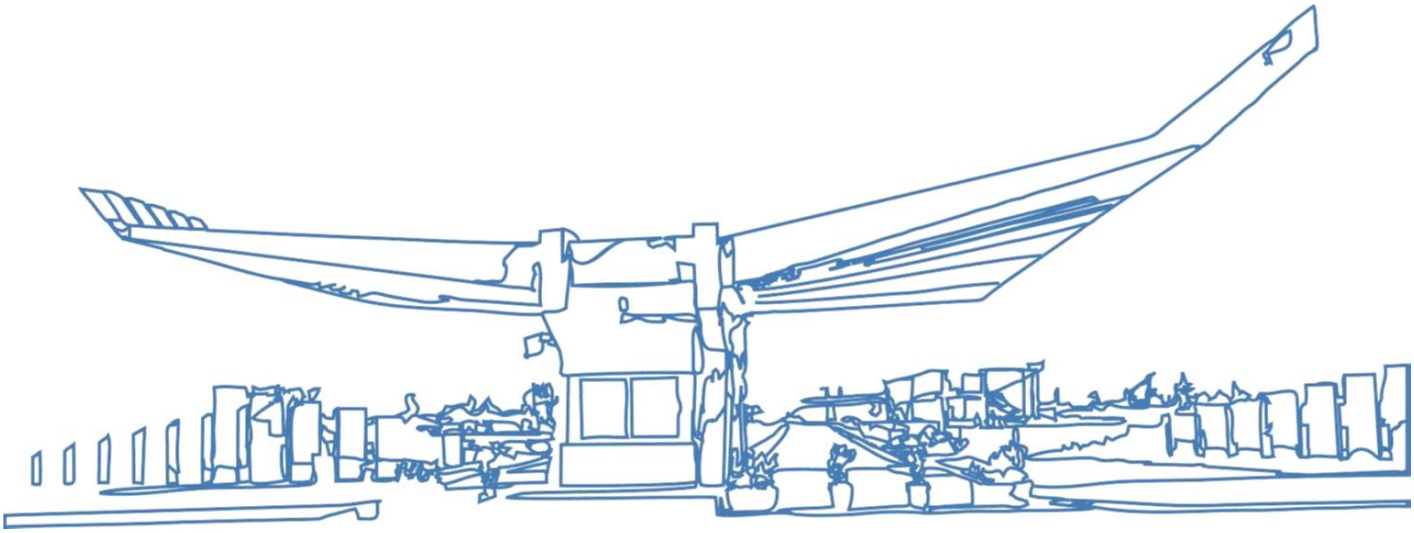
**Polyclinic Management System Documentation**

**Epoka University**
Faculty of Engineering and ArchitectureDepartment of Computer Engineering

**SWE202 – Software Engineering**



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# Polyclinic Management System

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# 1. Executive Summary

## *1.1 Project Overview*

Over the last few years, demand for convenient medical services has increased. In combination with the rapid digitalization of the industry, more software systems and tools are appearing in medical institutions. Software solutions are established to automate daily operations, manage bills, documentation, and inventory, and generally reduce the pressure on clinicians.

One of the biggest all-in-one systems is the polyclinic management software system. A polyclinic management system is an independent or cloud-based web medical management infrastructure that captures and integrates all departments' data to automate the internal activities. It encompasses a wide variety of functions, as the system manages every department or branch of the polyclinic. It accumulates doctors, patients, receptionists, medical records, appointments and medical visits.

This Polyclinic Management System is designed for Albanian polyclinic's, to cover a wide range of their administration and management processes. It is an integrated end-to-end Polyclinic Management System that provides relevant information across the polyclinic to support effective decision making for patient care and polyclinic administration, in a seamless flow.

## *1.2 Purpose and Scope of this Specification*

The purpose of the project entitled as "POLYCLINIC MANAGEMENT SYSTEM" is to computerize the Front Office Management of the Albanian polyclinic's , to develop software which is user friendly, simple, fast, and cost – effective. It deals with the collection of patient's information, diagnosis details, etc.

Traditionally, it was done manually. The main function of the system is to register and store patient details and doctor details and retrieve these details as and when required, set appointments, download medical records, edit these records using forms, and also to make changes meaningfully etc.

This online application should allow the patient to access his electronic medical records at any time. It should make the doctor's medical examination process easier, as well as provide a solution for administrative tasks such as adding a new patient, removing a patient, amending a patient's record, and so on. The receptionist should take care of this. The system should be secure in order to keep the data private.
This manual is intended for all software users. It will provide thorough information on how it operates and its features.

# 2. Product/Service Description

In this public health service, polyclinics play an essential role. They are health centers that provide medical assistance to each city's distinct neighborhood. To summarize how the system works, each citizen who need medical attention should first visit his or her polyclinic and talk with his or her physician. If the doctor believes the patient requires more specialist medical care, he refers him to a different polyclinic or hospital.

Until recently, the patient's medical records were stored in hardcopy files, which made the examination procedure more difficult and time consuming. These files are also permanent, and they are physically transferred when the patient moves polyclinics. We need to maintain these files in digital form to make it easier, faster, and more secure.

This new software of Polyclinic Management System is a platform that gives a solution to managerial problems of polyclinics. It is thought to be a management system with three main actors: receptionist, doctor and patient. It aims to remove these hardcopy files and make the documentation of patients' records easier. There are many other functions that a user can do in this system, but you need to log in first and then after you log in the system is going to show the offered functions depending on the user. For example, login in as a receptionist, you are going to have the possibility to: add new patient, update patient information, delete patient, add new doctor, update doctor's information, delete doctor, create medical visit, download examination, view doctor's/patient's profile etc.

Our software concept is an object-oriented PHP-based web application. Only the respective person can add data in the database. The data can be retrieved easily. The interface is very user-friendly. The data are well protected and data processing is very fast, accurate and relevant.

## *2.1 Product Context*

The "Polyclinic Nr.10, Tiranë" is directly linked to our software. It is planned to be a stand-alone system that will be accessible to three types of users, each of whom falls into one of these categories: doctors, patients, or receptionists (or nurse). Only in one scenario does this method require collaboration with other polyclinics. When a patient wants to transfer from one polyclinic to another, the former should be able to export a file containing the patient's records and send it to the latter, which should be able to quickly import it. All this work is done manually by the receptionist and other operational staff and there is not need for a lot of papers to be handled and taken care of, because our software is now the solution of Albanian polyclinic's management problem.

## *2.2* User Characteristics

There are three types of users who interact with the system:

1. Patient:
    - Logs in
    - Looks general information about the polyclinic
    - Reads his personal information
    - Looks at the medical records created by the doctor
    - Downloads his medical records in PDF files
    - Contacts his doctor by Email
    - Changes his account password
    - Logs out
2. Doctor:
    - Logs in
    - Looks general information about the polyclinic
    - Reads his personal information
    - Has a list of all his patients
    - Searches patients in his patients' list
    - Fills the medical visit forms
    - Looks the profiles of his patients
    - Looks the examination records of his patients
    - Views the polyclinic doctor's list
    - Searches for a doctor in the doctor's list
    - Signs prescription
    - Checks appointments
    - Cancels appointments
    - Responds E-Mail
    - Downloads examination record of a patient in a PDF file
    - Changes his account password
    - Logs out

3. Receptionist:
    - Logs in
    - Looks general information about the polyclinic
    - Reads his personal information
    - Looks the list of all patients of the polyclinic
    - Looks the patients profiles
    - Looks the examination records of the polyclinic patients
    - Changes personal information of a patient
    - Exports files of a patient, which wants to get transferred
    - Adds a new patient
    - Deletes an existing patient
    - Creates a visit and allows the doctor to fill the form
    - Searches for a patient
    - Looks the list of all doctors
    - Looks the doctors profiles
    - Changes personal information of a doctor
    - Adds a new doctor
    - Deletes an existing doctor
    - Searches for a doctor
    - Checks staff timetable
    - Updates staff timetable
    - Looks appointments list
    - Updates appointments list
    - Cancels appointments
    - Changes his account password
    - Logs out

4. Admin
    - Manages database
    - Updates services and information about the polyclinic
    - Generates reports
    - Has full access to all functionalities

## 2.3 *Assumptions*

- It is assumed that some of the actions taken behind the scenes are done on a regular basis in accordance with the law.
- It is assumed that the receptionist profile is initially created by the system administrator and no one else can add, delete, or modify information about the receptionist. If the receptionist changes, you will need to contact the system administrator.
- It is assumed that compatible computers will be available before the system is installed and tested.
- It is assumed that the Polyclinics will have enough trained staff to take care of the system
- It is assumed that the staff is familiar with the English language
- It is assumed that the patient's information will be completely confidential. Apart from the patient himself, it can only be read by the receptionist or his doctor. The receptionist can only export the file if the patient changes polyclinic or needs further examination at the hospital. Your doctor can download the patient's file, but you are entirely responsible for this action and you need to be careful about who you share it with.
- It is assumed that when filling out the current examination form, it is understood that only the doctor is responsible for what is written on this form. For security reasons, when the doctor finishes the test, he has to confirm the action.

## 2.4 *Constraints*

- The staff of the polyclinic should have a personal computer available during the work hours in order to be able to access this web application.
- The staff of the polyclinic should know how to use this web application. They should know their capabilities and their duties in order not to interfere with each other and to respect the privacy of their patients.
- The project is constrained also by the Internet connection. Since it is supposed to be a web application, it is crucial that there is stable Internet connection for the application to function.

## *2.5 Dependencies*

Since the receptionist is the main actor that coordinates the actions between the doctor and the patient, there exist some dependencies between the doctor and the receptionist or between the patient and the receptionist:

- No new patient or new doctor can be added if the receptionist is not registered at the systemor is not available.
- An existing patient or an existing doctor cannot be deleted if the receptionist is not available.
- The profile of a patient or the profile of the doctor cannot be updated id the receptionist is not available.
- The medical file of a patient cannot be exported and sent to another polyclinic or hospital if the receptionist is not available.

There exist also some dependencies between the doctor and the patient:

- The doctors cannot view the profile or examination records of the patients of the polyclinic if they are not assigned to him.
- The patient cannot see the latest medical visit record if the doctor has not filled the form and saved that.
- The patient cannot be examined if there is no doctor assigned to him.

Also, between the three of them (the receptionist, the doctor and the patient):

- The doctors cannot create a new examination record for one of his patients if the receptionist has not allowed him to do that.

# 3. Requirements

## *3.1 Functional Requirements*

| *Req#* | *Requirement* | *Comments* | *Priority* | *Date* | *Reviewed/ Approved* |
|---|---|---|---|---|---|
| ***FR_01*** | The web application should show different web view depending on the user. | Users such as: doctor, patient and receptionist are going to have different web views. | 2 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_02*** | A reCaptcha should be used for security issues while login in. | ReCaptcha option, is going to be used to verify you are not a robot. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_03*** | Every user should have his account secured by a password. | The passwords are going to be encrypted. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_04*** | User has the right to edit his password but not his username. | Password changes can be made since there are personal, but usernames are going to have a structural setup for all users. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_05*** | Receptionist has the right to add a new patient. | Receptionist is the only one that can do this operation. If the patient is being transferred from another polyclinic, receptionist can import his files. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_06*** | Information should be validated. | It is important that allthe information entered is accurate. | 2 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_07*** | Receptionist edits patient's personal information. | Only receptionist is the one responsible for this action. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |

| | | | | | |
|---|---|---|---|---|---|
| ***FR_08*** | Receptionist deletes a patient. | Only receptionist is the one responsible for this action. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_09*** | Receptionist has access to see the patient's profile. | Receptionist should be able to see all information about a patient. | 2 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_10*** | If the patient wants to be transferred, receptionist can export his files. | Only receptionist is the one responsible for this action. By this option, the other polyclinics are going to import the same files as the patient had in the respective polyclinic. | 2 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_11*** | Receptionist can see the patient's list of the respective polyclinic where he is working. | All the patients list of the polyclinic can be checked by the receptionist. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_12*** | Receptionist can search for a patient. | The searching tool is going to be efficient by entering patient, name, surname, or personal ID. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_13*** | Receptionist has the right to add a new doctor. | Only receptionist is the one responsible for this action. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_14*** | Receptionist edits doctor's personal information. | Only receptionist is the one responsible for this action. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_15*** | Receptionist deletes an existing doctor. | Only receptionist is the one responsible for this action. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_16*** | Receptionist has access to see the doctor's profile. | Receptionist should be able to see all information about a doctor. | 2 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |

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|---|---|---|---|---|---|
| ***FR_17*** | Receptionist or Doctor can see the doctor's list of the respective polyclinic where he is working. | All the doctor's list of the polyclinic can be checked by the receptionist or the doctor. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_18*** | Receptionist or Doctor can search for a doctor. | The searching tool is going to be efficient by entering doctor's, name, surname, or personal ID. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_19*** | Receptionist allows the doctor to fill the examination form for his patient's. | In order for the doctor to fill examination form, there is required access, so receptionist is the only one that denies or allows him. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_20*** | Doctor has access to a list where all his patients are shown. | Doctor must have a list of all his patients. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_21*** | Doctor can see the patients profile or even download them as a PDF file. | Doctor should be able to see all information about a patient. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_22*** | Doctor can give the prescription in printable form. | This type of prescription is sent to the patient in a PDF file signed virtually, so it can be given in pharmacy to get the medications. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_23*** | Doctor can fill a form while examining a patient and save the patient's new medical records. | For every new visit, doctor should update the patient's medical records, depending on the examination. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_24*** | Patient has the right to see his profile and all his medical records in the system. | Patient should know what the doctor has written for him in his profile after every examination. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_25*** | Each user will have the availability status. | This option is efficient for the receptionist to keep in track with the doctors according to availability. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |

| | | | | | |
|---|---|---|---|---|---|
| ***FR_26*** | Patient downloads his medical records as a PDF file. | The patient may want to have a hardcopy fileof his records. | 2 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_27*** | Patient has the right to get in touch with their respective physician. | The connection is going to be available through E-Mail. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_28*** | Patient cannot check other patient's or doctor's profiles. | Patient can only check his and his physician's profile. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_29*** | Admin must have all the privileges of the system. | Admin is going to have full access to all functionalities and can view any data in real-time. | 2 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_30*** | Every user can see on the web application, general information of their receptive polyclinic. | General information about the polyclinic is shown. | 3 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_31*** | The web application has to be responsive. | The users should be able to access this web application from many devices. | 3 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_32*** | Admin has access to all functionalities in the system | Full access guaranteed. Admin can view any-data in real time | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_33*** | User registration | User has the possibility to create his account by the Sign-Up option | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_34*** | Doctor signs an prescription | After the medical visit doctor signs an prescription for the patient depending in his examination. | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |

| | | | | | |
|---|---|---|---|---|---|
| ***FR_35*** | Receptionist checks staff shift timetable | Receptionist is the only user that can have access at the timetable | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_36*** | When signing up the user should select a role | In order to create an account, the user should get a role (doctor/receptionist/ patient) depending on the role chosen, the account gets the respective functionalities | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_37*** | Doctor checks appointments | Depending on the visits created by the receptionist or patient, doctor can check the appointments set | 2 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_38*** | Cancel appointments | Doctor or receptionist can cancel the appointments set | 2 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_39*** | Doctor responds E-Mails within 24h | Patient can contact the doctor via E-Mail, but the doctor is obligated to respond within 24h. If the doctor has his days off, system sends an automatic E-Mail | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_40*** | Admin creates, updates and deletes services | Keeps the users up to date with the polyclinic services and information | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_41*** | Admin generates reports of examinations in the end of every day/month/year | Reports are used as statistics by the polyclinic | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |
| ***FR_42*** | Admin manages database | Admin is the only user that has access for this action | 1 | 11/04/2022 | Eva Daçi<br>Emin Suha Uzun<br>Qemal Sinaj |

***Table 1. Functional Requirements***

## *3.2 Non-Functional Requirements*

There are a lot of software requirements specifications included in the non-functional requirements of the Polyclinic Management System, which contains various process, namely Security, Performance, Maintainability, and Reliability.

### 3.2.1 Product Requirements

#### 3.2.1.1 User Interface Requirements

The user interface for the web applications should be compatible to any browser in order for the user to access it from Desktop or Mobile.

In addition to functions required, we are going to describe the characteristics of each interface which are supported from the sketches attached at the Appendix C.

The User interface could be grouped in 4 main interfaces:

- Log In Interface

  Which will contain:

  - The header bar containing the logo, "National Healthcare Polyclinic"
  - In the body, three icons will be shown, the field to fill up the username and password. Also, it will have the buttons: Select Location, Select Polyclinic, Log in and Sign up.
  - The log in form contains fields <Username> and <Password>, a reCaptcha to make sure the user is not a robot and a button <Log In>. When that button is pressed the information is validated and the respective interface is showed to the user (patient/doctor/receptionist) or an error notification indicating a wrong username or password will be shown.

- Patient Interface

  Which will contain:

  - The header bar containing the logo, a quote which says "HELLO PATIENT" and the Log out option.
  - On the left there will be listed the menus, which are: "Home", "My profile", "Appointments", "Contact Doctor" and "Downloads".
  - The "**My Profile**" menu will allow the patient to see all his personal information and his medical record information, also there he can make other actions like "changing password".
  - The "**Appointments**" menu will show to the patient all the visits he has made with the doctor and to request a new one.

- The "**Contact Doctor**" menu will allow the patient to communicate will his/her doctor via e-mail. The page will provide a simple form containing the sender's name which will be filled automatically from the patient's personal information, as well as the respective doctor to whom the e-mail will be sent, a text field for the message and a <Send> button to deliver the email. This menu will be similar to the "New e- mail" menu of the well-known pages like www.gmail.com , www.yahoo.com etc.
- The "**Downloads**" menu will allow the patient to download all his medical records uploaded by the doctor, also he can download his profile information.
- The "**Log out**" will terminate the current session and will resent the user to the main page.

- Doctor Interface

Which will contain:

- The header bar containing the logo, a quote which says "HELLO DOCTOR" and the Log out option.
- On the left there will be listed the menus, which are: "Home", "My profile", "Patient's list", "Doctor's list", "Prescribe" and "Appointments" .
- The "**My Profile**" menu will allow the doctor to see all his personal information and there he can edit his account settings.
- The "**Patient's list**" menu will display a table with all the patients of that specific doctor. For each patient he can view the full profile: personal information and all the medical examinations. He can also download a PDF file of this information. Above the table of the patients, there is a search box that can be used to find a specific patient.
- The "**Doctor's list**" menu will display a table with all the doctors of that specific polyclinic. Above the table of the doctors, there is a search box that can be used to find a specific doctor.
- Only in the case that the logged in doctor, a "**Prescribe**" menu will be shown. It will redirect the doctor to a page where he can prescribe all his patient's examinations.
- The "**Appointments**" menu will show to the doctor all his visits and to request a new one or cancel it.
- The "**Log out**" will terminate the current session and will resent the user to the main page.

- Receptionist Interface

Which will contain:

- The header bar containing the logo, a quote which says "HELLO RECEPTIONIST" and the Log out option.
- On the left there will be listed the menus, which are: "Home", "My profile",

"Patient's list", "Doctor's list", "Timetable" and "Appointments" .

- "**My Profile**" will allow the receptionist to see all his personal information.
- "**Patients' List"** will show a full list of the patients of that polyclinic. For each patient the receptionist can view his full profile, can update his information, can delete his profile, can export his medical file or can allow the doctor to create a visit for that patient. When he clicks "**View profile**", he can see the full details and the examinations of that patient. He can also download that information in a PDF file. When he clicks "**Update profile**", he can change the personal information of that patient. When he clicks "**Delete**" a pop up window will appear to make sure that the receptionist really wants to delete that patient. When he clicks "**Export**", a file will be created and it can be sent to other polyclinics. When he/she clicks "**Create visit**", it allows the doctor to add a new examination record for that patient.

  When he clicks "**Add a New Patient"** allows the receptionist to create a new user, type patient. He will be responsible for filling all the obligatory fields with valid information provided by the patient. If there already exists a file of that patient, he can import that file.
- "**Doctors' List"** will show a full list of the doctors of that polyclinic. For each doctor the receptionist can view his full profile, can update his information and can delete his profile. When he clicks "**View profile**", he can see the full details of that doctor. When he clicks "**Update profile**", he can change the personal information of that doctor. When he clicks "**Delete**" a pop up window will appear to make sure that the receptionist really wants to delete that doctor.

  "**Add a New Doctor"** allows the receptionist to create a new user, type doctor. He will be responsible for filling all the obligatory fields with valid information provided by the doctor.
- "**Timetable**" will display a simple page where he can see the availability of every staff member in the polyclinic.
- The "**Log out**" will terminate the current session and will resent the user to the main page.

#### 3.2.1.2 Usability

- Emails should be sent with a latency of no greater than 24 hours.
- Each request should be processed within 10 seconds.
- The site should load in 3 seconds when the number of simultaneous users are > 10000

#### 3.2.1.3 Efficiency

- Each operation will be fast and in real time.
- Once the users have learned the system they will be able to perform each operation within

minutes.

- Each user should be able to do each task effortlessly, with few or no user errors, and in a short amount of time thanks to the program.

#### 3.2.1.4 Performance requirements

- Response Time: The system provides acknowledgment in just one second once the 'patient's information is checked.
- Capacity: The system needs to support at least 1000 people at once.
- User-Interface: The user interface acknowledges within five seconds.
- Conformity: The system needs to ensure that the guidelines of the Microsoft accessibilities are followed.

#### 3.2.1.5 Dependability

- Availability: The probability that the system will be up and running and able to deliver useful services to users.
- Reliability: The probability that the system will correctly deliver services as expected by users.
- Safety: A judgment of how likely it is that the system will cause damage to people or its environment.
- Security: A judgment of how likely it is that the system can resist accidental or deliberate intrusions.
- Resilience: A judgment of how well a system can maintain the continuity of its critical services in the presence of disruptive events such as equipment failure and cyberattacks.

### 3.2.2 Organizational Requirements

#### 3.2.2.1 Environmental requirements

- The application will be available 24 hours per day, every day.
- The application will be available to everyone who owns a PC connected to the Internet, therefore any user can access his data anywhere.
- The application will be developed such that it will not be forced to encounter downtime since the data used by the users is very sensitive and time-varying.
- Scheduled maintenance on the system shall not affect its functionality. In case of any problem unscheduled maintenance of the application shall not allow the system to be down for more than 1 hour.

#### 3.2.2.2 Operational requirements

Some of the operations that will be provided to the users are:

- The users can log in and access their personal information anytime.
- The information entered to the system is accessed only by the people who really need access.
- Create, Read, Update and Delete doctors.
- Create, Read, Update and Delete patients.

- View personal information and medical records of patient.
- Download a PDF with the medical examinations of a specific patient.
- Export the medical file of a specific patient and use it to send it to another polyclinic.
- Allow the doctor to create a new examination record for a specific patient.
- Create a new examination record for a specific patient.
- Contact the doctor.
- Check timetable
- Generate reports

#### 3.2.2.3 Development requirements

Our application is a new system developed to digitalize the filing system in polyclinics. All activities and tasks connected with discovering, analyzing, recording, documenting, and validating the requirements for a project or program of work are included in requirement development. Requirements are identified, studied, specified, and verified, and Enterprise Architect provides a variety of tools and features to aid the Requirement Analyst in their work. Information will continue to follow the standards created by the Ministry of Health of Albania.
Everything will be in accordance with the law and the Ministry of Health.

### 3.2.3 External Requirements

#### 3.2.3.1 Regulatory requirements

Generally, regulations are implemented to protect someone or something, whether it be employees, consumers, the public at large, or the integrity of commerce or of business processes. The entities overseeing regulation often focus on several primary areas, including the following:

- Establishing and implementing controls at organizations.
- Keeping abreast of and assessing how organizations are complying with laws and regulations.
- Identifying and remediating areas where organizations are not complying.
- Providing ways for organizations to report on their compliance with laws and regulations.

#### 3.2.3.2 Ethical requirements

Healthcare staff have a legal and ethical obligation to safeguard the patients they are responsible for. Patients suffer when these responsibilities are disregarded. Furthermore, healthcare personnel may be held liable for these actions. Doing the right thing for the patient is what ethical action or responsibility entails. Many healthcare professions have ethics codes to which practitioners must conform. The nursing code of ethics, for example, is a lengthy document that goes over ethical obligations in detail. Fraud and neglect are two examples of unethical behavior. Let's look at several court examples that demonstrate the harmful consequences of unethical behavior.

#### 3.2.3.3 Legislative requirements

These Regulations require employers to consider the health and safety risks to employees and to carry out a risk assessment to protect employees from exposure to reasonably foreseeable risks. Those risks include work-related violence. A risk assessment is an examination to:

- Determine what hazards exist in the workplace;

- Establish the significance of the risk;
- Identify and implement prevention and control measures;
- Produce a clear management action plan.

If you have five or more employees you must record the significant findings of your risk assessment and any groups of employees identified by it as being especially at risk. In addition, employers have a requirement to appoint competent people, set up emergency procedures, provide information to employees and work together with employers sharing the same workplace.
Employees, on the other hand, are required to use the information/training they have received, and to report dangerous situations/shortcomings in health and safety arrangements.

#### 3.2.3.4 Accounting requirements

At its core, health care accounting is like other professional accounting roles in keyways. Health-care accountants, for example, analyze reports, keep financial records, and track cash flow studies. The various healthcare-related layers of these tasks constitute the primary difference between health care accounting and other types of accounting.

- Accrual and Cash Accounting
- Reporting
- Depreciation
- Payments and Receivables Related to Medical Services
- Credit Balances and Outstanding Checks

#### 3.2.3.5 Security requirements

The information kept in the system's database is considered to be sensitive information. Therefore, we should make sure that the security of our system is high. According to the law No.9887, dated 10.03.2008, as amended with law No.48/2012, "On the Protection of Personal Data", the personal information of each user should be private and possible to be accessed only by the specified actors. Therefore, this information is secured with hashed passwords. Moreover, the doctors and the receptionist have to be careful with the usage of the personal information of the patients.

### *3.3 Domain Requirements*

This Web Application operates in the field of Public Medical System of Albania. The main purpose is to digitalize patients' records, in order to make data retrieval easier and more efficient. However, the most important thing in this Web Application is the security of data. Since it is sensitive information, it should be accessible only by the users that have an account on this software. This application is assumed to be used in a specific polyclinic with private network and it does not have to communicate with any other system.

# 4. Software Design / Diagrams

## *4.1 Requirements Analysis*

### 4.1.1 User Scenarios

#### 4.1.1.1 User Scenarios List

| *Nr* | *Name* | *Description* |
|---|---|---|
| ***US_01*** | User logs in | *Users: patients, receptionist and doctors log in using username and password* |
| ***US_02*** | Change password | *Users: patients, receptionist and doctors change their password* |
| ***US_03*** | Add a new patient | *Receptionist creates an account for a new patient* |
| ***US_04*** | Add a new patient from existing files | *Receptionist creates an account for a patient by importing his files* |
| ***US_05*** | Add a new doctor | *Receptionist creates an account for a new doctor* |
| ***US_06*** | Patients' list | *View list of all the patients* |
| ***US_07*** | Doctors' list | *Receptionist or Doctor can view all the doctors of the respective polyclinic where they are working* |
| ***US_08*** | Search a patient | *Search for a specific patient* |
| ***US_09*** | Search a doctor | *Receptionist or Doctor searches for a doctor* |
| ***US_10*** | Update patient | *Receptionist updates personal information of a patient* |
| ***US_11*** | Update doctor | *Receptionist updates personal information of a doctor* |
| ***US_12*** | Delete user | *Receptionist can delete an account of an existing user (patient or doctor)* |
| ***US_13*** | Allow doctor to create an visit | *Receptionist allows the doctor to create a new examination/visit record for a specific patient. This patient appears in doctor's visit list.* |
| ***US_14*** | Create visit | *Doctor creates an examination/visit for the patients that the receptionist has allowed to do so* |
| ***US_15*** | Export user | *Receptionist exports user information which will be sent to another polyclinic* |
| ***US_16*** | View profile | *Patient, doctor and receptionist can view their own profiles* |
| ***US_17*** | View patient's examinations | *Patients can view all of his medical records. Doctors can view their patients' examinations.* |

| | | |
|---|---|---|
| | | *Receptionist can view examinations of all patients of the polyclinic.* |
| ***US_18*** | Patient contacts doctor | *Patient can contact the doctor by completing a form and an email will be sent to his physician* |
| ***US_19*** | Download patient's examinations | *Receptionist can download the examinations of all patients in the respective polyclinic where he is working. Doctor can download the examinations of his patients. Patient can download his medical records.* |
| ***US_20*** | User logs out | *Receptionist, doctor and patient log out from their accounts* |
| ***US_21*** | User registers | *User creates an account by filling a form, and choosing a specific role* |
| ***US_22*** | Admin manages database | *Admin is the only user that has access to all functionalities of the system, which one of them is to manage the database* |
| ***US_23*** | Admin CRUD services | *Admin can create, read, update and delete service information about the polyclinic* |
| ***US_24*** | Admin generates reports | *Reports are used as statistics by the polyclinic* |
| ***US_25*** | Receptionist checks timetable | *Receptionist is the only user that can have access at the timetable in order to set right appointments* |
| ***US_26*** | Cancel appointment | *Doctor or receptionist can cancel the appointments set* |

***Table 2.*** User scenarios list

#### 4.1.1.2 User Scenarios Extended

1. **US_01** – User logs in
    a. User chooses his user type: patient/receptionist/doctor
    b. User is redirected to the log in page
    c. User enters his username and password
    d. User selects the respective polyclinic where he is working
    e. User selects the city where the polyclinic is located
    f. User checks the reCaptcha option
    g. User clicks the log in button
    h. If data is correct the user is redirected to his profile page
    i. If data is not correct an error message will be shown and user repeats the process from step b.

2. **US_02** – Change password
    a. User logs in following the steps in *US_01*.
    b. User chooses the menu "Change Password"
    c. User types his old password and his new password (confirms also new password one more time)
    d. User presses the button "Save Changes"
    e. If the old password is correct and if the new password is the same as the confirmation password, an alert message is going to be shown: "Password was changed successfully!"
    f. In case the user has typed the old password credentials wrong or the new password is not the same as the confirmation password, an alert message is going to be shown: "Password was not changed! Please try again!"
3. **US_03** – Add a new patient
    a. Receptionist logs in following the steps *US_01*
    b. Receptionist clicks on "Add a New Patient"
    c. Receptionist fills the form
    d. Receptionist double checks if the data entered is correct
    e. Receptionist clicks the button "Add Patient"
    f. Alert pops up: Do you approve this action? **YES**/ **NO**
    g. If **NO**, do nothing, we stay at the same page
    h. If **YES**, system validates data according to the specified requirements
    i. If validation is passed successfully, the data is saved in the database and the account is created. An informative message "Patient added successfully!" will be shown and the receptionist is redirected to the home page.
    j. If validation is not passed successfully, informative messages will show where the problem is, so the receptionist can fix it and continue again from step d.

4. **US_04** – Add a new patient from existing files
    a. Receptionist logs in following the steps in *US_01*
    b. Receptionist clicks on "Add Patient"
    c. Receptionist clicks the button "Import data"
    d. Receptionist selects the file with the data and clicks the button "Add Patient"
    e. Alert pops up: Do you approve this action? **YES**/ **NO**
    f. If **YES**, the data is saved in the database and the account is created. An informative message "Patient added successfully!" will be shown and the receptionist is redirected to the home page.
    g. If **NO**, do nothing, stay at the same page

5. **US_05** – Add a new doctor
    a. Receptionist logs in following the steps in *US_01*
    b. Receptionist clicks on "Add a New Doctor"
    c. Receptionist fills the form
    d. Receptionist double checks if the data entered is correct
    e. Receptionist clicks the button "Add Doctor"
    f. Alert pops up: Do you approve this action? **YES**/ **NO**
    g. If **NO**, do nothing, we stay at the same page
    h. If **YES**, system validates data according to the specified requirements
    i. If validation is passed successfully, the data is saved in the database and the account is created. An informative message "Doctor added successfully!" will be shown and the receptionist is redirected to the home page.
    j. If validation is not passed successfully, informative messages will show where the problem is, so the receptionist can fix it and continue again from step d.

6. **US_06** – Patients' list
    - Receptionist
        a. Receptionist logs in following the steps in *US_01*
        b. Receptionist clicks on "Patients' list"
        c. A table with all the patients of the polyclinic will be shown
    - Doctor
        a. Doctor logs in following the steps in *US_01*
        b. Doctor clicks on "My Patients" menu
        c. A table with all his/her patients will be shown

7. **US_07** – Doctors' list
    a. Receptionist/Doctor logs in following the steps in *US_01*
    b. Receptionist/Doctor clicks on "Doctors' list"
    c. A table with all the doctors of the polyclinic will be shown

8. **US_08** – Search a patient
    - Receptionist
        a. Receptionist logs in following the steps in *US_01*
        b. Receptionist clicks on "Patients' list"
        c. A table with all the patients will be shown and a search box above it
        d. Receptionist fills the name, the surname, both of the fields, or personal ID
        e. If results were found, patient will be shown in the table
        f. If no result was found, the table will be shown empty
    - Doctor
        a. Doctor logs in following the steps in *US_01*
        b. Doctor clicks on "My Patients"
        c. A table with all his/her patients will be shown and a search box above it
        d. Receptionist fills the name, the surname, both of the fields, or personal ID
        e. If results were found, patient will be shown in the table
        f. If no result was found, the table will be shown empty

9. **US_09** – Search a doctor
        a. Receptionist/Doctor logs in following the steps in *US_01*
        b. Receptionist/Doctor clicks on "Doctors' list"
        c. A table with all the doctors will be shown and a search box above it
        g. Receptionist/Doctor fills the name, the surname, both of the fields, or personal ID
        d. If results were found, the doctor looking for will be shown in the table
        e. If no result was found, the table will be shown empty
10. **US_10** – Update patient
        a. Receptionist searches a patient following the steps in *US_08/a*
        b. Receptionist clicks the button "Update" for that specific patient
        c. A form with fields filled with current information of the patient is shown
        d. Receptionist makes the necessary changes
        e. Receptionist double checks if the data entered is correct
        f. Receptionist clicks the button "Update"
        g. Alert pops up: Do you approve this action? **YES**/ **NO**
        h. If **NO**, do nothing, we stay at the same page
        i. If **YES**, system validates data according to the specified requirements
        j. If validation is passed successfully, the data is saved in the. An informative message "Patient updated successfully!" will be shown and the receptionist is redirected to the home page.
        k. If validation is not passed successfully, informative messages will show where the problem is, so the receptionist can fix it and continue again from step e.

11. **US_11** – Update doctor
    a. Receptionist searches a doctor following the steps in *US_09*
    b. Receptionist clicks the button "Update" for that specific doctor
    c. A form with fields filled with current information of the doctor is shown
    d. Receptionist makes the necessary changes
    e. Receptionist double checks if the data entered is correct
    f. Receptionist clicks the button "Update"
    g. Alert pops up: Do you approve this action? **YES**/ **NO**
    h. If **NO**, do nothing, we stay at the same page
    i. If **YES**, system validates data according to the specified requirements
    j. If validation is passed successfully, the data is saved in the. An informative message "Doctor updated successfully!" will be shown and the receptionist is redirected to his/her home page.
    k. If validation is not passed successfully, informative messages will show where the problem is, so the receptionist can fix it and continue again from step e.

12. **US_12** – Delete user
    - For patients
        a. Receptionist searches a patient following the steps in *US_08/a*
        b. Receptionist clicks the button "Delete" for that specific patient
        c. Alert pops up: Do you approve this action? **YES**/ **NO**
        d. If **NO**, do nothing, we stay at the same page
        e. If **YES**, the information for that patient is deleted from the database. The message "Patient deleted successfully!" will be shown and the receptionist is redirected to the home page.
    - For doctors
        f. Receptionist searches a doctor following the steps in *US_09*
        g. Receptionist clicks the button "Delete" for that specific doctor
        h. Alert pops up: Do you approve this action? **YES**/ **NO**
        i. If **NO**, do nothing, we stay at the same page
        j. If **YES**, the information for that doctor is deleted from the database. The message "Doctor deleted successfully!" will be shown and the receptionist is redirected to the home page.

13. **US_13** – Allow doctor to create a visit
    a. Receptionist searches a patient following the steps in *US_08/a*
    b. Receptionist clicks the button "Create Visit" for that specific patient
    c. Alert pops up: Do you approve this action? **YES**/ **NO**
    d. If **NO**, do nothing, we stay at the same page
    e. If **YES**, some changes will be made to the database. An informative message "Youallowed the doctor to visit this patient!" will be shown and the receptionist is redirected to the home page.

14. **US_14** – Create visit
    a. Doctor clicks the button "Create Visit" for a specific patient
    b. A form with all the needed fields to be filled during a medical visit will be shown
    c. Doctor fills the form
    d. Doctor double checks if the data entered is correct
    e. Doctor clicks the button "Finish Examination"
    f. Alert pops up: Do you approve this action? **YES**/ **NO**
    g. If **NO**, do nothing, we stay at the same page
    h. If **YES**, the data is saved in the database. An informative message "Visit created successfully!" will be shown and the doctor is redirected to the home page. Also a PDF file is created.

15. **US_15** – Export user
    a. Receptionist searches a patient following the steps in *US_08/a*
    b. Receptionist clicks the button "Export" for that specific patient
    c. Alert pops up: Do you approve this action? **YES**/ **NO**
    d. If **NO**, do nothing, we stay at the same page
    e. If **YES**, the information for that patient is downloaded in the computer. The message "Patient exported successfully!" will be shown and the receptionist is redirected to the home page.
    f. The exported file can be sent to another polyclinic or hospital for further examinations

16. **US_16** – View profile
- Receptionist views his/her profile
    a. Receptionist logs in following the steps in *US_01*
    b. Receptionist clicks on "My profile"
    c. Receptionist will be redirected to a page with his/her personal information
- Patient views his/her profile
    a. Patient logs in following the steps in *US_01*
    b. Patient clicks on "My profile"
    c. Patient will be redirected to a page with his/her personal information
- Doctor views his/her profile
    a. Doctor logs in following the steps in *US_01*
    b. Doctor is redirected to his home page (or he can manually click "Home" menu)
    c. Doctor will be redirected to a page with his/her personal information
- Receptionist views profile of a patient
    a. Receptionist searches a patient following the steps in *US_08/a*
    b. Receptionist clicks the button "View Profile" for that specific patient
    c. Receptionist is redirected to a page showing the personal information of that patient
- Receptionist views profile of a doctor

a. Receptionist searches a doctor following the steps in *US_09*
b. Receptionist clicks the button "View Profile" for that specific doctor
c. Receptionist is redirected to a page showing the personal information of that doctor

- Doctor views profile of one of his patients
  a. Doctor searches a patient following the steps in *US_08/b*
  b. Doctor clicks the button "View Profile" for that specific patient
  c. Doctor is redirected to a page showing the personal information of that patient

17. **US_17** – View patient's examinations
- Receptionist
  a. Receptionist views profile of a patient following the steps in *US_16/d*
  b. Receptionist clicks the button "View Examinations" that is shown at the patient's profile
  c. Receptionist is redirected to a page showing all the examinations of that patient
- Doctor
  a. Doctor views profile of a patient following the steps in *US_16/f*
  b. Doctor clicks the button "View Examinations" that is shown at the patient's profile
  c. Doctor is redirected to a page showing all the examinations of that patient
- Patient
  a. Patient logs in following the steps in *US_01*
  b. Patient clicks the "Medical Records" menu
  c. Patient is redirected to a page showing all his examinations. The latest one is shown first.

