



**Dermatology clinic app  
Requirements Specificatio**

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# *Dermatology clinic app Requirements Specification*

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## **1. Executive Summary**

### **1.1 Project Overview**

This project conforms with a simple application which is a Web-Based and consists as a simplifier management system for dermatologist clinic .Many people tend to neglect their skin problems because they perceive them as unimportant, thinking that they will pass over time by itself, or by using a product that most of the time is not suitable for treating specific conditions. Therefore, they can have further problems that may appear in the future. Since nowadays technology plays a huge role in our lives, and almost everything is digitalized, in order to solve this problem, we have thought to develop an app that aims to facilitate the interaction of patients with dermatologist specialists.

This app will help people communicate directly to specialists and send their skin images. A dermatologist can easily diagnose a skin problem through an image, that is why this app will save time for patients. The user can fill out a form and attach the skin photo and other health information that might be needed by the doctor, such as past medical records. By having access to these files, the doctor avoids prescribing medication that can contain ingredients, which may cause an allergic reaction in the patient. After the doctor gives the diagnosis, he can contact the patient and give a prescription which is in a printable version. Furthermore, if the condition is serious, the patient also has the possibility to schedule appointments with the dermatologist/clinic of his choice.

The app will also support other activities like payment, searching skin information, calling and sending messages, skin history, daily skincare tips, etc. Given the high weight of many activities that doctors face on a daily basis, it appears necessary to develop a management system that encompasses both on-site (in the clinic) and off-site (outside the clinic) responsibilities. This management system intends to provide practitioners with an easy-to-use, all-in-one tool at every level of their job. The environment must be designed in such a way that it meets several important requirements presented by both practitioners and clients, providing the latter with a

quick and reliable way to manage their visits, payments, medical history, and treatment plans in a comprehensive and well-organized set of tools while also assisting with the management of the agenda and finances. Inorder to substantiate our goals, we find it very important to make a strong connection between the user's needs and our implementation. This philosophy is critical to our strategy, as we want to develop many parts of the product on a constant basis. Furthermore, delivering diverse perspectives of the system in a flexible manner is a significant component of our work, making it easier for all sorts of users to access their information with ease. Users would be able to view their data remotely and at any time if these technologies were used. Additionally, this system, which is aimed to make patients' lives easier by organizing and eliminating superfluous human errors from their everyday tasks, should benefit patients, doctors, and clinics. Thanks to advanced technology and artificial intelligence, diagnosing skin problems and maintaining skin health has never been easier. You'll be able to connect with professional dermatologists and put your fears to rest in no time.

## **1.2 Purpose and Scope of this Specification**

The purpose of this specification is to assess the current state of the product design and to document the entire process based on design issues and the audience.

This specification encompasses several aspects of the process being discussed in an as broad scope as possible. Thus, in this scope we address the following:

- In depth documentation of the features of the product
- Technical overview of the system processes and views
  - This is discussed in Part 2.1 and throughout the document
- User and System Requirements
- Components & Functional/non-functional requirements
  - These are discussed in Part 3 in some detail
- Definition of users' means of using and accessing the product
  - Use cases/scenarios discussed in Part 4
- Dependencies and Constraints
  - These are discussed in Part 2.4/5 of the Document

Aspects not included in the scope are as follows:

- Legislative requirements for the product
- Auditing and financial considerations of the product

## **2. Product/service description**

This software will allow users to communicate effectively with doctors and send photographs of their skin. Because a dermatologist can readily diagnose a skin concern using a photograph, this app will save patients time. The user can complete a form and submit the skin photo as well as any other health information that the doctor may require, such as previous medical documents.

The doctor can avoid providing medication that contains chemicals that could induce an allergic reaction in the patient if he or she has access to these files. After the doctor has made the diagnosis, he can contact the patient and issue a printable prescription. If the patient approves to order the medications from the clinic, then the dermatologist can add the required medications to the patient's cart, meanwhile the pharmacist will provide further details of the order.

### **2.1 Product context:**

This software is a critical work tool whose purpose is to facilitate the interaction between the patient and the doctor, including here diagnoses, appointments, routine check-ups and the maintenance of patients' data. Because there is currently no system on the market that meets the full range of criteria, the idea for such an app was created.

With the user in mind, it thrives on a high level of user-friendliness, making it a valuable resource for patients and professionals.

This tool provides a simple, adaptable, and effective answer to the difficult process of organizing information. With an electronic, cloud solution, patients' data and medical histories are no longer on paper. Furthermore, it provides doctor-patient interaction and notifications in real time.

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Given the comparatively low upfront cost of establishing and operating a cloud-based platform of apps, many industries and enterprises are already adopting this new philosophy.

### **2.2 User Characteristics:**

#### **Patient:**

- Complete a form with the proper information about the skin problem
- Pay treatments online
- Communicate with the doctor from the app(chat, call)
- Choose an emergency option to be in the first cases to be consulted
- Book an appointment in case of unclear diagnosis
- Create an album with skin images related to the disease
- Write daily symptoms and images in patient diary
- Read verified information about skin problem after having the diagnosis
- Receive daily notifications about the medicaments and appointments
- Choose the dermatologist based on preferences or availability
- Added to the Dermo Tree of his/her family members who might have been users of app or patients of this clinic previously

#### **Dermatologist:**

- Provides his timetable
- Awaits new cases
- Access patients medical files and diagnosis
- Access the diary if the patient allows.
- Give the prescription in two forms:
  1. Printable form so it can be given in pharmacy to get the medications
  2. Write the medications in a specific part of app

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- Filter patients according to diseases or emergency cases.
- Send a patient case to another dermatologist in case of not being available
- Access all patients' cases in order to use them as a reference
- Send appointment information to receptionist by email

### **Pharmacist:**

- Checks the medications available
- Receives the prescription from the dermatologist
- Prepares the medications order
- Contacts the patient for the order
- Receives the personal information of the patient
- Approves the order
- Contacts the admin of app to add the medications not available

### **Admin:**

- Managing the database
- Reviewing and updating doctors' profile
- Updating the services offered
- Generating reports
- Can update his credentials

### **2.3 Assumptions:**

- It is assumed that the staff is familiar with the English language
- It is assumed that the clients have a basic knowledge of smartphones.
- The mobile devices are assumed to have either iOS or Android operating systems.

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- The administrative and management functions will be managed using a web interface. This assumes an active internet connection and a device which has access to the internet (laptop, PC, mobile device)
- It is assumed that the admin will have access rights to the data entered by the patients, as well as the dermatologist, which apart from the form, can access other patients' data only if the patient allows it. This data is accessed as stated in the related Albanian law on data protection.
- It is assumed that the information provided by the patients is entirely confidential. The patients will have confidential rights to view and update their personal information on the system.
- The admin is expected to double-check all required paperwork when adding a new doctor or pharmacist, or amending their personal information.

### **2.4 Constraints**

The system will potentially have the following constraints:

- Every patient, dermatologist and pharmacists must log in and/or register with their personal username.
- There should be provided fast internet connection so as the app can work properly.
- The patient should be logged in to send the form and contact the dermatologists. Otherwise he/she will be considered as a visitor.

### **2.5 Dependencies**

- The dermatologist cannot view the diary of the patient if he/she has not given permission to the dermatologist.
- The patient needs to have logged in so as he/she can contact a doctor and fill in a form with skin problems.
- The phone camera should be placed in the proper distance to make the proper skin scanning.

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- The patient cannot decide the appointment without checking the timetable of the dermatologist.
- If a dermatologist is not available to consult the patient case, it will be sent to another dermatologist.
- In order to finalize the order of medications, the pharmacist waits for the confirmation from the patient.
- The order cannot be performed if a specific medication is not available in the catalog.
- The patient cannot send the form if he/she has not made the payment for the service that is being provided with.

