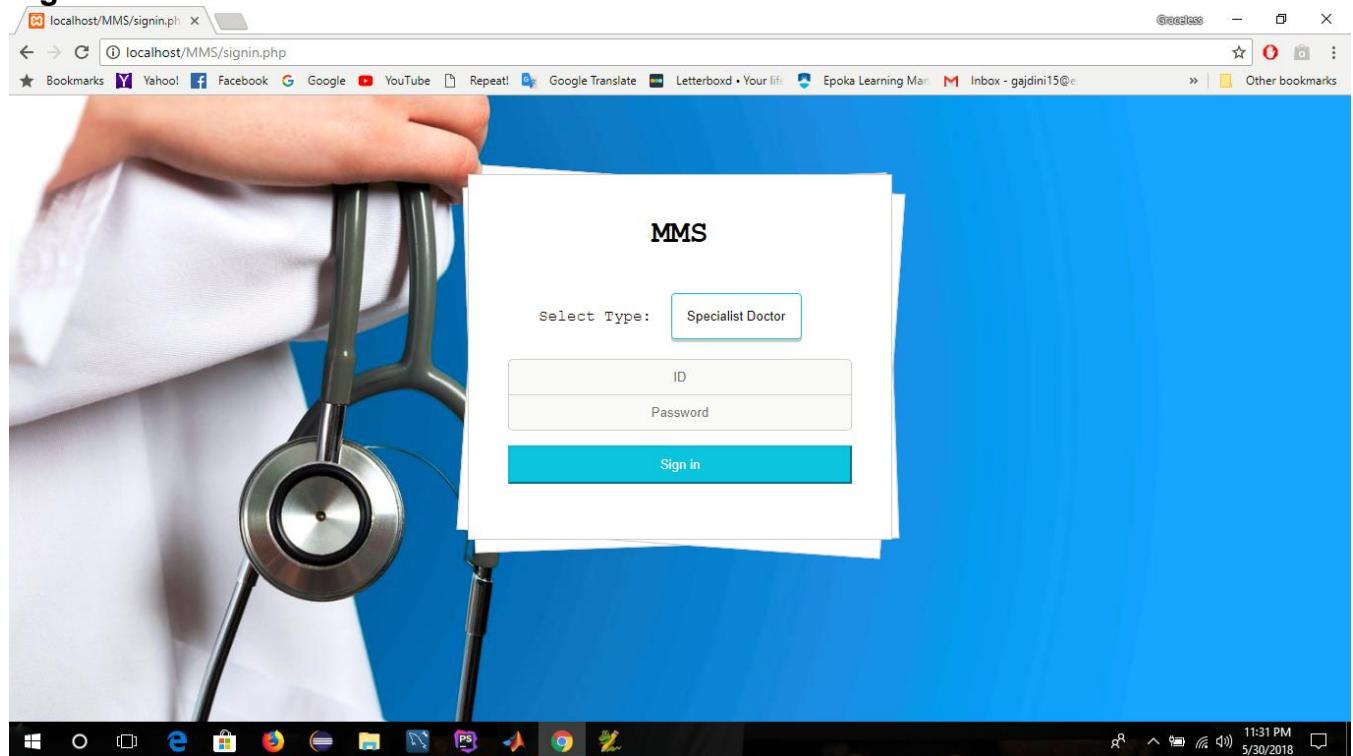
List of all appointments

▼ Time/Day	▼ 08:00-08:30	▼ 8:30-9:00	▼ 9:00-9:30	▼	▼	▼	▼ 00:30-1:30
Monday	Appointment	Free	Appointment				Duty Call
Tuesday	Free	Appointment	Appointment				Duty Call
Wednesday	Appointment	Free	Free				Duty Call