18. **US_18** – Patient contacts doctor
a. Patient logs in following the steps in *US_01*
b. Patient clicks on "Contact Doctor" menu
c. A form containing his name and email, his doctor's name and email as well as a place to write the message is shown
d. Patient fills the form
e. Patient double checks what he has written
f. Patient clicks "Send"
g. Alert pops up: Do you approve this action? **YES**/ **NO**
h. If **NO**, do nothing, we stay at the same page
i. If **YES**, the system will try to send an email to his doctor
j. If the email is sent successfully, the message "Email was sent successfully!" will be shown and the patient will be redirected to his home page.
k. If the email is not sent successfully, the message "Email couldn't be sent due to some problems! Please try again!" will be shown

19. **US_19** – Download patient's examinations
    - Receptionist
        a. Receptionist views examinations of a patient following the steps in *US_17/a*
        b. Receptionist clicks "Download" button for a specific examination
        c. A PDF file will be downloaded in the computer
    - Doctor
        a. Doctor views examinations of a patient following the steps in *US_17/b*
        b. Doctor clicks "Download" button for a specific examination
        c. A PDF file will be downloaded in the computer
    - Patient
        *d.* Patient views examinations of himself following the steps in *US_17/c*
        e. Patient clicks "Download" button for a specific examination
        f. A PDF file will be downloaded in the computer

20. **US_20** – User logs out
    a. User logs in following the steps in *US_01*
    b. User follows some of the scenarios listed above
    c. User clicks "Log out"
    d. User will be logged out from the system and he will be redirected to the main page

21. **US_21** – User registers
    a. User opens the Log in dashboard
    b. User clicks the button "Sign Up"
    c. User completes a form with the required information
    d. User will be logged in in the system if the registration was successful

22. **US_22** – Admin manages database
    a. User logs in as Admin
    b. User clicks the button "Database"
    c. User completes the required action on the database dashboard

23. **US_23** – Admin CRUD services
    a. User logs in as Admin
    b. User goes on the general information section about the polyclinic
    c. User completes the needed changes

24. **US_24** – Admin generates reports
    a. User logs in as Admin
    b. User goes on the reports section

c. User selects the kind of report he wants to generate (daily/weekly/monthly/yearly)

25. **US_25** – Receptionist checks timetable
    a. User logs in as Receptionist
    b. User clicks the "Timetable" menu
    c. User checks the available doctors

26. **US_26** - Cancel appointments
    a. User logs in as Receptionist or Doctor
    b. User clicks the "Appointment" menu
    c. User clicks the desired appointment
    d. User clicks "Cancel"
    e. Alert pops up: Do you approve this action? **YES**/ **NO**
    f. If **NO**, do nothing, we stay at the same page
    g. If **YES**, the system will cancel the appointment

### 4.1.2 User Cases

| | |
|---|---|
| *Name* | *User logs in* |
| *Summary* | *User enters personal information to access his account.* |
| *Actor* | *Patient / Receptionist / Doctor* |
| *Description* | *User gains access on his account after typing his correct username and password, selecting the polyclinic location and number* |
| *Precondition* | *User must have an active account and should choose one of the roles (patient/ receptionist/ doctor) before logging in.* |
| *Alternatives* | *The user can access only one account at time and can have only one role, but a doctor or the receptionist can havetwo accounts because they can also be patients.* |
| *Post Condition* | *User is logged on his account.* |

**UC_01 – US_01 - User logs in**

| | |
|---|---|
| *Name* | *Change password* |
| *Summary* | *User goes to the corresponding page to change his password.* |
| *Actor* | *Patient / Receptionist / Doctor* |
| *Description* | *User types the old password and the new one in order to make the change.* |
| *Precondition* | *The user should be logged in. The old password should be typed correctly and both fields with the new password should match. Also the user should follow the validation rules.* |
| *Alternatives* | *If the fields are not filled correctly (validation rules not passed successfully), then information cannot be saved. The user is allowed to try again.* |
| *Post Condition* | *After pressing the "Save" button, the old password is replaced with the new one.* |

**UC_02 – US_02 - Change password**

| | |
|---|---|
| *Name* | *Add a new patient* |
| *Summary* | *The receptionist can add a new patient.* |
| *Actor* | *Receptionist* |
| *Description* | *Receptionist clicks on "Add Patient" menu, fills the form and clicks "Add Patient" button.* |
| *Precondition* | *Receptionist should be logged in and the patient must possess the necessary documents to be registered in the polyclinic. The new patient's unique information should not match with any other patient in the database, so one user cannot have two accounts in the same role.* |
| *Alternatives* | *If the receptionist is sure he/she should press **YES** to continue saving, if not then he/she should press **NO** and go back to the previous page. If when pressing **YES**, the validation of the fields is not successful, the receptionist is allowed to make the necessary changes.* |
| *Post Condition* | *A new patient is added on the database* |

**UC_03 –US_03 – Add a new patient user**

| | |
|---|---|
| *Name* | *Add a new patient from existing files* |
| *Summary* | *The receptionist adds a new patient user by importing the data that is sent to his/her from another polyclinic.* |
| *Actor* | *Receptionist* |
| *Description* | *Receptionist clicks on "Add Patient" menu, clicks on "Import data" button and then clicks "AddPatient" button.* |
| *Precondition* | *The receptionist should have a file containing the information of the patient, which is sent by another polyclinic. The new patient's unique information should not match with any other patient in the database, so one user cannot have two accounts in the same role.* |
| *Alternatives* | *If the receptionist is sure he/she should press **YES** to continue saving, if not then he/she should press **NO** and go back to the previous page.* |
| *Post Condition* | *A new patient is added on the database.* |

**UC_04 – US_04 – Add a new patient from existing files**

| | |
|---|---|
| *Name* | *Add a new doctor* |
| *Summary* | *The receptionist can add a new doctor.* |
| *Actor* | *Receptionist* |
| *Description* | *Receptionist clicks on "Add Doctor" menu, fills the information for the new doctor and then clicks "Add Doctor" button.* |
| *Precondition* | *Receptionist should be logged in and the doctor must possess the necessary documents to be registered in the polyclinic. The new doctor's unique information should not match with any other doctor in the database, so one user cannot have two accounts in the same role.* |
| *Alternatives* | *If the receptionist is sure he/she should press **YES** to continue saving, if not then he/she should press **NO** and go back to the previous page. If when pressing **YES**, the validation of the fields is not successful, the receptionist is allowed to make the necessary changes.* |
| *Post Condition* | *A new doctor is added on the database.* |

**UC_05 –US_05 – Add a new doctor**

| *Name* | *Patients' list* |
|---|---|
| *Summary* | *Access the list of patients.* |
| *Actor* | *Receptionist / Doctor* |
| *Description* | *In the receptionist's version he/she logs in then clicks on "Patients' list", to access the list of all patients of the polyclinic. In the doctor's version, he/she logs in and clicks on "My Patients", to access the list of his/her patients.* |
| *Precondition* | *To access this list you should be logged in as a receptionist or doctor. Patients do not have access on the list.* |
| *Alternatives* | *Receptionist can view the whole list of the patients of the polyclinic, whereas the doctor can view only the list of his patients. If there is no patient registered yet, an informative message will be shown.* |
| *Post Condition* | *A table with the list of the patients is shown.* |

**UC_06 –US_06 – Patients' list**

| *Name* | *Doctors' list* |
|---|---|
| *Summary* | *Access the list of the doctors of the polyclinic.* |
| *Actor* | *Receptionist / Doctor* |
| *Description* | *The receptionist/doctor logs in then clicks on "Doctors'List", to access the list of all doctors of the polyclinic.* |
| *Precondition* | *To access this list you should be logged in as the receptionist or a doctor. Patients do not have access on the list.* |
| *Alternatives* | *Receptionist/Doctor can view the whole list of the doctors of the polyclinic* |
| *Post Condition* | *A table with the list of the doctors is shown.* |

**UC_07 – US_07 –Doctors' list**

| | |
|---|---|
| *Name* | *Search a patient* |
| *Summary* | *Search a specific patient in the list.* |
| *Actor* | *Receptionist / Doctor* |
| *Description* | *In the receptionist's version he/she logs in then clicks on "Patients' list", to access the list of the patients. At the search box, he/she enters the name, surname (or both), or the personal ID of the patient he/she islooking for.*<br>*In the doctor's version, he/she logs in and clicks on "My Patients", to access the list of his/her patients. At the search box, he/she enters the name, surname (or both), or the personal ID of the patient he/she is looking for.* |
| *Precondition* | *You should be logged in as a receptionist or a doctor. Patients will not have this right.* |
| *Alternatives* | *Receptionist or doctor can either type the name, the surname, both, or personal ID. If there is no patient found, an informative message will be shown and table will be empty.* |
| *Post Condition* | *If results were found, a table with all the results will be shown.* |

**UC_08 – US_08 – Search a patient**

| | |
|---|---|
| *Name* | *Search a doctor* |
| *Summary* | *Search a specific doctor in the list.* |
| *Actor* | *Receptionist/Doctor* |
| *Description* | *In the receptionist's version he/she logs in then clicks on "Doctors' list", to access the list of the patients. At the search box, he/she enters the name, surname (or both), or personal ID of the doctor he/she is looking for.* |
| *Precondition* | *You should be logged in as a receptionist or a doctor. Patients will not have this right.* |
| *Alternatives* | *Receptionist/Doctor can either type the name, the surname, both or personal ID. If there is no doctor found, an informative message will be shown and table will be shown empty.* |
| *Post Condition* | *If results were found, a table with all the resultswill be shown.* |

**UC_09 – US_09 – Search a doctor**

| | |
|---|---|
| *Name* | *Update patient* |
| *Summary* | *Receptionist can update personal information of a patient of the polyclinic.* |
| *Actor* | *Receptionist* |
| *Description* | *Receptionist logs in and searches for a patient as we described before in **UC_08**. After that, he/she clicks the "Update" button for that specific patientthat was the result of the search. Then he/she can change any of the personal information and at the end clicks "Update" button.* |
| *Precondition* | *You should be logged in as a receptionist. Patients and doctors will not have this right. Also, the patient should exist in the database in order to make the changes.* |
| *Alternatives* | *If the receptionist is sure he/she should press **YES** to continue saving, if not then he/she should press **NO** and go back to the previous page. If when pressing **YES**, the validation of the fields is not successful, the receptionist is allowed to make the necessary changes.* |
| *Post Condition* | *Patient's personal information has been updated.* |

**UC_10 – US_10 – Update patient**

| | |
|---|---|
| *Name* | *Update doctor* |
| *Summary* | *Receptionist can update personal information of a doctor of the polyclinic.* |
| *Actor* | *Receptionist* |
| *Description* | *Receptionist logs in and searches for a doctor as we described before in **UC_09**. After that, he/she clicks the "Update" button for that specific doctorthat was the result of the search. Then he/she can change any of the personal information and at the end clicks "Update" button.* |
| *Precondition* | *You should be logged in as a receptionist. Patients and doctors will not have this right. Also, the doctor should exist in the database in order to make the changes.* |
| *Alternatives* | *If the receptionist is sure he/she should press **YES** to continue saving, if not then he/she should press **NO** and go back to the previous page. If when pressing **YES**, the validation of the fields is not successful, the receptionist is allowed to make the necessary changes.* |
| *Post Condition* | *Doctor's personal information has been updated.* |

**UC_11 – US_11 – Update doctor**

| *Name* | *Delete user* |
|---|---|
| *Summary* | *Receptionist can delete an existing patient or doctor of the polyclinic.* |
| *Actor* | *Receptionist* |
| *Description* | *Receptionist logs in and searches for a doctor or for a patient as we described before in **UC_08** or **UC_09**. After that, he/she clicks the "Delete" button for that specific doctor/patient that was the result of the search. A pop up window will be used to confirm the action.* |
| *Precondition* | *You should be logged in as a receptionist. Patients and doctors will not have this right. Also, the doctor/patient should exist in the database in order to delete his/her account.* |
| *Alternatives* | *If the receptionist is sure he/she should press **YES** to delete that user, if not then he/she should press **NO** and go back to the previous page.* |
| *Post Condition* | *The patient or doctor is deleted from the database.* |

**UC_12 – US_12 – Delete user**

| *Name* | *Allow doctor to create a visit* |
|---|---|
| *Summary* | *Receptionist allows the doctor to create an examination for a specific patient.* |
| *Actor* | *Receptionist* |
| *Description* | *Receptionist logs in and searches for a patient as we described before in **UC_08.** After that, he/she clicks the "Create Visit" button for that specific patient.* |
| *Precondition* | *You should be logged in as a receptionist. Patients and doctors will not have this right. Also, the patient should exist in the database in order to create a visit for him/her.* |
| *Alternatives* | *If the receptionist is sure he/she should press **YES** to create a visit for that user, if not then he/she should press **NO** and go back to the previous page.* |
| *Post Condition* | *The visit is created.* |

**UC_13 – US_13 – Allow doctor to create a visit**

| | |
|---|---|
| *Name* | *Create visit* |
| *Summary* | *The doctor fills the form according to his current examination.* |
| *Actor* | *Doctor* |
| *Description* | *Doctor logs in, clicks on "Create Visit" for a specific patient on the table with patients waiting to be visited, fills the form and then clicks "Finish".* |
| *Precondition* | *Doctor should be logged in and the receptionist must have previously allowed the doctor to visit that patient.* |
| *Alternatives* | *After pressing "Finish" a pop up window will be shown. If the doctor is sure he/she should press **YES** to finish the examination, if not then he/she should press **NO** and go back to the previous page.* |
| *Post Condition* | *The examination is saved on the database and a PDF file is created.* |

**UC_14 – US_14 - Create visit**

| | |
|---|---|
| *Name* | *Export user* |
| *Summary* | *Receptionist can export a file with a patient's information.* |
| *Actor* | *Receptionist* |
| *Description* | *Receptionist logs in and searches for a patient as we described before in **UC_08.** After that, he/she clicks the "Export" button for that specific patient that was the result of the search. A pop up window will be used to confirm the action.* |
| *Precondition* | *You should be logged in as a receptionist. Patients and doctors will not have this right. Also, the patient should exist in the database in order to export his/her files.* |
| *Alternatives* | *After pressing "Export" a pop up window will beshown. If the receptionist is sure he/she should press **YES** to continue exporting, if not then he/she should press **NO** and go back to the previous page.* |
| *Post Condition* | *A file with the patient's information is created and saved on the computer.* |

**UC_15 – US_15 – Export user**

| | |
|---|---|
| *Name* | *View profile* |
| *Summary* | *Each user can view his/her personal information.* |
| *Actor* | *Receptionist / Doctor / Patient* |
| *Description* | *In case of a receptionist, he/she logs in and clicks on "My Profile".*<br>*In case of a doctor, he/she logs in and at the left panel of the main page is shown his personal information. He can also access it by clicking "Home" menu.*<br>*In case of a patient, he/she logs in and clicks "MyProfile".* |
| *Precondition* | *The user should be logged in.* |
| *Alternatives* | *Users can view their profile at any time.* |
| *Post Condition* | *The user views his personal information.* |

**UC_16/a – US_16/a, b, c – View profile**

| | |
|---|---|
| *Name* | *View profile* |
| *Summary* | *Receptionist can view the profile of a patient or a doctor. The doctor can view the profile of a patient.* |
| *Actor* | *Receptionist / Doctor* |
| *Description* | *In case of a receptionist that wants to view the profile of a patient, he/she logs in, searches for a patient as we described before in **UC_08** and clicks "View Profile" for that specific patient.*<br>*In case of a receptionist that wants to view the profile of a doctor, he/she logs in, searches for a doctor as we described before in **UC_09** and clicks "View Profile" for that specific doctor.*<br>*In case of a doctor that wants to view the profile of his patient, he/she logs in, searches for a patient as we described before in **UC_08** and clicks "View Profile" for that specific patient.* |
| *Precondition* | *Receptionist or doctor should be logged in. also the doctor or the patient, whose profile the receptionist wants to see, should exist on the database. The patient that the doctor wants to see should exist on the database too.* |
| *Alternatives* | *Receptionist can view a profile of a patient or a doctor. Doctor can view only the profiles of his/her patients.* |
| *Post Condition* | *Receptionist or doctor will be redirected to the profile of the user they have chosen to see.* |

**UC_16/b – US_16/d, e, f – View profile**

| | |
|---|---|
| *Name* | *View patient's examinations* |
| *Summary* | *Receptionist can view the examinations of all the patients. Doctor can view examinations of his patients. Patient can view his examinations.* |
| *Actor* | *Receptionist / Doctor / Patient* |
| *Description* | *In case of a receptionist that wants to view the examinations of a patient, he/she first logs in, views the profile of a specific patient as we described before in* ***UC_16/b*** *and clicks "View Examinations".*<br>*In case of a doctor that wants to view the examinations of a patient, he/she first logs in,views the profile of a specific patient as we described before in* ***UC_16/b*** *and clicks "ViewExaminations".*<br>*In case of a patient that wants to view his examinations, he/she first logs in and clicks "Records" menu.* |
| *Precondition* | *The receptionist should be logged in if he/she wants to see the examinations of a patient. That patient should exist in the database.*<br>*The doctor should be logged in if he/she wants to see the examinations of a patient. That patient should exist in the database.*<br>*The patient should be logged in if he/she wants to see his examinations.* |
| *Alternatives* | *Examinations of a specific patient can be seen from the receptionist, from his physician or from the patient himself.* |
| *Post Condition* | *A page with all the examinations of the patient will be shown.* |

**UC_17 – US_17 – View patient's examinations**

| | |
|---|---|
| *Name* | *Patient contacts doctor* |
| *Summary* | *Patient fills a form to send an email to his doctor.* |
| *Actor* | *Patient* |
| *Description* | *Patient logs in, clicks on "Contact Doctor" menu, fills the form then clicks "Send" button.* |
| *Precondition* | *Patient should be logged in. He/she must have been assigned to a specific doctor, and he/she can send an email only to that doctor.* |
| *Alternatives* | *After pressing "Send" a pop up window will be shown. If the patient is sure he/she should press **YES** to continue sending that email, if not then he/she should press **NO** and go back to the previous page. If when pressing **YES**, some error happens while trying to send that message, an informative will be shown and the patient can try again later.* |
| *Post Condition* | *An email is sent to the patient's physician.* |

**UC_18 – US_18 – Patient contacts doctor**

| | |
|---|---|
| *Name* | *Download patient's examinations* |
| *Summary* | *The receptionist can download the examinations of a patient. The doctor can download the examinations of one of his patients. The patient can download his examinations.* |
| *Actor* | *Receptionist / Doctor / Patient* |
| *Description* | *In case of a receptionist that wants to download the examinations of a patient, he/she logs in, views the patient's examinations as described before in **UC_17** and clicks "Download". In case of a doctor that wants to download the examinations of a patient, he/she logs in, views the patient's examinations as described before in **UC_17** and clicks "Download". In case of a patient that wants to download his examinations, he/she logs in, views his examinations as described before in **UC_17** and clicks "Download".* |
| *Precondition* | *The user should be logged in and the examinations should exist in the database.* |
| *Alternatives* | *Receptionist, physician and patient have the right to download and use carefully the information for each examination of a patient.* |
| *Post Condition* | *A PDF file with the information of a specific examination of a user will be downloaded in the computer.* |

**UC_19 – US_19 – Download patient's examinations**

| | |
|---|---|
| *Name* | *User logs out* |
| *Summary* | *User has finished his/her activity.* |
| *Actor* | *Receptionist / Doctor / Patient* |
| *Description* | *First the user logs in. Then he/she interacts with the web application and when he/she finishes, he/she clicks "Log Out" button.* |
| *Precondition* | *The user must first be logged in.* |
| *Alternatives* | *The user can log out at any time.* |
| *Post Condition* | *The user has logged out and is no longer using his/her account.* |

**UC_20 – US_20 – User logs out**

| *Name* | *User registers* |
|---|---|
| *Summary* | *User creates an account by filling a form, and choosing a specific role* |
| *Actor* | *User* |
| *Description* | *If the user does not have an account, he needs to create one. He should fill the form with the required information, then he can log in if the registration was accepted. One user can create two accounts but not with the same role.* |
| *Precondition* | *User should not have any previous account* |
| *Alternatives* | *Can sign up as a receptionist, doctor or patient* |
| *Post Condition* | *After registration, new users data is stored in the database* |

**UC_21 – US_21 –** User registers

| *Name* | *Admin manages database* |
|---|---|
| *Summary* | *Admin is the only user that has access to all functionalities of the system, which one of them is to manage the database* |
| *Actor* | *Admin* |
| *Description* | |
| *Precondition* | *Should be logged in as admin* |
| *Alternatives* | *Can manage data of different users* |
| *Post Condition* | *Actions for necessary changes are going to be accepted by the system* |

**UC_22 – US_22 –** Admin manages database

| *Name* | *Admin CRUD services* |
|---|---|
| *Summary* | *Admin can create, read, update and delete service information about the polyclinic* |
| *Actor* | *Admin* |
| *Description* | *General information about the polyclinic are going to be shown in the Home menu of every dashboard and only admin has access to change them* |
| *Precondition* | *User should be logged in as admin* |
| *Alternatives* | *User can log out at any time* |
| *Post Condition* | *Information services about the polyclinic are going to change* |

**UC_23 – US_23 –** Admin CRUD services

| *Name* | *Admin generates reports* |
|---|---|
| *Summary* | *Reports are used as statistics by the polyclinic* |
| *Actor* | *Admin* |
| *Description* | *Different reports are needed in order to keep in track with the cases in the polyclinic. User can download daily, weekly, monthly or yearly reports* |
| *Precondition* | *User should be logged in as Admin* |
| *Alternatives* | *Can generate different reports for different timings (daily/weekly/monthly/yearly)* |
| *Post Condition* | *Reports are used as a statistic* |

**UC_24 – US_24 –** Admin generates reports

| *Name* | *Receptionist checks timetable* |
|---|---|
| *Summary* | *Receptionist is the only user that can have access at the timetable in order to set right appointments* |
| *Actor* | *Receptionist* |
| *Description* | *Receptionist checks timetable to see if he can set appointments depending on the doctor's availability. This functionality makes his job easier* |
| *Precondition* | *User should be logged in as receptionist* |
| *Alternatives* | *Can check timetable for doctors and directors* |
| *Post Condition* | *Keep track of available doctors* |

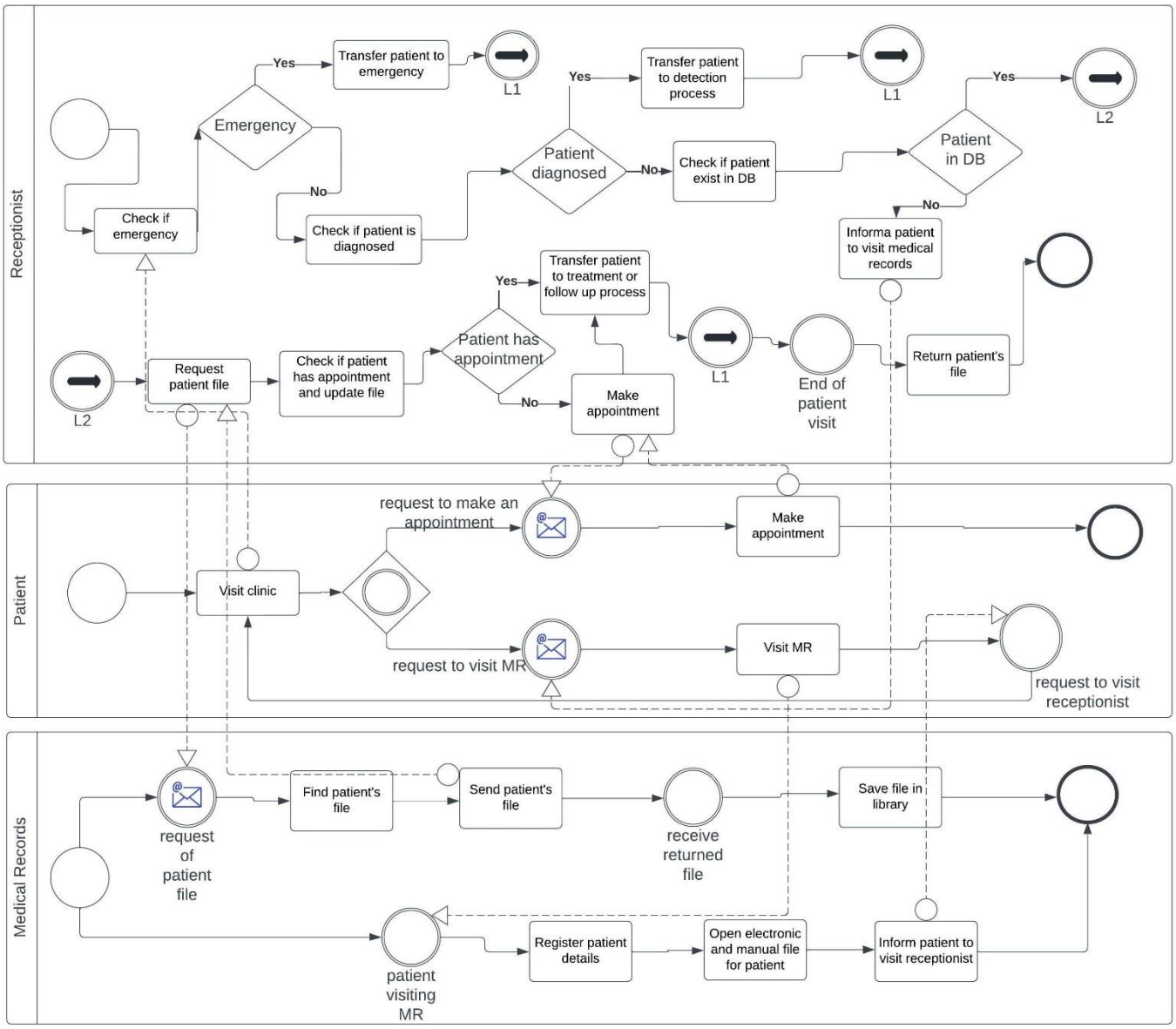
**UC_25 – US_25 –** Receptionist checks timetable

| *Name* | *Cancel appointment* |
|---|---|
| *Summary* | *Doctor or receptionist can cancel the appointments set* |
| *Actor* | *Receptionist/Doctor* |
| *Description* | *Depending on the doctor's availability the appointments can be canceled. Only doctors and receptionist has the right to perform this action* |
| *Precondition* | *User should have the role as a doctor or receptionist* |
| *Alternatives* | *Can delete more than 1 visit* |
| *Post Condition* | *Visit is deleted* |