### **3. Requirements**

#### **3.1 Functional Requirements:**

Req#	Requirement	Comments	Priority	Date reviewed	SME reviewed/approved
R_01	The app will offer different views for different user levels (doctors, patients, admin)	Based on the role and the account type of the user, the app will provide different views.	1	19.04.2022	A.Meta E.Hoxha K.Kasa
R_02	The admin account must have all the privileges of the system.	The admin account has full access to all functionalities and can view any data in real-time.	1	19.04.2022	A.Meta E.Hoxha K.Kasa
R_03	Users should accept conditions to proceed	When the user creates his account, he	1	19.04.2022	A.Meta E.Hoxha

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	with registration.	should review and accept terms and conditions in order to continue with the registration			K.Kasa
R_04	Patient fills a form to describe the symptoms that he/she had, the time period, an image of skin, previous health information, etc.	This step is important because it will be recorded in the patient's profile, as well the dermatologist needs to know past medical history.	1	19.04.2022	A.Meta E.Hoxha K.Kasa
R_05	The user will log in by email and password		1	19.04.2022	A.Meta E.Hoxha K.Kasa
R_06	The user can choose between two section if the disease is connected to hair or skin condition in order to have a more specific selection for the dermatologist.	This is important in order to diagnose the disease.	1	19.04.2022	A.Meta E.Hoxha K.Kasa
R_07	Patients can choose an emergency option to be in the first case which the doctor can consult.	In a normal case, the dermatologist should respond within 24 hours, however if case is	3	19.04.2022	A.Meta E.Hoxha K.Kasa

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		emergent, the dermatologist should make the consult as soon as possible.			
R_08	Patient provides a clear image of their skin.	When the user scans the skin, the app should provide to patient the proper instructions to take a clear image.	1	19.04.2022	A.Meta E.Hoxha K.Kasa
R_09	The user should have a skin album which is organized according to the skin problem.	Designed for patient to keep track of skin condition changes.	2	19.04.2022	A.Meta E.Hoxha K.Kasa
R_10	The dermatologist has access to the patient's information.	The user will have only one profile and it can be viewed by every dermatologist he/she is having the consultation. It means that a dermatologist can access health condition history.	1	19.04.2022	A.Meta E.Hoxha K.Kasa

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R_11	Patient can contact with the dermatologist through the app	Patient can text and call the dermatologist if he/she pays some extra money for the health service.	1	19.04.2022	A.Meta E.Hoxha K.Kasa
R_12	The doctor can give the prescription in printable form.	This type of prescription is sent to the patient so it can be given in pharmacy to get the medications.	2	19.04.2022	A.Meta E.Hoxha K.Kasa
R_13	The doctor can write the medications in a specific part of app	This is the second way in which the doctor can give the prescription: The doctor can write the medications used by patient so later can easily change if they are not effective	2	19.04.2022	A.Meta E.Hoxha K.Kasa
R_14	Patient receives the diagnosis through the app	After receiving a diagnosis, the patient can access through app verified	1	19.04.2022	A.Meta E.Hoxha K.Kasa

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		information about it.			
R_15	Patient makes payment online	The patients can pay for the service they take, through the app using payment methods.	1	19.04.2022	A.Meta E.Hoxha K.Kasa
R_16	In this app, all dermatologists can have their own profile linked to the clinics they work.	The profiles are created and managed by the administrator.	3	19.04.2022	A.Meta E.Hoxha K.Kasa
R_17	Each doctor will have the availability status.	To help the patient choose the dermatologist according to availability	1	19.04.2022	A.Meta E.Hoxha K.Kasa
R_18	There should be a dairy where the patient can write daily symptoms or changes in skin.	It can be accessible or not if the user wants to.	2	19.04.2022	A.Meta E.Hoxha K.Kasa
R_19	After receiving a diagnosis, the patient can access through app verified information about it.	The patient can read information without the need of dermatologist explanation	3	19.04.2022	A.Meta E.Hoxha K.Kasa
R_20	The app should give the patient information about the prices for each	This is done in order to be transparent with	3	19.04.2022	A.Meta E.Hoxha

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	service.	the patients.			K.Kasa
R_21	According to the number of appointments, the patient can receive discounts.	For each consult that the patient pays for, he/she will receive points.	3	19.04.2022	A.Meta E.Hoxha K.Kasa
R_22	There should be a dairy where the patient can write daily symptoms or changes in skin.	He/she can also add skin condition images.		19.04.2022	A.Meta E.Hoxha K.Kasa
R_23	The user might visit the app without having an account	This type of user can access community and verified information sections.	2	19.04.2022	A.Meta E.Hoxha K.Kasa
R_24	There should be a community section where users who don't pay can get some information.	That information is given by the dermatologist and the patient who write about their previous skin problems.	3	19.04.2022	A.Meta E.Hoxha K.Kasa
R_25	The app should provide the users a map to find the clinic.	They choose according to the Dermatologist or the nearest clinic.	3	19.04.2022	A.Meta E.Hoxha K.Kasa
R_26	The patient can have his/her calendar to	The app can be integrated with	3	19.04.2022	A.Meta

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	check the tasks to do daily including the appointments arranged.	google calendar to get the appointment arranged.			E.Hoxha K.Kasa
R_27	When signing up in app, patient should provide all of the required information.	This would help the dermatologist to give the proper diagnosis.	1	19.04.2022	A.Meta E.Hoxha K.Kasa
R_28	The dermatologists can filter patients according to disease, symptoms, emergency case etc.	This would also help them to compare similar cases.	3	19.04.2022	A.Meta E.Hoxha K.Kasa
R_29	To take the skin picture, this app needs to use the camera of the user.	When the user scans the skin, the app should provide to patient the proper instructions to take a clear image.	1	19.04.2022	A.Meta E.Hoxha K.Kasa
R_30	The user will have only one profile and it can be viewed by every dermatologist he/she is having the consultation.	It means that dermatologist can access health condition history.	1	19.04.2022	A.Meta E.Hoxha K.Kasa

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R_31	The patient receives notifications about the medications that should be taken daily.	The user can activate or not the notifications.	2	19.04.2022	A.Meta E.Hoxha K.Kasa
R_32	The patient can book appointment through the app.	This is done in case of unclear diagnosis.	1	19.04.2022	A.Meta E.Hoxha K.Kasa
R_33	There should be a Dermo Tree which links the patient with other family member patients.	This will be used by doctors to identify hereditary skin diseases or contagious ones.	3	26.04.2022	A.Meta E.Hoxha K.Kasa
R_34	The dermatologist can send the case of a patient to another dermatologist.	The patient receives notification for this change.	1	26.04.2022	A.Meta E.Hoxha K.Kasa
R_35	The dermatologist can make changes to his/her timetable and write details of appointments.	The user can view only the availability and not the details given by doctor.	1	26.04.2022	A.Meta E.Hoxha K.Kasa
R_36	Dermatologist send a copy of calendar to receptionist through by email	The app will contain an option to send it	1	26.04.2022	A.Meta4 E.Hoxha K.Kasa
R_37	Dermatologist should respond within 24 hour.	The app will keep track of the time span of not	1	26.04.2022	A.Meta E.Hoxha

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		getting response.			K.Kasa
R_38	In case of not getting a response, the patient can choose another dermatologist or get the one suggested by app.	In that case, the patient will get the points as it has done one consult.	1	26.04.2022	A.Meta E.Hoxha K.Kasa
R_39	The clinic pharmacy should provide a catalog with all medications.	They should have all important details like image, name, expire date, price etc	1	26.04.2022	A.Meta E.Hoxha K.Kasa
R_40	Only the pharmacist and dermatologists can have access in the pharmacy store section.	As the patient won't be able to make the order by themselves.	1	26.04.2022	A.Meta E.Hoxha K.Kasa
R_41	The dermatologist can add medications needed to the patient's chart.	As the medicines should be taken by a specialist and not a normal person.	1	26.04.2022	A.Meta E.Hoxha K.Kasa
R_42	The patient approves or not if he/she want to make the medications order.	The patient might not want to make the order online.	1	26.04.2022	A.Meta E.Hoxha K.Kasa
R_43	The dermatologist should also attach the printable prescription with the order.	No one can take medications from pharmacy without prescription.	2	26.04.2022	A.Meta E.Hoxha K.Kasa

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R_44	There is a online payment option for the medications.	This is a separate section in online pharmacy.	1	26.04.2022	A.Meta E.Hoxha K.Kasa
R_45	The pharmacist will provide the order details to the patient.	Date, time, place	1	26.04.2022	A.Meta E.Hoxha K.Kasa
R_46	The admin can create, update and delete the dermatologist profiles	In order to save time to doctors.	2	26.04.2022	A.Meta E.Hoxha K.Kasa
R_47	The admin can create, update and delete the services of the clinic.	To be up to dates with the clinic changes.	2	26.04.2022	A.Meta E.Hoxha K.Kasa
R_48	In the test section of the patient, every user except the pharmacist can update it.	The patient might have done skin tests and they are needed by the doctor.	2	26.04.2022	A.Meta E.Hoxha K.Kasa
R_49	When the case of patient is closed by the dermatologist, he/she has an option to close.	Then it will be registered directly to database of case solved	1	26.04.2022	A.Meta E.Hoxha K.Kasa
R_50	The admin can generate reports for the incomes, number of patients,	They will be used by the clinic.	2	26.04.2022	A.Meta E.Hoxha

	number of cases solved.				K.Kasa
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### **3.2 Non-Functional Requirements:**

#### **3.2.1 Product requirements**

##### *3.2.1.1 User interface requirements*

The user interface will be grouped into 3 main interfaces depending on the role of the user.