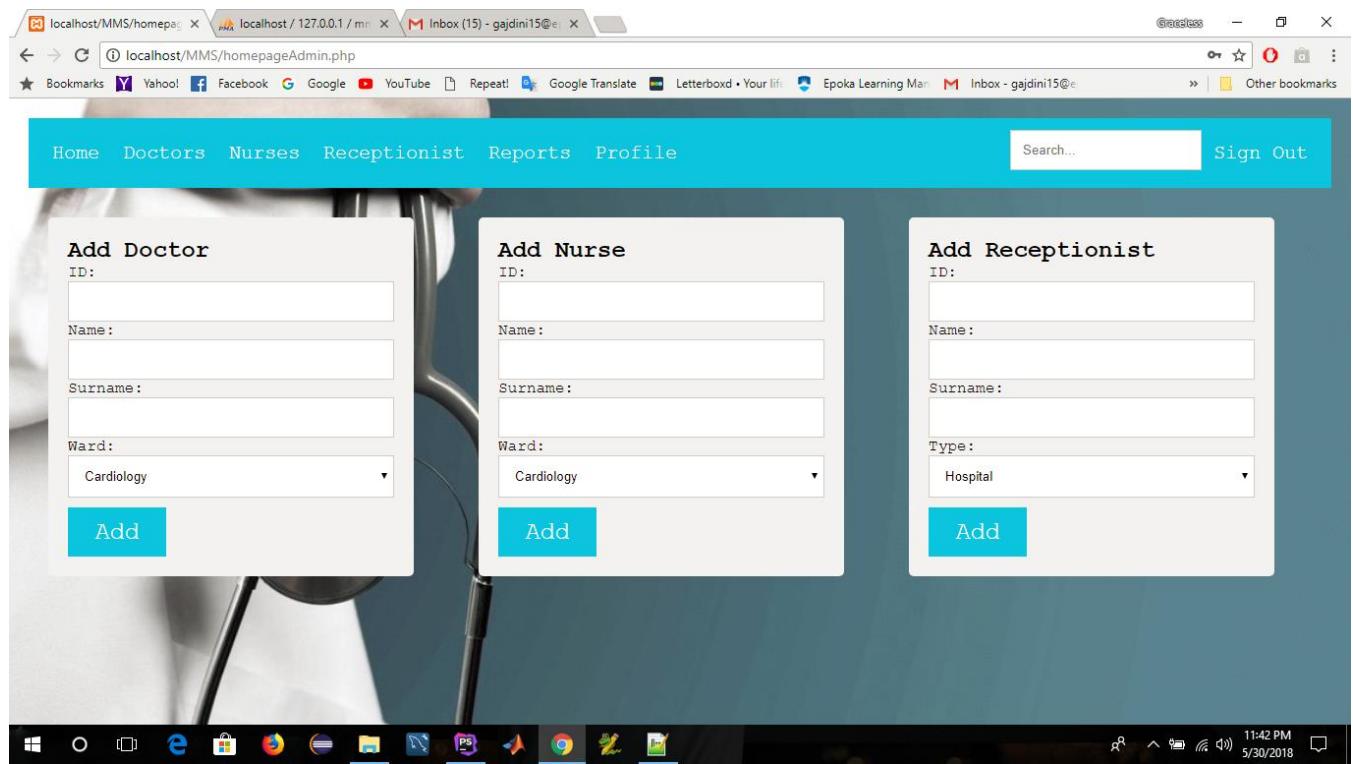
Medical Management System

Appendix B Screenshots

Sign in



Add User



Medical Management System

Edit profile

A screenshot of a web browser window showing the 'Edit profile' page of the Medical Management System. The browser tabs include 'localhost/MMS/editNurse', 'localhost / 127.0.0.1 / mms', and 'Inbox (15) - gajdini15@e...'. The page header has links for 'Home', 'Profile', and 'Timetable', along with a search bar and a 'Sign Out' button. The main content area contains form fields for 'Name' (Friedrich), 'Surname' (Schneider), and 'Ward' (Cardiology), with a 'Save' button. The background features a medical-themed image of a stethoscope. The Windows taskbar at the bottom shows various application icons.

Name :
Friedrich

Surname :
Schneider

Ward:
Cardiology

Save

Change Password

A screenshot of a web browser window showing the 'Change Password' page of the Medical Management System. The browser tabs include 'localhost/MMS/changePass', 'localhost / 127.0.0.1 / mms', and 'Inbox (15) - gajdini15@e...'. The page header has links for 'Home', 'Profile', and 'Timetable', along with a search bar and a 'Sign Out' button. The main content area contains fields for 'Enter new Password' and 'Enter new Password again', with a 'Save' button. The background features a medical-themed image of a stethoscope. The Windows taskbar at the bottom shows various application icons.