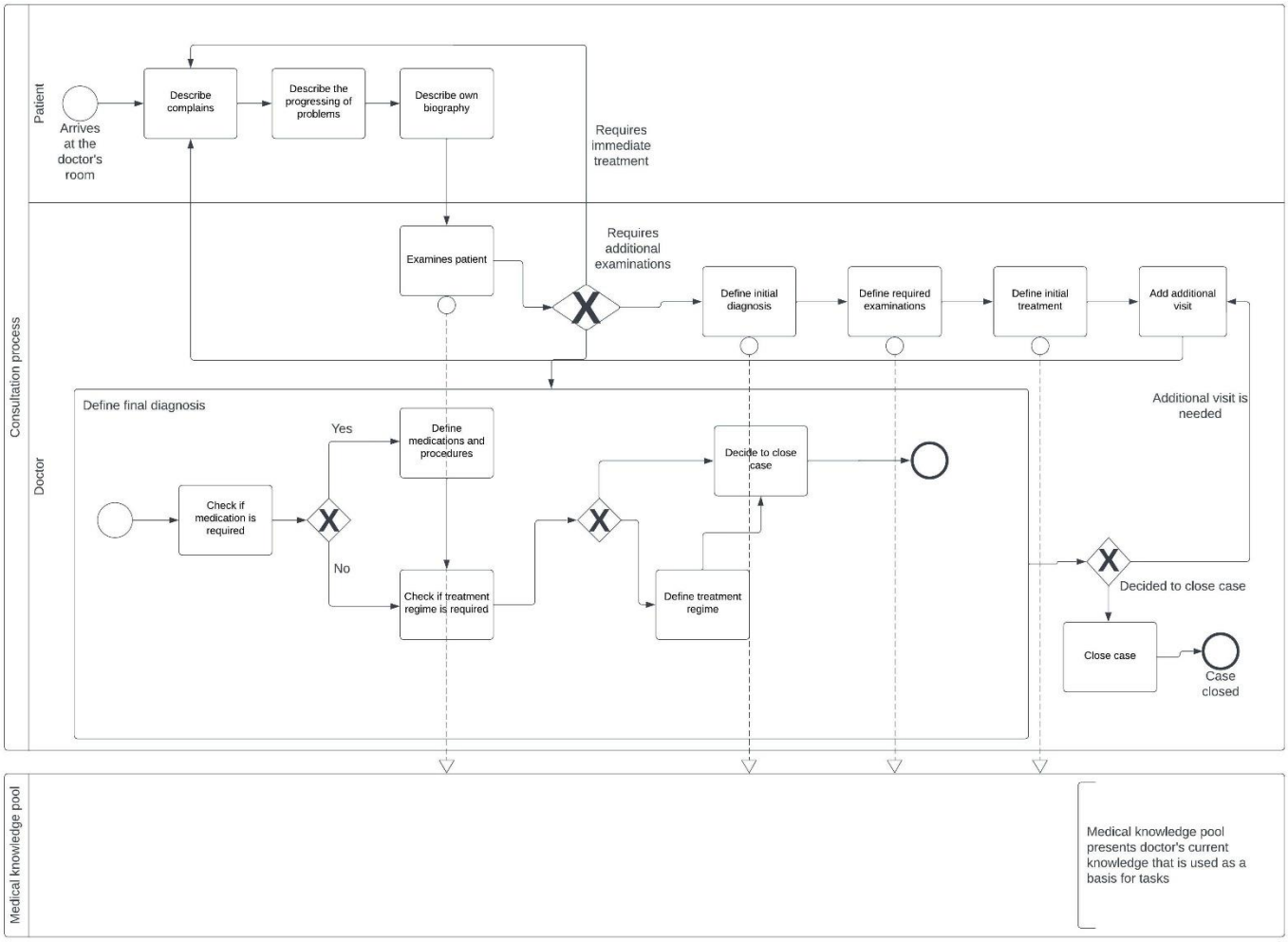
**UC_26 – US_26 –** Cancel appointment

## *4.2 Behavioral Diagrams*

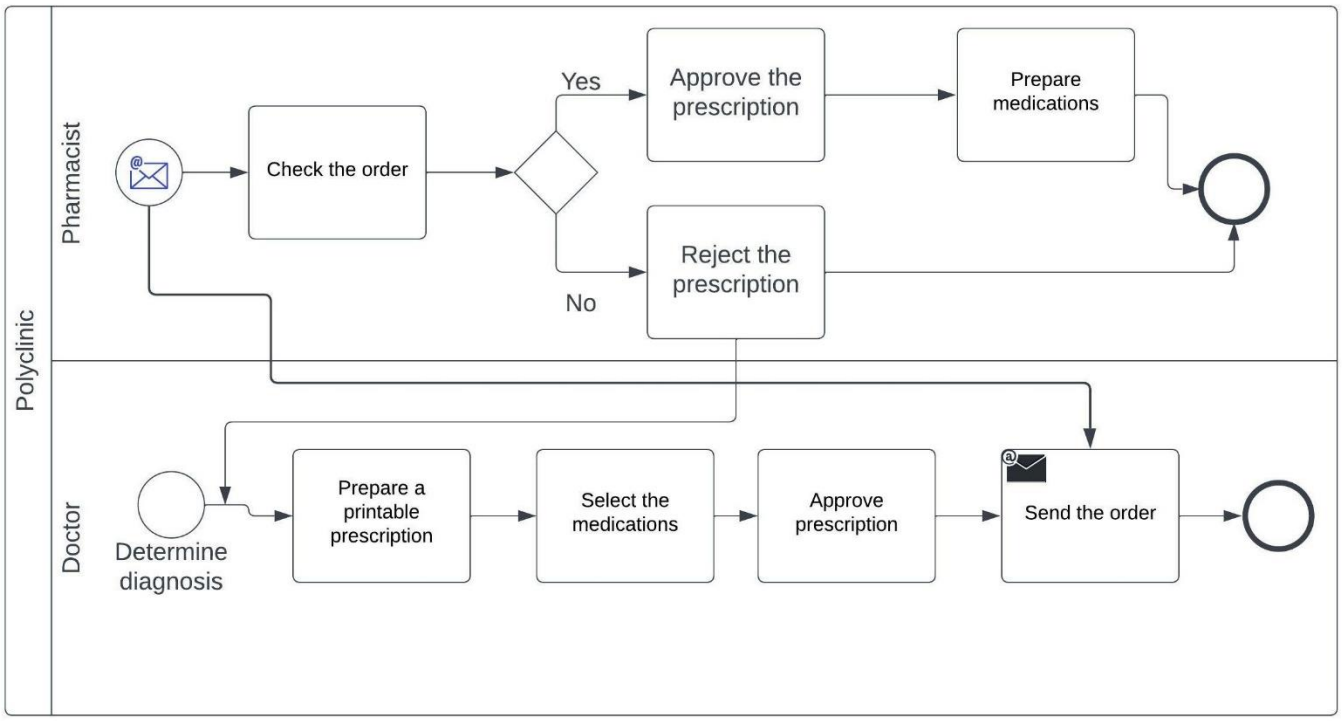
### 4.2.1 BPMN Diagrams




**BPMN_01 –** BPMN diagram 1

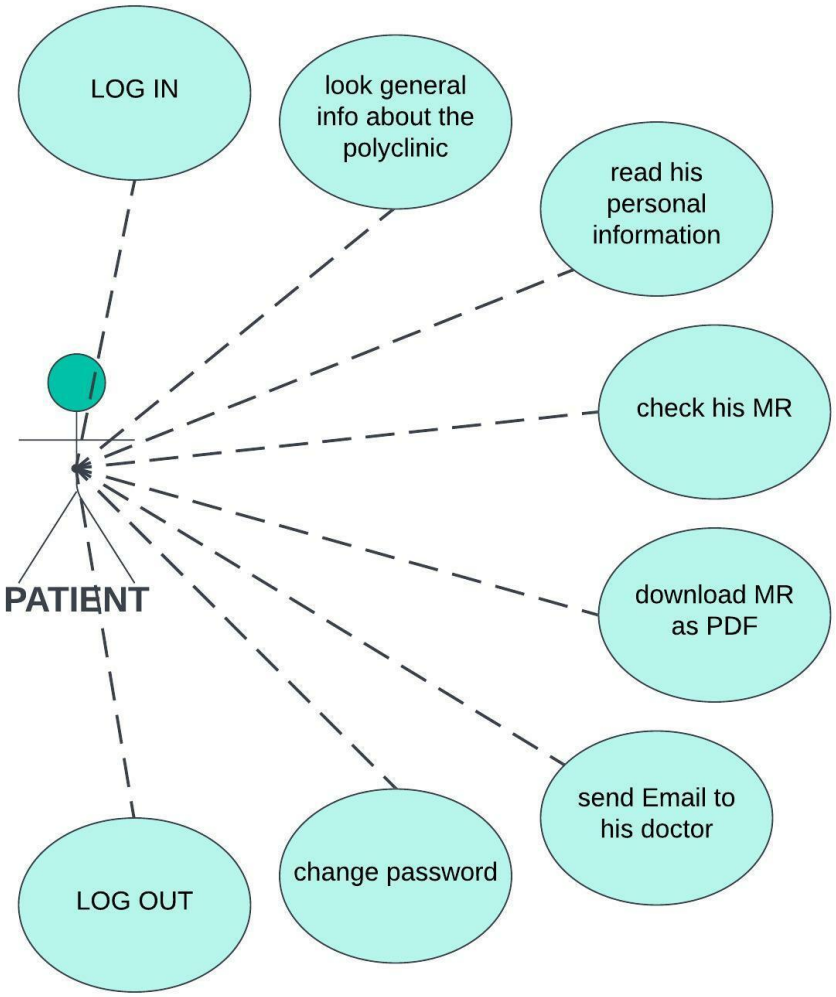



**BPMN_02 –** BPMN diagram 2

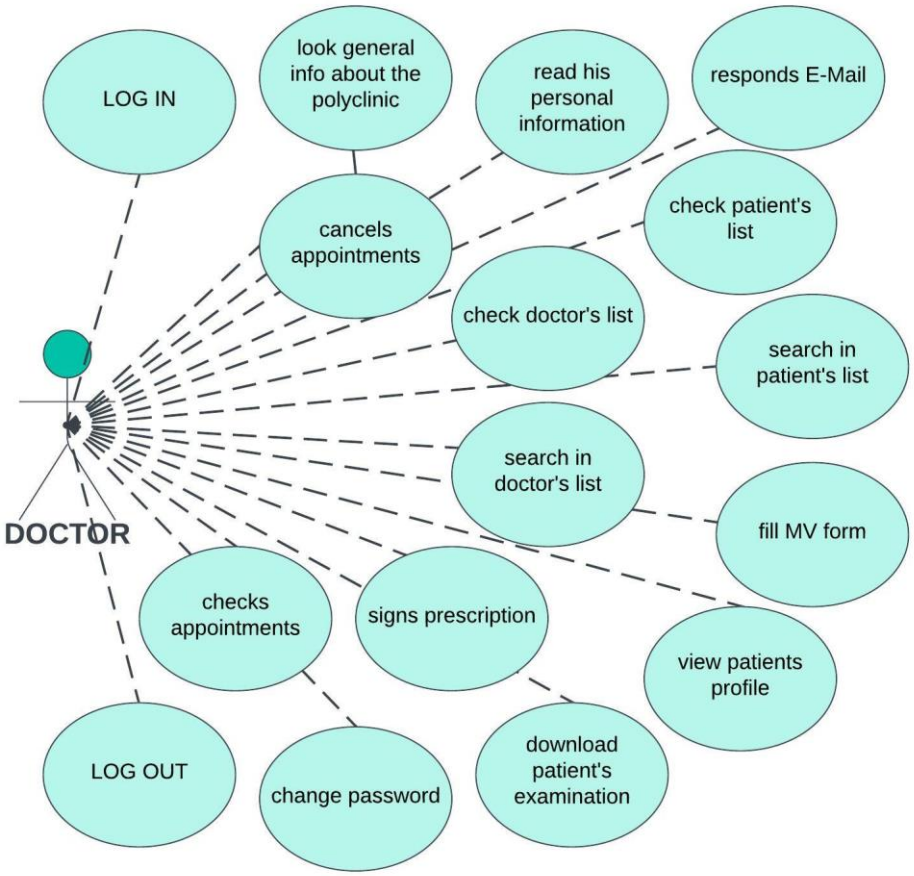



**BPMN_03 –** BPMN diagram 3

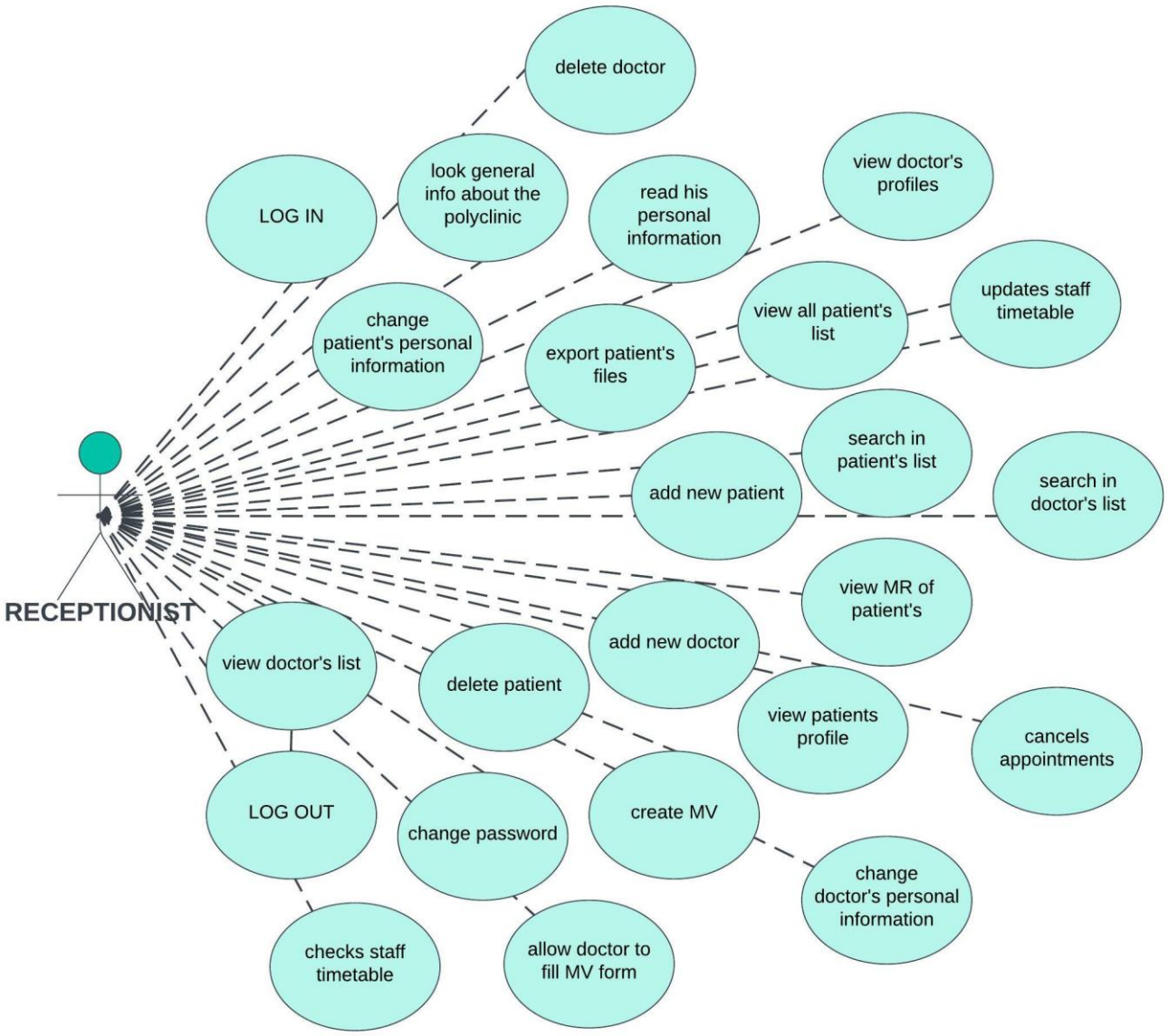
### 4.2.2 Use Case Diagrams




**UCD_01** –Patient



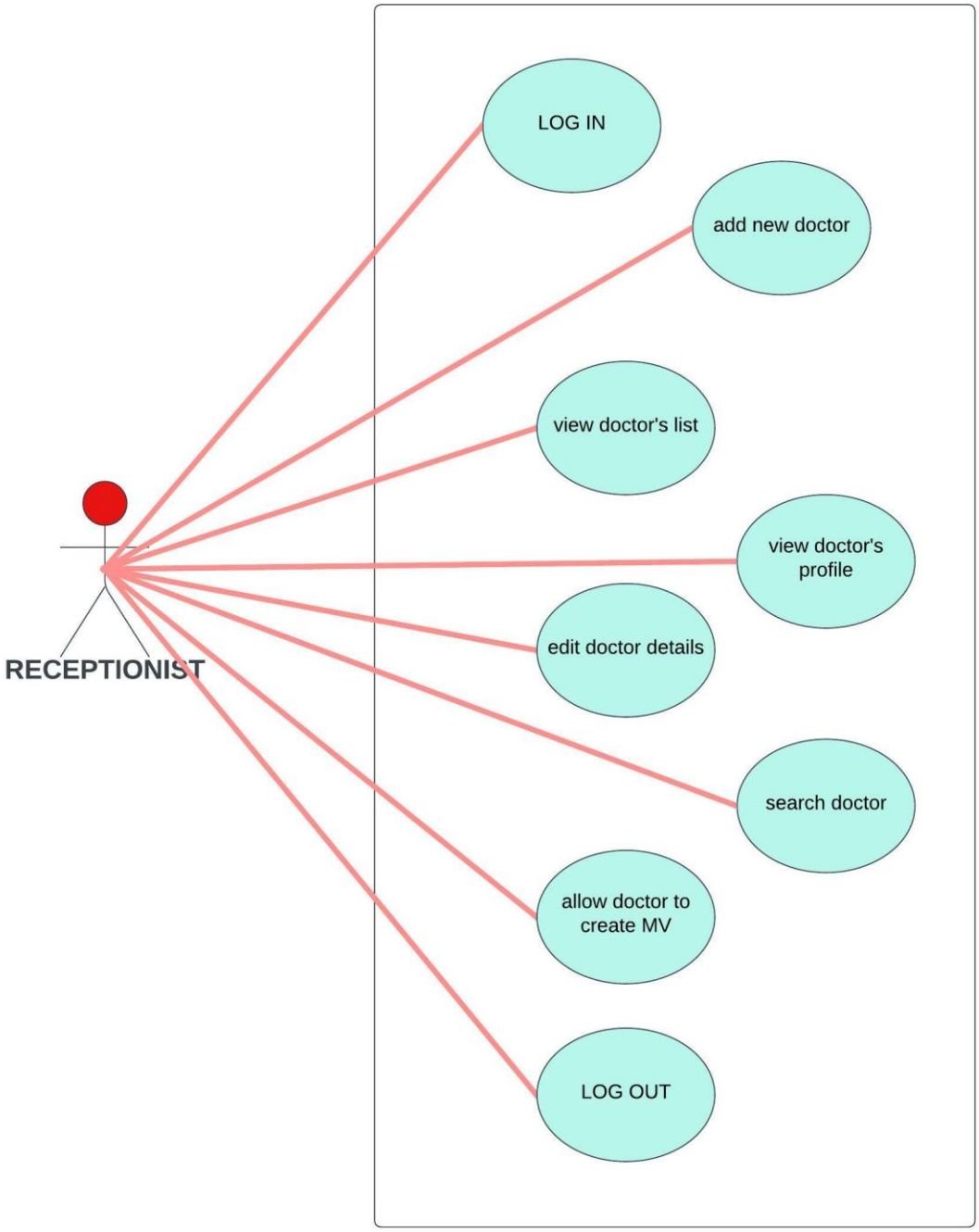

**UCD_02** –Doctor



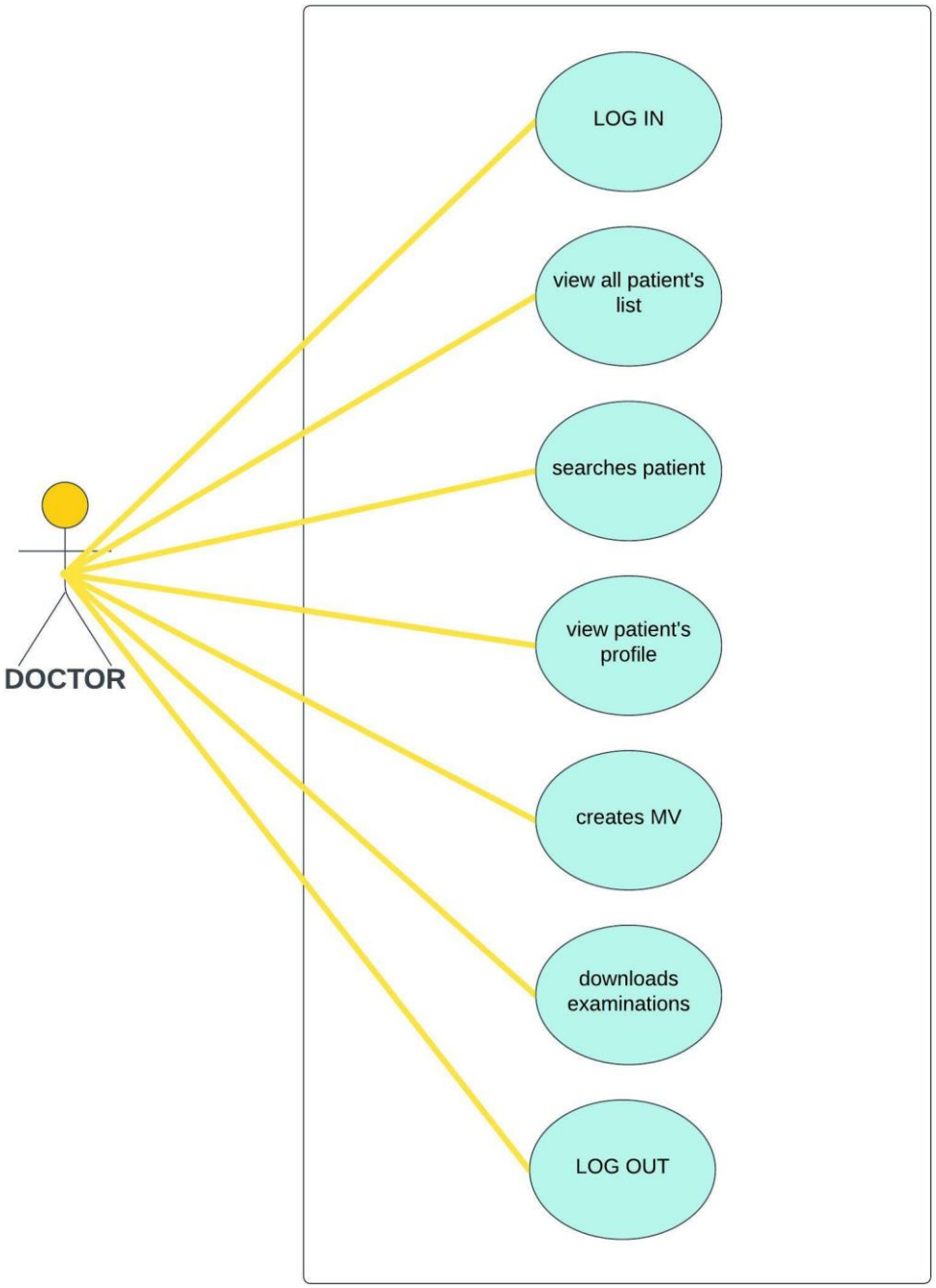

**UCD_03 –**Receptionist


**UCD_04** –Basic Operations

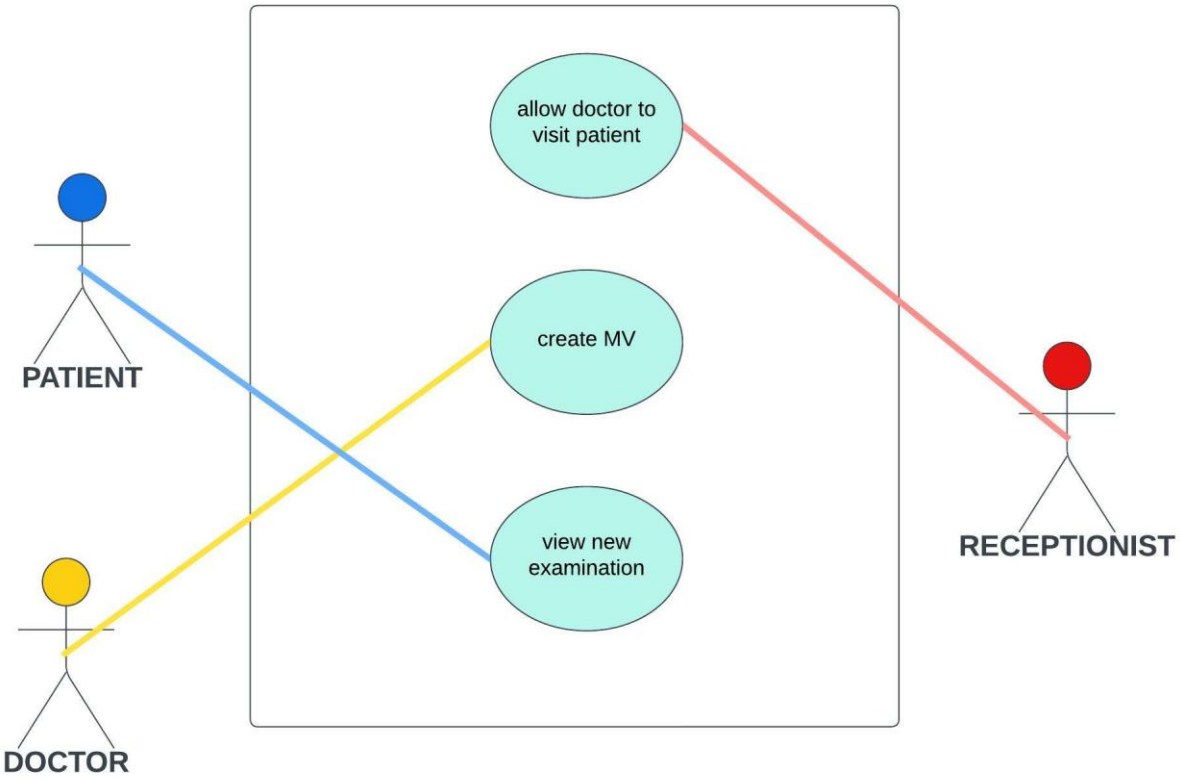

**UCD_05–** Relationship
between receptionist and patient



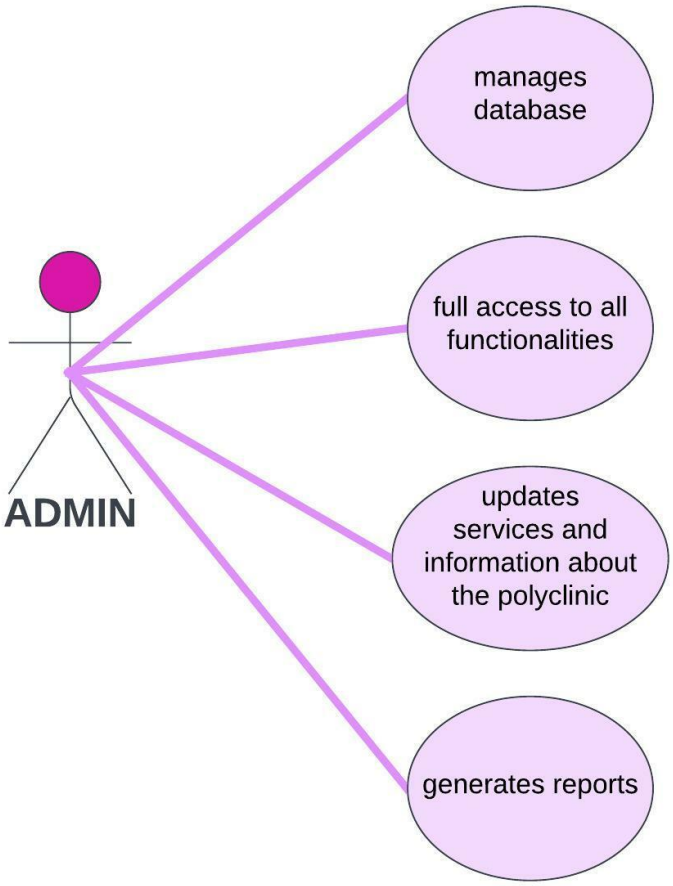

**UCD_06 –** Relationship between receptionist and doctor




**UCD_07 –** Relationship between doctor and patient

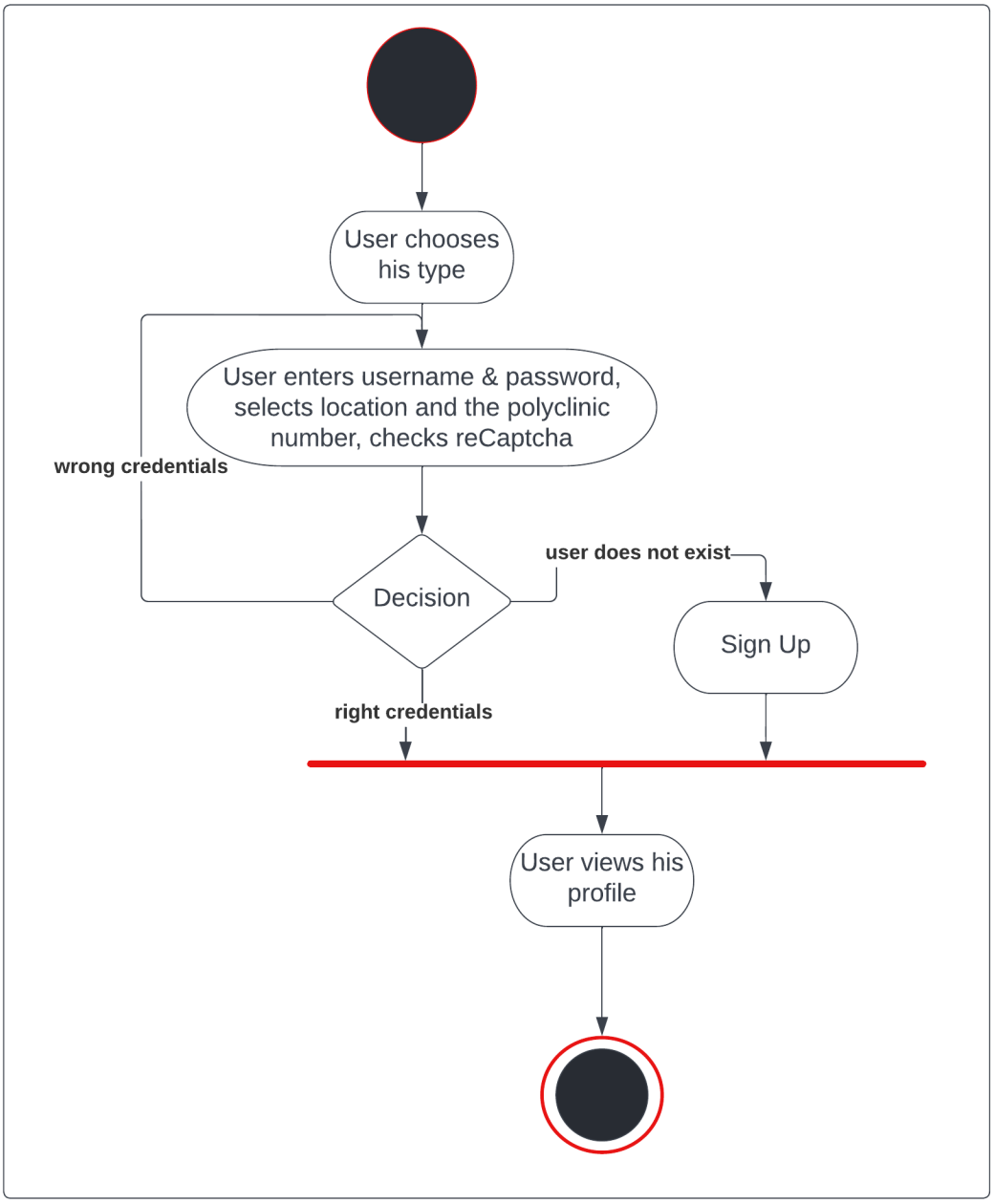



**UCD_08 –** Create visit

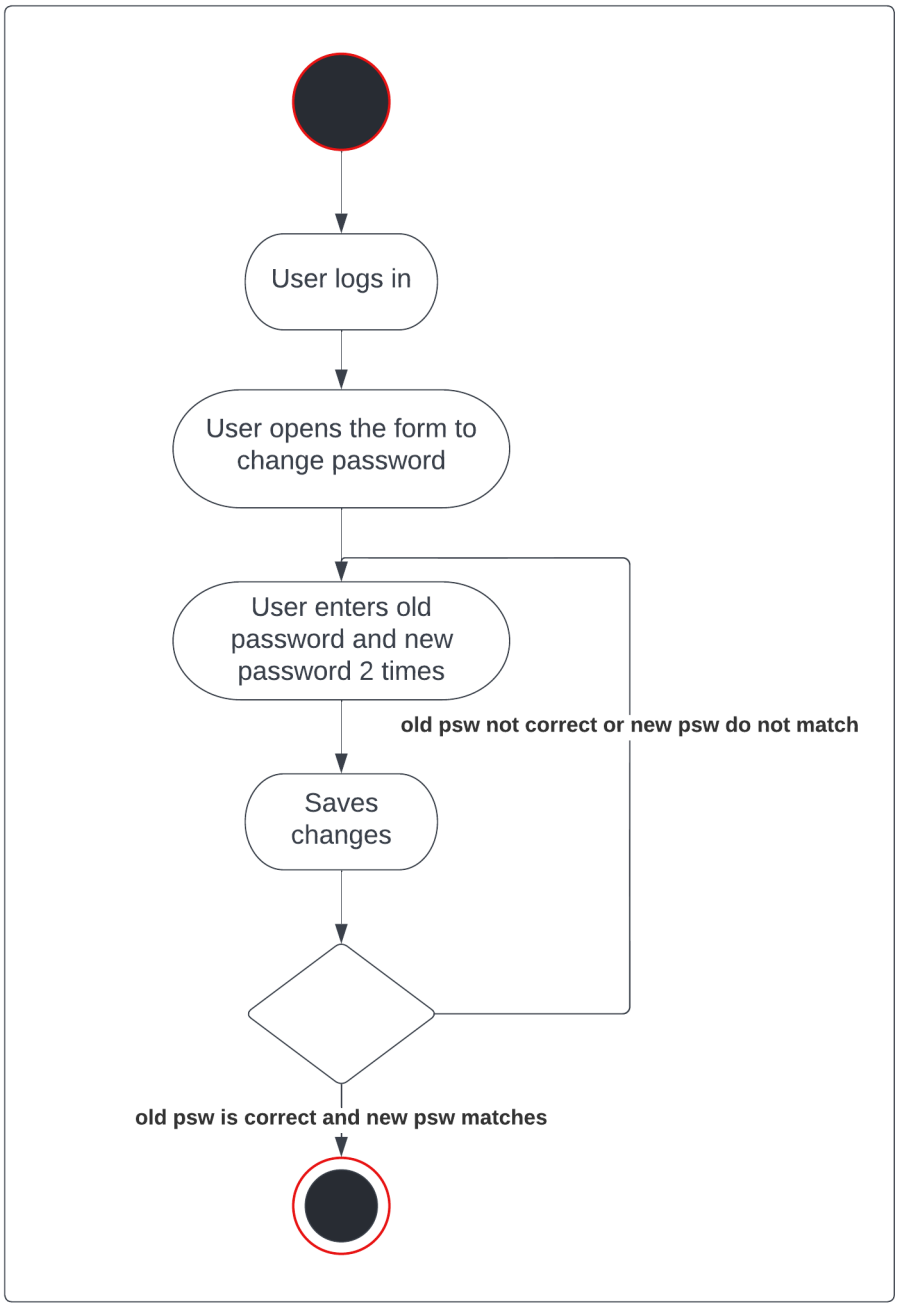

manages database
full access to all functionalities
updates services and information about the polyclinic
generates reports
ADMIN