- Logged in interface
- It is provided for all type of users. It contains the input boxes for the specific information needed like the username and the password. There will be the submit button to be logged in and open the other pages.
- Patient Interface
- To the patient, firstly there will be displayed the home page which includes three categories that make the link to other pages with different functionalities.
- Each of the categories will be displayed using icons and label to be easily determined by the patient. On the top, there will be a navigation bar for quick navigation through the app.
- In the consultation view, there will be displayed a form with all the required input boxes. There will be a camera icon so the user can easily understand that it is used to make the scanning of the problematic skin. There is also another option for uploading images from the phone device. There will be the option to make the payment and a button to make the submission of the form. There will be a chat icon to send the user to a chat section to communicate with the dermatologist.
- In the communication section, the patient can call the dermatologist by clicking the phone icon, or can write messages in the chat boxes.
- In the diary page, the patient will be provided with empty pages to write notes for the symptoms or things that show improvement in the disease. There is also an option to attach photos. The patient can click to a slide button to allow the doctor access the information.

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- In the album section, there will be displayed all images uploaded and taken for the form.
- . Dermatologist Interface
  - In the dermatologist interface, there should be displayed many buttons to make the link with other pages. One page will show the information for patients, where the filtering options will make the searching quicker.
  - In the dermatologist interface, there should be a calendar to show all the dates marked with a color in case of appointment arrangements.
- . Pharmacist Interface
  - In the pharmacist interface, there will be provided a catalog with all the medications that are found in the pharmacy.
  - There will be buttons to prepare the order, to contact the patient, to contact the dermatologist and to finalize the order.

### ***3.2.1.2 Usability***

There are considered some key indicators for the usability of the app:

#### **Accessibility:**

Because both patients and dermatologists will use the app on their devices, the software must be available remotely and at all times.

#### **Responsiveness:**

The app's design and database will be highly responsive. The program must be responsive in both design and data transactions.

#### **Flexibility:**

The program must be designed in such a way that it is relatively easy to update and accommodate to these requirements.

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The program must be designed in such a way that it is possible to detect and handle faults as promptly as possible.

### **Effectiveness:**

The app should be simple and easy to use for both the patients and the dermatologists.

### **Efficiency:**

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.

#### **3.2.1.3 Efficiency**

Each operation will be executed in a real time.

##### **3.2.1.3.1 Performance Requirements**

- The software will be based on app for users and in the case of the admin, it will be web based.
- The software application should support all the users who have an account at any time they want.
- In order to use the app, there is needed internet connection, however there will be some functionalities where the internet connection is not needed.

##### **3.1.2.3.2 Responsiveness**

Responsiveness of the application should be achieved to the user Input or to any external interrupt which may have a higher priority and it should ensure to return back to same state.

When skin app gets interrupted by another app activity, then app should save state and go back to same state/ page which was in the previous state.

##### **3.2.1.4 Dependability Availability**

- The application is partially available if the users do not have internet network.

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- The application should be available to users at any time.
- The application should be accessed in any geographical area, although it cannot offer all the services to the patients who are abroad.

### **Satisfaction**

- The user satisfaction while using the app and it is essential for the user to get the expected results by using the app.

### **Errors**

- User can face errors during the usage of the app and it is important to know how those errors affect the usage of the app and user experience.

#### **3.2.1.4 Dependability**

- Our software application depends on Internet connection.
- The consultation depends on the payment transaction.
- The medications order depends on patient and dermatologist.

#### **3.2.1.5 Security**

There should be taken into consideration some preconditions to ensure the security of app usage.

- Each patient will be able to see only his/her personal data.
- Each dermatologist can see the personal data of the patient.
- Each dermatologist will have access in the patients diary only if the patient gives the permission.
- Encryption should be applied in sensitive information such as passwords for logging In the account or making the transactions.
- Each user is responsible for their personal data authenticity that they enter
- In order to ensure high security for the users accounts, it will be mandatory for the users to make the password based on some conditions.

### **3.2.2 Organizational Requirements**

#### *3.2.1.1 Environmental Requirements*

Every document, such as the patient's personal information, prescriptions, and so on, must be imported and received by the polyclinic's system into our system, because otherwise, dermatologists will be unable to proceed with subsequent phases of medication. Of course, the clinic's system must take into account all other legal and ethical issues relating to the confidentiality of sensitive patient information.

#### *3.2.1.2 Operational Requirements*

Specify any normal and special operations that the user requires, such as:

- Approval of a major transaction, such as sign-up or access to medical records
- Data integrity is not possible without the administrator's approval
- Handling of idle and unattended periods in the app
- The user must operate under some constraints while some of his operations are not approved Backup operations
- The application will be available to the user 24/7.
- The information entered to the system shall be accessed only by the people who are previously registered to the system.
- Create, Read, Update and Delete users.
- Create, Read, Update and Delete examinations.
- Create periodic reports.
- Create prescription.
- Create medical visit.
- Update agenda.

These operations will be handled by the cloud storage provider.

### **3.2.1.3 Development Requirements**

The app will use either Wi-Fi, or mobile data to connect to the internet.

Other network related issues are automatically handled by Firebase Infrastructure, including connection monitoring, operation queueing during offline periods, etc.

### **3.2.3 External Requirements**

#### **3.2.3.1 Regulatory Requirements**

The Dermatology Application will operate for a dermatologic clinic. To ensure that our application complies with guidelines, standards, and legal requirements, we create regulation records. The rules cover personnel wellness and the app environment's safety. The state of a regulation can be Draft, Active, or Inactive. The provisions of Law No. 9887, dated 10.03.2008, "On the Protection of Personal Data" and relevant sub-legal acts will be followed while developing privacy policies. Privacy Policy explains the types of information that will be gathered and how it will be used. IP addresses are not linked to any information that can be used to identify a person. This means that users' sessions will be logged, but their identities will remain anonymous.

#### **3.2.3.2 Ethical Requirements**

Users' personally identifiable information, such as an email address, name, surname, phone number, and other information, will never be sold or exchanged to other institutions, enterprises, or non-profit organizations.

At the same time, if one or more of the following circumstances are met, the application will provide personally identifiable information about users of this web application to third parties:

- Users have given their permission for the administrator to disseminate the information.
- By current legislation, court orders, or an act of a public or regulatory authority, the administrator is requested or authorized to provide the said information.

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- The administrator discloses the information in order to preserve property rights, as well as the security of the clinic's premises, its employees, patients, and other individuals.

### ***3.2.3.3 Legislative Requirements***

The power of legislation and regulation lies in its ability to:

1. create and recognize rights;
2. impose obligations and penalties; establish permanent institutions and institutional arrangements

Law and regulation should be considered from the outset of the planning process. A legislation governing the health-care system (clinic) establishes legal authority and accountability for key health-care functions (planning, priority setting, financing, service provision, integrity and supervision, etc.). It's critical for key players to be aware of any legal laws or requirements that govern how the process should be carried out. During the various planning activities, certain legal and regulatory considerations should be considered. This section first goes over legal scenarios in which vendors, clinics, and dermatologists could be held liable for patient injuries caused by two types of clinical software: embedded software in medical devices and decision support software provided to licensed, practicing clinicians that improves their ability to collect, manage, and draw inferences from patient-related data and general biomedical information. Individual practitioners, institutions, and governments are all responsible for ensuring patient safety when decision assistance software is used in the clinical setting, according to legislative standards.

### ***3.2.3.3.1 Accounting Requirements***

Due to the obvious nature of the Dermatology App, no accounting requirements will be implemented for the time being. If such changes occur in the future, the requirements will be updated.

### ***3.2.3.3.2 Security Requirements***

The personal information of every user of this system will be protected by the relevant regulations and legislative standards that are already in place on Albanian territory. The

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Commission for Personal Data Protection, which is based in Albania, issues licenses to institutions, organizations, and/or corporations that allow them to manage personal and sensitive data about information system users. This legislation will apply to Dermatology App because it will operate under the jurisdiction of clinic websites. 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. As a result, the information of patients, doctors, administrators, and other users is already protected via emails with hashed passwords. This web application will also enforce the latest update on the General Data Protection Regulation (GDPR) as it became enforceable on June 14, 2022 in EU (European Union) and EEA (European Economic Area) countries.

### **3.3 Domain Requirements**

This app operates in the medical field, and its main purpose is facilitating the work of a dermatologic clinic. The users who access the app as guests can see some posts, but they cannot add anything, unless they sign up. All users need to have a stable Internet connection. This app not only manages the main operations related to a dermatologic clinic, but it also provides additional functions as well, such as skin scanning, creating a photo album of the skin, contacting with the dermatologist, getting the medications from the clinic's pharmacy and so on.