Enter new Password :

Enter new Password again :

Save

Medical Management System

Doctors

The screenshot shows a web browser window with the URL localhost/MMS/doctors.php. The page title is "Doctors". The header includes links for Home, Doctors, Nurses, Receptionist, Reports, Profile, a search bar, and a "Sign Out" button. Below the header is a table with columns: ID, Name, Surname, Ward, and Actions (Edit, Timetable, Delete). The table contains four rows of doctor data:

ID	Name	Surname	Ward	Actions
D12345678A	Sabine	Hofmeister	Cardiology	Edit Timetable Delete
D12345678D	Markus	Hirsch	Pediatrics	Edit Timetable Delete
D12345678E	Rozana	Cela	Pediatrics	Edit Timetable Delete
D12345678F	Stefan	Fleischman	Oncology	Edit Timetable Delete

The status bar at the bottom shows the taskbar with various application icons and the date/time as 11:42 PM 5/30/2018.

Nurses

The screenshot shows a web browser window with the URL localhost/MMS/nurses.php. The page title is "Nurses". The header includes links for Home, Doctors, Nurses, Receptionist, Reports, Profile, a search bar, and a "Sign Out" button. Below the header is a table with columns: ID, Name, Surname, Ward, and Actions (Edit, Timetable, Delete). The table contains four rows of nurse data:

ID	Name	Surname	Ward	Actions
N12345678A	Otto	Fischer	Neurology	Edit Timetable Delete
N12345678E	Sarah	Williams	Pathology	Edit Timetable Delete
N12345678I	Friedrich	Schneider	Cardiology	Edit Timetable Delete
N12345678O	Gertrud	Selten	Pediatrics	Edit Timetable Delete

The status bar at the bottom shows the taskbar with various application icons and the date/time as 11:42 PM 5/30/2018.

Medical Management System

Patients

The screenshot shows a web browser window with the title "localhost/MMS/doctorsPatients.php". The page has a header with links for Home, Patients, Hospitalizations, Emergency, Profile, and Timetable, along with a search bar and sign-out link. The main content area displays a table of patient records:

ID	Name	Surname	Action
P12345678E	John	Doe	Records
P12345678Q	Kevin	Fel	Records
P12345678W	Megi	Word	Records
P12345678R	Mat	Tes	Records
P12345678T	Bona	Polis	Records

The browser's address bar shows "localhost / 127.0.0.1 / mms / doctorPatients.php". The taskbar at the bottom includes icons for various applications like FileZilla, Photoshop, and MATLAB.

Profile

The screenshot shows a web browser window with the title "localhost/MMS/userProfile.php". The page has a header with links for Home, Patients, Hospitalizations, Emergency, Profile, and Timetable, along with a search bar and sign-out link. The main content area displays a doctor's profile:

Doctor
Meghan Damo

First Name: Meghan
Last Name: Damo
ID: D12345678Q
Ward: Cardiology

[Edit Profile](#) [Change Password](#)

The browser's address bar shows "localhost / 127.0.0.1 / mms / userProfile.php". The taskbar at the bottom includes icons for various applications like FileZilla, Photoshop, and MATLAB.

Medical Management System

Receptionists

A screenshot of a web browser showing the 'Receptionists' page of the Medical Management System. The page has a blue header with navigation links: Home, Doctors, Nurses, Receptionist, Reports, Profile, a search bar, and a 'Sign Out' button. Below the header is a table with columns: ID, Name, Surname, Type, and Actions (Edit and Delete buttons). Three receptionists are listed:

ID	Name	Surname	Type	Actions
R12345678E	Jack	Brown	Polyclinic	Edit Delete
R12345678Q	Angeline	Curly	Hospital	Edit Delete
R12345678R	Felix	Connor	Hospital	Edit Delete

The background of the page features a close-up image of a stethoscope. The browser's address bar shows 'localhost/MMS/recep.php'. The taskbar at the bottom of the screen includes icons for various applications like FileZilla, Photoshop, and Google Chrome.