**UCD_09 –** ADMIN

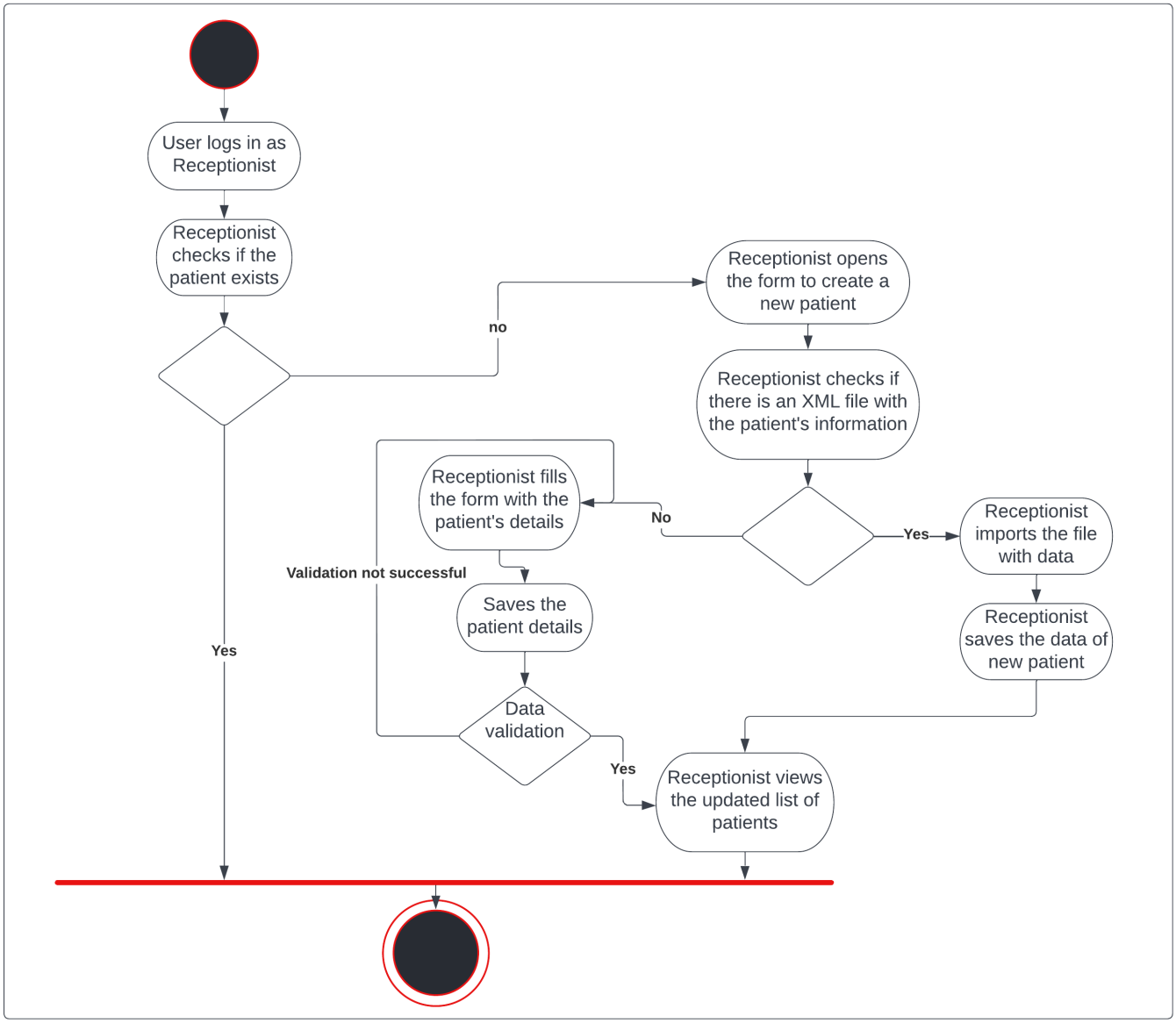
### 4.2.3 Activity Diagrams



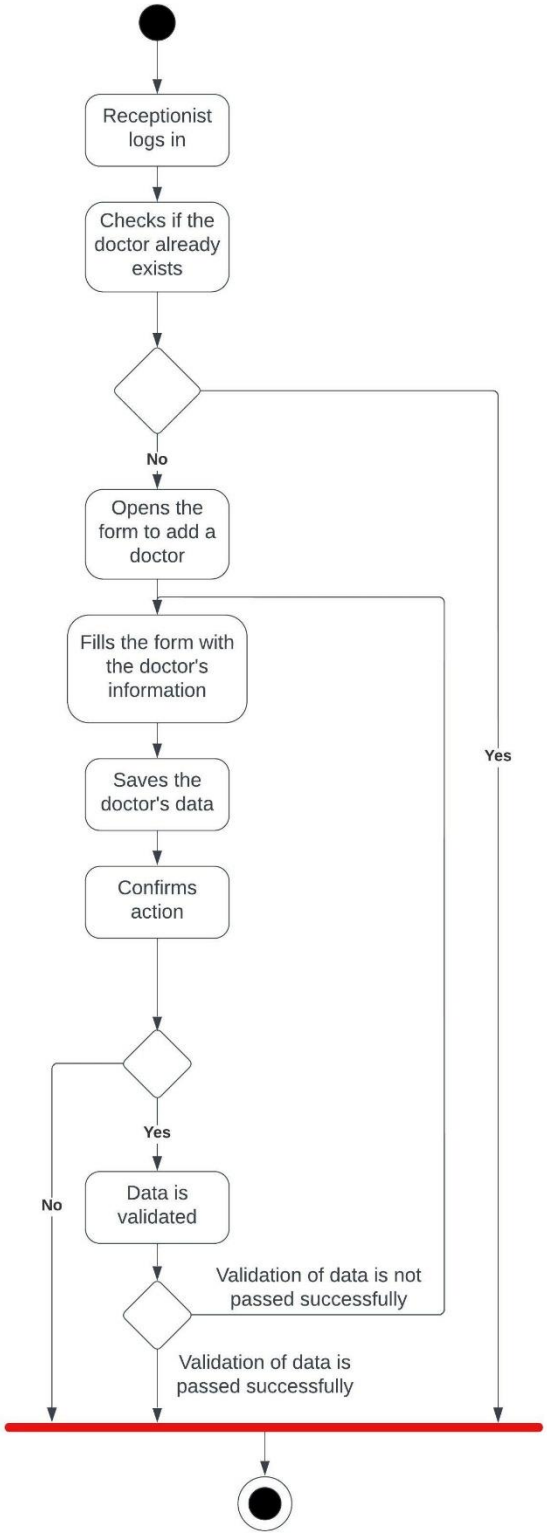

**AD_01** –User logs in



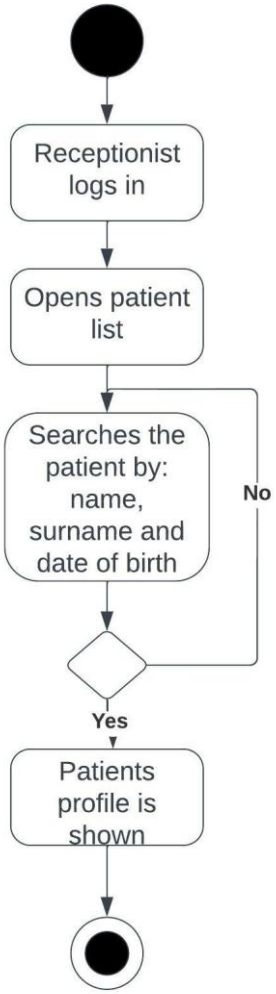

**AD_02 –**Change password



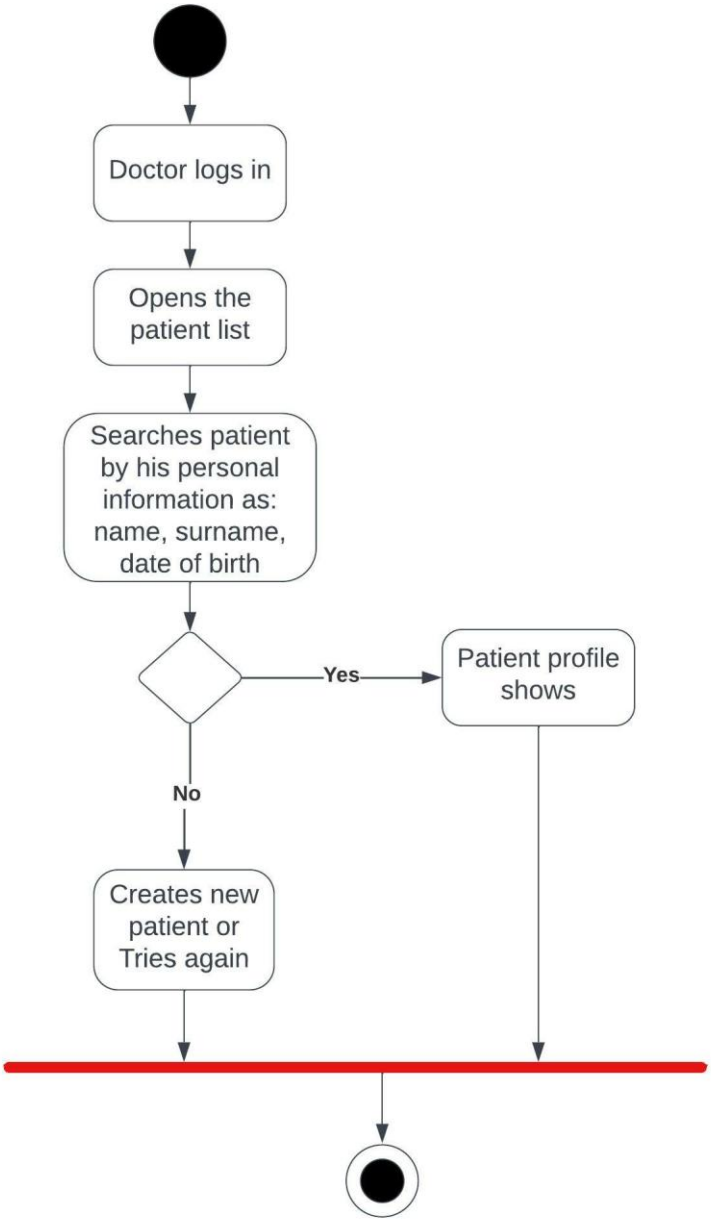

**AD_03 –**Add new patient



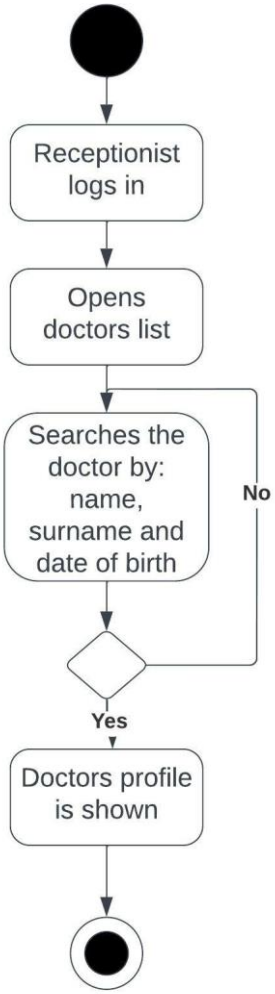

**AD_04 –**Add new doctor



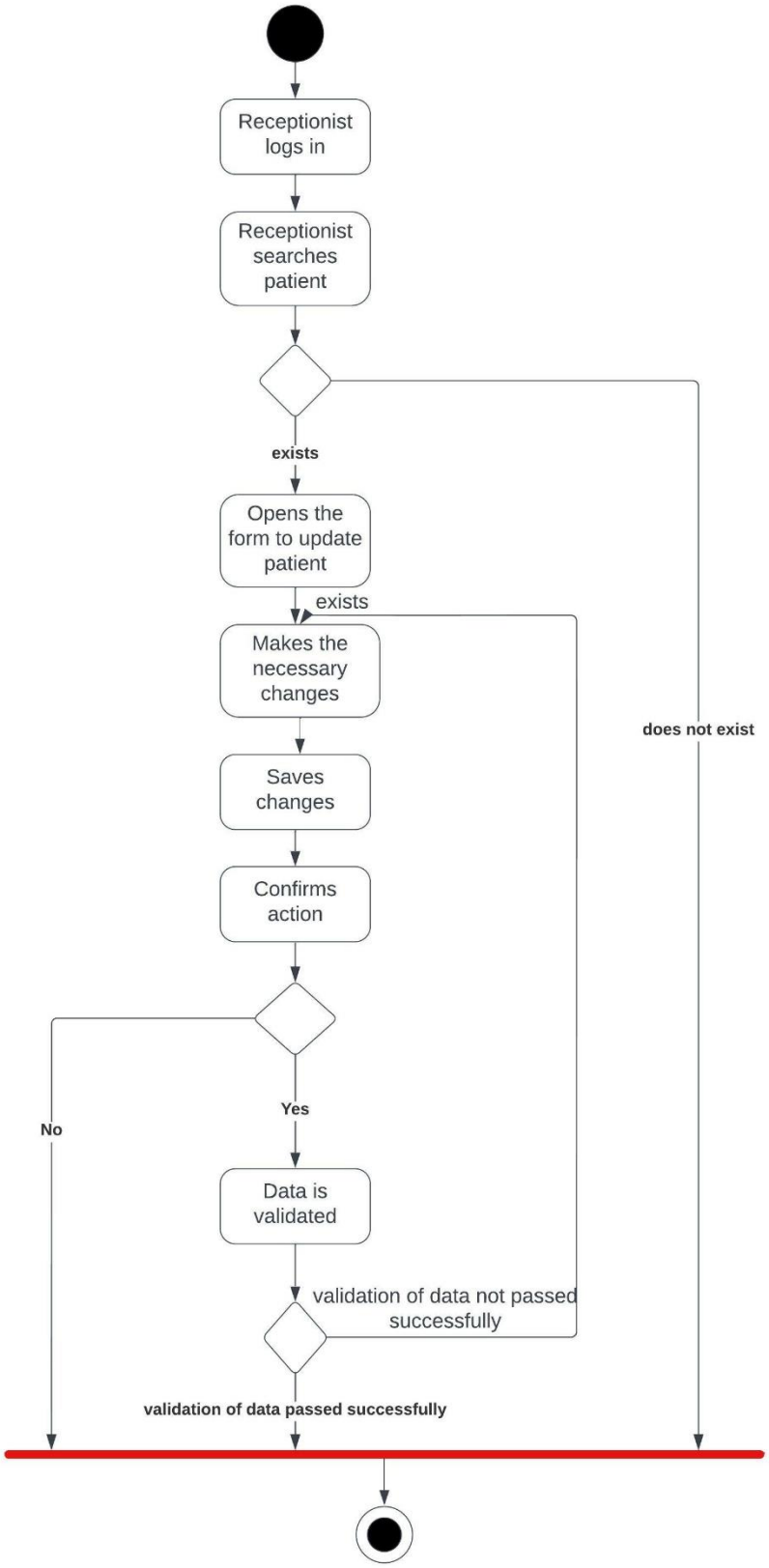

**AD_05 –**Receptionist searches patient



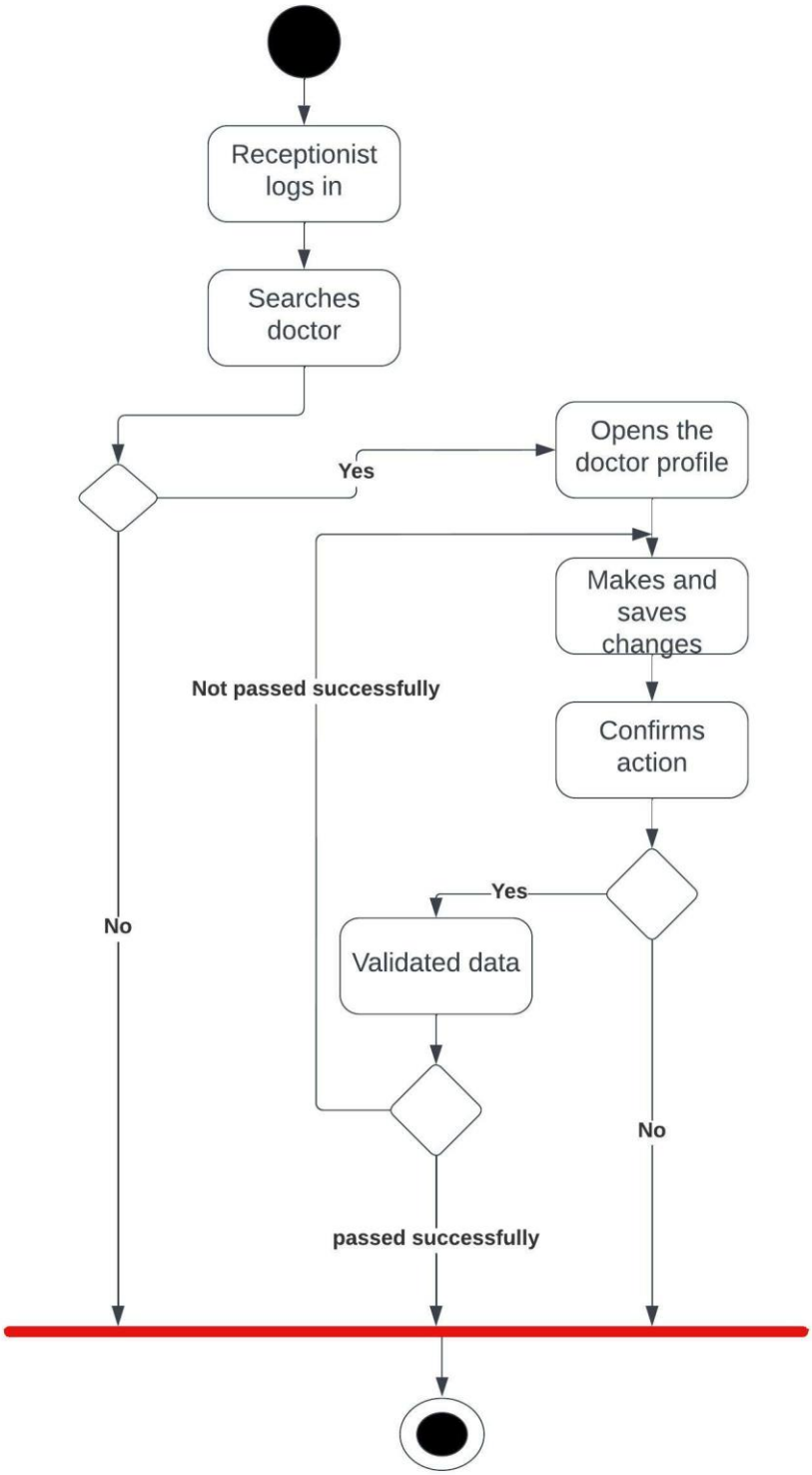

**AD_06 –**Doctor searches patient



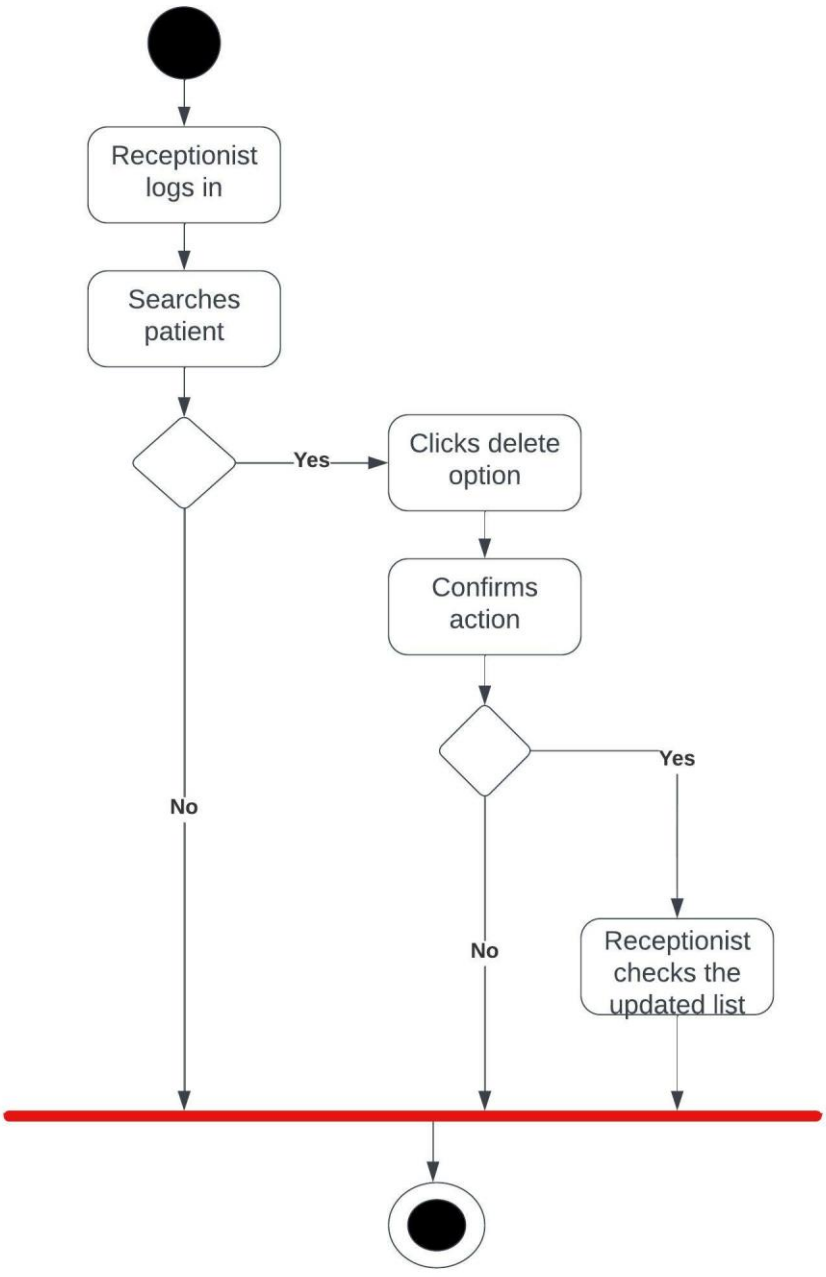

**AD_07 –**Receptionist searches doctor



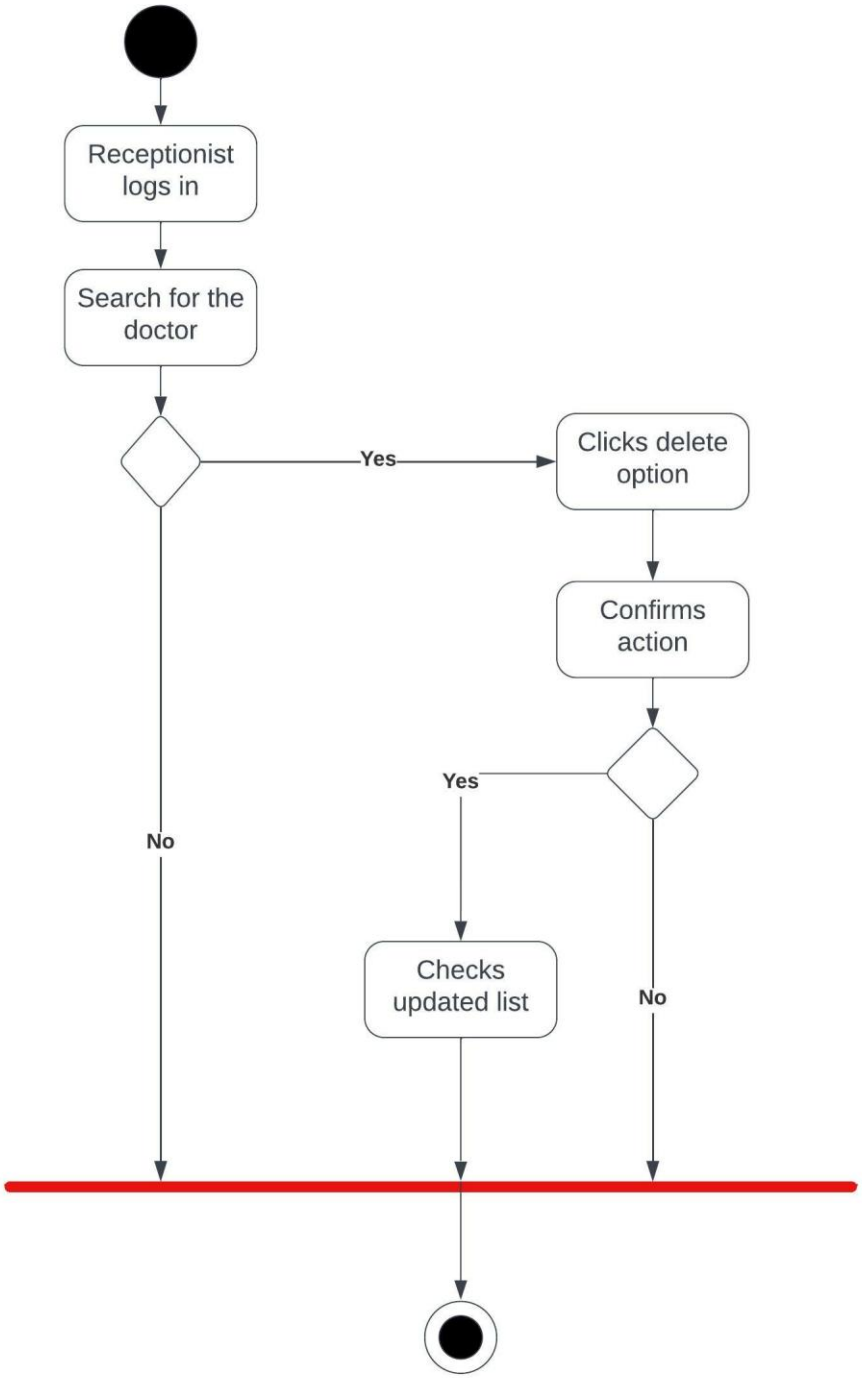

**AD_08** –Update patient



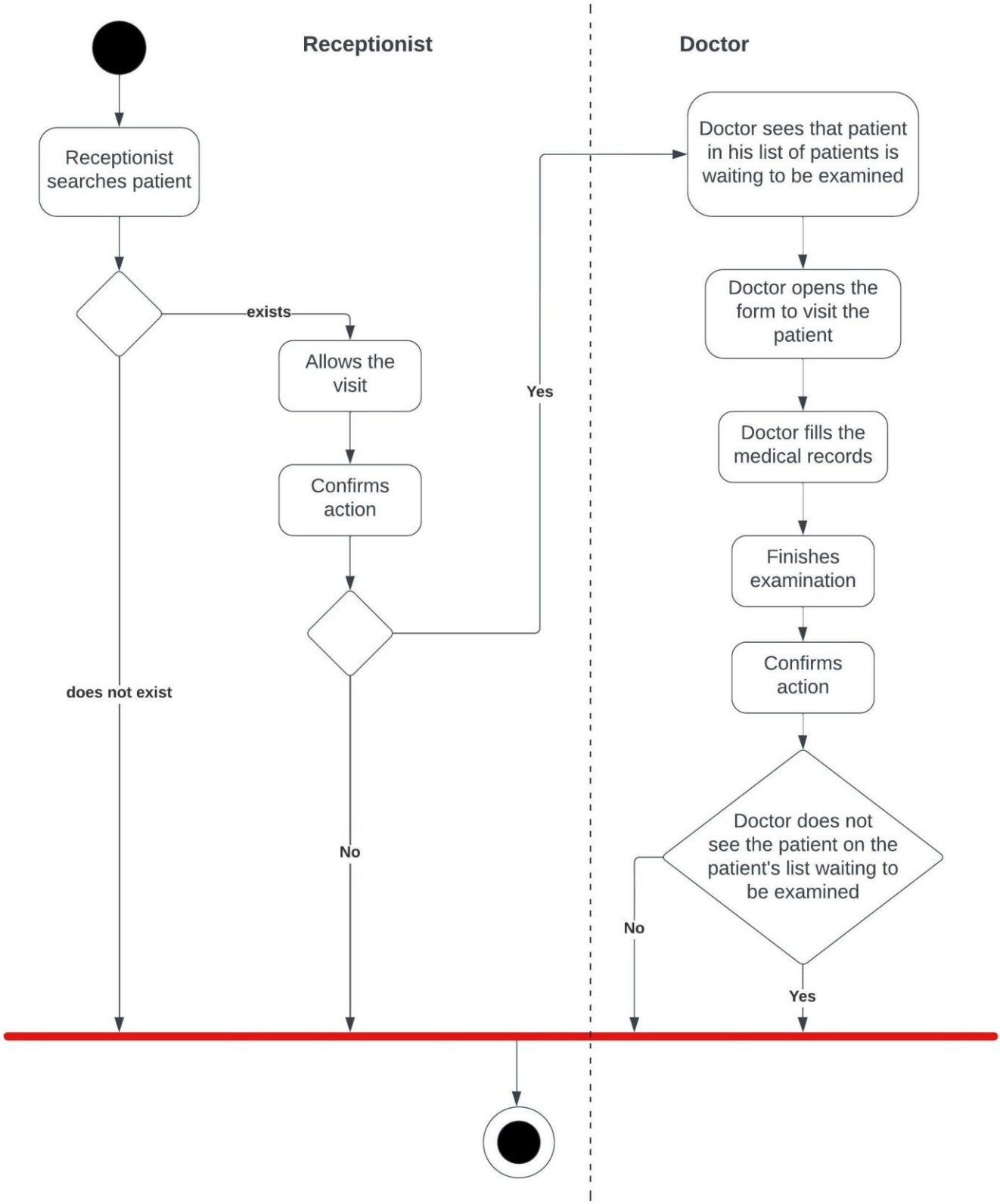

**AD_09** –Update doctor



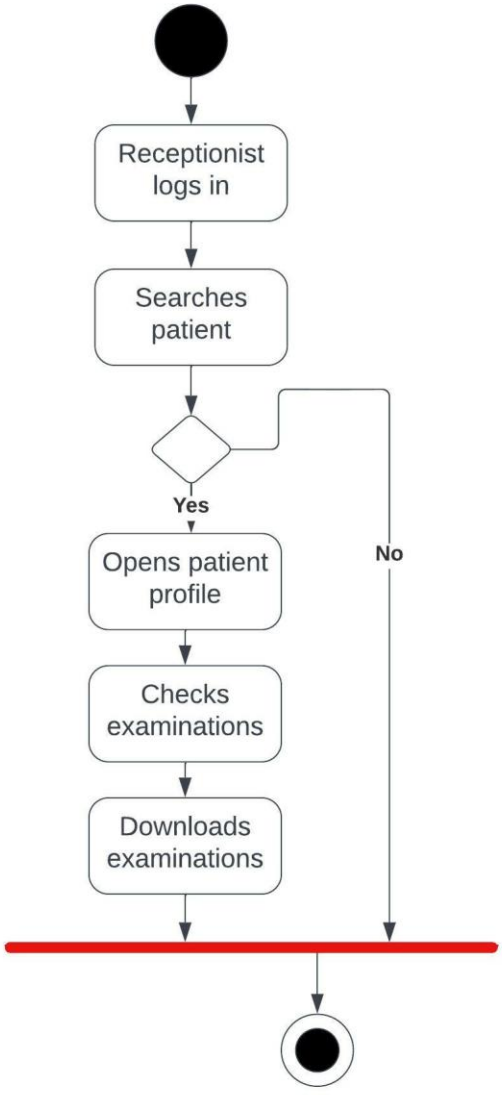

**AD_10 –**Delete patient



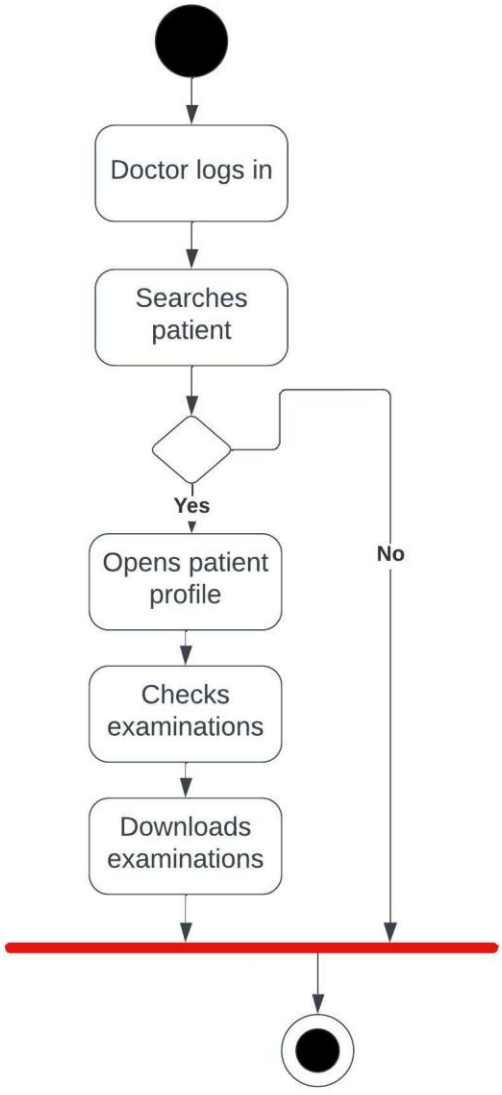

**AD_11**–Delete doctor



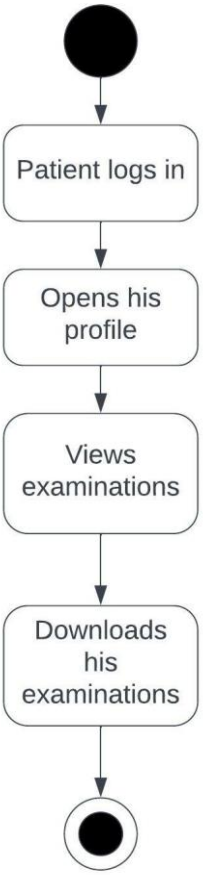

**AD_12 –**Create visit



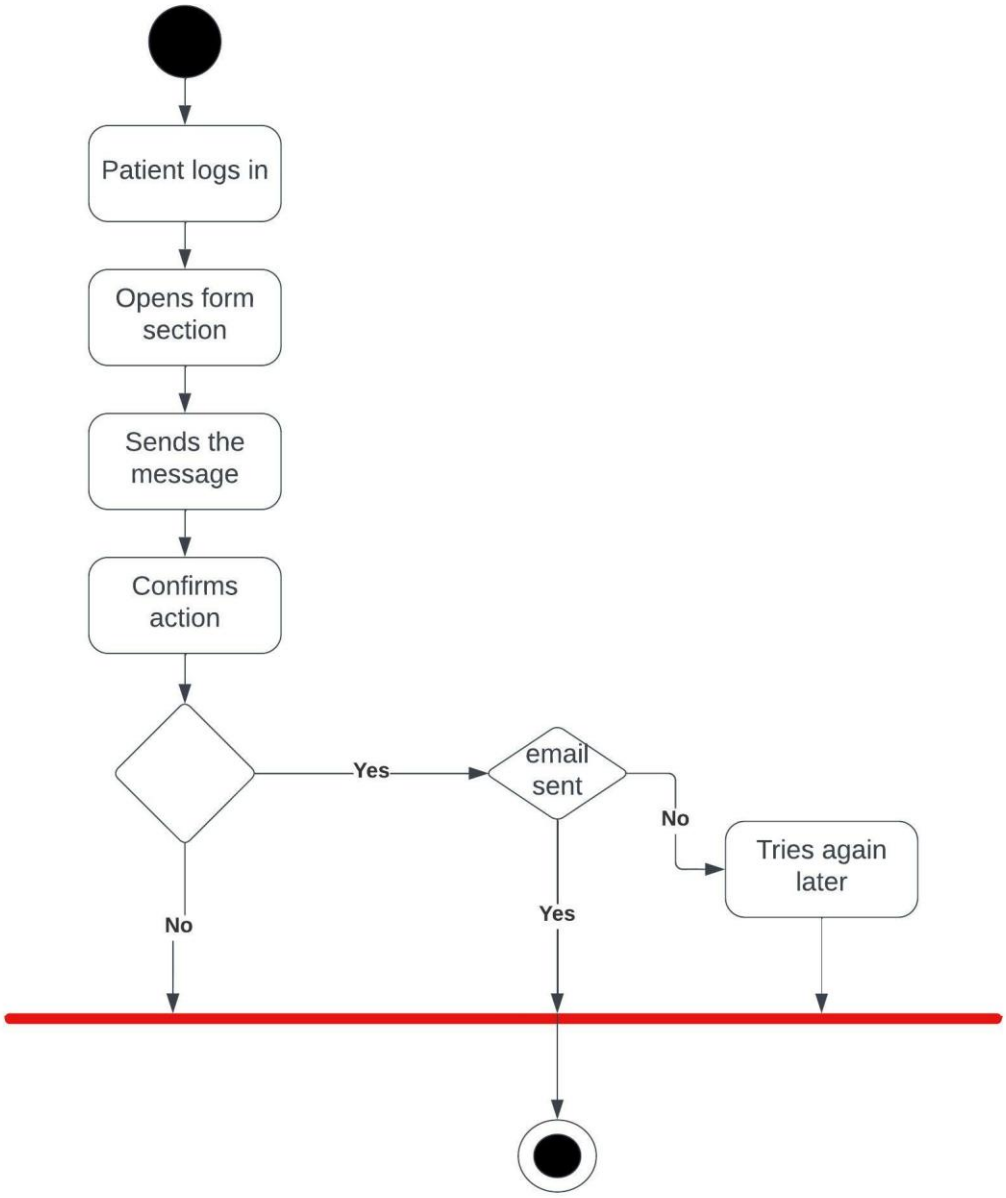

**AD_13 –**Receptionist downloads patient's examinations




**AD_14 –**Doctor downloads patient's examinations

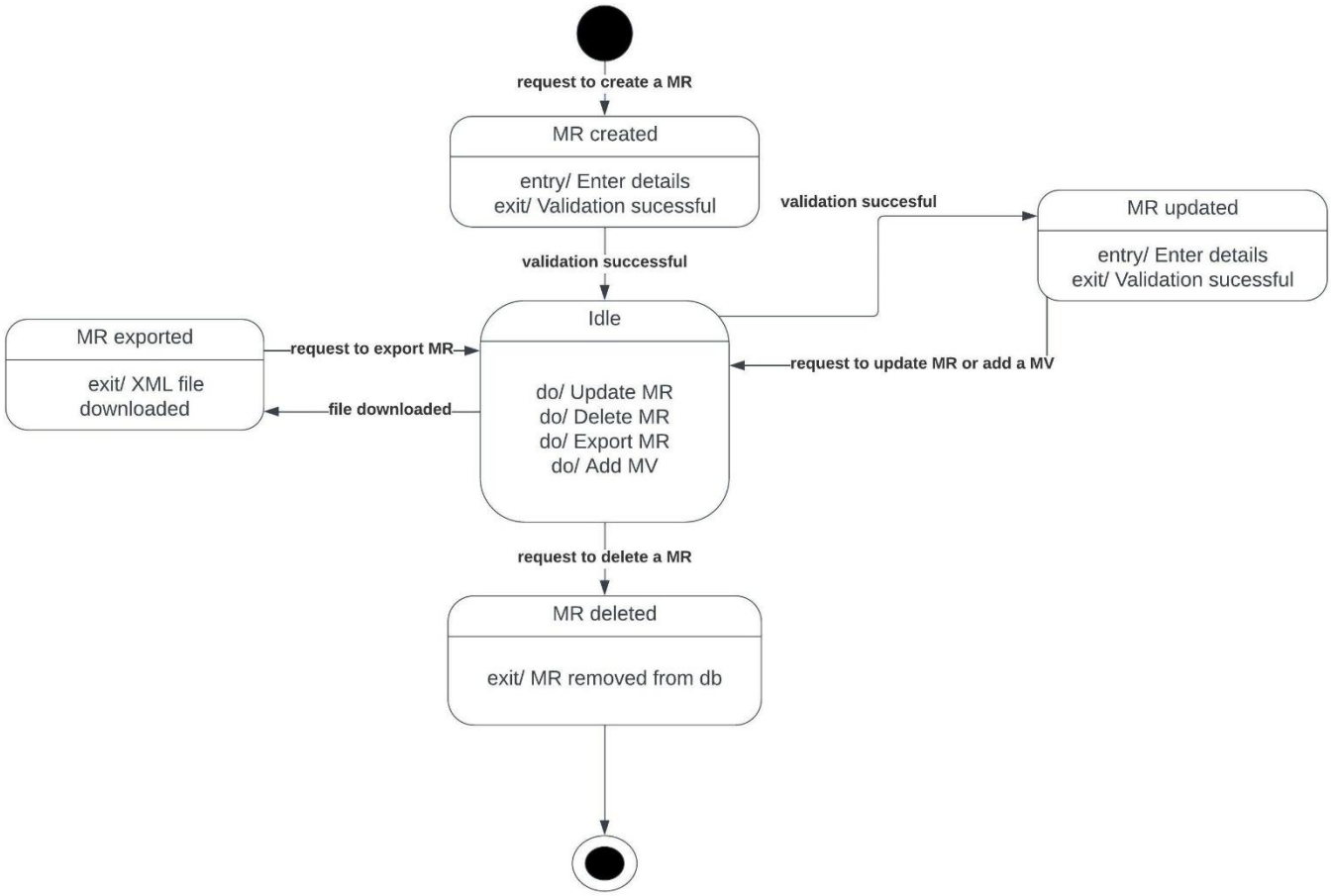



**AD_15 -** Patient downloads his examinations

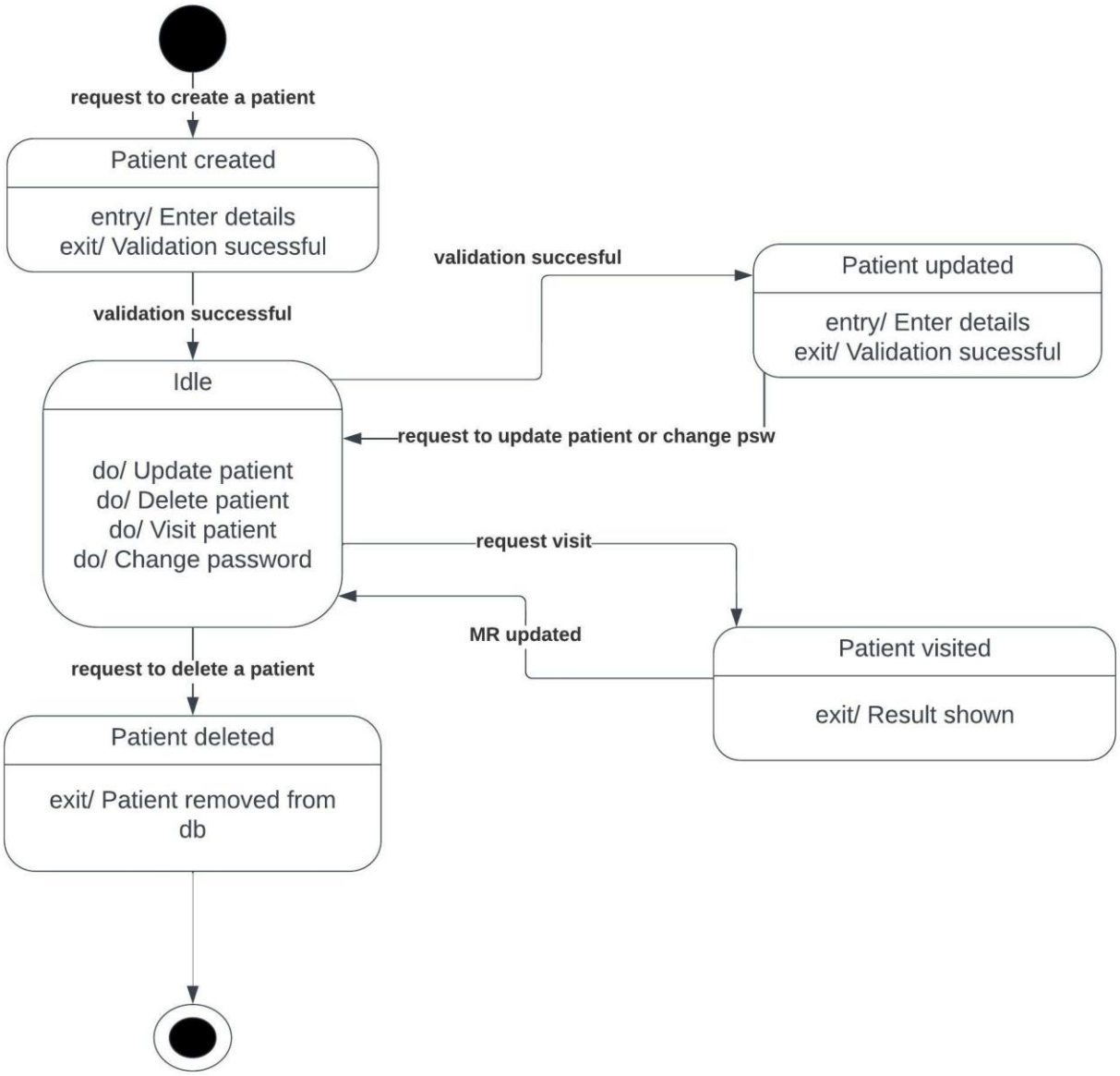



**AD_16** - Contact doctor

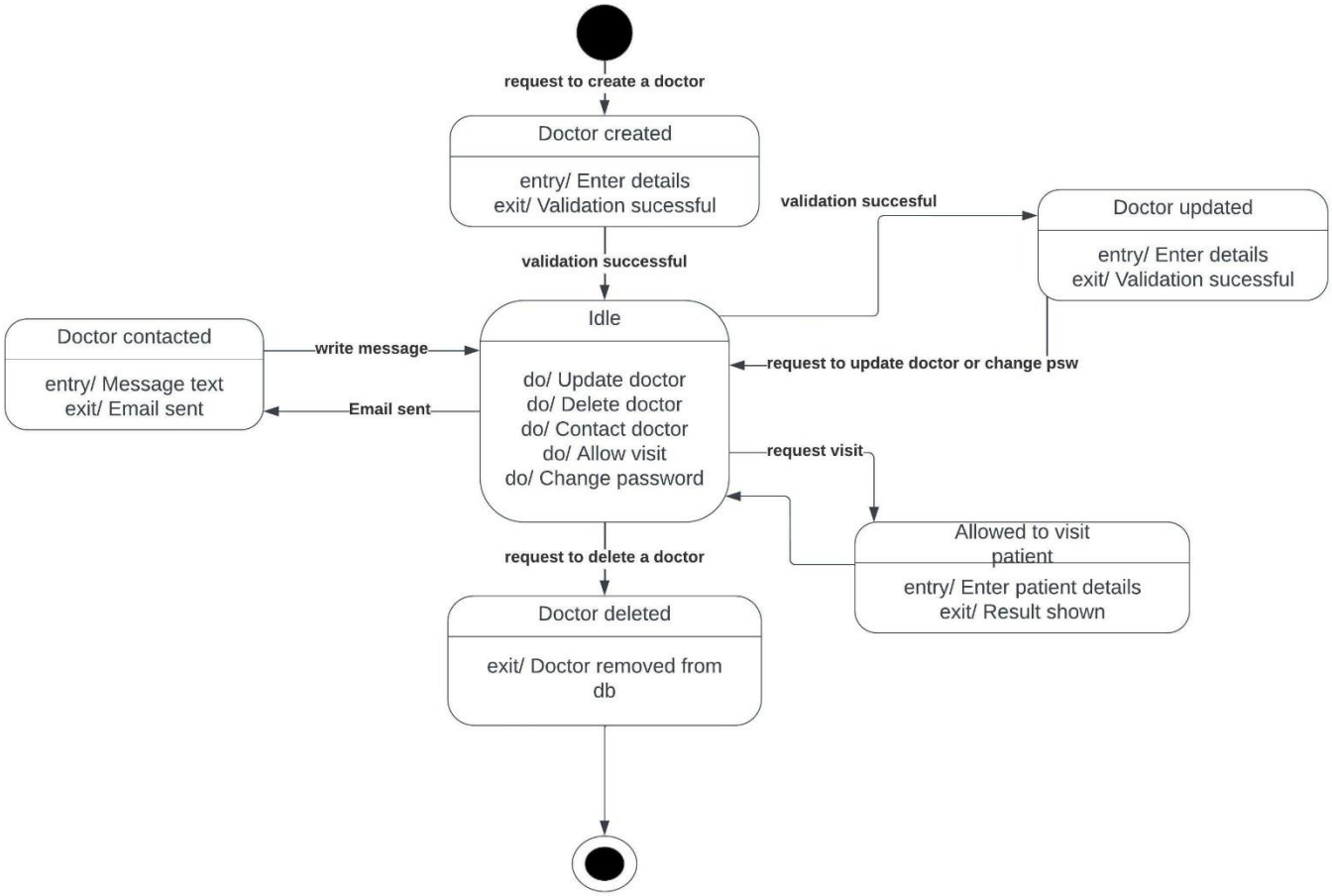
### 4.2.4 State Diagrams



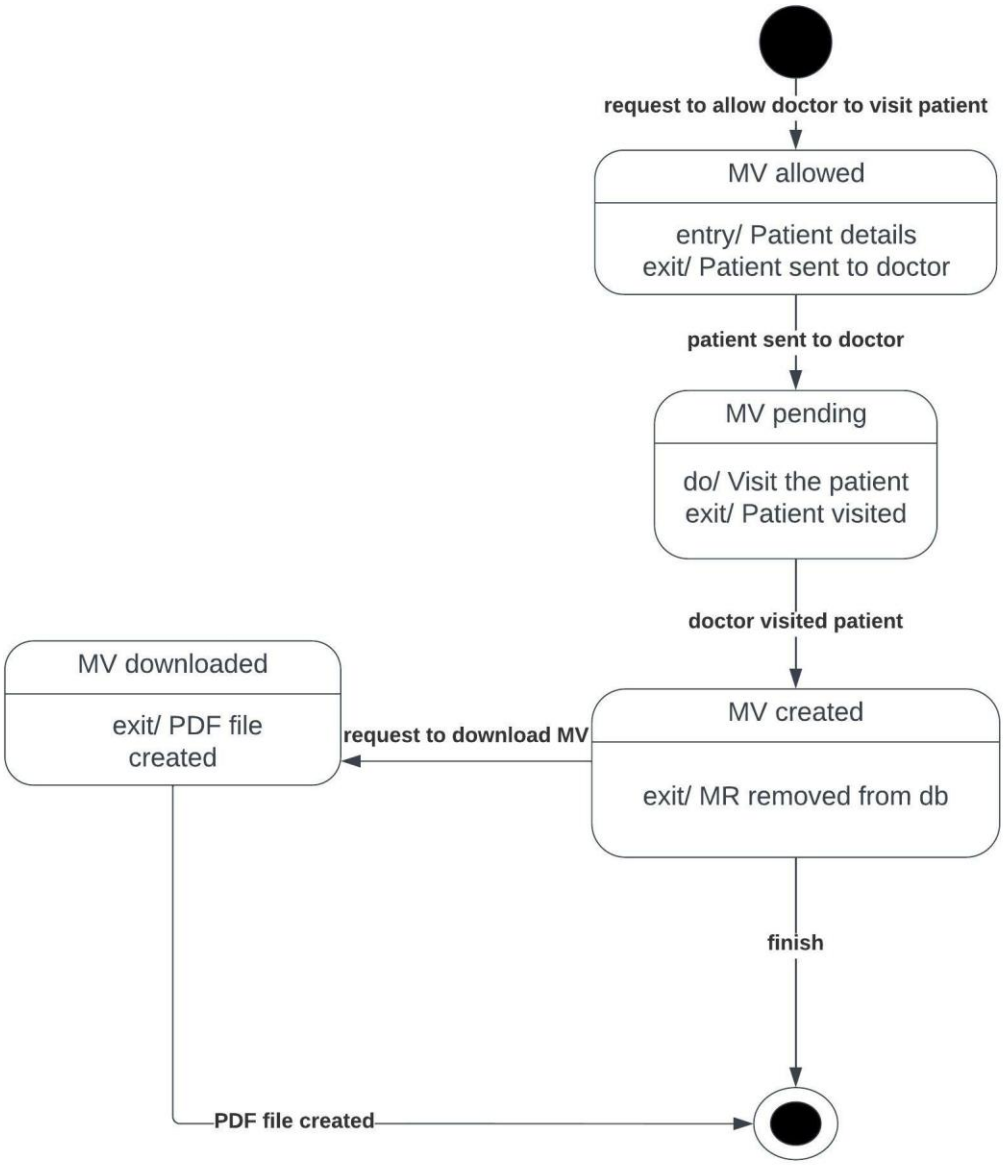

**SD_01 –** MR




**SD_02 –** Patient

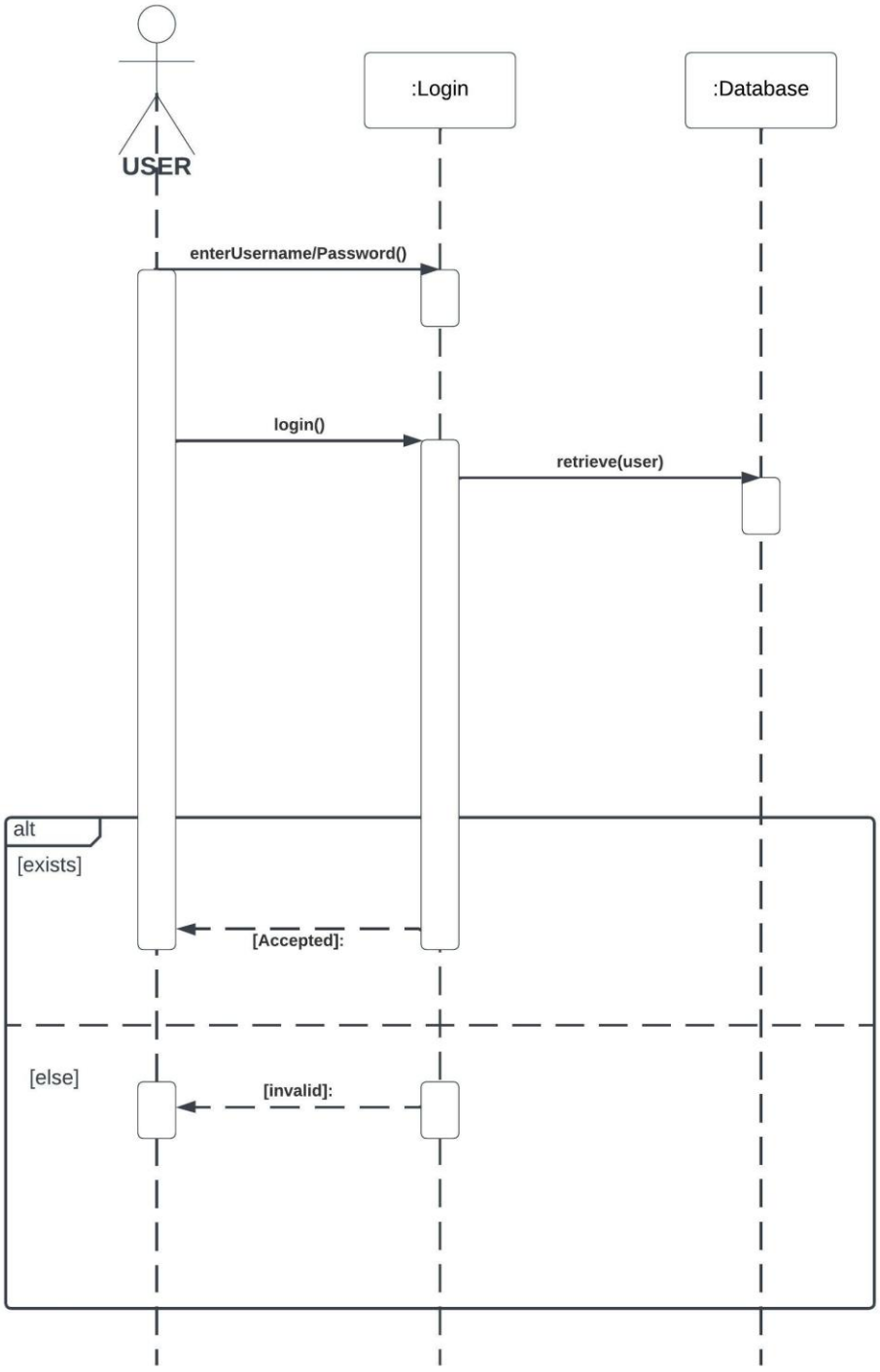

request to create a doctor
Doctor created
entry/ Enter details
exit/ Validation sucessful
validation succesful
Doctor updated
entry/ Enter details
exit/ Validation sucessful
validation successful
Idle
do/ Update doctor
do/ Delete doctor
do/ Contact doctor
do/ Allow visit
do/ Change password
request to update doctor or change psw
Doctor contacted
entry/ Message text
exit/ Email sent
write message
Email sent
request visit
Allowed to visit patient
entry/ Enter patient details
exit/ Result shown
request to delete a doctor
Doctor deleted
exit/ Doctor removed from db