## **4. Software Design**

### **4.1 User Scenarios**

#### **User Scenarios: (Patient)**

##### **S\_U1: User is not registered.**

1. The user can view the profile of the dermatologists.
2. The user can view the services offered.
3. The user can access the verified information.
4. The user can access The Q&A community part, but he cannot leave his own comments.

5. The user has the option to register, in order to communicate with the dermatologist.

**S\_U2: Users signs in for the first time**

1. User chooses to sign in by pressing the specified button
2. User is redirected to Sign in activity.
3. User provides the required information in order to create their account.
4. User clicks Ok.
5. Registration is successful and complete.

**S\_U3: User fills a form**

1. The user is registered.
2. The user has to fill a form with proper information regarding their skin issue.
3. The user fills the form correctly.
4. The user submits the form
5. User awaits the dermatologist's response.

**S\_U4: User contacts with dermatologist by call**

1. User opens the contact section.
2. User chooses the call option.
3. Dermatologists answer call.
4. If the dermatologist doesn't answer, the user writes a message.
5. If no solution is found, the user has the option to ask for an appointment.
6. If the solution is found, then it is proceeded with the prescription.

**S\_U5: User contacts with dermatologist by message**

1. User opens the contact section.
2. User chooses the message option.
3. Dermatologists receives message and replies to it.

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4. If no solution is found, the user has the option to ask for an appointment.
5. If the solution is found, then it is proceeded with the prescription.

### **S\_U6: User reads information from Derma Book**

1. User clicks the option to read from the derma book, and the specified view is loaded.
2. In the Derma Book dermatologists can upload information regarding different skin issues.
3. The user has access to verified information.

### **S\_U7: User books an appointment**

1. On the home screen, User scrolls to the right, on “Appointments” section.
2. User clicks on the button to request an appointment.
3. User specifies the day he wishes to schedule the appointment, along with the service required and an optional descriptive message.

### **S\_U8: User is assigned a specific appointment**

1. Admin sends the appointment request to the dermatologist.
2. According to his schedule, the dermatologist confirms the appointment details or he schedules another timeslot.
3. User receives a push notification that the appointment has been confirmed, even if the app is closed.
4. User receives a reminder before the appointment (by default).

### **S\_U9: User gives information about his/her daily skin problems in Dermo Diary**

1. User opens the section for the diary.
2. The diary can be updated daily.
3. If the diary for a specific date is filled, the user can click the edit option.
4. Users have the option to provide pictures of their skin in order to keep track of their condition.
5. User clicks save.

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6. If the user has given access to the diary to the dermatologist, then the dermatologist gets a notification and writes a comment to the patient.

### **S\_U10: User chooses emergency option**

1. User clicks emergency option.
2. Dermatologist is notified of the case.
3. User's case is in the first cases, which the doctor can consult as soon as possible.

### **Dermatologist**

#### **S\_D1: Dermatologist creates an account**

1. Dermatologist logs in to the app using their preferred way as a regular user.
2. By supplying the required extra fields, the administrator designates the dermatologist's profile as an employee.
3. The Dermatologist's View is given to the dermatologist the next time he registers in.

#### **S\_D2: Dermatologist is not an employee of the clinic anymore**

1. The dermatologist's account is removed from the list of employees by the admin.
2. As a regular user, the dermatologist has access to the app.

#### **S\_D3: Dermatologist opens the app as an already signed in user**

1. The user's existence in the employee list is checked.
2. If the result is positive, the Dermatologist's particular View is displayed.
3. A dashboard comprising "My appointments," "My patients," "Services," and "My availability" is displayed to the dermatologist.

#### **S\_D4: Dermatologist adds his available hours in the system**

1. Every Saturday, the dermatologist should record his next week's available hours.
2. On the Home screen, Dermatologist accesses the Dashboard.

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3. Dermatologist taps "My availability"
4. Dermatologist uses the floating action bar to enter different time-spans on each day of the coming week, then submits.
5. This information is given to the administrator, who adapts the schedule to meet these requirements.

### **S\_D5: Dermatologist views the list of appointments.**

1. The user selects the "My Appointments" tab from the dashboard.
2. A tabbed interface containing "Today's Appointments" and "Upcoming Appointments" is shown to the dermatologist.
3. On each tab, you'll see a list of all the assigned appointments, sorted by start time.

### **S\_D6: Dermatologist manages his patients and treatments.**

1. Dermatologist selects "My Patients" from the drop-down menu.
2. A list of users is displayed.
3. One of the records on the list is pressed by the dermatologist.
4. The patient's profile information is displayed.
5. A dermatologist can oversee or initiate treatment.

### **S\_D7: Dermatologist starts a new appointment in a treatment.**

1. Dermatologist selects a user.
2. Dermatologist selects a treatment or starts a new one.
3. Dermatologist adds a new appointment.
4. The dermatologist fills out a full appointment description, which the user can see later in his account.
5. To keep track of the issues, the dermatologist can include images and use a Perio chart.
6. The individual appointment is assigned a price by the dermatologist, which is then added to the total treatment cost.
7. Dermatologist gives the prescriptions in two forms.

8. Access the patient's diary if the patient allows.

**S\_D8: Dermatologist awaits new cases**

1. Dermatologists can sort patients by disease, symptom, and emergency situations, among other things.
1. Dermatologists can record the patient's diagnosis along with a brief description and save it in the patient's profile.

**Pharmacist**

**S\_P1: Pharmacist asks the admin to add medicines in the catalog**

1. The pharmacist checks the catalog to make sure that all medicines are available in the catalog.
2. If there is a lack of specific medicines, the pharmacist will ask the admin to add them.
3. If there is a lack of real medicines, but they are found in the catalog, the pharmacist makes the order in the medicines company.
4. The order will not be performed until the medicines are added in the catalog.

**S\_P2: Pharmacist gets the order from the dermatologist**

1. The dermatologist sends the request to make an order in pharmacy.
2. Pharmacist gets the prescription in both versions: pdf and online form.
3. Pharmacist approves the order.

**S\_P3: Pharmacist prepare the order**

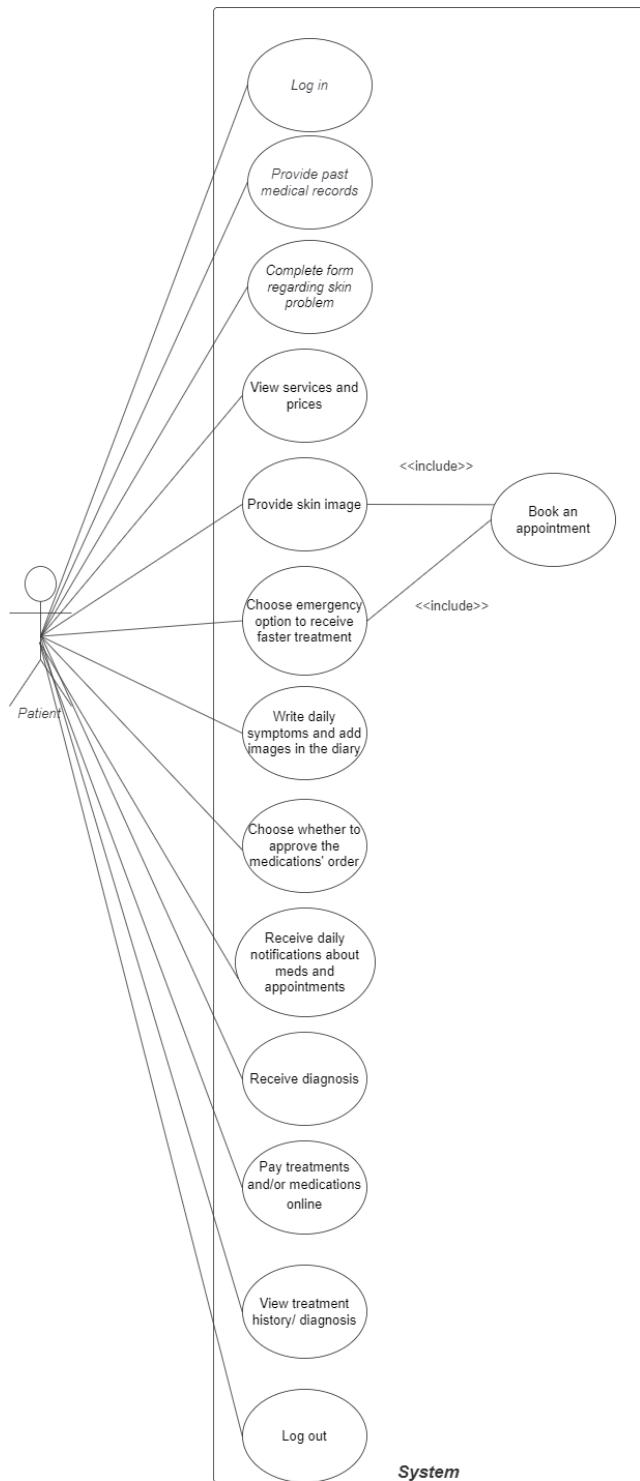
1. Pharmacist checks the catalog to prepare the order.
2. Pharmacist adds the medicines needed in the cart.
3. Pharmacist send the order request to the patient.
4. Pharmacist receives the order confirmation.
5. Pharmacist gets the other patient information to finish the order.