Set Appointment

A screenshot of a web browser showing the 'Set Appointment' page of the Medical Management System. The page has a blue header with navigation links: Home, Patients, Hospitalizations, Emergency, Profile, Timetable, a search bar, and a 'Sign Out' button. A large central form is titled 'Appointment Form' and contains fields for Patient ID (with a placeholder box), Choose Ward (with a dropdown menu showing 'Cardiology'), Date (with a placeholder box 'mm/dd/yyyy'), Choose Time (with a dropdown menu showing '08:00 - 10:00'), and a 'Check Availability' button. The background of the page features a close-up image of a stethoscope. The browser's address bar shows 'localhost/MMS/setAppointment.php'. The taskbar at the bottom of the screen includes icons for various applications like FileZilla, Photoshop, and Google Chrome.

Medical Management System

Appointments

The screenshot shows a web browser window for the 'Medical Management System'. The URL is 'localhost/MMS/homepageDoctor.php'. The page has a blue header bar with links for Home, Patients, Hospitalizations, Emergency, Profile, and Timetable. A search bar and a 'Sign Out' button are also in the header. Below the header is a banner with the text 'New Appointment'. The main content area displays a table of appointments:

ID	Name	Surname	Date	Time	Actions
P12345678R	Mat	Tes	2018-05-31	16:00 - 18:00	Records Finish Cancel
P12345678T	Bona	Polis	2018-05-30	16:00 - 18:00	Records Finish Cancel

The background of the page features a close-up image of a stethoscope. The system's watermark 'Gajdini' is visible in the bottom right corner of the page content.

Appointment Notes

The screenshot shows a web browser window for the 'Medical Management System'. The URL is 'localhost/MMS/appointmentActions.php'. The page contains two sections for entering medical notes:

Diagnosis:
Sprained leg

Prescription:
Bandages

Below these sections is a larger form labeled 'Appointment Notes' with the following fields:

Appointment Date:
2018-05-31

Diagnosis:
[Empty text area]

Prescription:
[Empty text area]

Hospitalization: Yes No

A large blue 'Save' button is at the bottom of the form.

Medical Management System

Request for hospitalization

This screenshot shows the 'Request for hospitalization' page of the Medical Management System. The page has a header with links for Home, Hospitalizations, Emergency, Profile, and Sign Out. A search bar is also present. The main content is a table listing patients:

ID	Name	Surname	Doctor	Ward	Actions
P12345678E	John	Doe	Meghan Damo	Cardiology	Reserve
P12345678T	Bona	Polis	Meghan Damo	Cardiology	Reserve

The background features a large image of a stethoscope. The system interface includes a taskbar at the bottom with various application icons.

Hospitalization

This screenshot shows the 'Hospitalization' page of the Medical Management System. The page has a header with links for Home, Patients, Hospitalizations, Emergency, Profile, and Timetable, along with a search bar and sign-out link. The main content is a table listing hospitalized patients:

ID	Name	Surname	Doctor	Ward	Hospitalized on	Bed	Actions
P12345678Q	Kevin	Fel	Meghan Damo	Cardiology	2018-05-16	A1	Progress Release
P12345678W	Megi	Word	Meghan Damo	Cardiology	2018-05-16	B1	Progress Release

The background features a large image of a stethoscope. The system interface includes a taskbar at the bottom with various application icons.

Medical Management System

Progress

This screenshot shows the 'Progress' page of the Medical Management System. At the top, there is a navigation bar with links for 'Home', 'Profile', and 'Timetable'. On the right side of the navigation bar are 'Search...' and 'Sign Out' buttons. Below the navigation bar, there are two text input fields: 'Nurse Notes:' containing 'Reacting to medication.' and 'Doctor Notes:' containing 'Do blood analysis.'. A large blue 'Save' button is positioned below these notes. The background of the page features a photograph of a stethoscope. The browser's address bar shows the URL 'localhost/MMS/hospitalizedActions.php'. The taskbar at the bottom of the screen displays various application icons.