**SD_03 –** Doctor

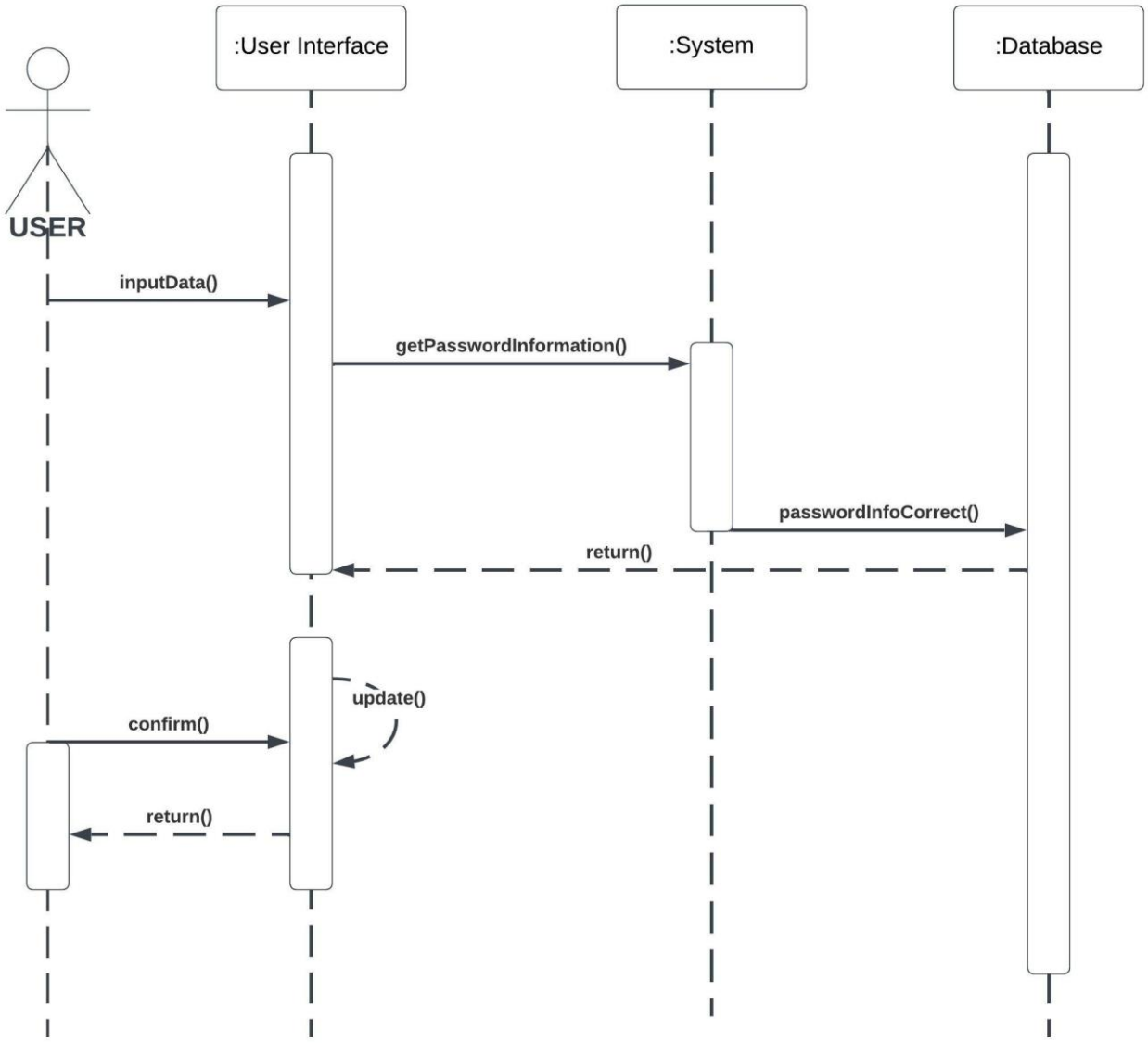

request to allow doctor to visit patient
MV allowed
entry/ Patient details
exit/ Patient sent to doctor
patient sent to doctor
MV pending
do/ Visit the patient
exit/ Patient visited
doctor visited patient
MV downloaded
exit/ PDF file created
request to download MV
MV created
exit/ MR removed from db
finish
PDF file created