**S\_P4: Pharmacist receives a negative response for the patient**

1. Pharmacist cancels the order.
2. Pharmacist deletes the prescriptions, order and the patient details.
3. Pharmacist removes the medicines from the shopping cart.

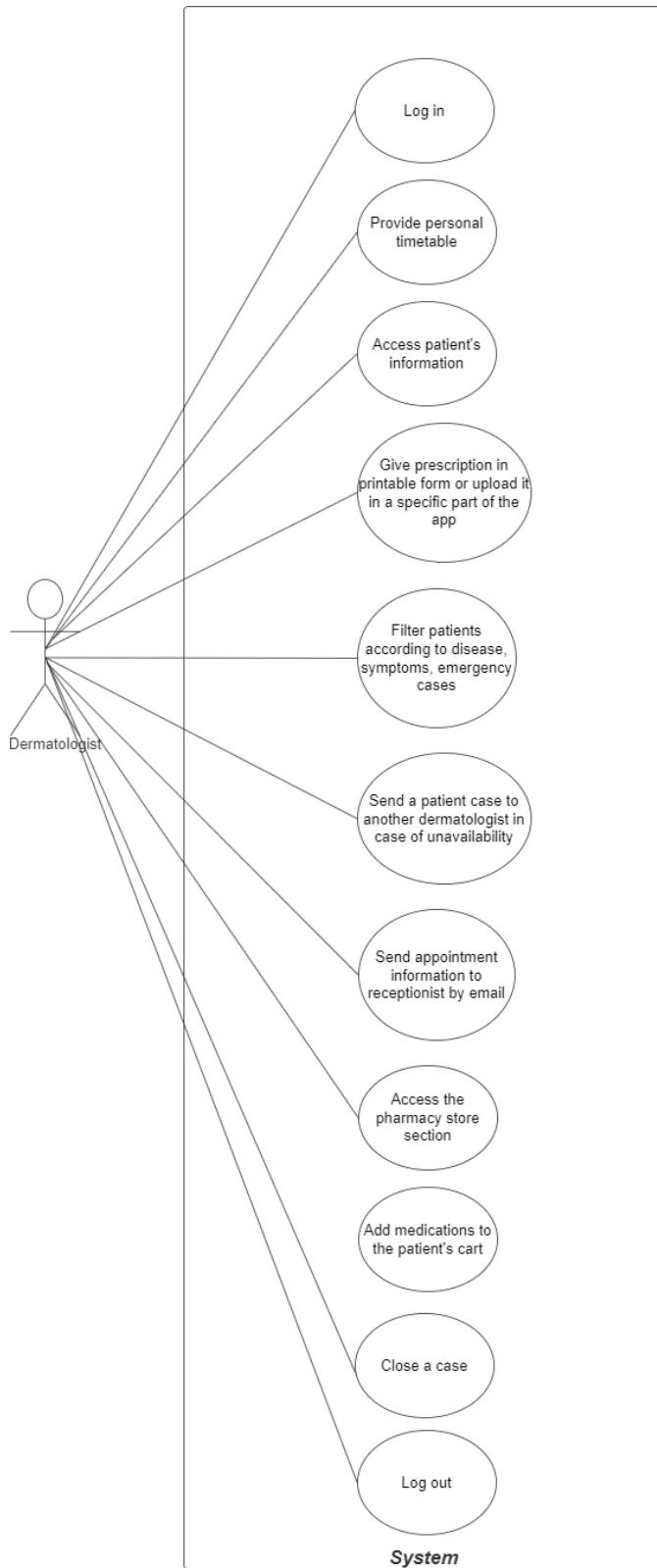
## 4.2 Use Cases

### Use Case 1: Patient



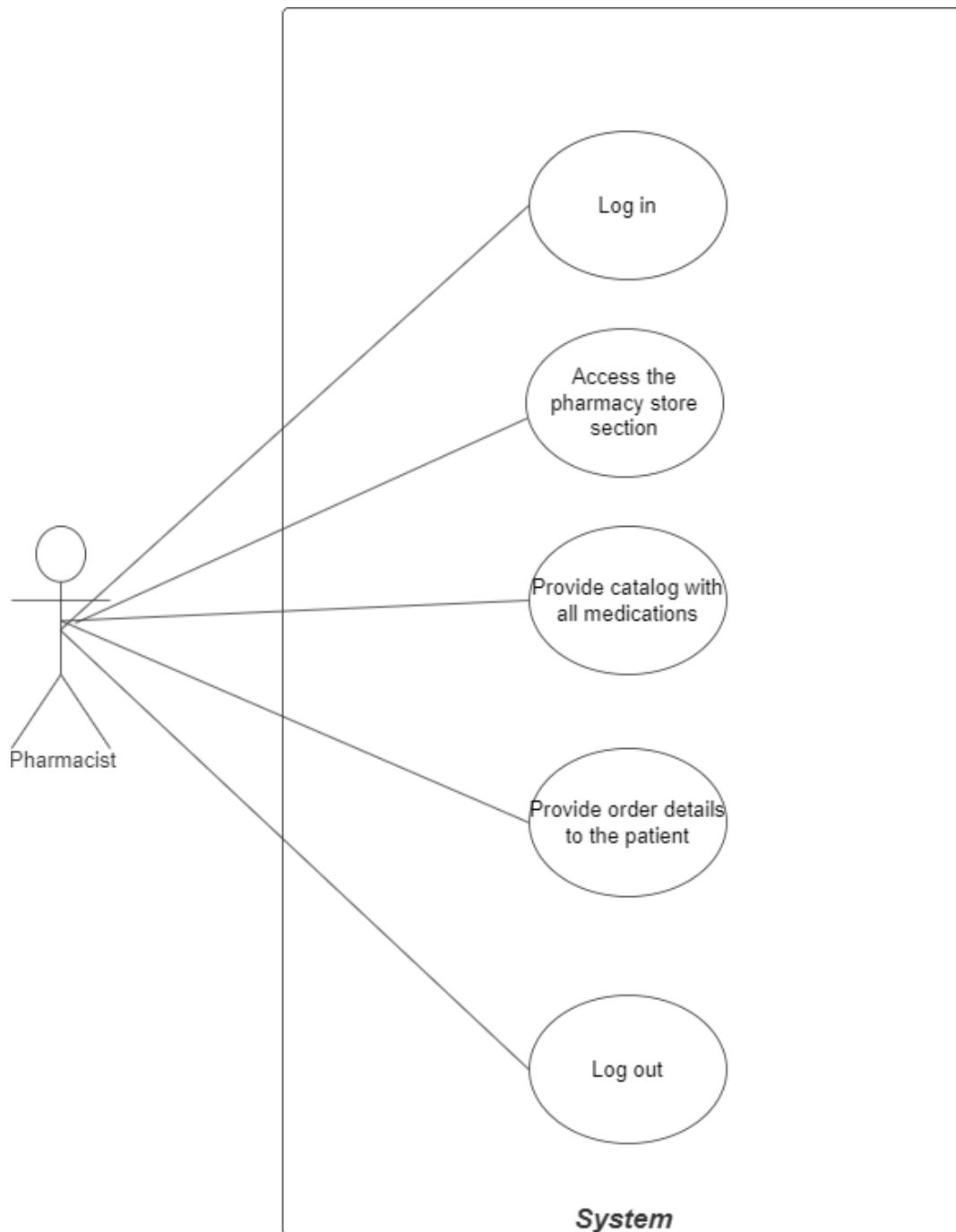
## *Dermatology clinic app Requirements Specification*