Add Emergency Entry

This screenshot shows the 'Add Emergency Entry' page of the Medical Management System. At the top, there is a navigation bar with links for 'Home', 'Patients', 'Hospitalizations', 'Emergency', 'Profile', and 'Timetable'. On the right side of the navigation bar are 'Search...' and 'Sign Out' buttons. Below the navigation bar, there is a form titled 'Add Emergency:' with fields for 'ID', 'Name', 'Surname', 'E-mail', and 'Symptoms'. A large blue 'Add' button is located at the bottom left of the form area. Below the form, there is a table with columns labeled 'ID', 'Name', 'Surname', 'Symptoms', 'Email', 'Date', and 'Actions'. The table has one row currently listed. The browser's address bar shows the URL 'localhost/MMS/emergency.php'. The taskbar at the bottom of the screen displays various application icons.

Medical Management System

List of emergency cases

The screenshot shows a web browser window with the title "localhost/MMS/emergency.php". The page displays a form with fields for Name, Surname, E-mail, and Symptoms, followed by an "Add" button. Below the form is a table with columns: ID, Name, Surname, Symptoms, Email, Date, and Actions. Two rows of data are shown:

ID	Name	Surname	Symptoms	Email	Date	Actions
E12345678Q	John	Doe	Heart Pain	gajdini15@epoka.edu.al	2018-05-30	Add Edit
E12345678A	John	Doe	Headache		2018-05-23	Add Edit

Download Patient Records

The screenshot shows a web browser window with the title "localhost/MMS/finished.php". The page features a navigation bar with links for Home, Finished, Profile, Search..., and Sign Out. Below the navigation bar is a table with columns: ID, Name, Surname, and Actions. Two rows of data are shown:

ID	Name	Surname	Actions
P12345678Q	Kevin	Fel	Download
P12345678T	Bona	Polis	Download

Medical Management System

Records of patients

A screenshot of a web browser window titled "localhost/MMS/appointmentActions.php". The page has a blue header bar with links for Home, Patients, Hospitalizations, Emergency, Profile, and Timetable. On the right side of the header is a search bar and a "Sign Out" button. The main content area is titled "General Information" and contains several input fields for patient details:

- ID: P12345678R
- Name: Mat
- Surname: Tes
- Email: gajdini15@epoka.edu.al
- Birthdate: 1999-08-12
- Allergies: Nuts, Bees

The browser's address bar shows the URL "localhost/MMS/appointmentActions.php". The taskbar at the bottom of the screen shows various application icons.

Set Timetable

A screenshot of a web browser window titled "localhost/MMS/timetable.php?userid=D12345678A&type=doctor". The page features a grid for setting a weekly timetable. The days of the week are listed vertically on the left: Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday. The time slots for each day are represented by green rectangular boxes. At the bottom left, there is a blue button labeled "Edit Timetable". Below the grid, there is a form with the following fields:

- Shift 1: 08:00 - 16:00 (dropdown menu)
- Duty call:
- Set (button)

The browser's address bar shows the URL "localhost/MMS/timetable.php?userid=D12345678A&type=doctor". The taskbar at the bottom of the screen shows various application icons.

Medical Management System

View Timetable

The screenshot shows a web browser window for the Medical Management System. The title bar says "localhost/MMS/timetable". The page has a header with links for Home, Patients, Hospitalizations, Emergency, Profile, and Timetable. A search bar and a "Sign Out" button are also in the header. The main content is a "Timetable" section with a grid. The columns represent time slots: "08:00 - 16:00", "16:00 - 00:00", "00:00 - 08:00", and "Duty Call". The rows represent days of the week: Monday through Sunday. Most time slots are green, indicating they are free or available. A small green box in the "Duty Call" slot for Saturday contains the date "2018-05-29". The background of the page features a close-up image of a stethoscope.

View Reports

The screenshot shows a web browser window for the Medical Management System. The title bar says "localhost/MMS/reports.php". The page has a header with links for Home, Doctors, Nurses, Receptionist, Reports, and Profile. A search bar and a "Sign Out" button are also in the header. The main content is a "Reports" section. It includes a "Generate PDF" button and navigation links for "Previous... April 2018 ...Next". Below this, there's a "Total" section with three data points: "Number of Appointments" (0), "Number of Hospitalizations" (0), and "Number of Emergencies" (0). There are also sections for "Cardiology" and "Pediatrics", each with their own set of appointment and hospitalization counts. The background of the page features a close-up image of a stethoscope.