**SD_04** – MV

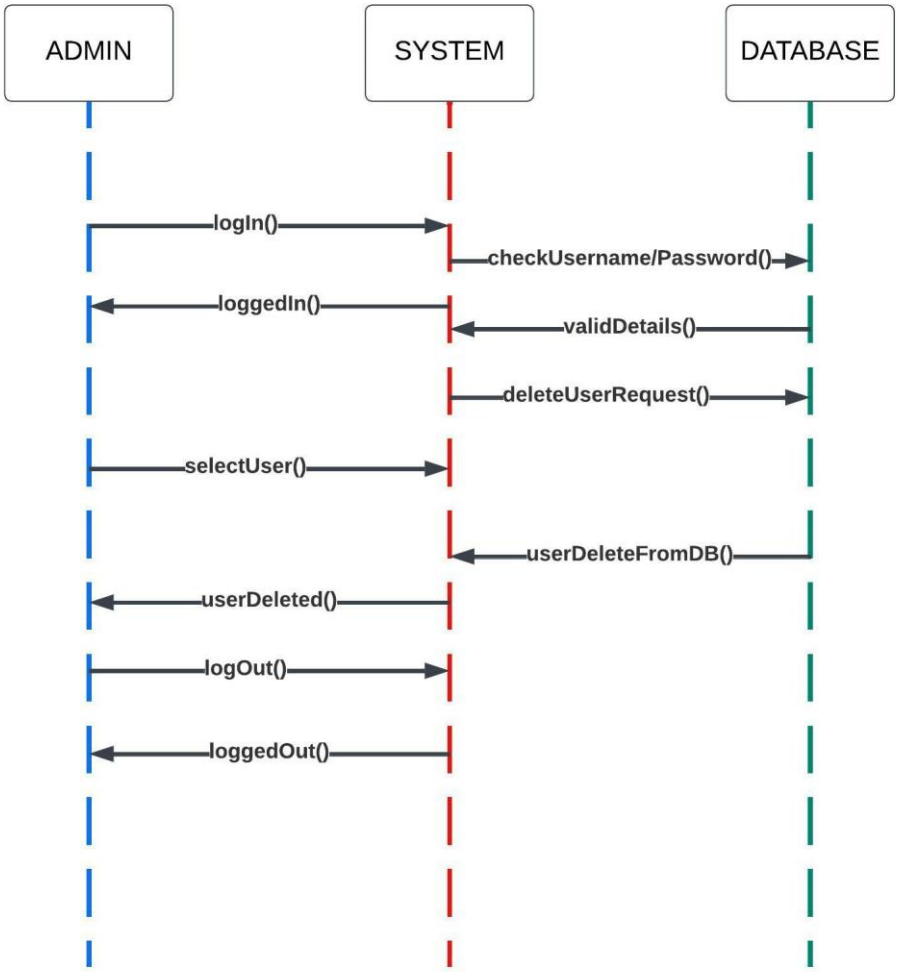
### 4.2.5 Sequence Diagrams



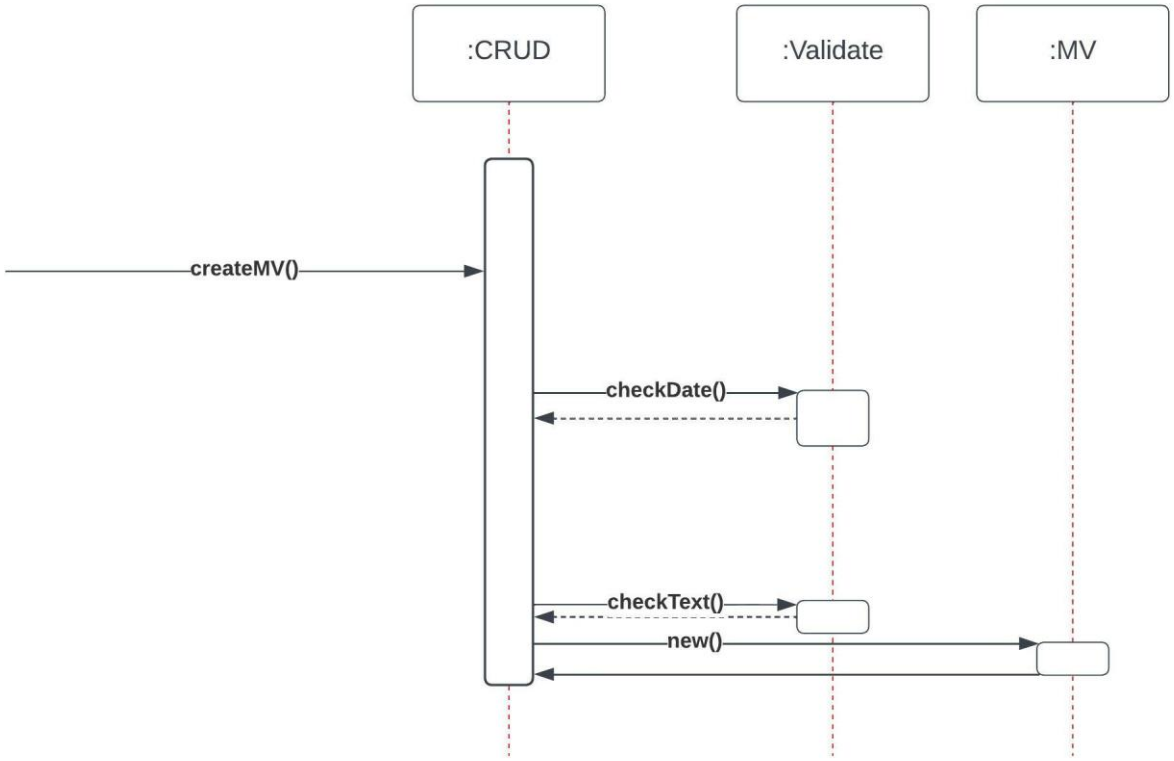

**SeqD_01**– Log In



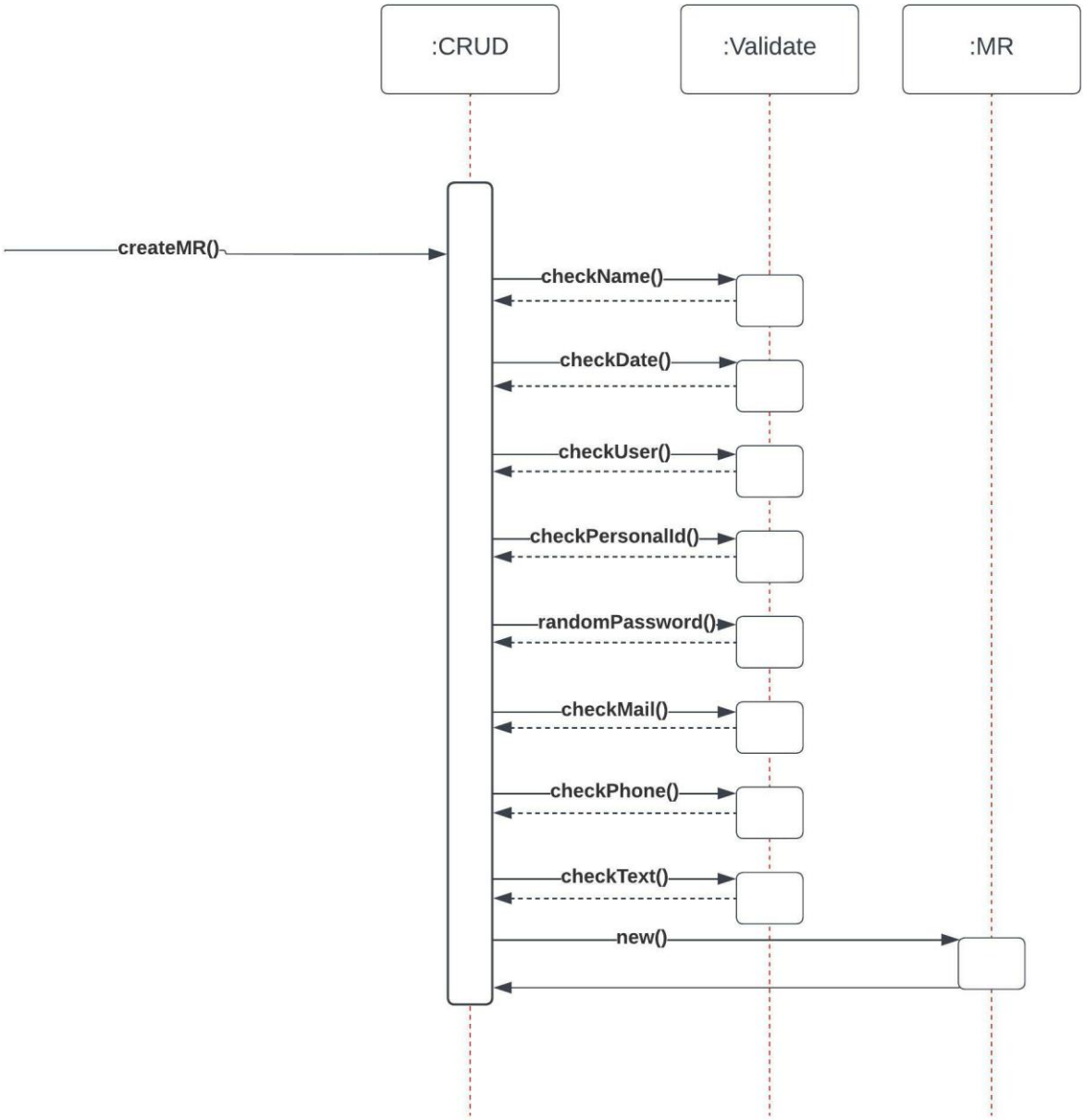

**SeqD_02–** Change Password



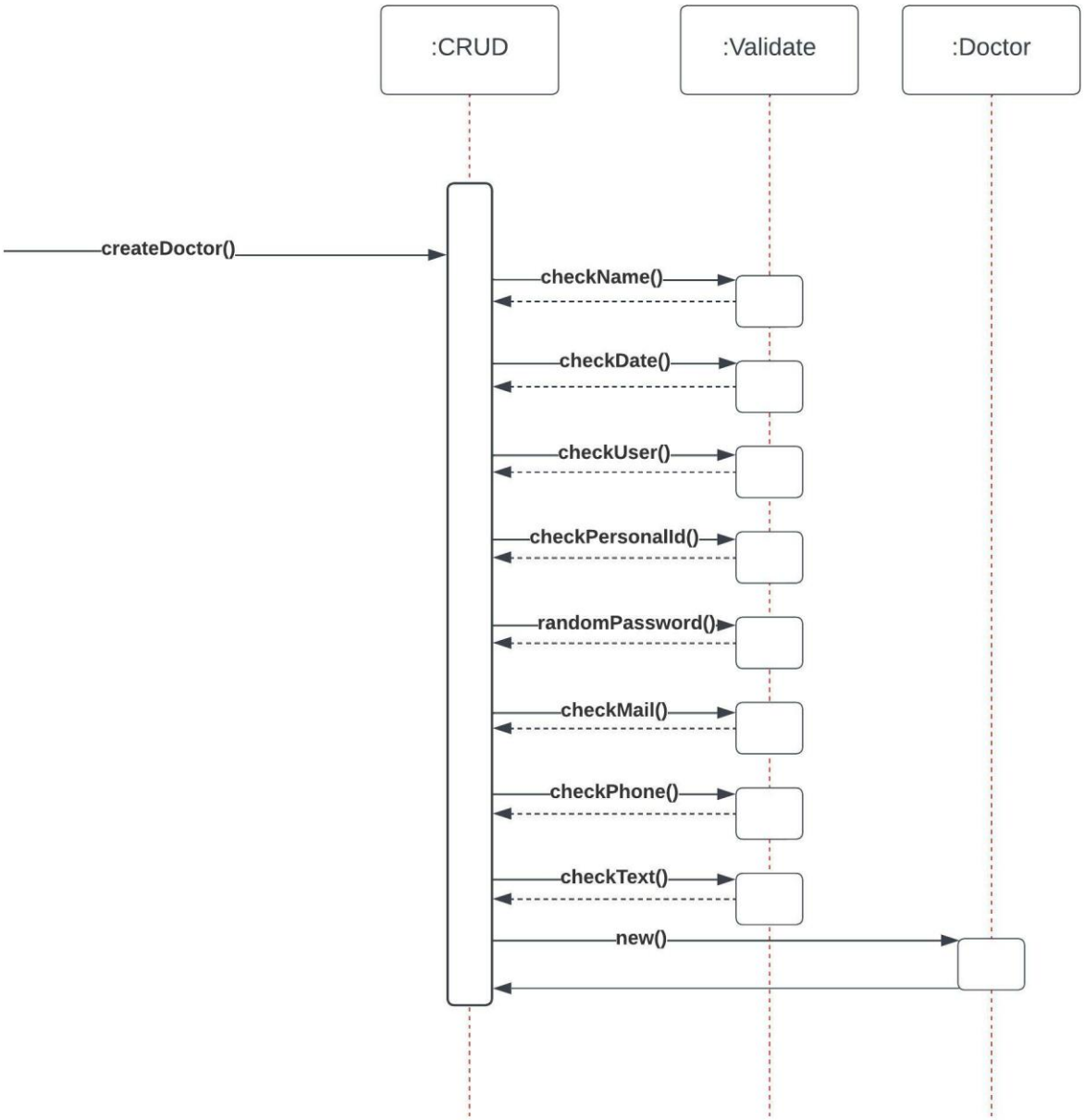

**SeqD_03–** Delete User



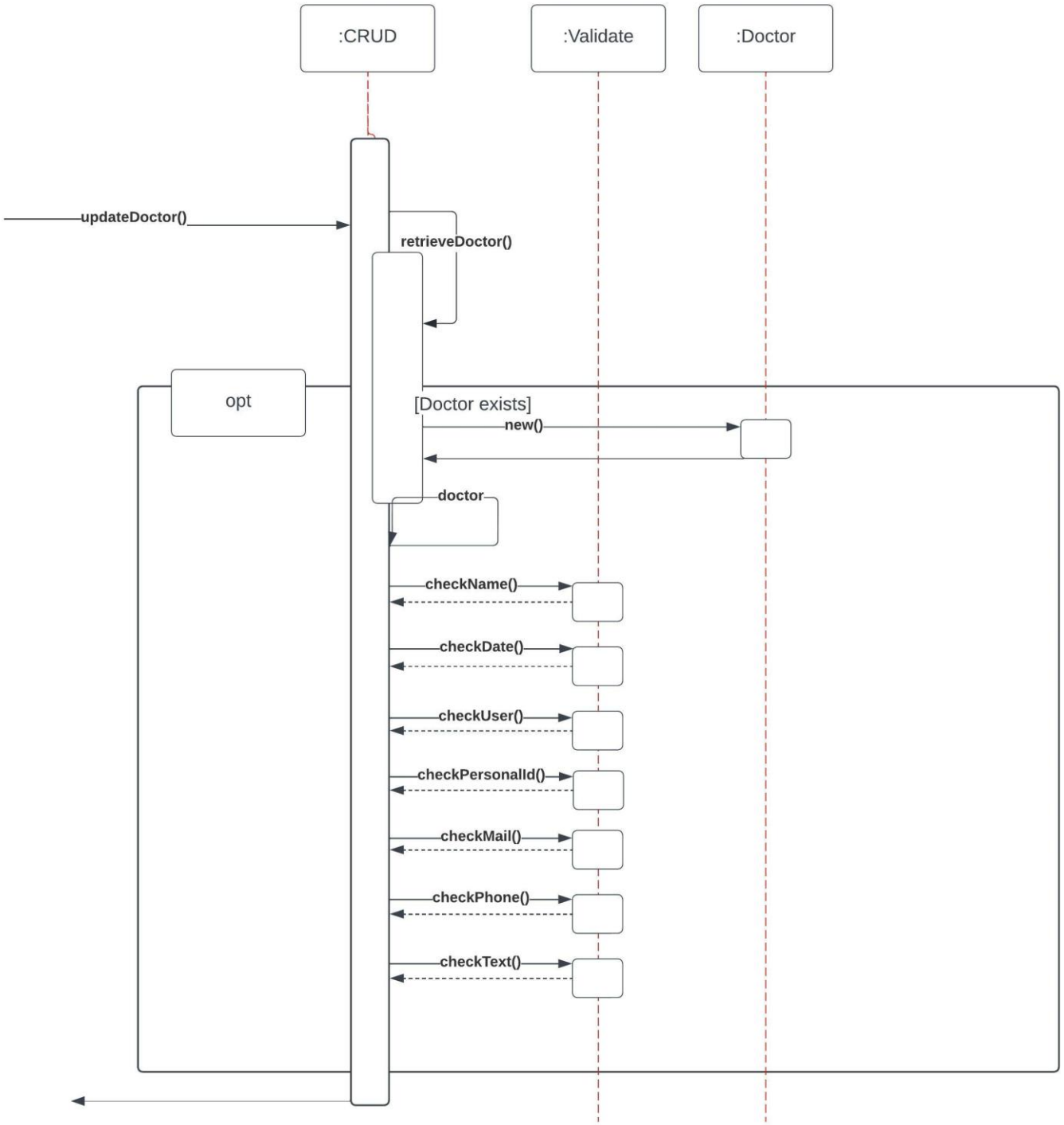

**SeqD_04–** Create MV



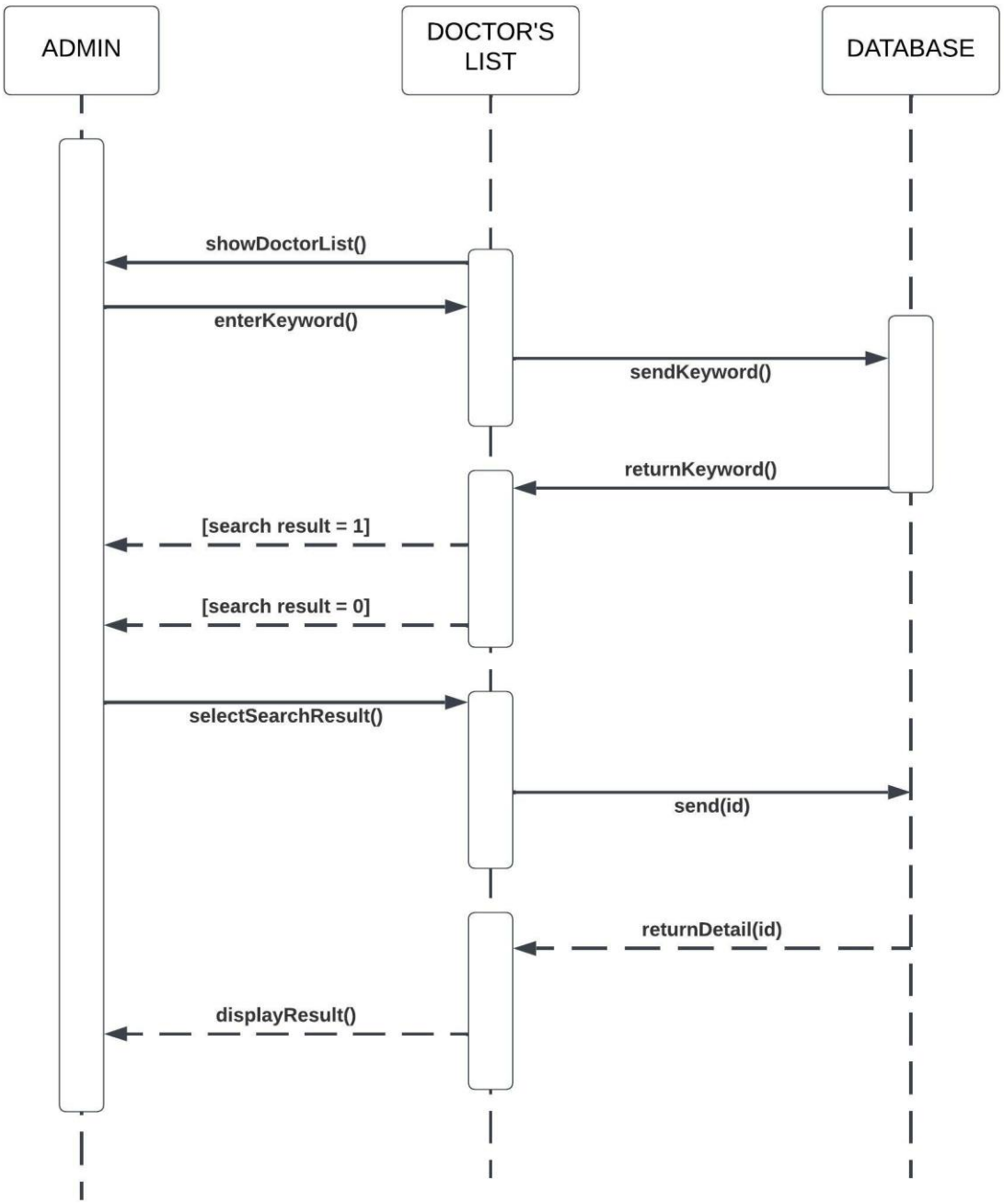

**SeqD_05–** Create MR



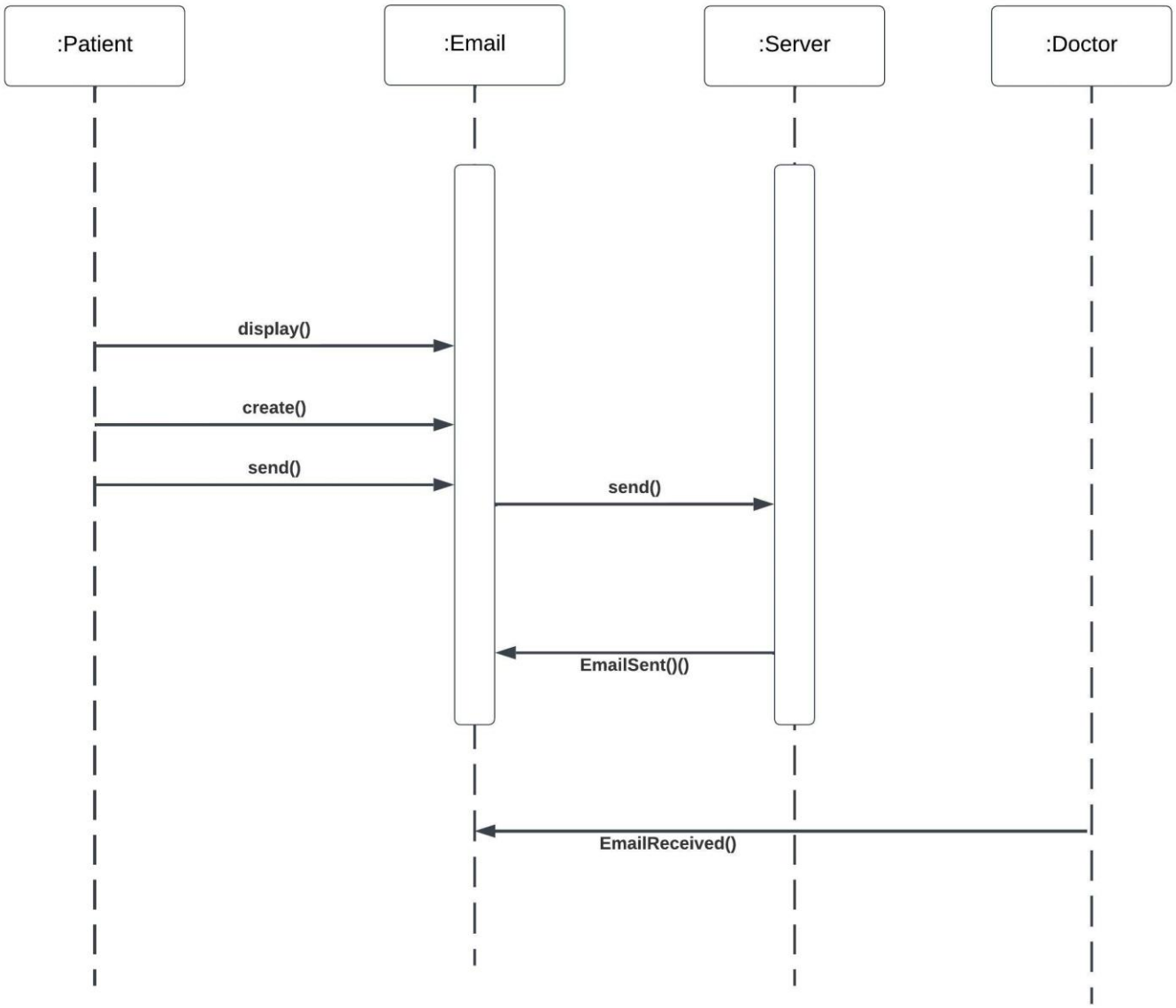

**SeqD_06–** Create doctor



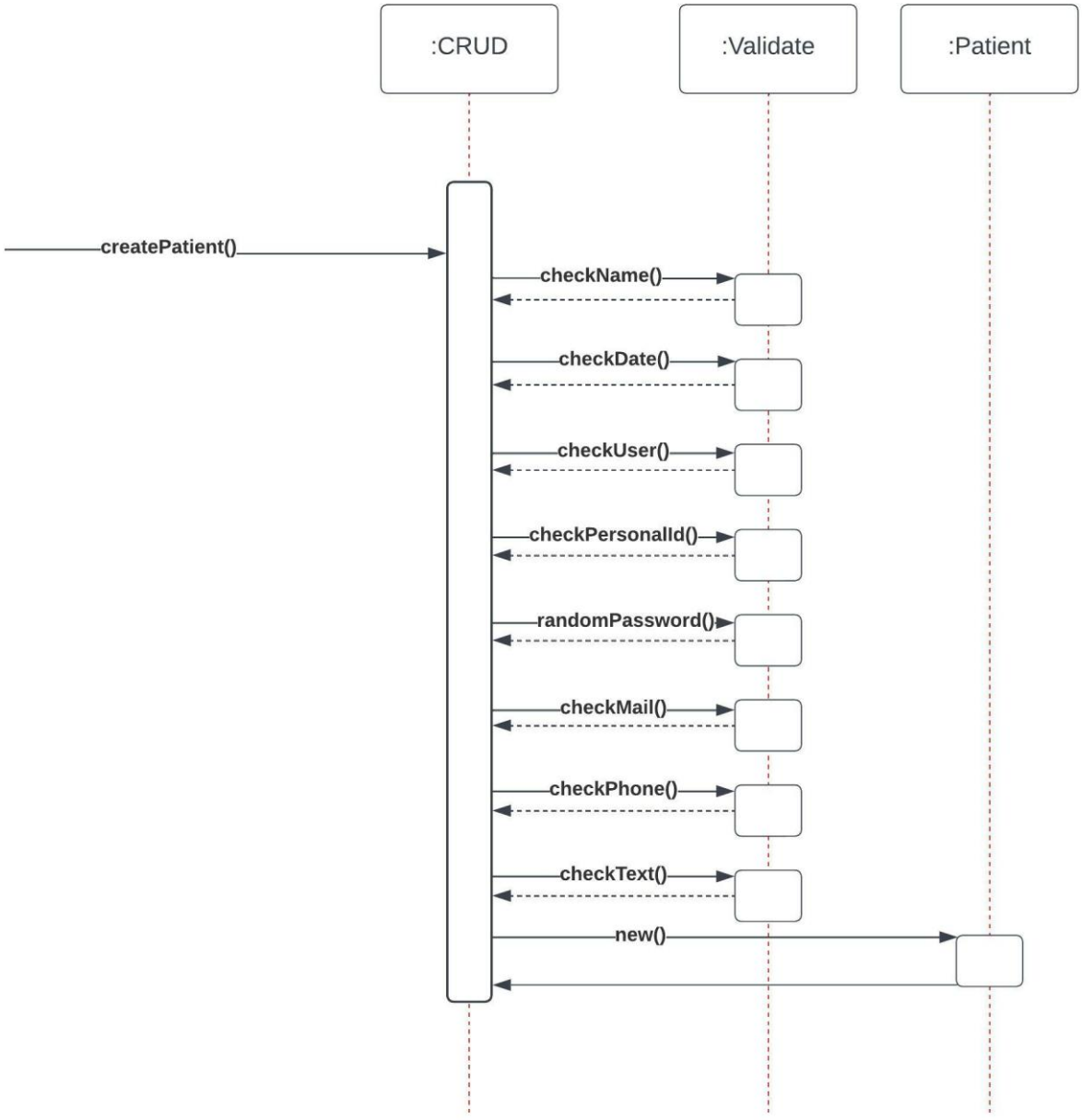

**SeqD_07–** Update doctor



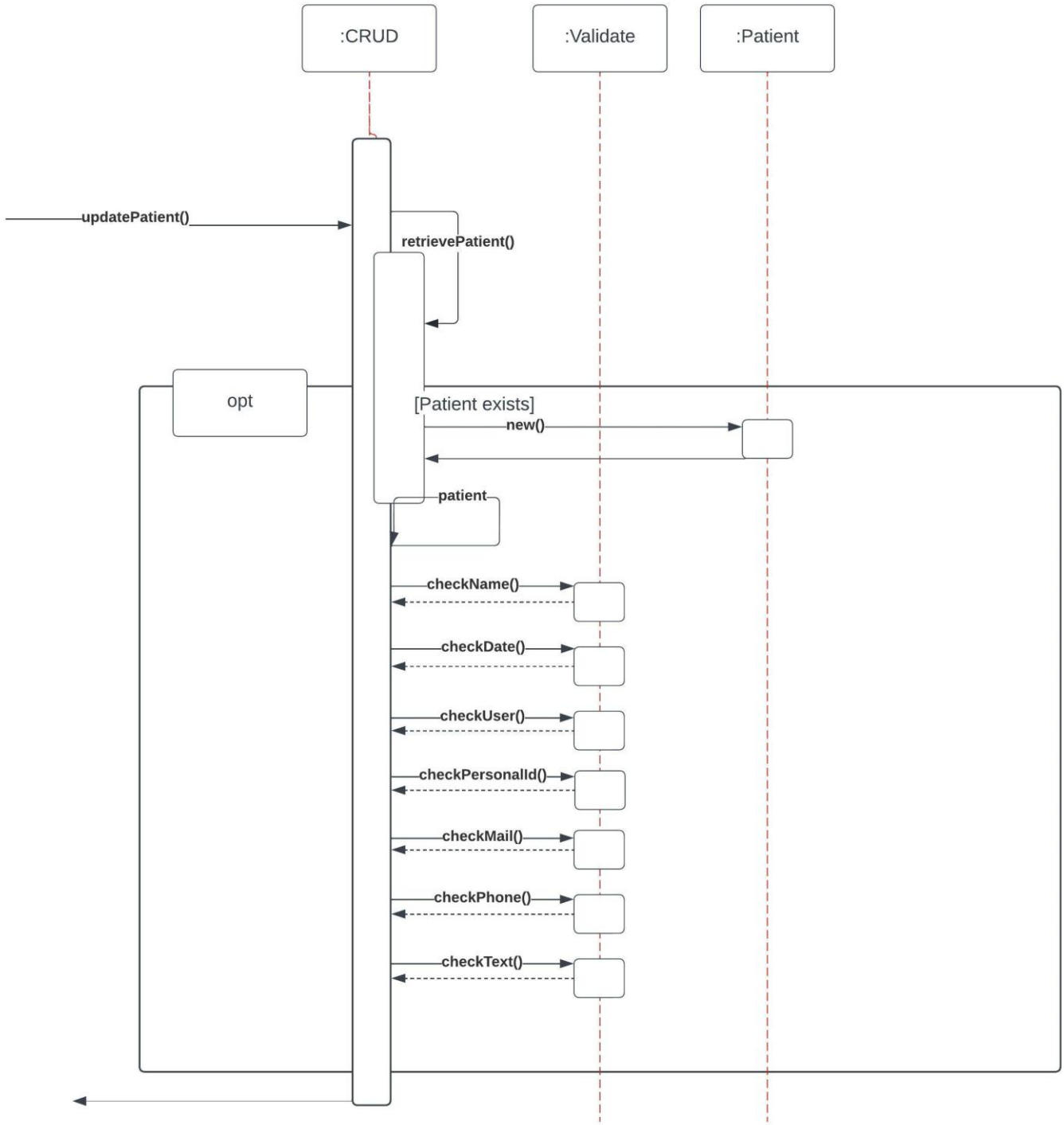

**SeqD_08–** Search doctor



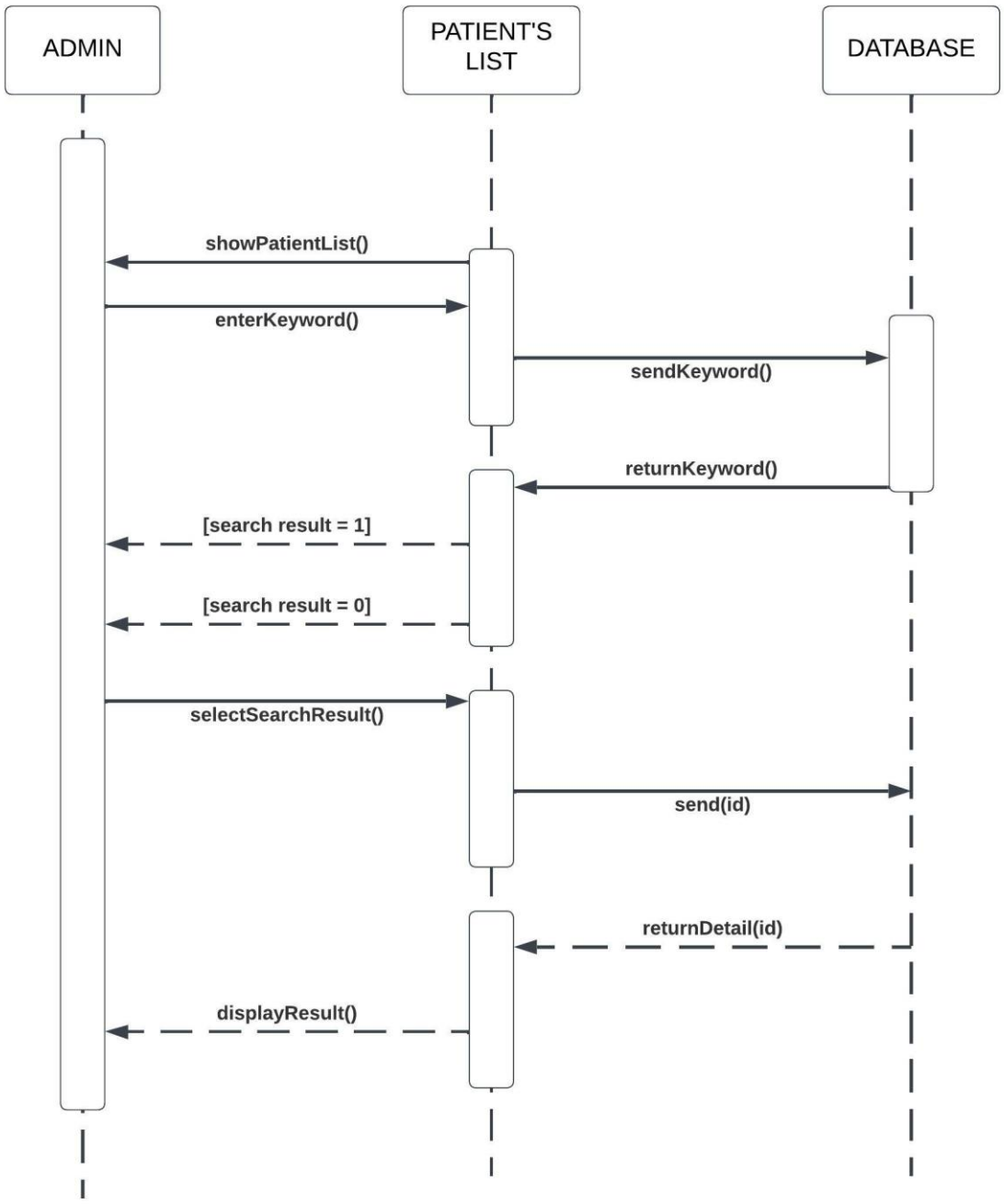

**SeqD_09–** Contact doctor




**SeqD_10–** Create patient

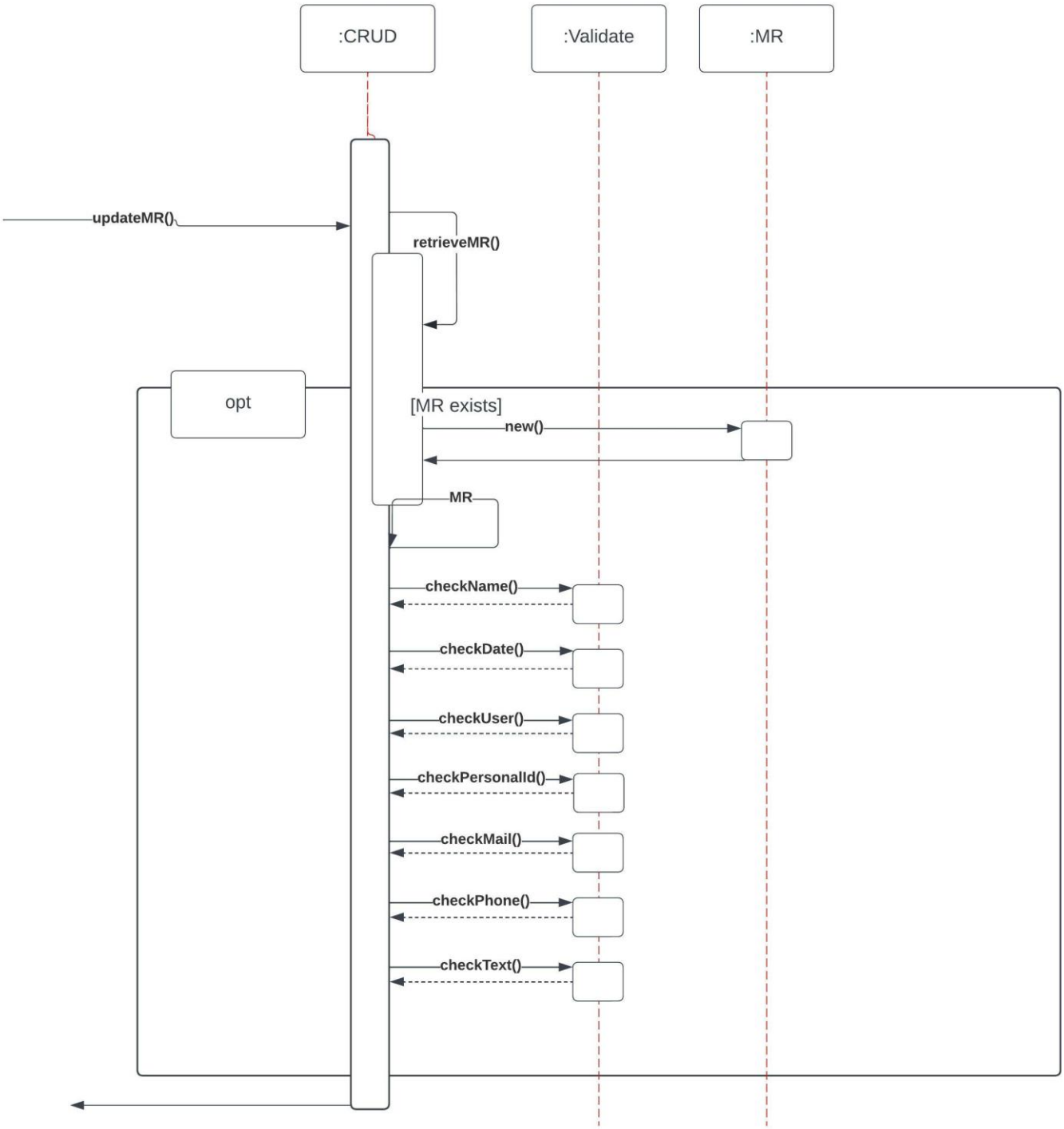


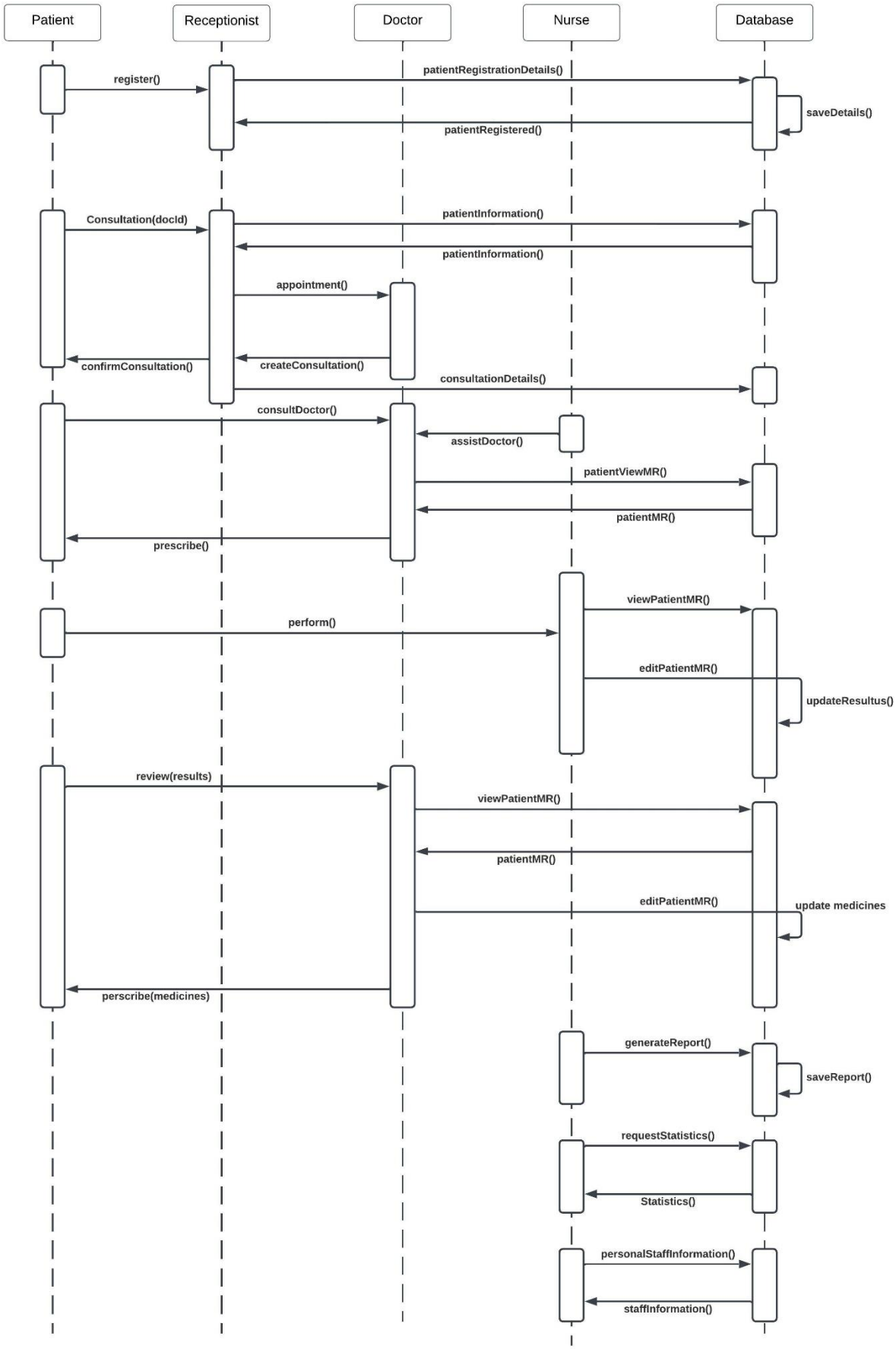

**SeqD_11–** Update patient




**SeqD_12–** Search patient

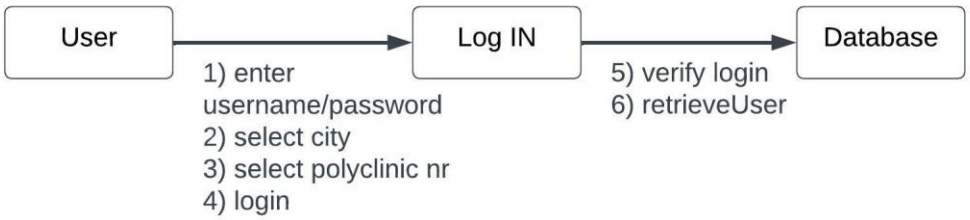
**SeqD_13–** Update MR





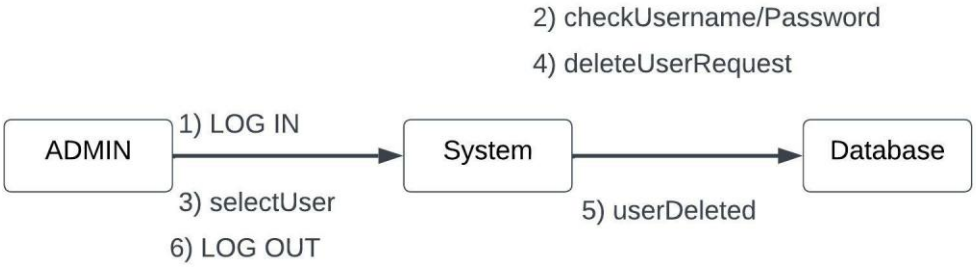

**SeqD_14**– General Functionalities

### 4.2.6 Collaboration Diagrams

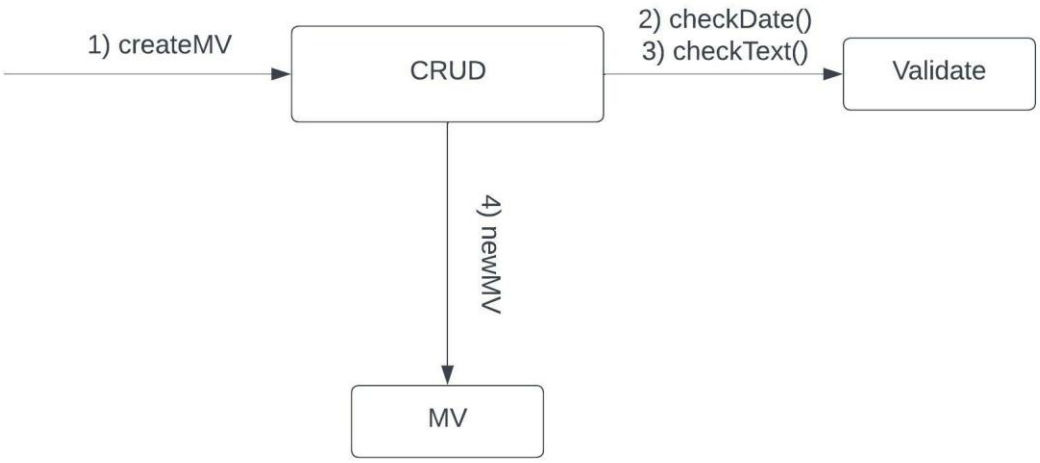



**ColD_01–** Log In

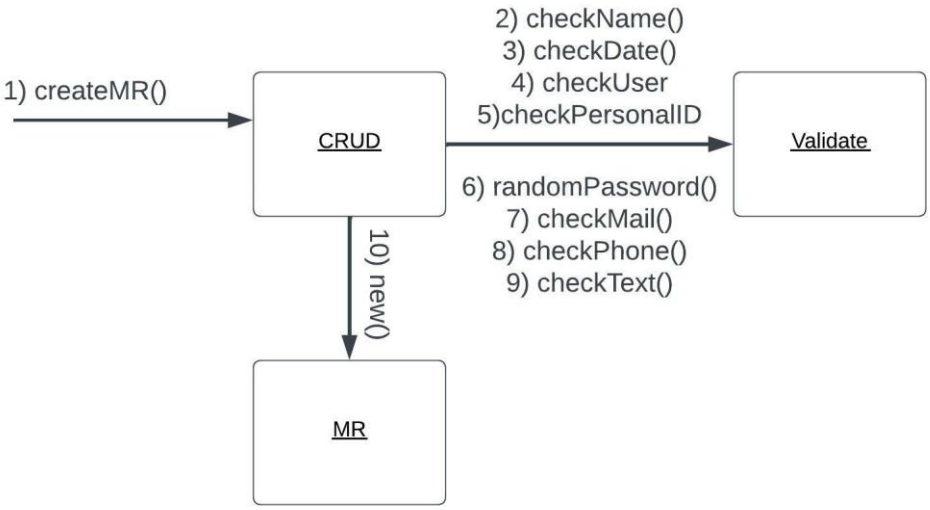

**ColD_02–** Change password



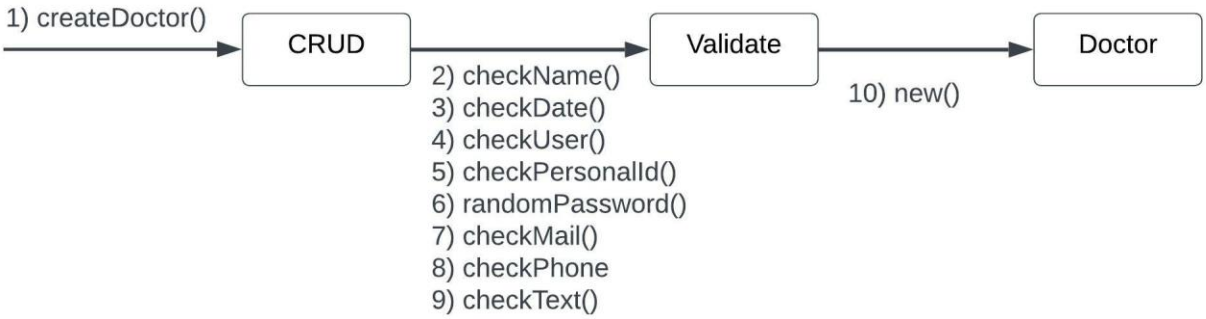

**ColD_03–** Delete user



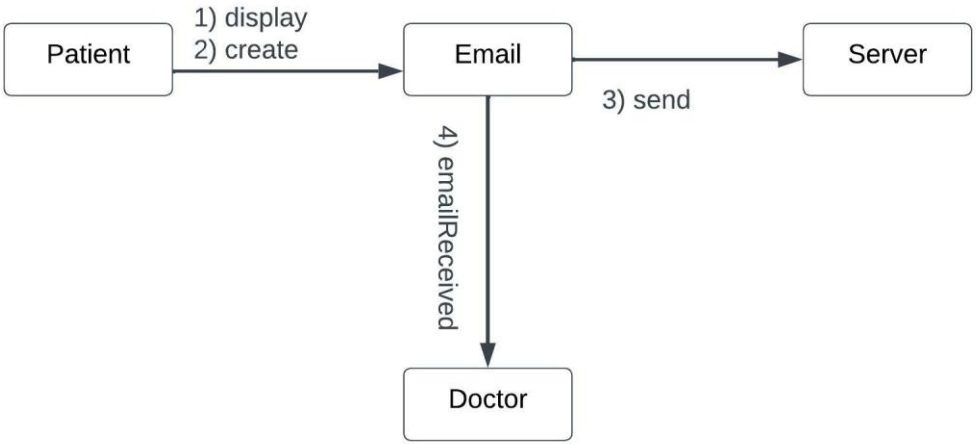

**ColD_04–** Create MV



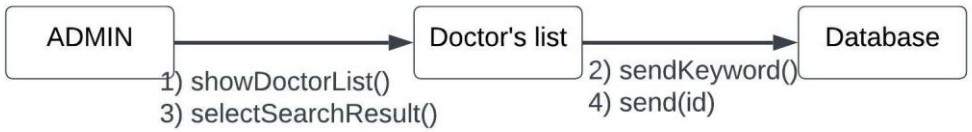

**ColD_05–** Create MR



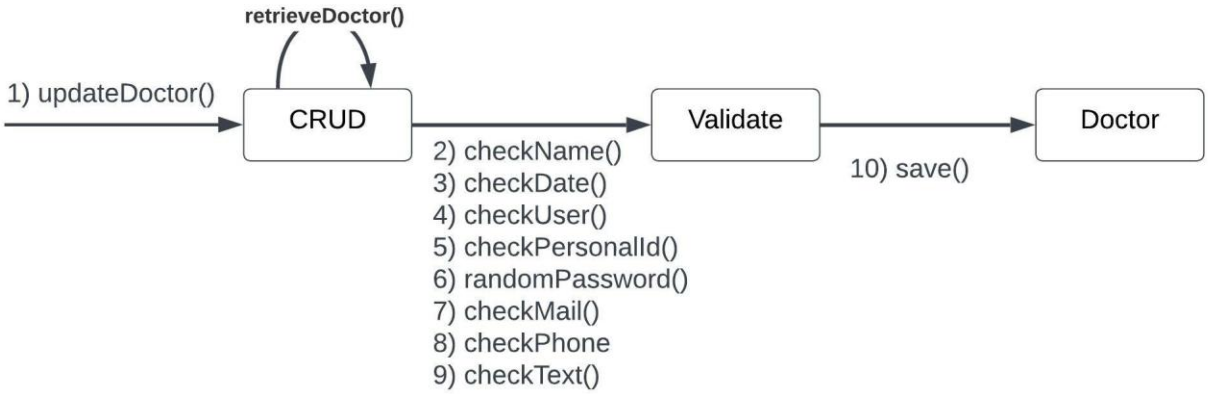

**ColD_06–** Create doctor



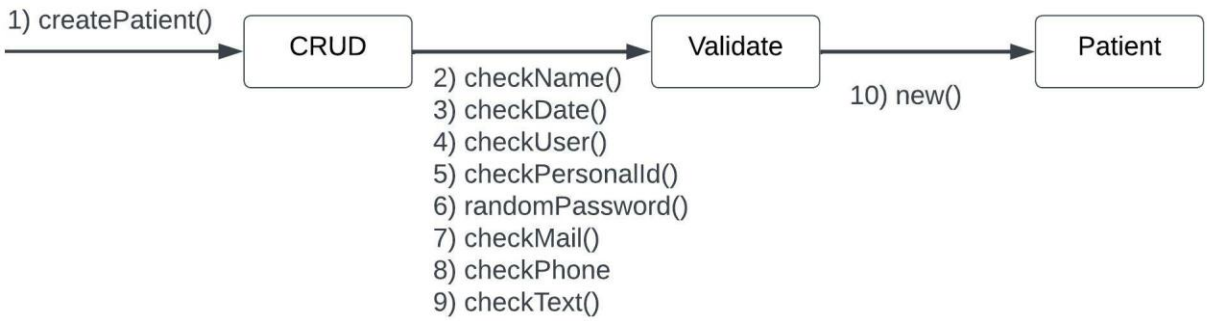

**ColD_09–** Contact doctor




**ColD_10–** Search doctor

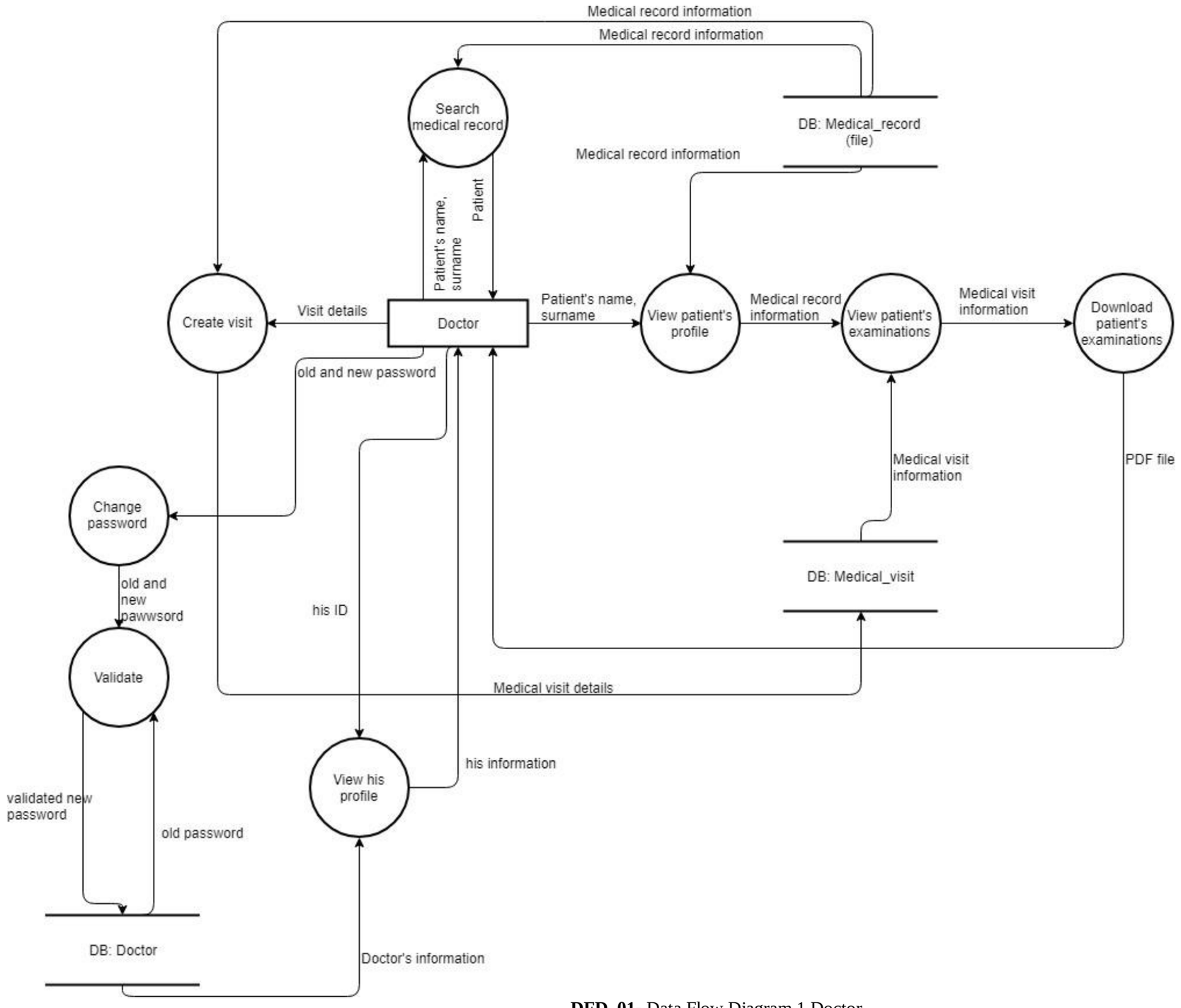



**ColD_11–** Update doctor

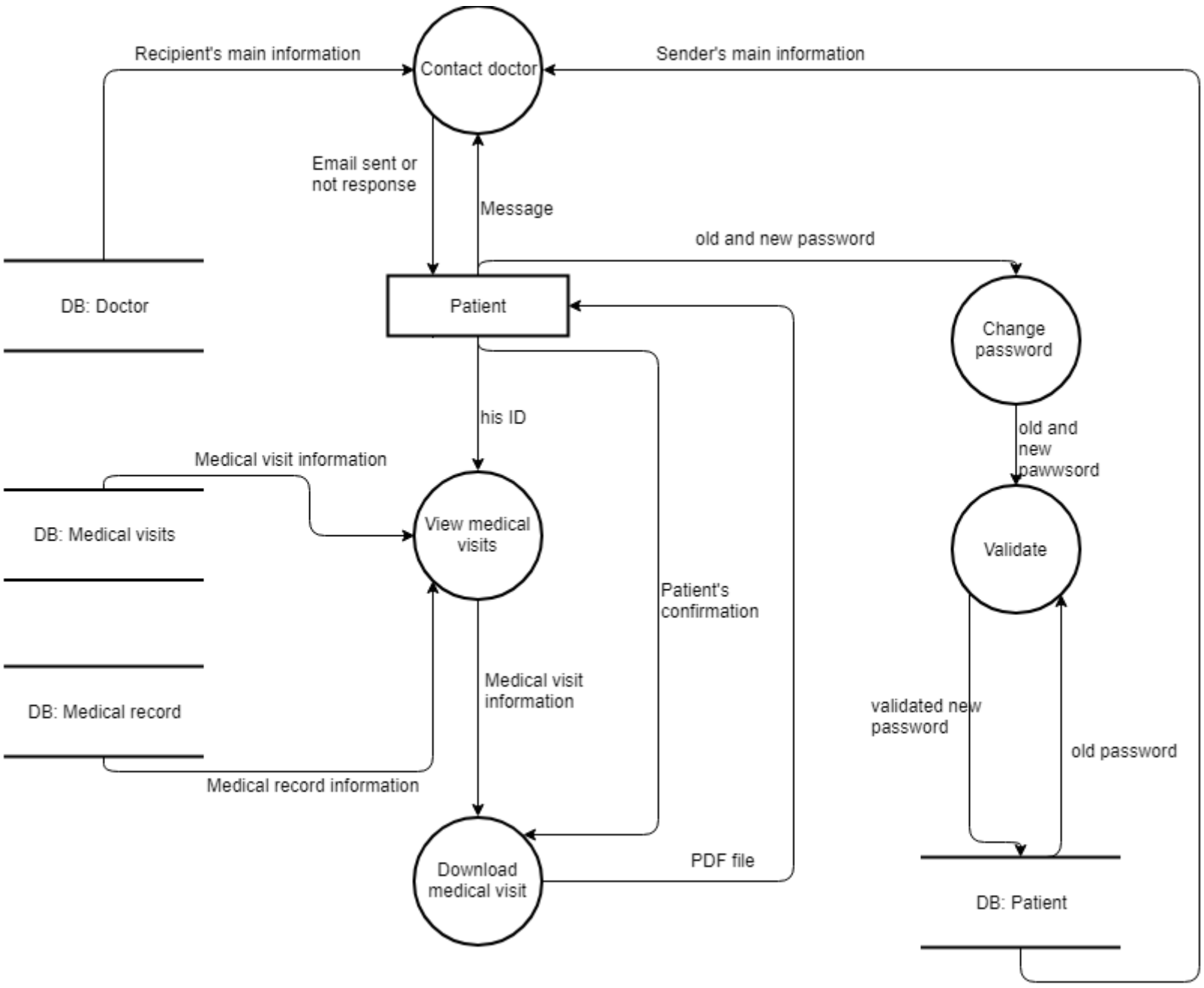



**ColD_12–** Create patient

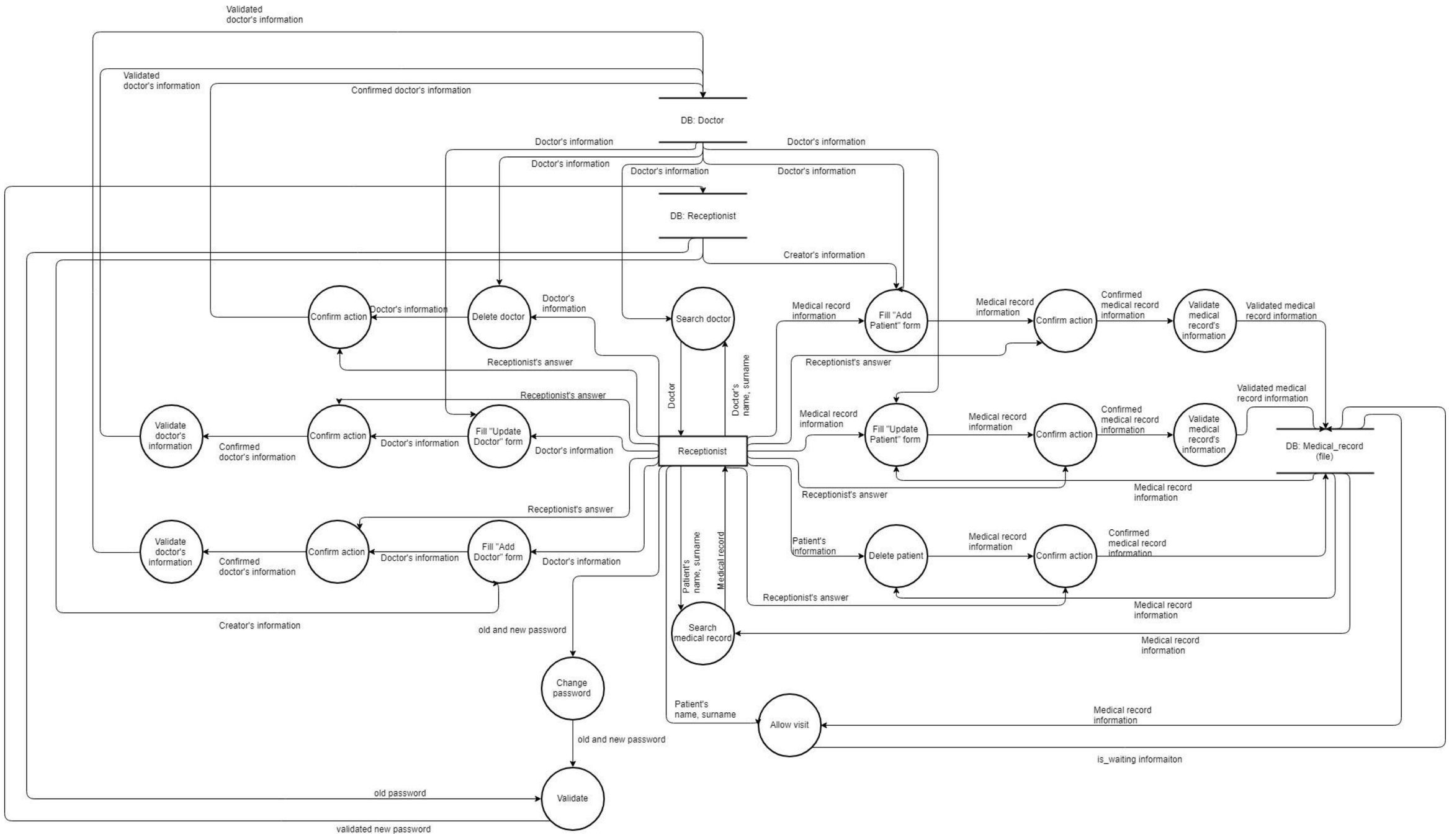