### **Use Case 2: Dermatologist**



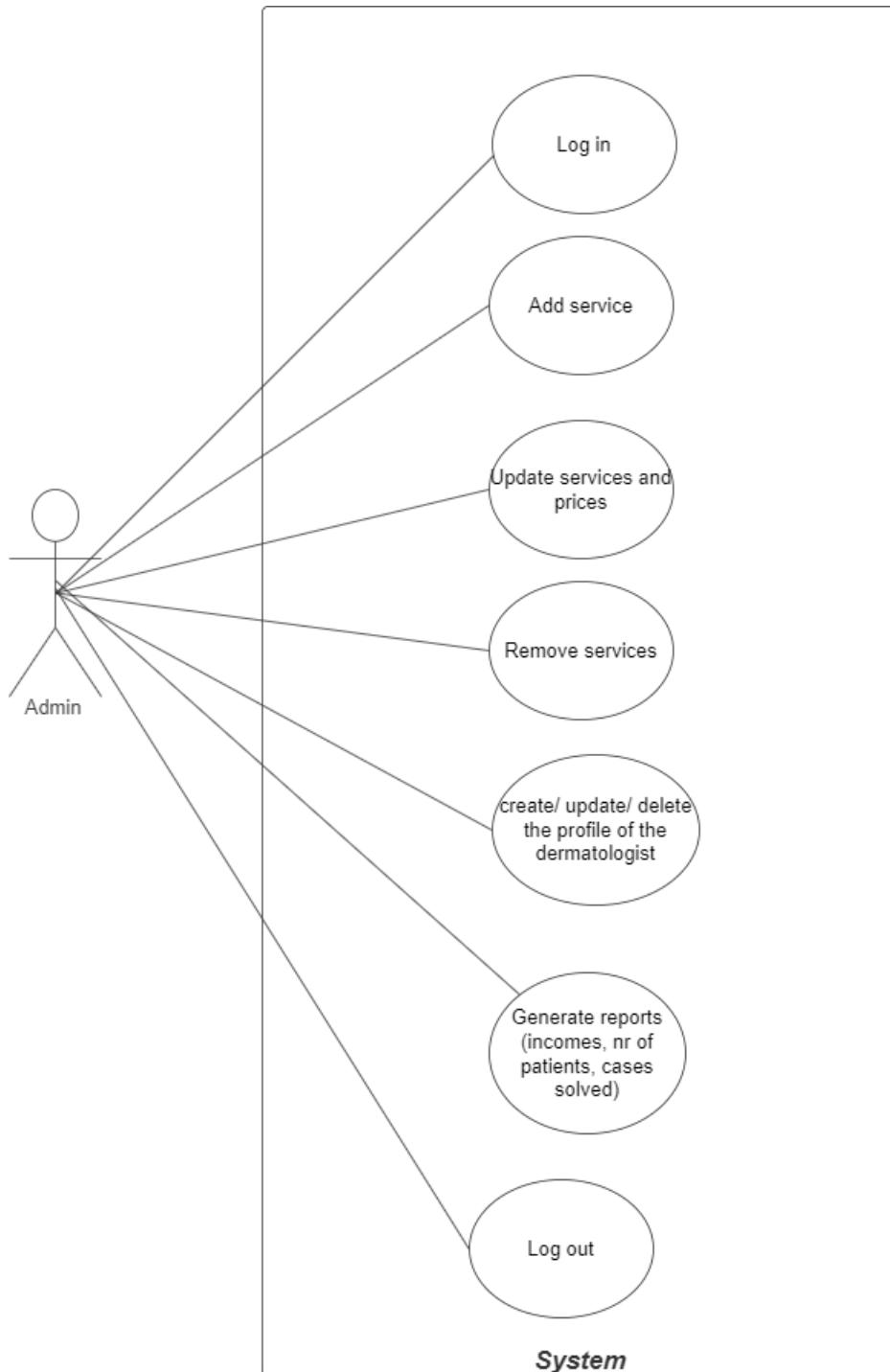
## *Dermatology clinic app Requirements Specification*

### **Use Case 3: Pharmacist**



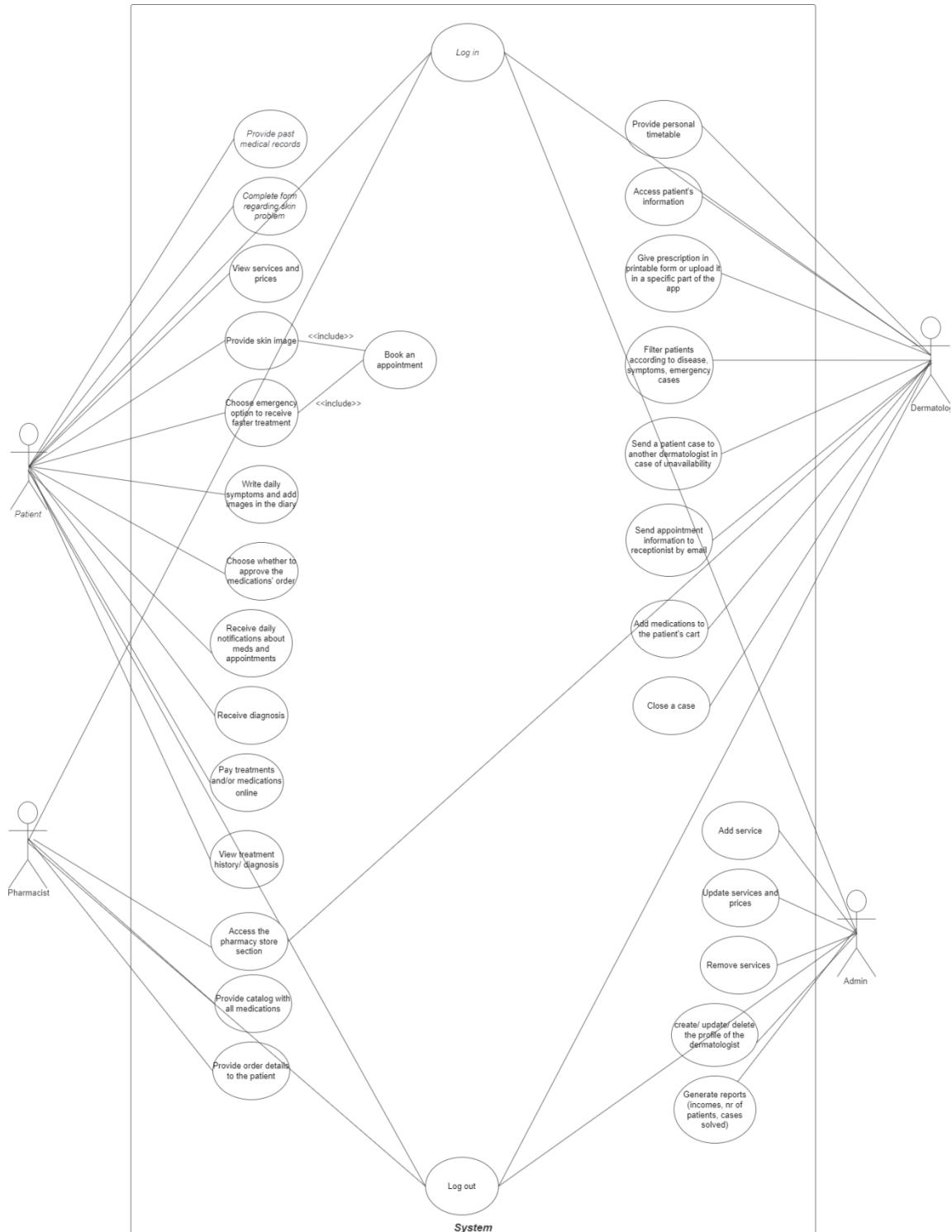
## *Dermatology clinic app Requirements Specification*

### **Use case 4: Admin**



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### Use Case 5: General Use Case



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### **4.3 Use Cases Extended**

<b>Use Case (UC_1.1):</b>	Log In
Scope:	Dermatology App
Level:	User level
Intention Context:	Firstly, the patient needs to logs in to the application and later to use it.
Minimum Guarantees:	Patients marks its data but cannot log in.
Success Guarantees:	The patient marks the credentials and logs successfully in to the application.
Primary Actor:	Patient
Stakeholder's Interest:	To have patients who know and use the application for the necessary dermatological services.
Precondition:	The patient must download the application.

<b>Use Case(UC_1.2):</b>	Provide past medical records
Scope:	Dermatology App
Level:	User level
Intention Context:	Every patient after logging in to the application must provide his medical records.
Minimum Guarantees:	Patients do not provide their medical records.
Success Guarantees:	All medical records of the patients are provided successfully.
Primary Actor:	Patient
Stakeholder's Interest:	To have patient's medical records and in this way they can understand better the patient's problems.
Precondition:	Patient is logged in the system.