### *4.3 Data Flow Diagrams*




**DFD_01-** Data Flow Diagram 1 Doctor



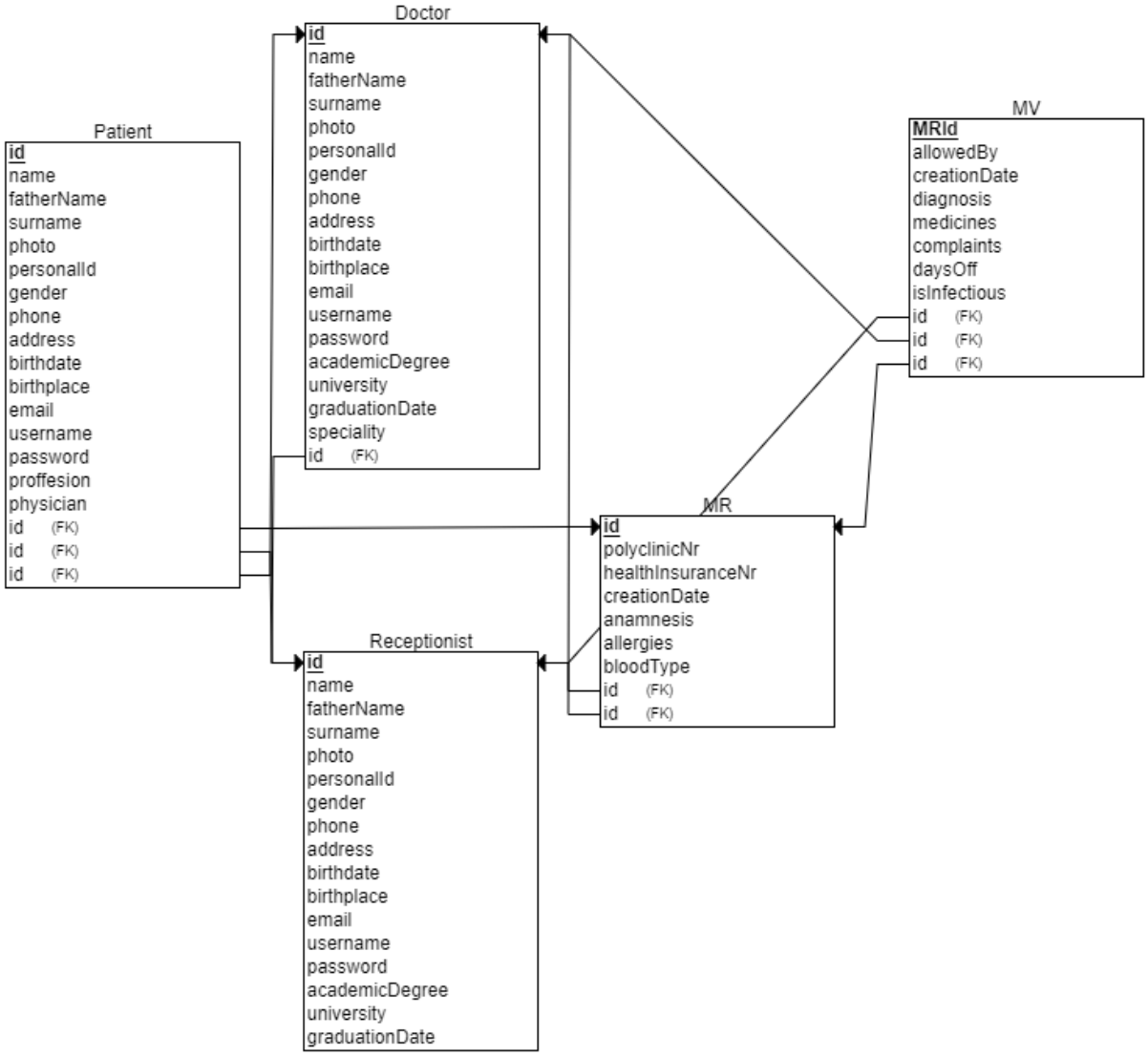

**DFD_02-** Data Flow Diagram 2 Patient



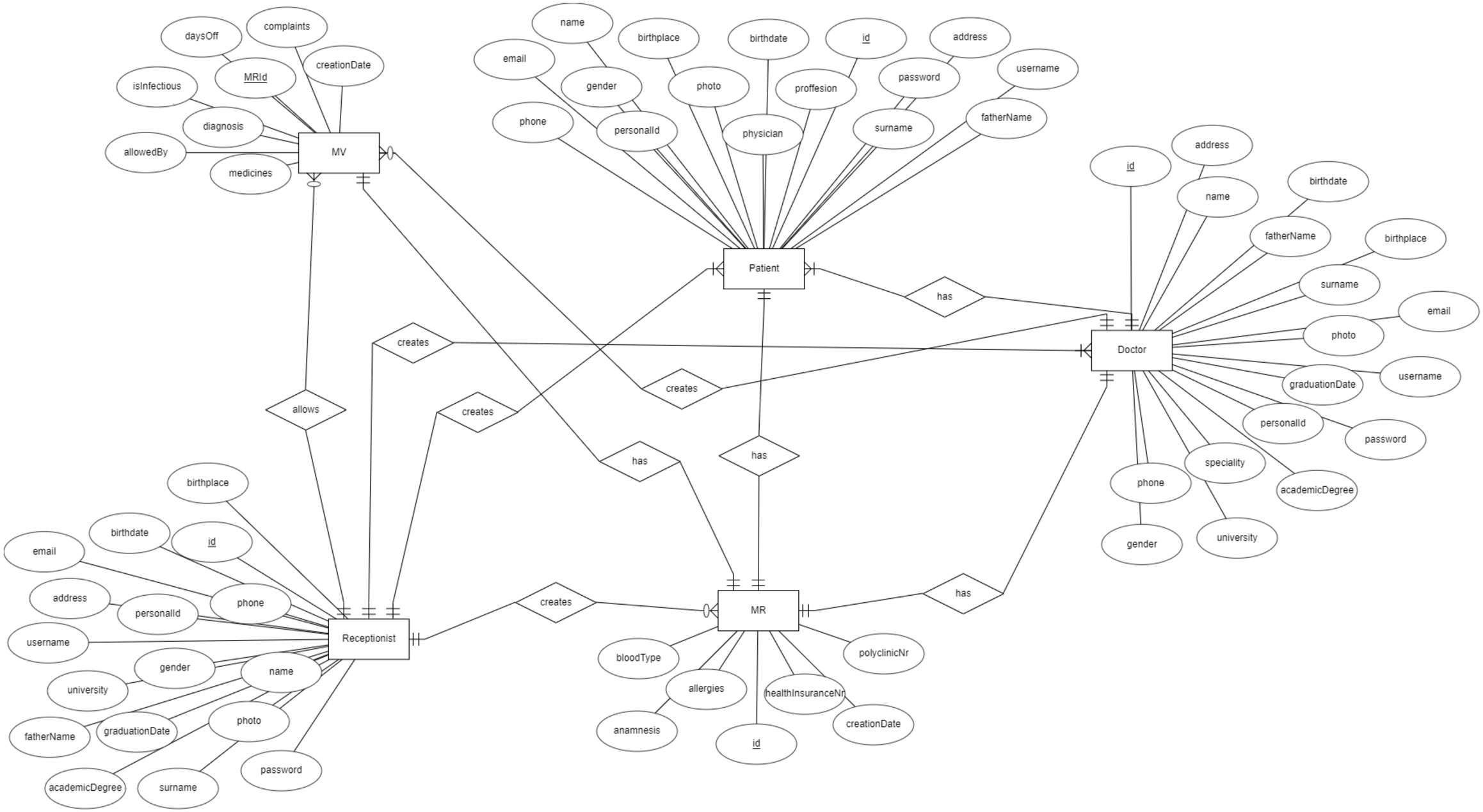

**DFD_03-** Data Flow
Diagram 3 Receptionist

## *4.4 Entity Relation*

### 4.4.1 Database Schema Design



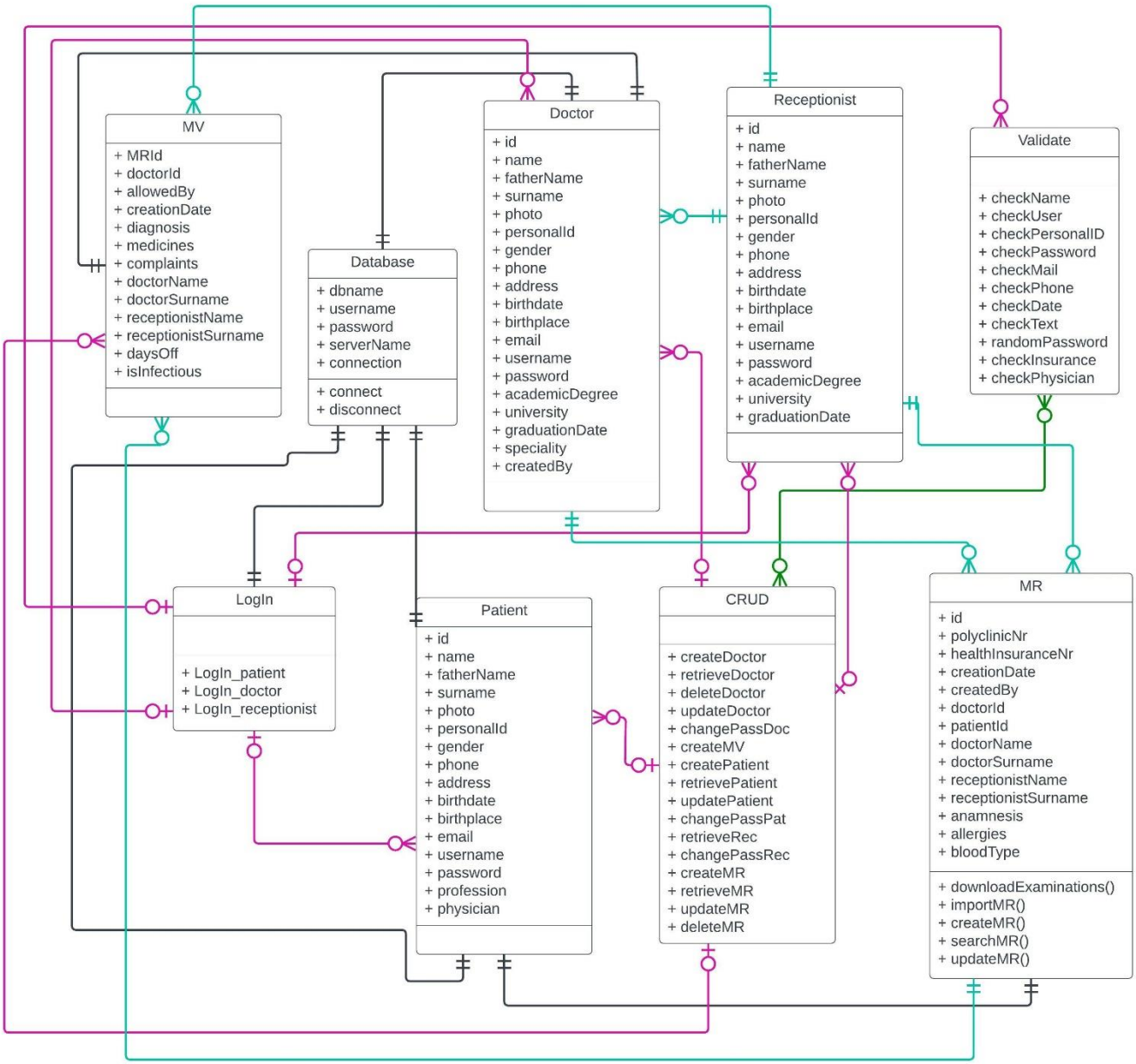
### 4.4.2 Entity Relation Diagram



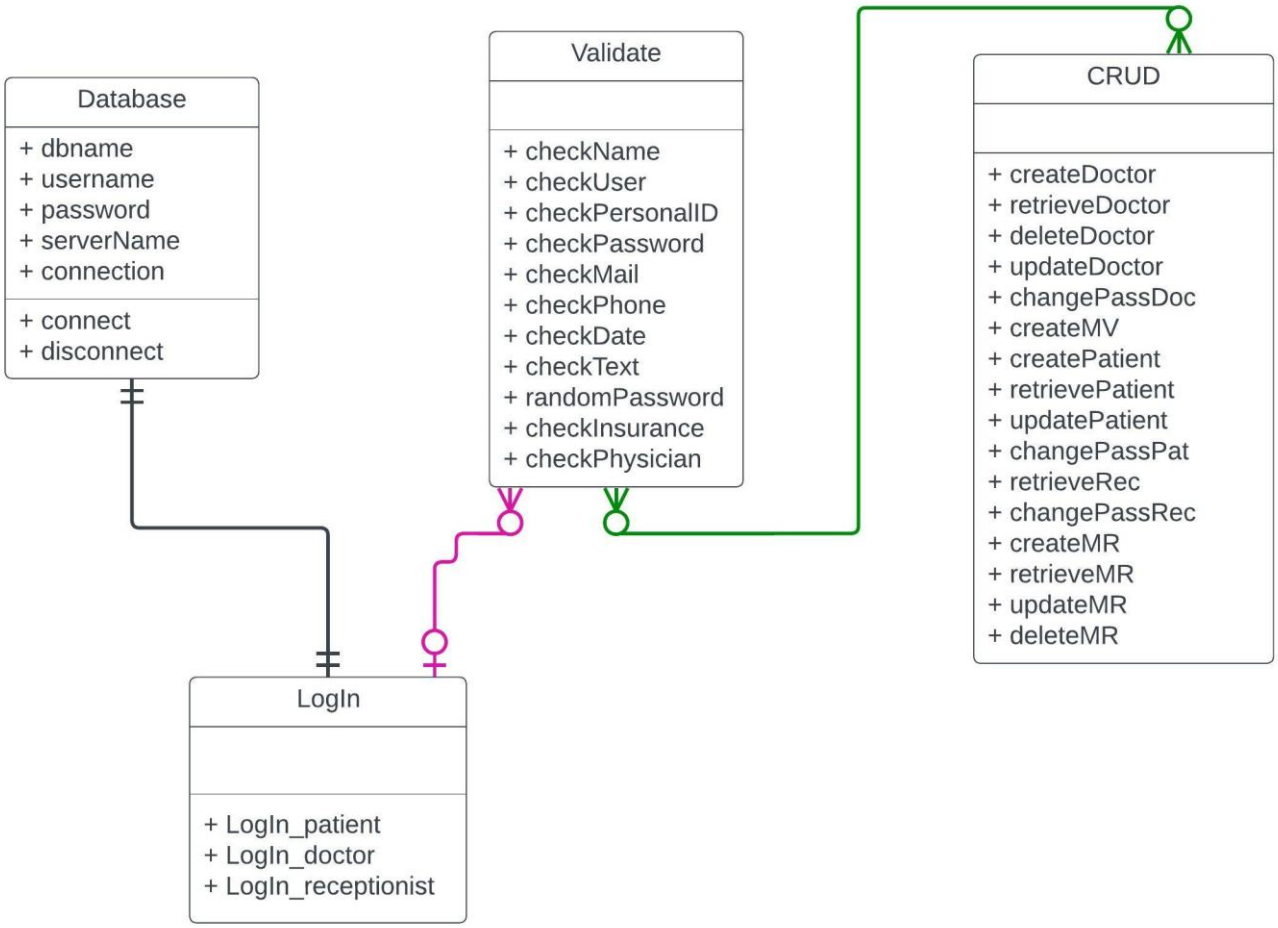
## *4.5 Structural Diagrams*

### 4.5.1 Class Diagram

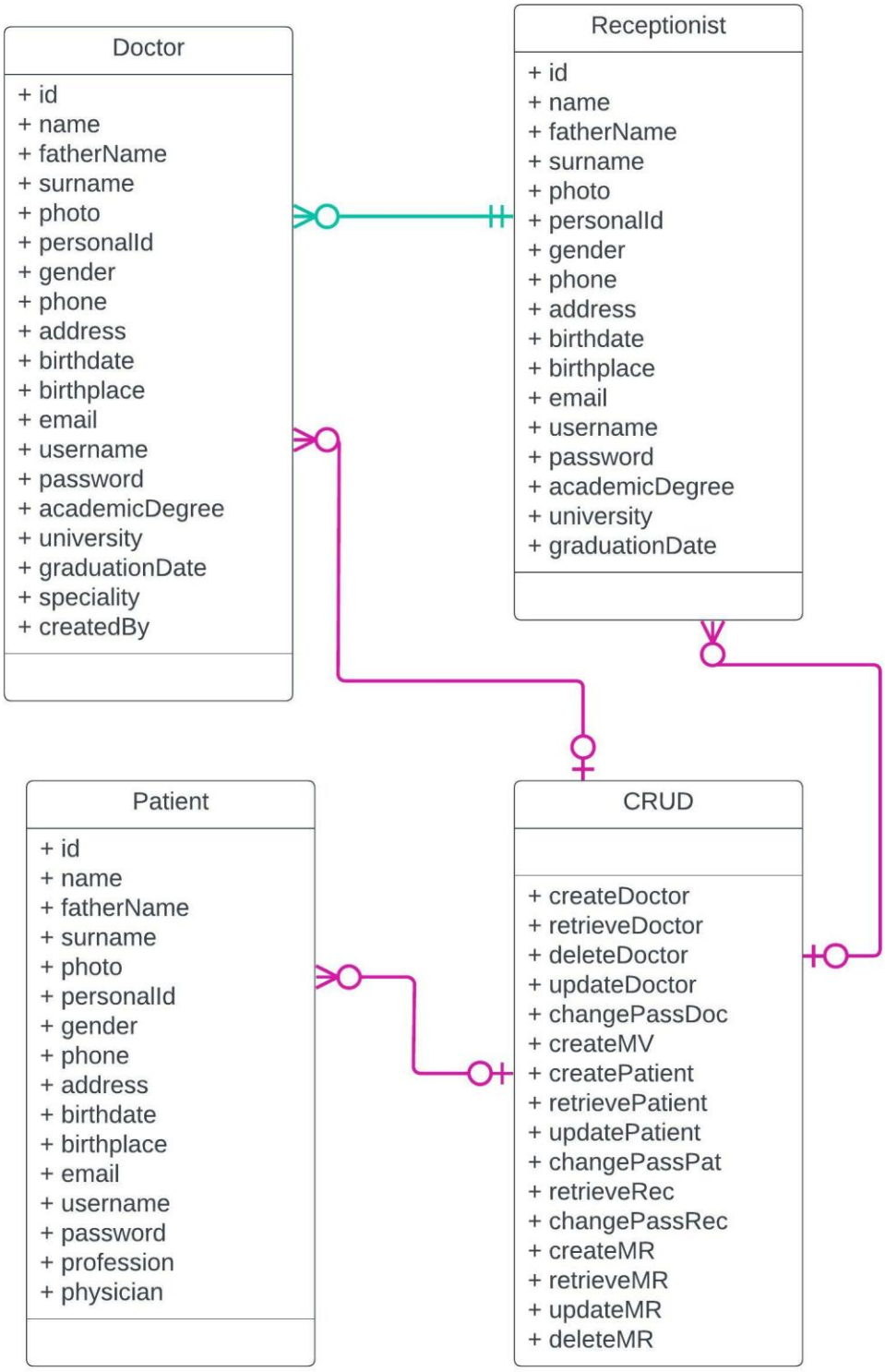

**CD_01** – Methods list for all classes



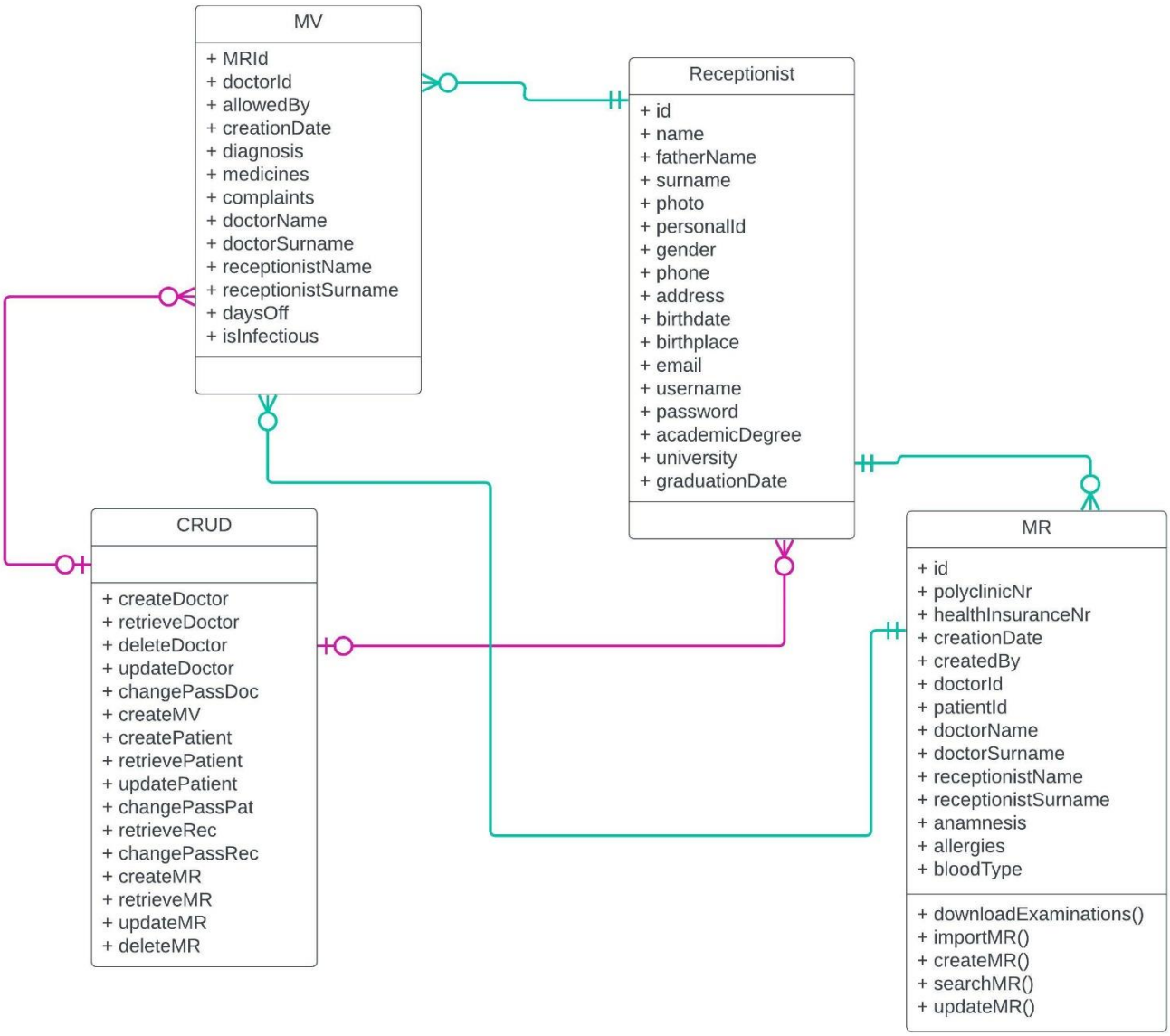

**CD_02 –**Main Class diagram



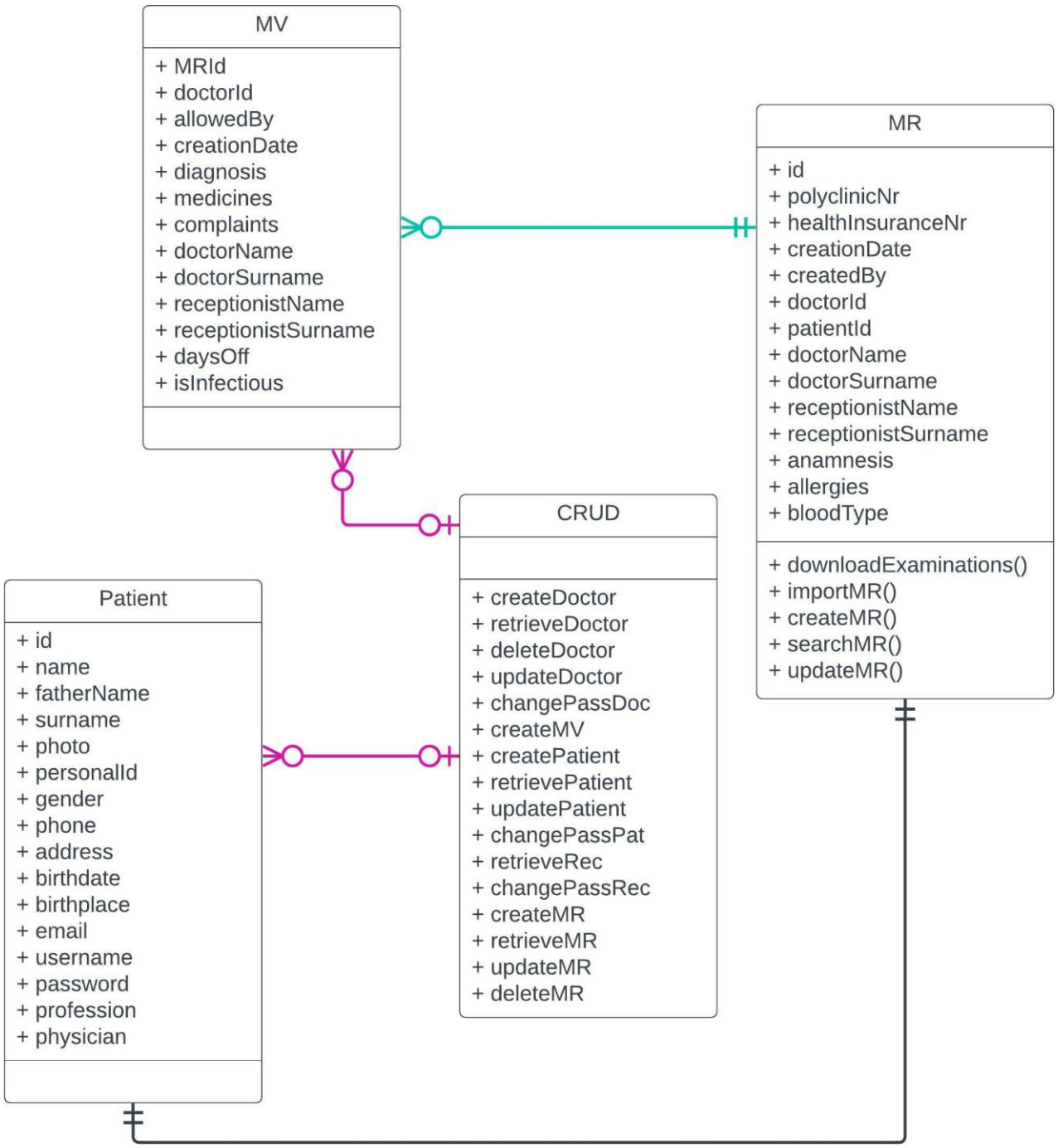

**CD_03 –**Class diagram (CRUD - Login - Database - Validate)




**CD_04** –Class diagram (CRUD-Patient-Receptionist-Doctor)

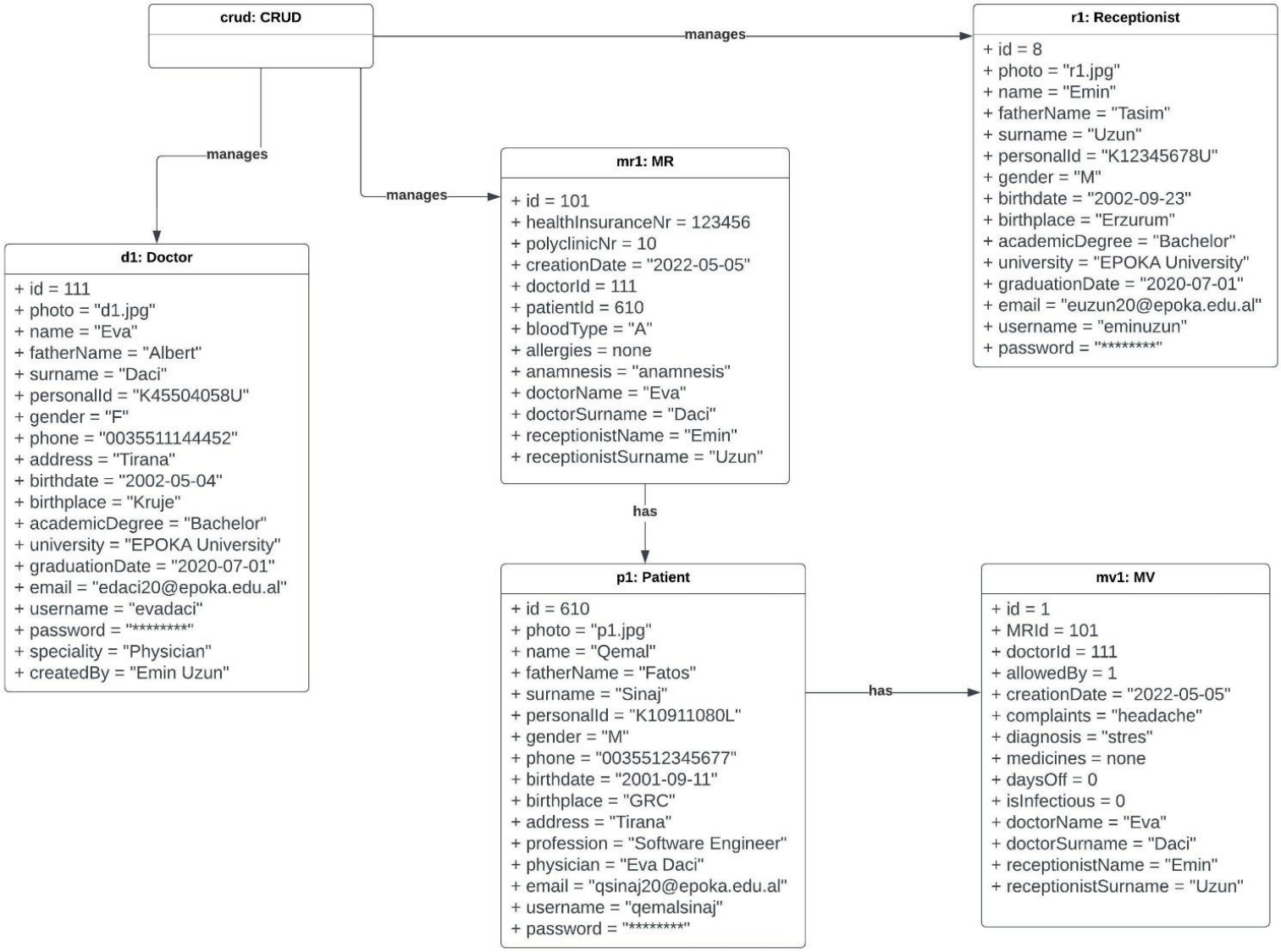



**CD_05** –Class diagram (CRUD-Receptionist-MV-MR)



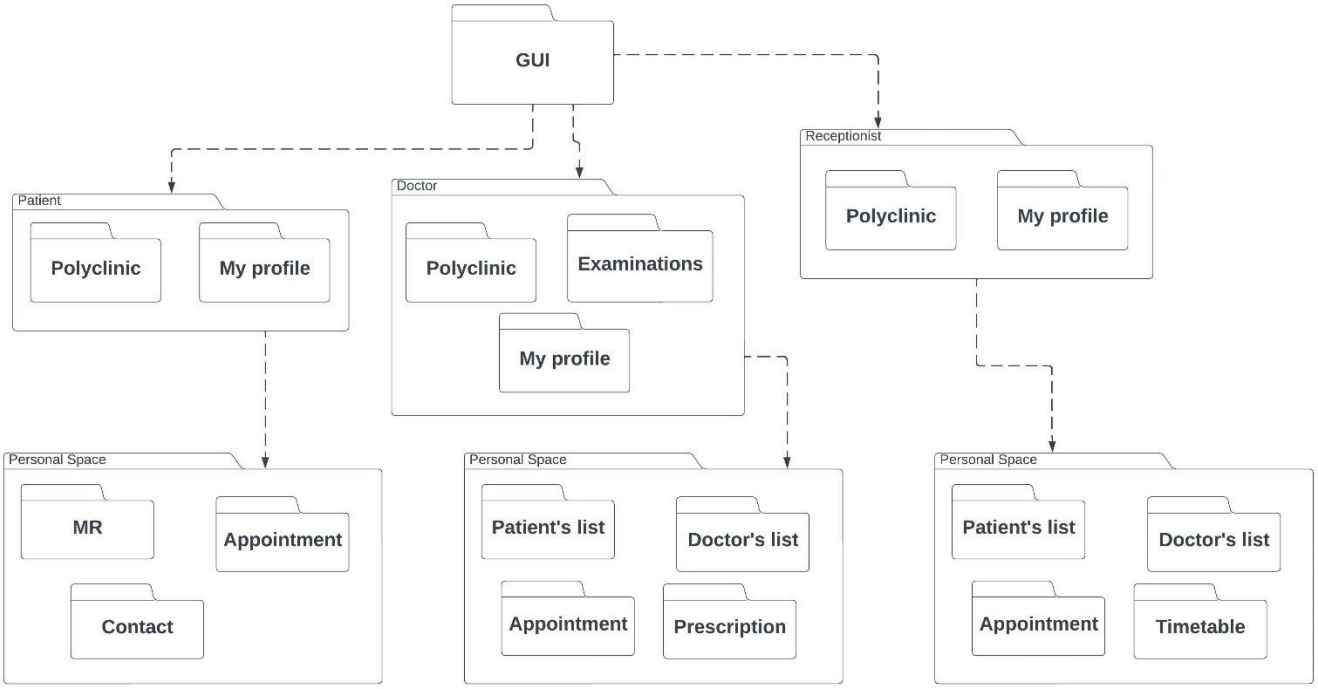

**CD_06 –**Class diagram (CRUD-Patient-MV-MR)

### 4.5.2 Object Diagram



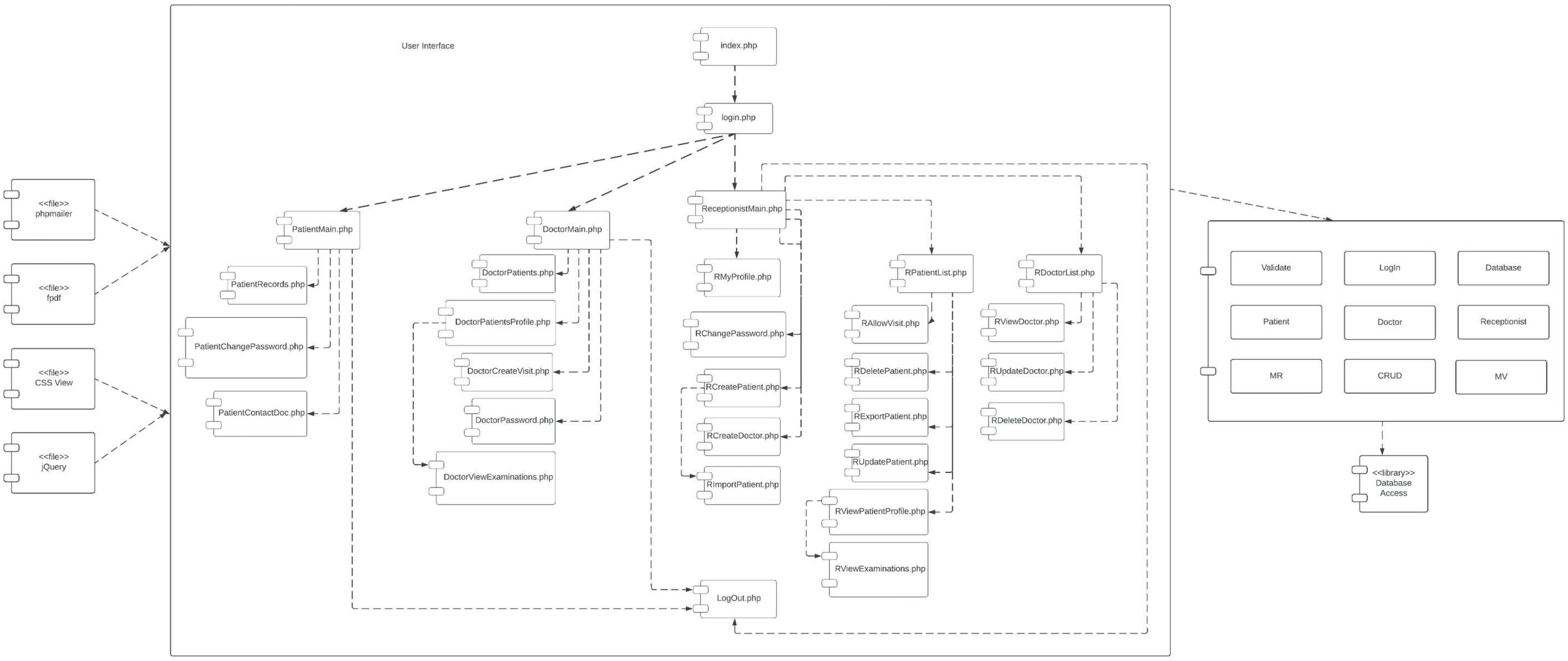

**OD_01 –**Object diagram

### 4.5.3 Package Diagram



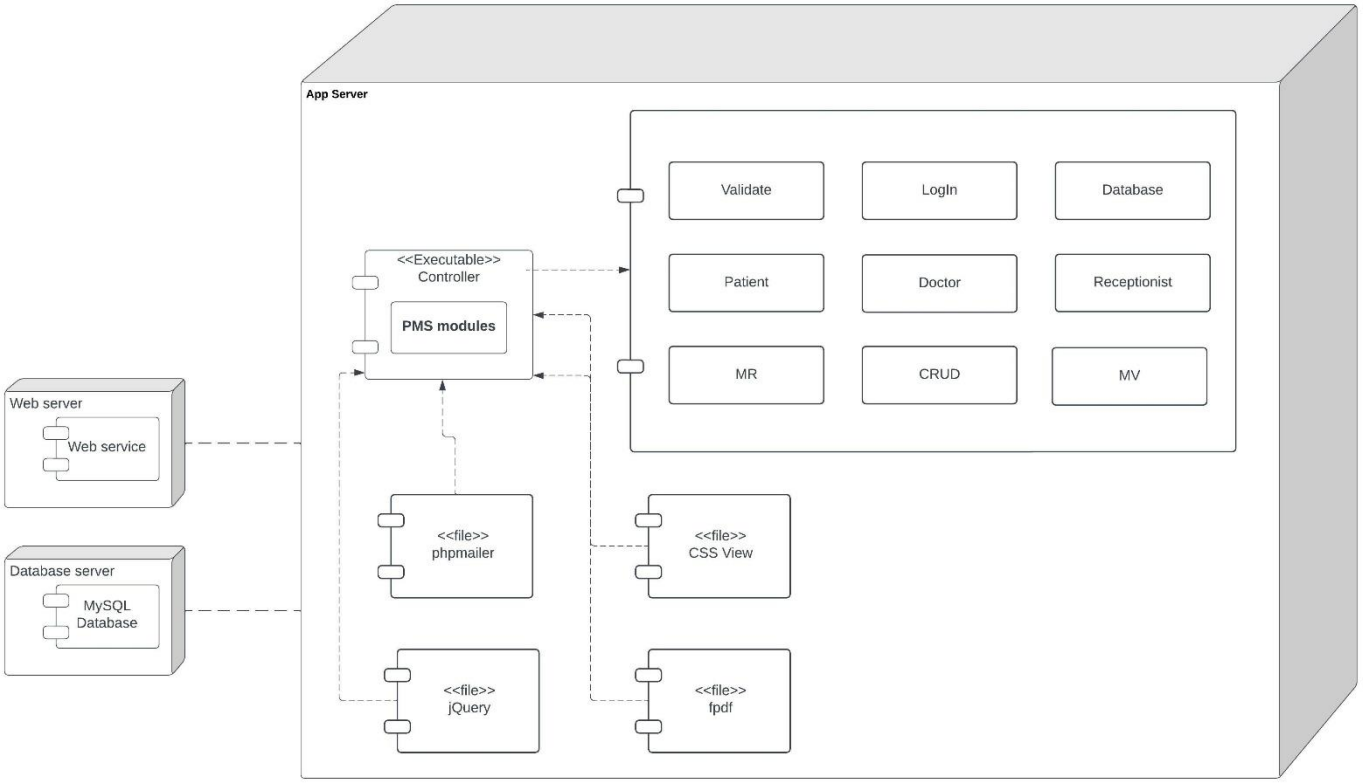

**PD_01 –**Package diagram

### 4.5.4 Component Diagrams



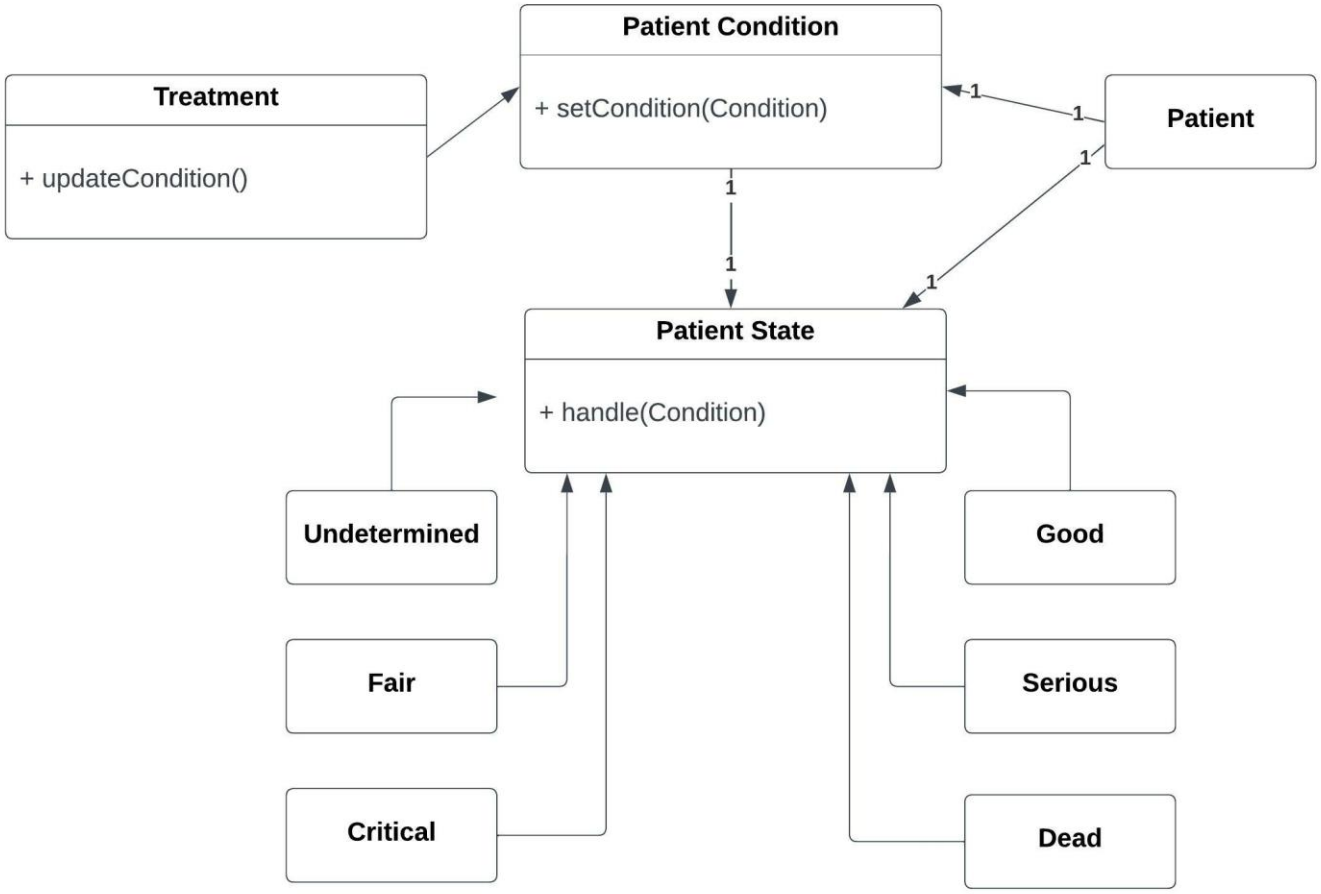

**ComD_01-** Component Diagram

### 4.5.5 Deployment Diagram

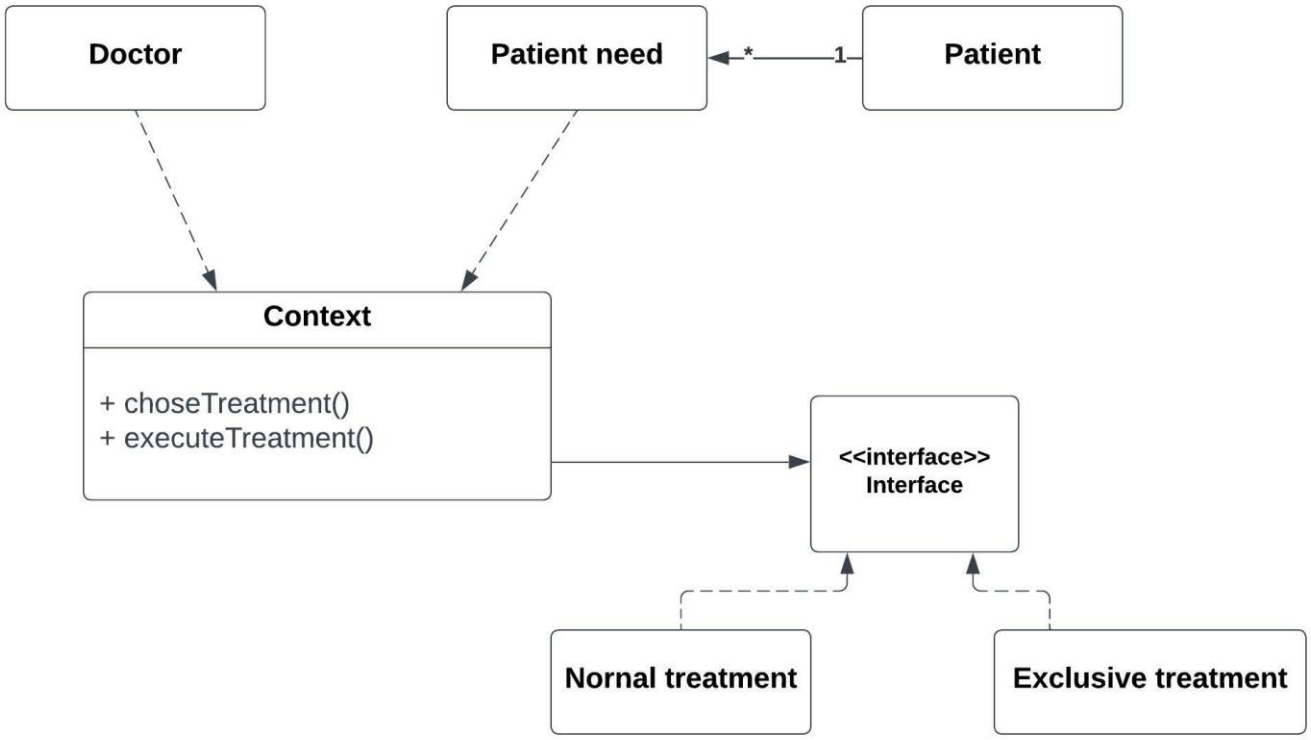



**DD_01 –** Deployment diagram

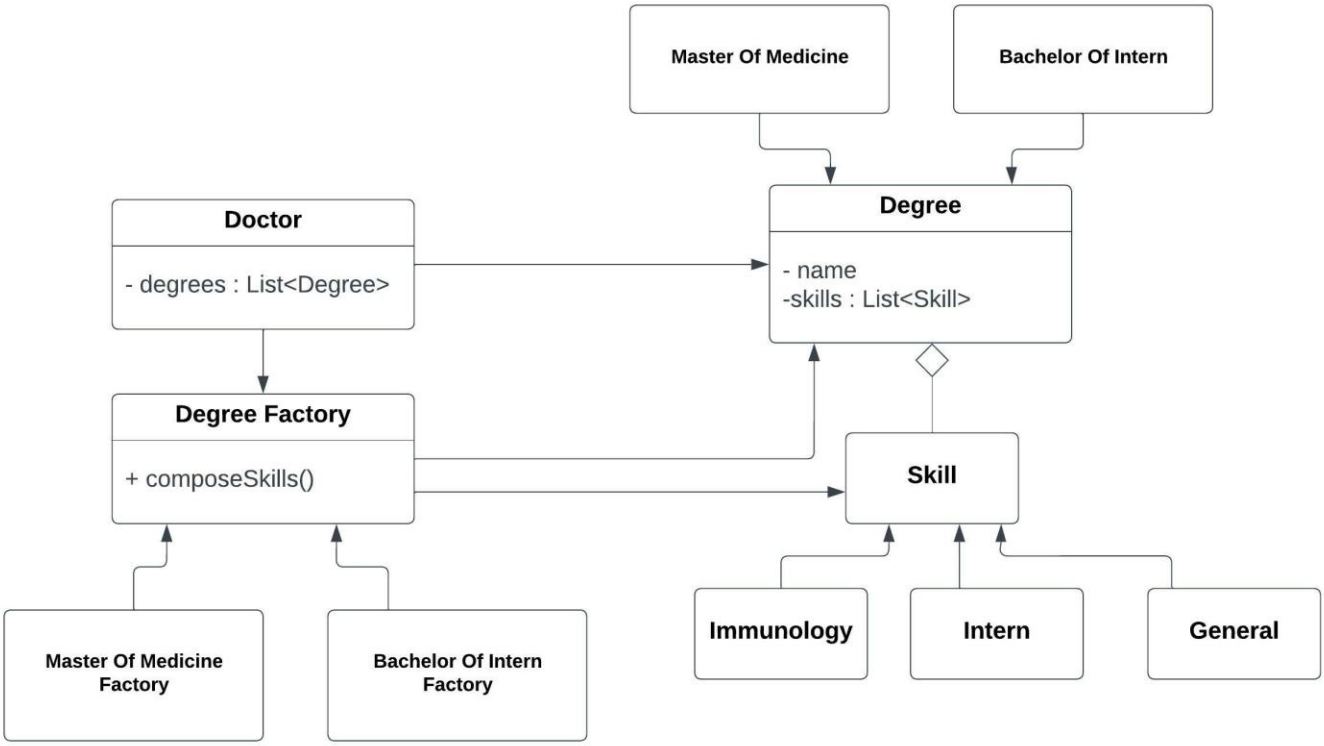
### 4.5.6 Design Patterns




**DP_01 –** Design Pattern 1




**DP_02 –** Design Pattern 2




**DP_03 –** Design Pattern 3

# 5. Implementation Technology

Polyclinic Management System is a dynamic Web Application. For the creation of this software, we are going to combine Client Side Scripting and Server Side Scripting. The communication between the client and the server will take place via HTTP protocol.