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<b>Use Case (UC_1.3):</b>	Complete form regarding skin problem
Scope:	Dermatology App
Level:	User level
Intention Context:	Each patient completes the form regarding skin problem because dermatologist needs to know past medical history.
Min Guarantees:	The patient fills out the form but it is not saved.
Success Guarantees:	The completed form with skin problems goes to the dermatologist to check it.
Primary Actor:	Patient
Stakeholder's Interest:	The form will be added in patient's profile and each dermatologist can see it and will learn about patient's skin problem.
Precondition:	The patient must have a skin problem or a previous medical history to complete the form.

<b>Use Case (UC_1.4):</b>	View services and prices
Scope:	Dermatology App
Level:	User level
Intention Context:	This is done in order to be transparent with the patients and to provide the enough value based on their needs.
Minimum Guarantees:	Not all the prices and services are presented in the application.
Success Guarantees:	Detailed services with respective prices, to save admin hours per week.
Primary Actor:	Patient
Stakeholder's Interest:	By presenting all services and prices, everything is more detailed and clearer and also builds trust between app and patients.
Precondition:	Services and prices have to be posted on the application.

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<b>Use Case (UC_1.5):</b>	Provide skin image
Scope:	Dermatology App
Level:	User level
Intention Context:	The patient should provide a clear skin image to avoid the possibilities of appointments in the clinic but also to better confirm the diagnosis.
Minimum Guarantees:	Photos are not clear and the dermatologist cannot diagnose the patient's problem.
Success Guarantees:	Skin images will help doctors to better observe the progression and potentially diagnose the condition.
Primary Actor:	Patient
Stakeholder's Interest:	Images are an easy tool to provide information to the doctor.
Precondition:	The patient must have opened the form in order to scan or upload the image.

<b>Use Case (UC_1.6):</b>	Book an appointment
Scope:	Dermatology App
Level:	User level
Intention Context:	The patient books an appointment if his problem is unclear and the doctor needs to see the case in person.
Minimum Guarantees:	The patient misses the appointment/the appointment is not scheduled by admin.
Success Guarantees:	The patient books the appointment online and eliminates the need to go to the clinic to set the appointment.
Primary Actor:	Patient
Stakeholder's Interest:	It is more quick, easy and improves patient's satisfaction.
Precondition:	The patient should be signed in.

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<b>Use Case (UC_1.7):</b>	Choose emergency option to receive faster treatment
Scope:	Dermatology App
Level:	User level
Intention Context:	In case the patient's problem is urgent the dermatologist leaves a consultation as soon as possible
Minimum Guarantees:	After choosing the emergency option, you don't receive faster treatment.
Success Guarantees:	Just click on emergency option and you will get a very quick response on when the consultation is.
Primary Actor:	Patient
Stakeholder's Interest:	The most problematic cases should be consulted and treated in person not through the app.
Precondition:	Patient has serious problems and he should definitely go and choose the emergency option.

<b>Use Case(UC_1.8):</b>	Write daily symptoms and add images in the diary
Scope:	Dermatology App
Level:	User level
Intention Context:	Patients can write down their daily symptoms in order to better inform the dermatologists about their skin problems.
Minimum Guarantees:	Not to keep in track with the progress of the skin problem.
Success Guarantees:	By marking the symptoms and attaching images it is easier to see the patient's progress.
Primary Actor:	Patient
Stakeholder's Interest:	Each symptom is important and by writing them patients help on recognizing the skin problem.

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Precondition:	The patient uses the app and has skin problems that will be consulted by clinic dermatologists.
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<b>Use Case (UC_1.9):</b>	Choose whether to approve the medication order
Scope:	Dermatology App
Level:	User level
Intention Context:	The patient after being given the list of medications he needs, decides if he wants to approve the order.
Minimum Guarantees:	The patient performs the treatments and does not approve the medication order.
Success Guarantees:	Miscommunication and mistakes are greatly decreased when the patient is part of approval process.
Primary Actor:	Patient
Stakeholder's Interest:	Patients will also better track the items they receive and ensure for the order.
Precondition:	The patient should be given prescription medication by the doctor.

<b>Use Case (UC_1.10):</b>	Receive daily notification about meds and appointments
Scope:	Dermatology App
Level:	User level
Intention Context:	They are commonly used to direct patients toward points of interest and customize the journey for each patient.
Minimum Guarantees:	The patient is not daily notified about his/her appointment.
Success Guarantees:	Notifications will remind patients at all times about their appointments and about meds.
Primary Actor:	Patient

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Stakeholder's Interest:	Informs patients about meds and appointments and provide thoughtful reminders.
Precondition:	The patient must have left an appointment/be interested in different meds.

<b>Use Case (UC_1.11):</b>	Receive diagnosis
Scope:	Dermatology App
Level:	User level
Intention Context:	The patient after consultation through the app receives a diagnosis to treat his problem.
Minimum Guarantees:	Doesn't receive the right diagnosis.
Success Guarantees:	Each patient will receive the proper diagnosis.
Primary Actor:	Patient
Stakeholder's Interest:	Getting the right diagnosis manages to cure the skin problems.
Precondition:	The patient should be visited and treated by a dermatologist.

<b>Use Case (UC_1.12):</b>	Pay treatments and/or medicitations online
Scope:	Dermatology App
Level:	User level
Intention Context:	The patients can pay for the service they take, through the app using payment methods.
Minimum Guarantees:	Reliance on telecommunication and server can disable online payment.
Success Guarantees:	Patients will enjoy the flexibility that comes as a benefit of payment processing, increasing their overall satisfaction.
Primary Actor:	Patient

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Stakeholder's Interest:	Is the easiest and the most likely method to pay treatments.
Precondition:	The patient receives the required service and pays for it.

<b>Use Case (UC_1.13):</b>	View treatment history/diagnosis
Scope:	Dermatology App
Level:	User Level
Intention Context:	Patient will understand the state of the skin and this history will serve as a guide and directed care.
Minimum Guarantees:	Patients wants to view the treatment history/diagnosis but they are not saved.
Success Guarantees:	The treatment plan may then include further investigations to clarify the diagnosis.
Primary Actor:	Patient
Stakeholder's Interest:	In this way patient can gather information about past and present medical conditions.
Precondition:	The patient must have a treatment history/diagnosis.

<b>Use Case (UC_1.14):</b>	Log Out
Scope:	Dermatology App
Level:	User Level
Intention Context:	Patients logs out if he/she finishes using the system.
Minimum Guarantees:	Patient cannot log out and his access is not protected.
Success Guarantees:	Patient presses the log out button and ends the connection with the app.
Primary Actor:	Patient
Stakeholder's Interest:	If patients don't log out their information may leak and be used for other

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	operations.
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<b>Use Case (UC_2.1):</b>	Log In
Scope:	Dermatology App
Level:	User level
Intention Context:	Firstly, the dermatologist needs to logs in to the application to use it.
Minimum Guarantees:	Dermatologist marks its data but cannot log in.
Success Guarantees:	The dermatologist gives the credentials and logs in successfully to the application.
Primary Actor:	Dermatologist
Stakeholder's Interest:	To have dermatologist who use the app to give the proper diagnosis to the patients.
Precondition:	The dermatologist must download the application.

<b>Use Case (UC_2.2):</b>	Access patient's personal information
Scope:	Dermatology Application
Level:	User level
Intention Context:	A dermatologist will check the data that the patient has in his/her profile which are needed to decide the diagnosis.
Min Guarantees:	Patient has not fill all the required information, or they are not in proper context.
Success Guarantees:	The dermatologist successfully checks the patient's personal information to decide the diagnosis
Primary Actor:	Dermatologist

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Stakeholder's Interest:	The dermatologist will get the required information needed to make the consult.
Precondition:	The dermatologist should have access in the patient's profile.

<b>Use Case (UC_2.3):</b>	Provide the personal timetable
Scope:	Dermatology Application
Level:	User level
Intention Context:	A dermatologist should provide his/her timetable so it is easier for the patient to check the availability.
Min Guarantees:	Dermatologist has not provided all the appointments in the timetable so there are cases of misunderstandings with the patients.
Success Guarantees:	The dermatologist successfully provides all the appointments that he/she has in the timetable
Primary Actor:	Dermatologist
Stakeholder's Interest:	The dermatologist will provide them in order to have an easier communication with the patient.
Precondition:	The dermatologist should have logged in the app.

<b>Use Case (UC_2.4):</b>	Give prescription in both formats
Scope:	Dermatology Application
Level:	User level
Intention Context:	A dermatologist should provide to the patient the prescription in two formats: one printable and one online version.
Min Guarantees:	Dermatologist has problems with uploading the printable format.