For the Client Side Scripting we have though of using the following technologies:

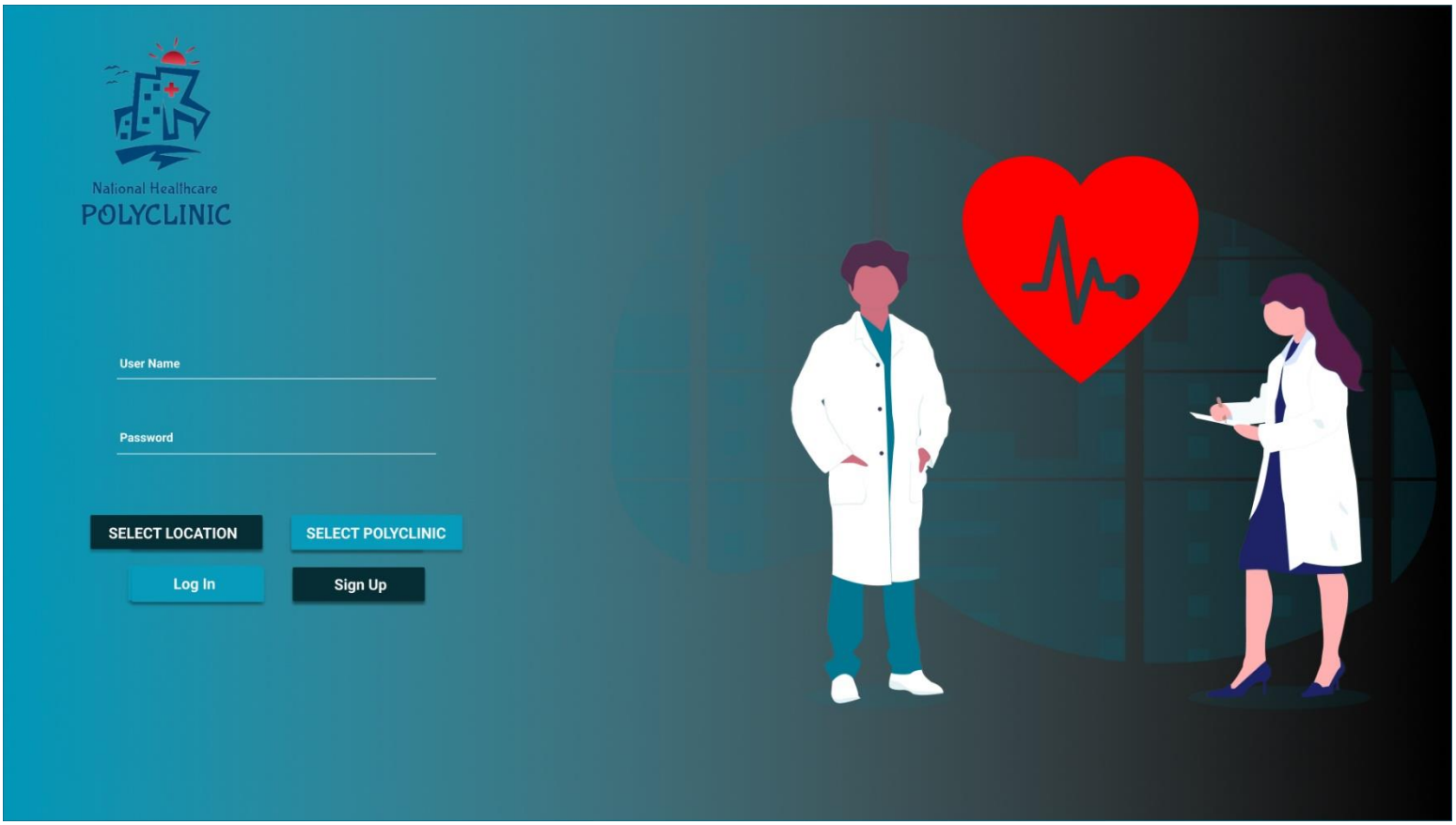
- HTML (HyperText Markup Language)
- CSS (Cascading Style Sheets)
- JavaScript
- Ajax (Asynchronous JavaScript and XML)
- jQuery (JavaScript Framework Library)

For the user interface (UI) we are going to use an open source template, designed with Bootstrap, to make the software intuitive and more easy and attractive for the user. The interface is based on the sketches that we have done.
For the Server Side Scripting, we are going to use PHP. This allows the users to interact with the software and with each other. We are going to use the OOP approach (Object Oriented Programming). We are going to use classes for each system user, actor: doctor class, receptionist Class, patient Class.
We are going to use a CRUD class, which contains all the functions needed to modify: patients, receptionists, doctors, medical records and medical visits.
We are going to use a validation class, which contains all the necessary functions for validation text, passwords, email etc.
To administrate MySQL over the web, phpMyAdmin is going to be used.

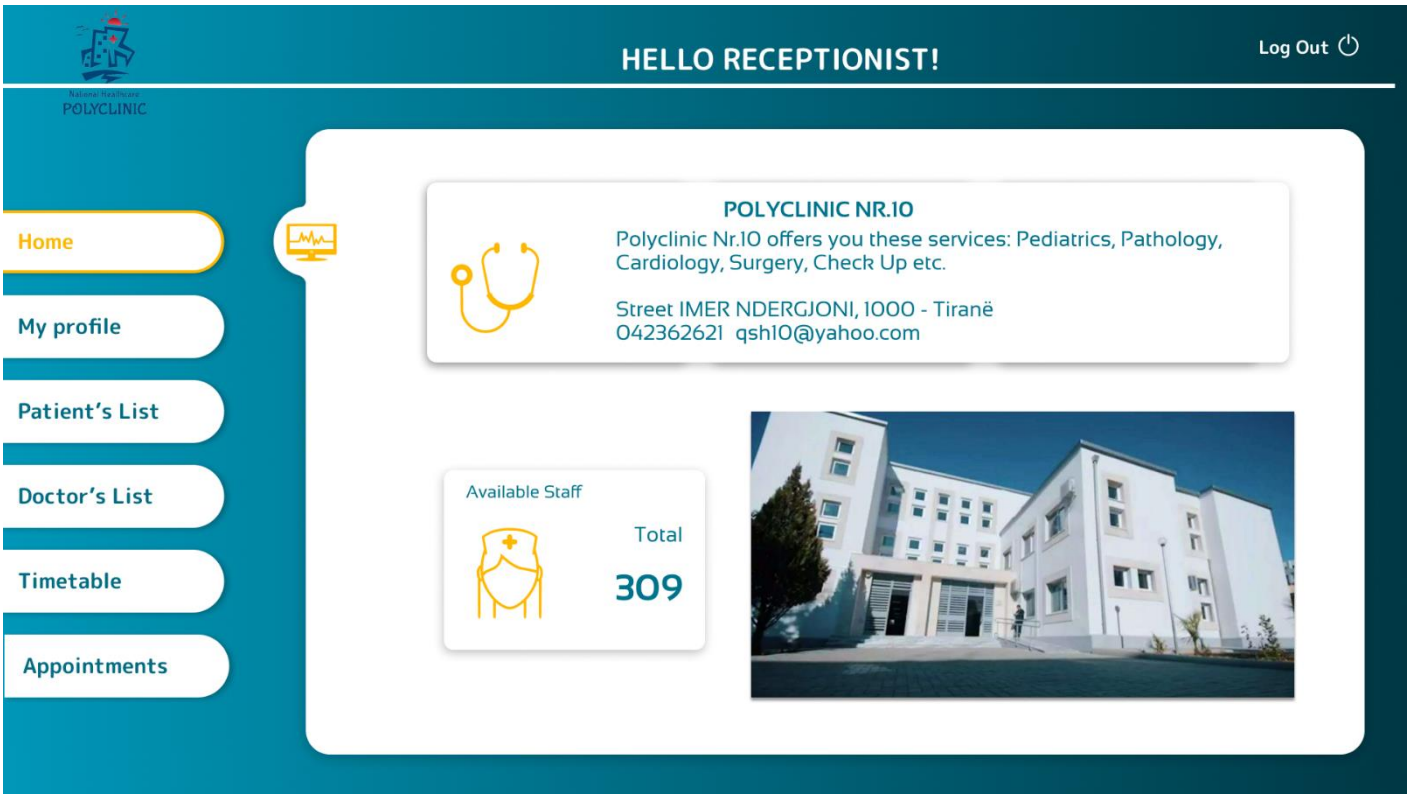
This project is also published in Github, where you can find the step by step procedure of the creation of this project (diagrams, designs, requirements, sketches, view, etc.):

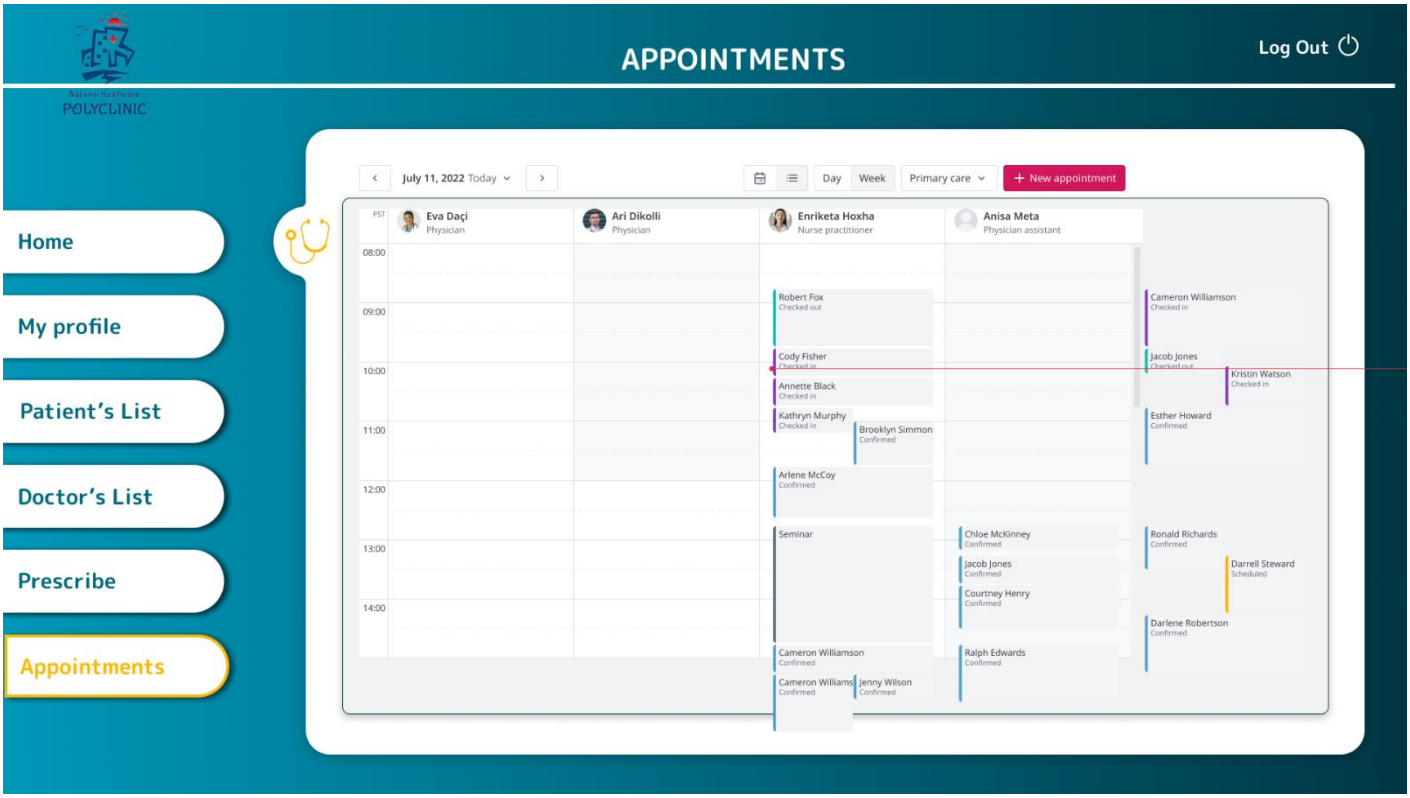
https://github.com/evadaci/Polyclinic-Management-System

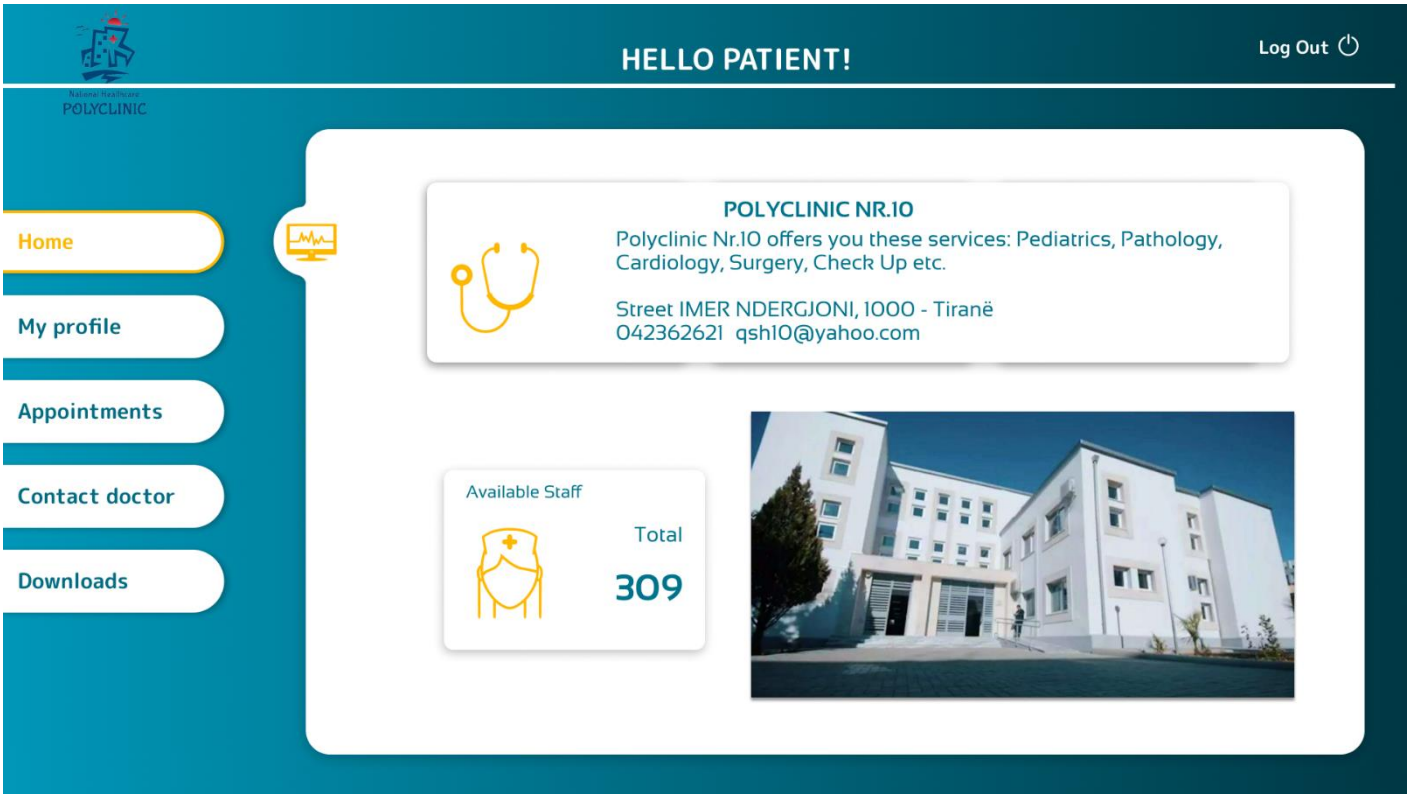
In the following print screens, you can see how the product should look like after being implemented.



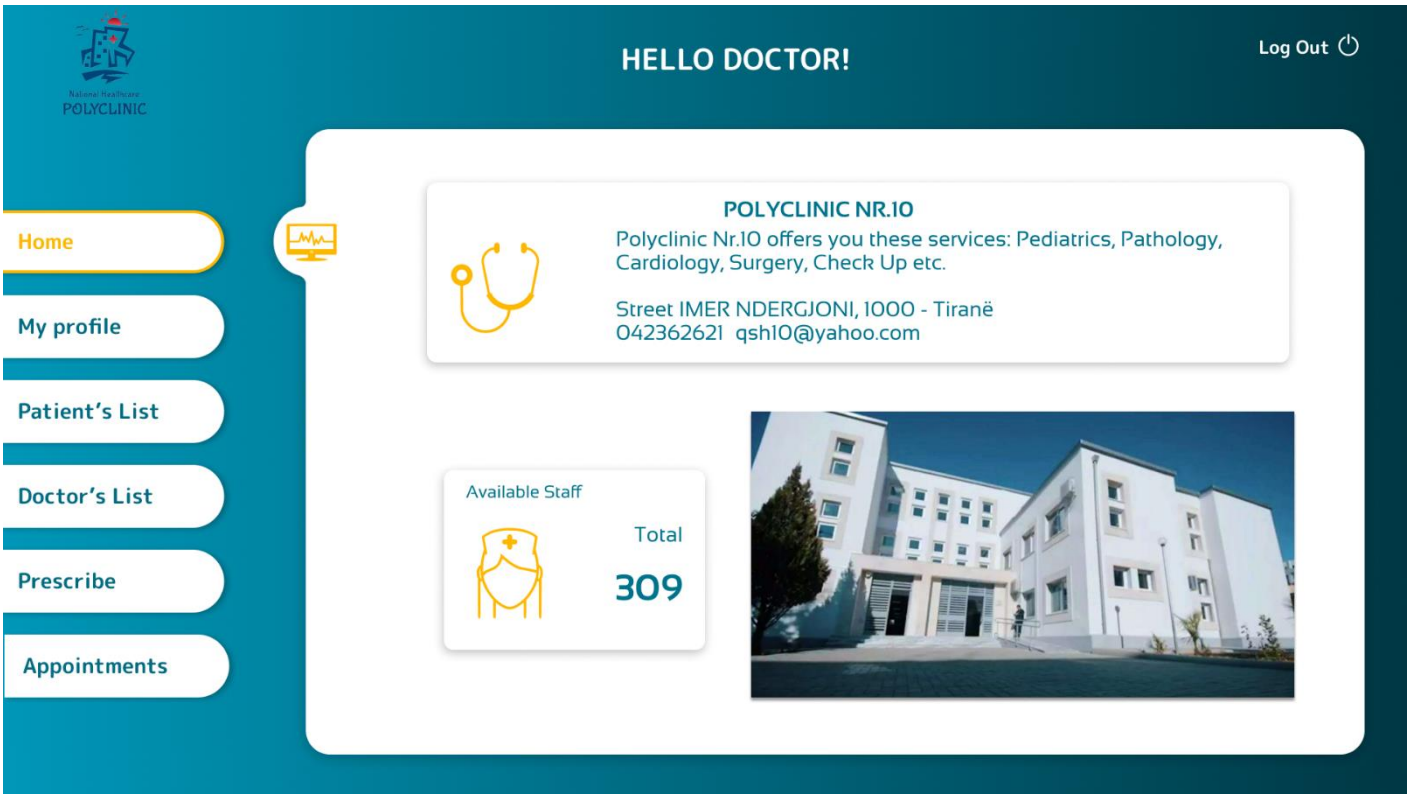

National Healthcare
POLYCLINIC

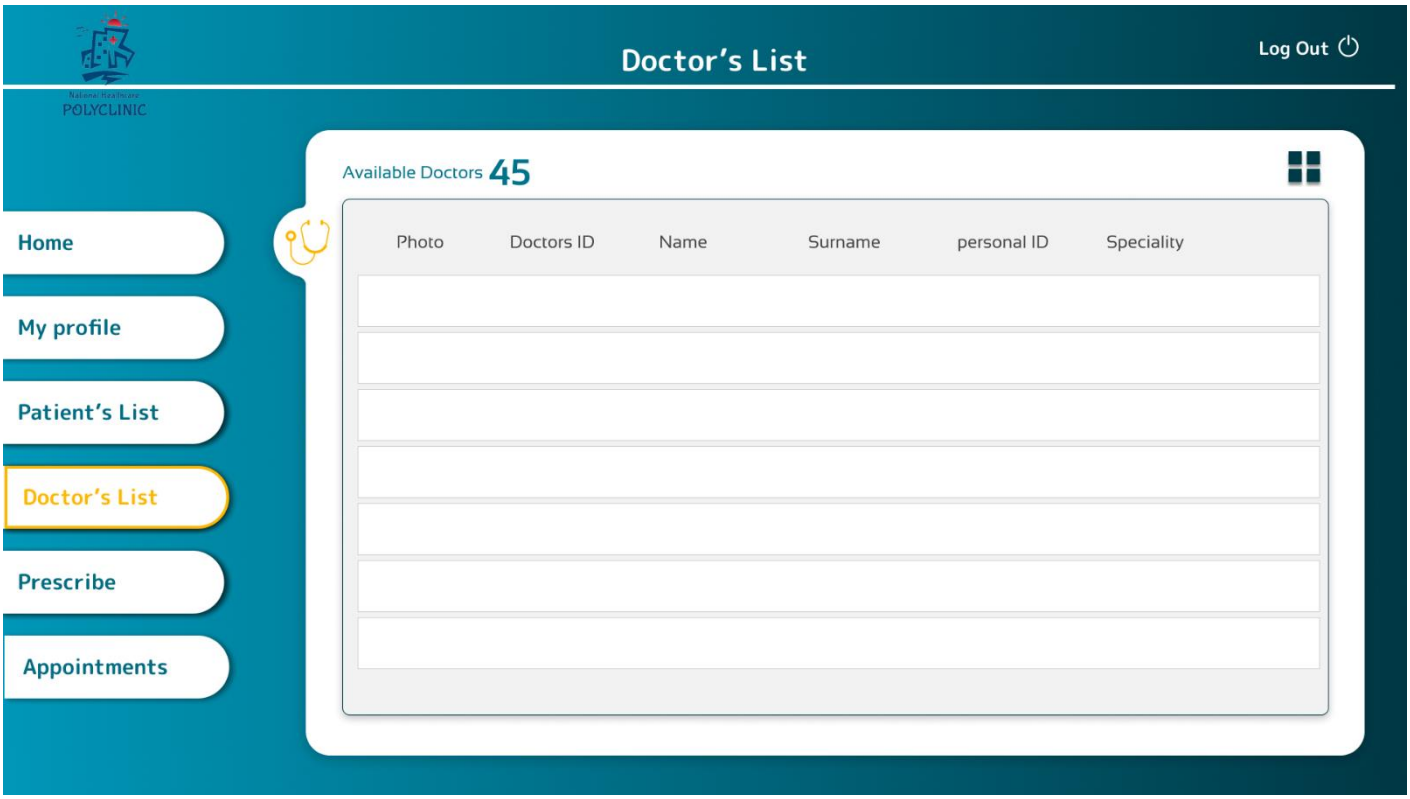

HELLO RECEPTIONIST!
Log Out
POLYCLINIC
Home
My profile
Patient's List
Doctor's List
Timetable
Appointments
POLYCLINIC NR.10
Polyclinic Nr.10 offers you these services: Pediatrics, Pathology, Cardiology, Surgery, Check Up etc.
Street IMER NDERGJONI, 1000 - Tiranë
042362621 qsh10@yahoo.com
Available Staff
Total
309


APPOINTMENTS
Log Out
POLYCLINIC
Home
My profile
Patient's List
Doctor's List
Prescribe
Appointments
July 11, 2022 Today
Day
Week
Primary care
New appointment
Eva Daçi
Physician
Ari Dikolli
Physician
Enriketa Hoxha
Nurse practitioner
Anisa Meta
Physician assistant


POLYCLINIC
HELLO PATIENT!
Log Out
Home
My profile
Appointments
Contact doctor
Downloads
POLYCLINIC NR.10
Polyclinic Nr.10 offers you these services: Pediatrics, Pathology, Cardiology, Surgery, Check Up etc.
Street IMER NDERGJONI, 1000 - Tiranë
042362621 qsh10@yahoo.com
Available Staff
Total
309


POLYCLINIC
Patient's List
Log Out
Home
My profile
Patient's List
Doctor's List
Prescribe
Appointments
Available Doctors 45
Photo
Patients ID
Name
Surname
personal ID
Respective Physician


National Healthcare
POLYCLINIC
HELLO DOCTOR!
Log Out
Home
My profile
Patient's List
Doctor's List
Prescribe
Appointments
POLYCLINIC NR.10
Polyclinic Nr.10 offers you these services: Pediatrics, Pathology, Cardiology, Surgery, Check Up etc.
Street IMER NDERGJONI, 1000 - Tiranë
042362621 qsh10@yahoo.com
Available Staff
Total
309


National Healthcare
POLYCLINIC
Doctor's List
Log Out
Home
My profile
Patient's List
Doctor's List
Prescribe
Appointments
Available Doctors 45
Photo
Doctors ID
Name
Surname
personal ID
Speciality

# 6. Appendix

## *6.1 Appendix A - Definitions, Acronyms and Abbreviations.*

AD_## - Activity Diagram followed by a number
CD – Class Diagram
CoD – Component Diagram
ColD_## – Collaboration Diagram followed by a number
DD – Deployment Diagram
DFD_## - Data Flow Diagram followed by a number
ERD – Entity Relation Diagram
FR_## - Functional Requirement followed by a number
OD – Object Diagram
PDF – Portable Document Format
SD_## - State Diagram followed by a number
SeqD_## - Sequence Diagram followed by a number
UC_## - Use Case followed by a number
UI – User Interface
US_## - User Scenario/Extended followed by a number
PD_## - Package diagram followed by a number

## *6.2 Appendix B - References*

(Figma, n.d.)

*Figma*. (n.d.). Retrieved from Figma: https://www.figma.com/community/plugin/862039267149408972/Quest---Figma-to-React-Components%2C-HTML-pages

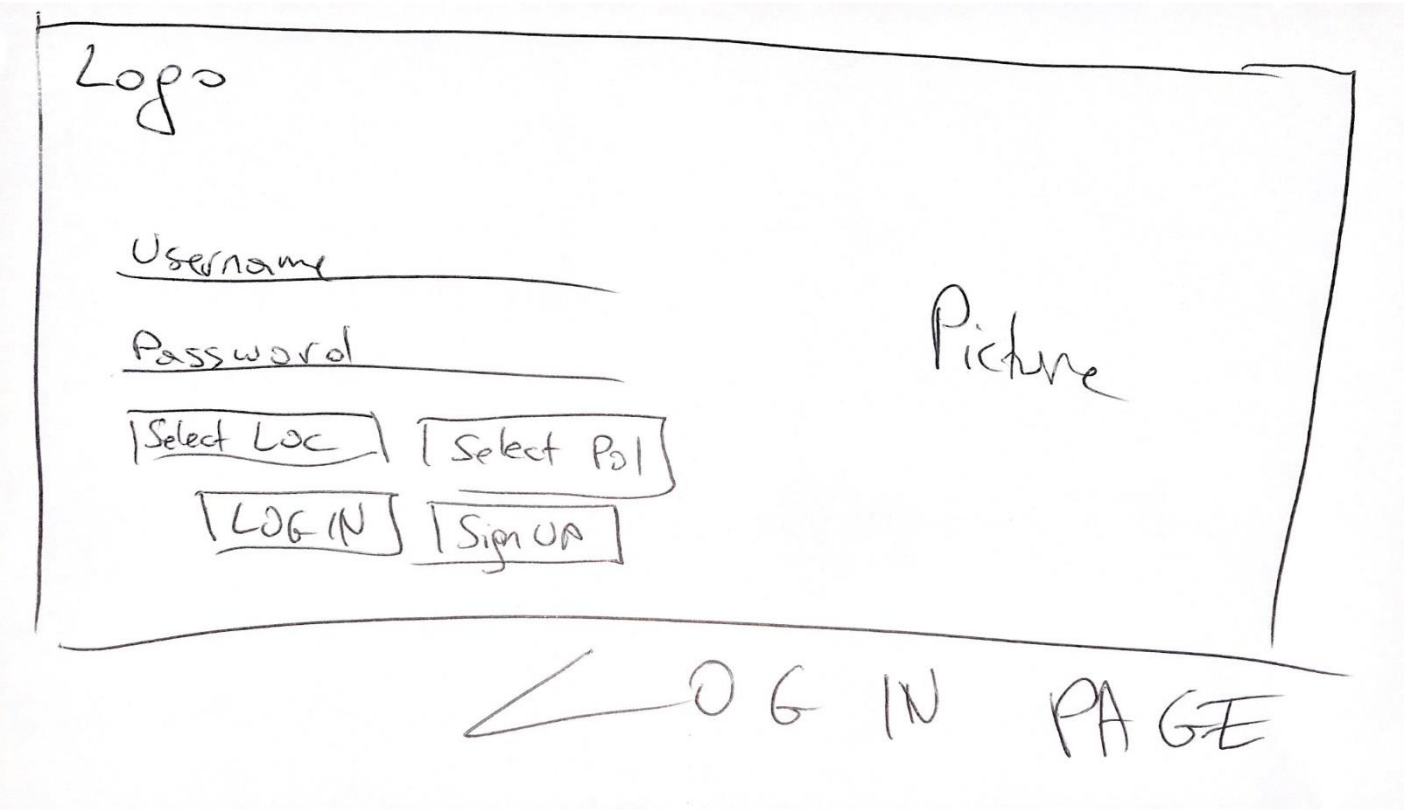
(The functional and nonfunctional requirement for HMS, n.d.)

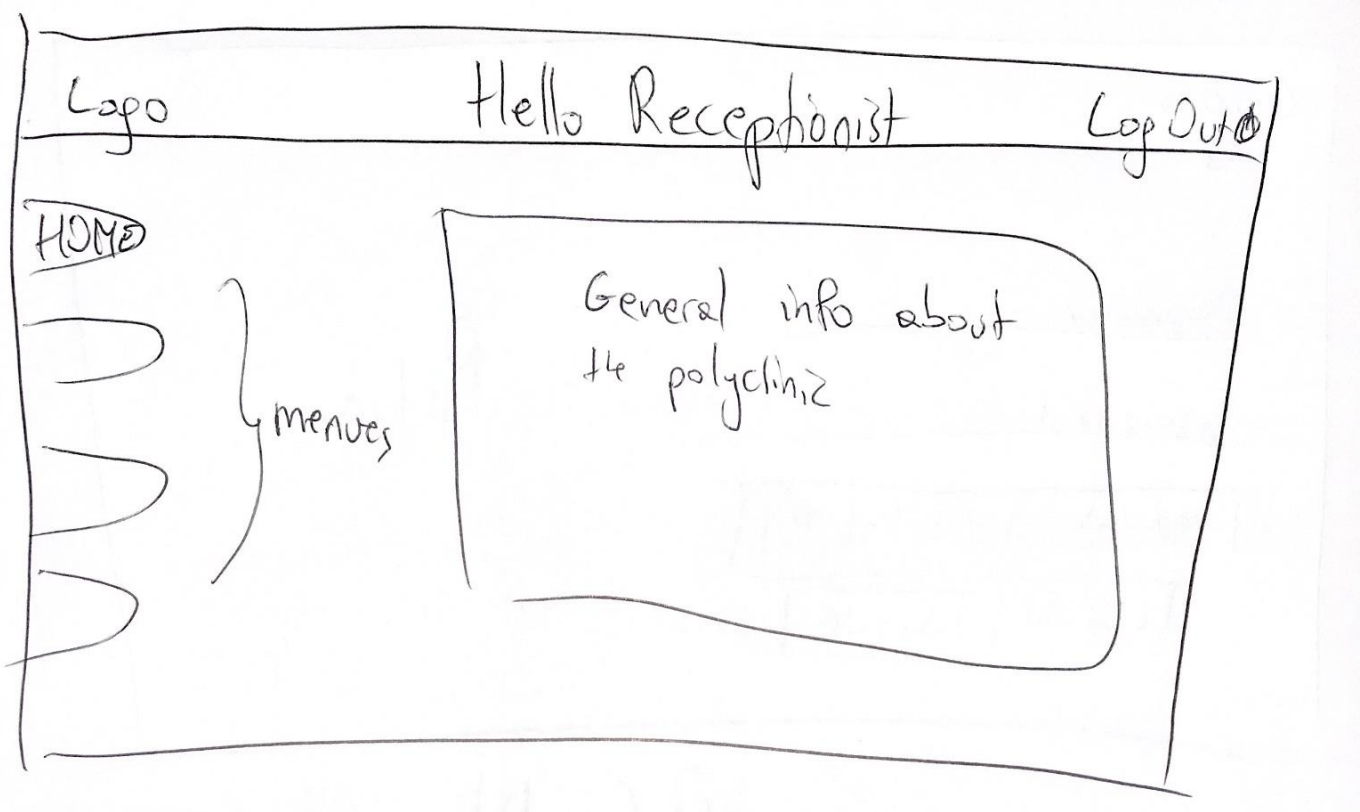
*The functional and nonfunctional requirement for HMS*. (n.d.). Retrieved from ModDoc: https://mocdoc.in/blog/the-functional-and-nonfunctional-requirement-for-hms

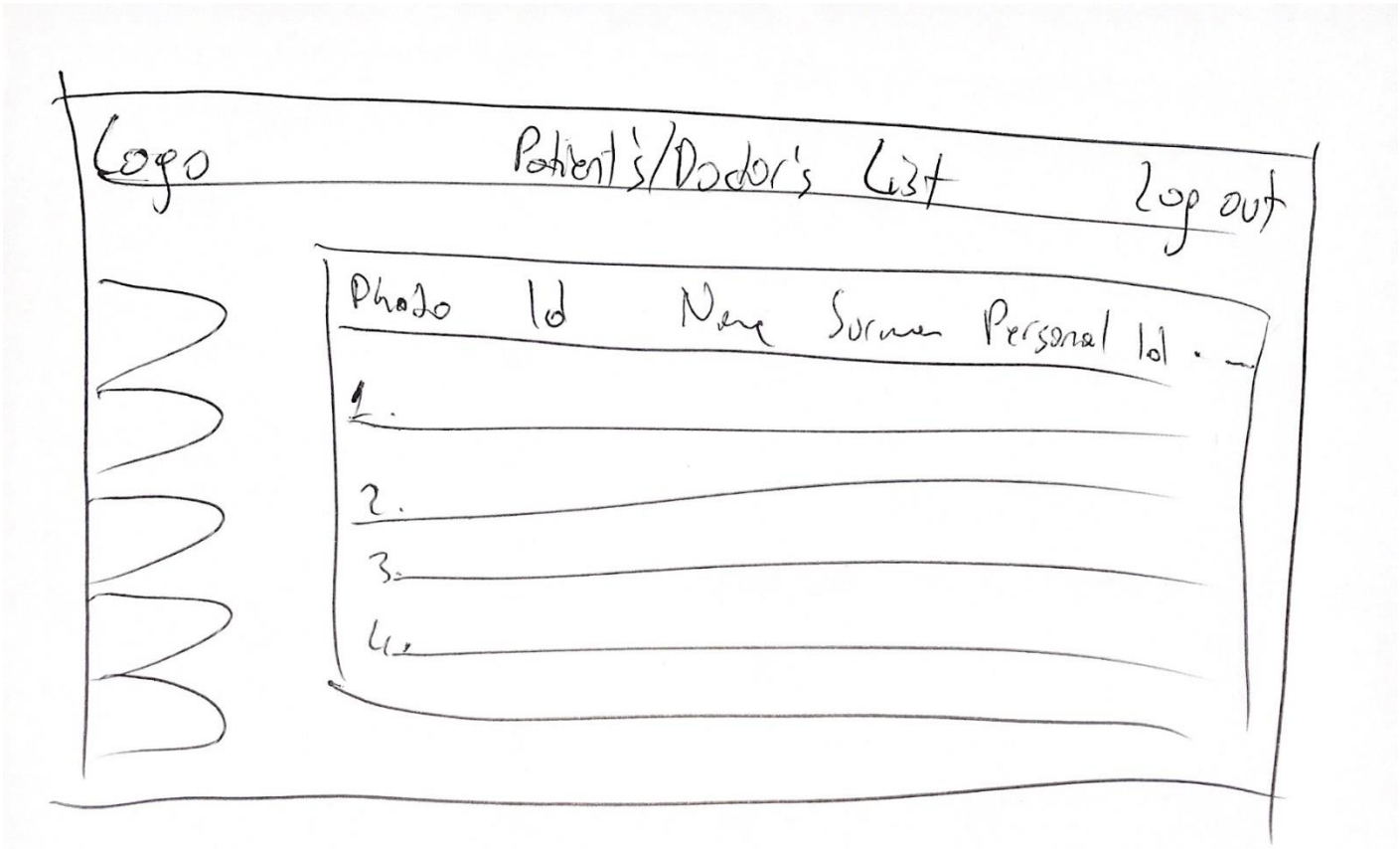
Voznaya, A. (n.d.).

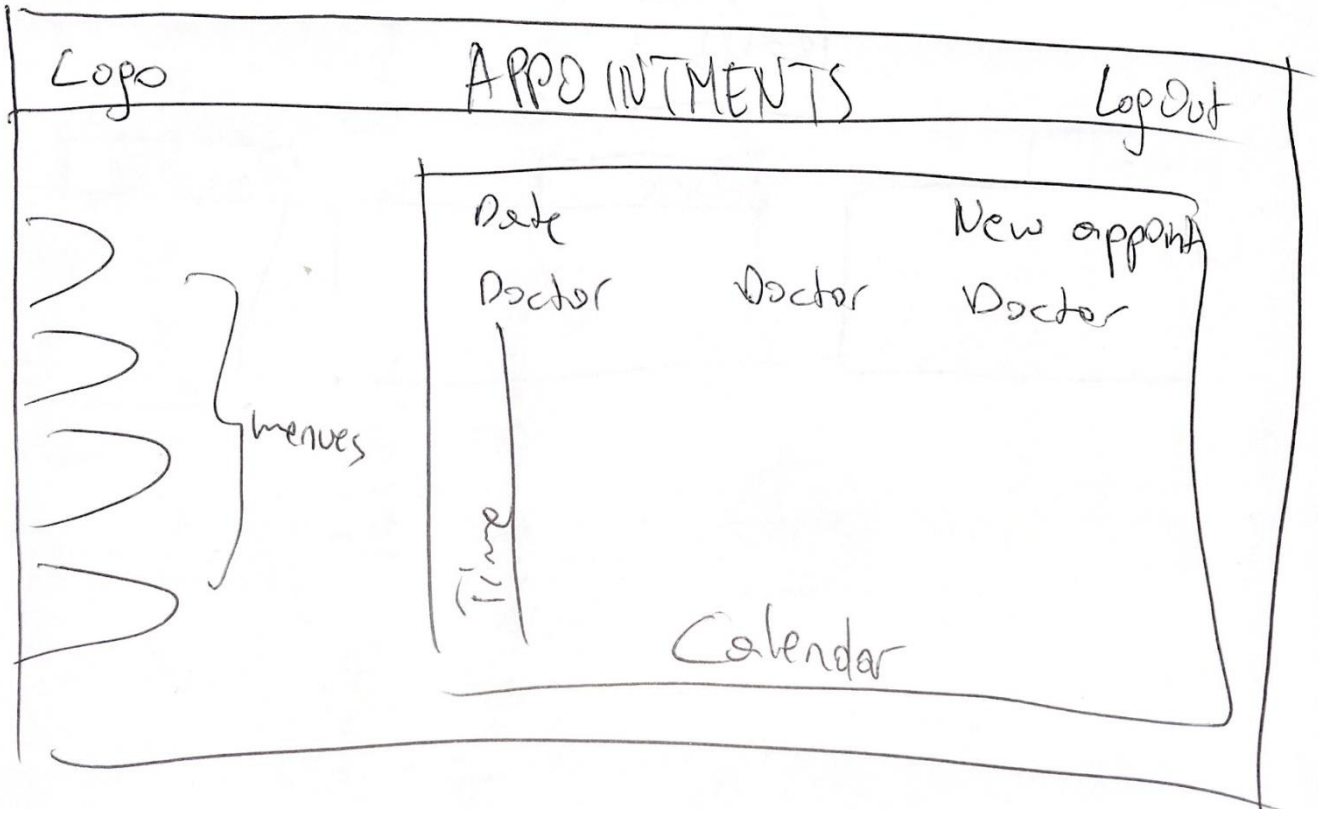
*GLORIUM Technologies*. Retrieved from GLORIUM Technologies: https://gloriumtech.com/hospital-management-software-development-key-features-and-benefits/

## *6.3 Appendix C - Sketches*




Logo
Patient's/Doctor's List
Log out
Photo
Id
Name
Surname
Personal Id
1.
2.
3.
4.


Logo
APPOINTMENTS
Log Out
Date
New appoint
Doctor
Doctor
Doctor
menues
Time
Calendar