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Success Guarantees:	The dermatologist successfully provides to the patient and the pharmacist both formats of the prescription.
Primary Actor:	Dermatologist
Stakeholder's Interest:	The patient will get the prescriptions needed to take the medications.
Precondition:	The dermatologist should have determined the diagnosis of the patient.

<b>Use Case (UC_2.5):</b>	Filter the patients
Scope:	Dermatology Application
Level:	User level
Intention Context:	A dermatologist can filter the patients according to some specific data such as disease, age, emergency cases etc.
Min Guarantees:	Dermatologist has not selected all the required filter options.
Success Guarantees:	The dermatologist successfully gets the patients he/she wanted to check by using the filter options.
Primary Actor:	Dermatologist
Stakeholder's Interest:	The dermatologist will get the required information for some patients.
Precondition:	The dermatologist should select the required options to make the filtration.

<b>Use Case (UC_2.6):</b>	Send the patient case to another dermatologist
Scope:	Dermatology Application
Level:	User level

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Intention Context:	If a dermatologist is not available or not competent to make a consultation, he/she send the case to another dermatologist by the help of the clinic.
Min Guarantees:	There is no dermatologist available for that specific time.
Success Guarantees:	The dermatologist is able to find the proper dermatologist who is competent to find the diagnosis for that patient case.
Primary Actor:	Dermatologist
Stakeholder's Interest:	The patient is able to find another dermatologist in case the first one is not available.
Precondition:	The dermatologist should make a request in the clinic.

<b>Use Case (UC_2.7):</b>	Send appointment details to the receptionist
Scope:	Dermatology Application
Level:	User level
Intention Context:	After the dermatologist reserves an appointment with a patient, he/she send the details to the receptions by email using an option in the app.
Min Guarantees:	The email is not delivered to the receptionist.
Success Guarantees:	The dermatologist send the appointment details to the receptionist successfully.
Primary Actor:	Dermatologist
Stakeholder's Interest:	The dermatologist does not have to update his/her timetable in clinic.
Precondition:	The dermatologist should have arranged the appointment with the patient confirmation.

<b>Use Case (UC_2.8):</b>	Access pharmacy store section
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Scope:	Dermatology Application
Level:	User level
Intention Context:	A dermatologist can enter the pharmacy store section and send the prescription to the pharmacist to make the order.
Min Guarantees:	Dermatologist cannot see the catalog of medications.
Success Guarantees:	The dermatologist successfully access the pharmacy section and contacts the pharmacist to make an order for a patient.
Primary Actor:	Dermatologist
Stakeholder's Interest:	The dermatologist can make the order for the patient by having access there.
Precondition:	The dermatologist should have logged in the app.

<b>Use Case (UC_2.9):</b>	Close a patient case
Scope:	Dermatology Application
Level:	User level
Intention Context:	The patient is healed and the dermatologist closes the patient case.
Min Guarantees:	Patient has need to contact the dermatologist again.
Success Guarantees:	The dermatologist successfully closes the patient case without any problem.
Primary Actor:	Dermatologist
Stakeholder's Interest:	The dermatologist does not need to check the diary of that patient again as he/she is healed, so case is closed.
Precondition:	The patient does not have any problem again.

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<b>Use Case (UC_2.10):</b>	Log Out
Scope:	Dermatology App
Level:	User Level
Intention Context:	Dermatologist logs out whenever he/she finishes using the system.
Minimum Guarantees:	Dermatologist cannot log out and his access is not protected.
Success Guarantees:	Dermatologist presses the log out button and ends the connection with the app.
Primary Actor:	Dermatologist
Stakeholder's Interest:	If dermatologist does not log out their information may leak and be used for other operations.

<b>Use Case (UC_3.1):</b>	Log In
Scope:	Dermatology App
Level:	User level
Intention Context:	Firstly, the pharmacist needs to log in the app in order to use it .
Minimum Guarantees:	Pharmacist marks its data but cannot login.
Success Guarantees:	The pharmacist gives the credentials and logs successfully in to the application.
Primary Actor:	Pharmacist
Stakeholder's Interest:	To have pharmacists with knowledge on how to use the app, in order to manage the pharmacy section of the clinic.
Precondition:	The pharmacist must download the application.

<b>Use Case (UC_3.2):</b>	Access pharmacy store section
Scope:	Dermatology App
Level:	User level

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Intention Context:	The pharmacist receives the prescription from the dermatologist and prepares the order for the patient.
Minimum Guarantees:	Pharmacist cannot access the catalog of medications.
Success Guarantees:	The pharmacist successfully accesses the catalog of medications and makes the orders for the patients.
Primary Actor:	Pharmacist
Stakeholder's Interest:	Pharmacist prepares the order for the patient and sends the confirmation.
Precondition:	The pharmacist should be registered and logged in the app.

Use Case (UC_3.3):	Provide catalog with all medications
Scope:	Dermatology App
Level:	User level
Intention Context:	The pharmacist provides catalog with all medications, provides information on them, sends notification to place a order if a medication is running out of stock.
Minimum Guarantees:	Pharmacist log catalog of medicines, but he cannot modify them.
Success Guarantees:	The pharmacist successfully accesses the catalog, and can update new medications, or modify existing ones.
Primary Actor:	Pharmacist
Stakeholder's Interest:	The pharmacist manages the catalog.
Precondition:	The pharmacist has access to the pharmacy section and the catalog.

Use Case (UC_3.4):	Provide order details to the patient
Scope:	Dermatology App
Level:	User level
Intention Context:	The patient has placed an order and the pharmacist provides details regarding the order to the patient.
Minimum Guarantees:	Pharmacist cannot send notification for the order to the patient.
Success Guarantees:	Pharmacist successfully sends order details and status to the patient.
Primary Actor:	Pharmacist

## ***Dermatology clinic app Requirements Specification***

Stakeholder's Interest:	Patient gets the medications from the clinic's pharmacy.
Precondition:	The pharmacist has already prepared the order.

Use Case (UC_3.5):	Log out
Scope:	Dermatology App
Level:	User level
Intention Context:	Pharmacist logs out when they finish using the app.
Minimum Guarantees:	Pharmacist cannot log out and his access is not protected.
Success Guarantees:	Pharmacist presses the log out button and ends the connection with the app.
Primary Actor:	Pharmacist
Stakeholder's Interest:	If the pharmacist does not log out, their information may leak and be used for other operations.

Use Case (UC_4.1):	Log in
Scope:	Dermatology App
Level:	Admin level
Intention Context:	The admin logs in the web app in order to use it.
Minimum Guarantees:	Admin marks its data but cannot login.
Success Guarantees:	Admin gives the credentials and logs successfully in to the application, and gains access to Admin Panel.
Primary Actor:	Admin
Stakeholder's Interest:	Admin login is important because he will manage the app and have different functionalities.
Precondition:	The admin must have a device and stable Internet connection, as well as an account.

Use Case (UC_4.1):	Log in
Scope:	Dermatology App
Level:	Admin level

## ***Dermatology clinic app Requirements Specification***

Intention Context:	The admin logs in the web app in order to use it.
Minimum Guarantees:	Admin marks its data but cannot login.
Success Guarantees:	Admin gives the credentials and logs successfully in to the application, and gains access to Admin Panel.
Primary Actor:	Admin
Stakeholder's Interest:	Admin login is important because he will manage the app and have different functionalities.
Precondition:	The admin must have a device and stable Internet connection, as well as an account.

Use Case (UC_4.2):	Add/update/delete service
Scope:	Dermatology App
Level:	Admin level
Intention Context:	The admin adds services offered by the clinic.
Minimum Guarantees:	Admin cannot access Admin Panel.
Success Guarantees:	Admin gains access to Admin Panel, and has the option to create, update or delete the services offered by the clinic and dermatologists, along with their prices.
Primary Actor:	Admin
Stakeholder's Interest:	The services of the clinic are updated by the admin.
Precondition:	Admin logs in.

Use Case (UC_4.3):	Create/update/delete the profile of the dermatologist
Scope:	Dermatology App
Level:	Admin level
Intention Context:	The admin has access to the dermatologist profile. He can add a new dermatologist after verifying their information, can confirm the update of their profile, or can remove a dermatologist when they are no longer employees of the clinic.
Minimum Guarantees:	Admin cannot modify the profile of the dermatologist.

## ***Dermatology clinic app Requirements Specification***

Success Guarantees:	Admin gains access to Admin Panel, and has the option to create, update or delete the profiles of the dermatologists.
Primary Actor:	Admin
Stakeholder's Interest:	The dermatologists account are verified by the admin, and their profile is activated after the admin confirms it.
Precondition:	Admin has access to Admin panel and can click the button which leads to the profile of the dermatologists.

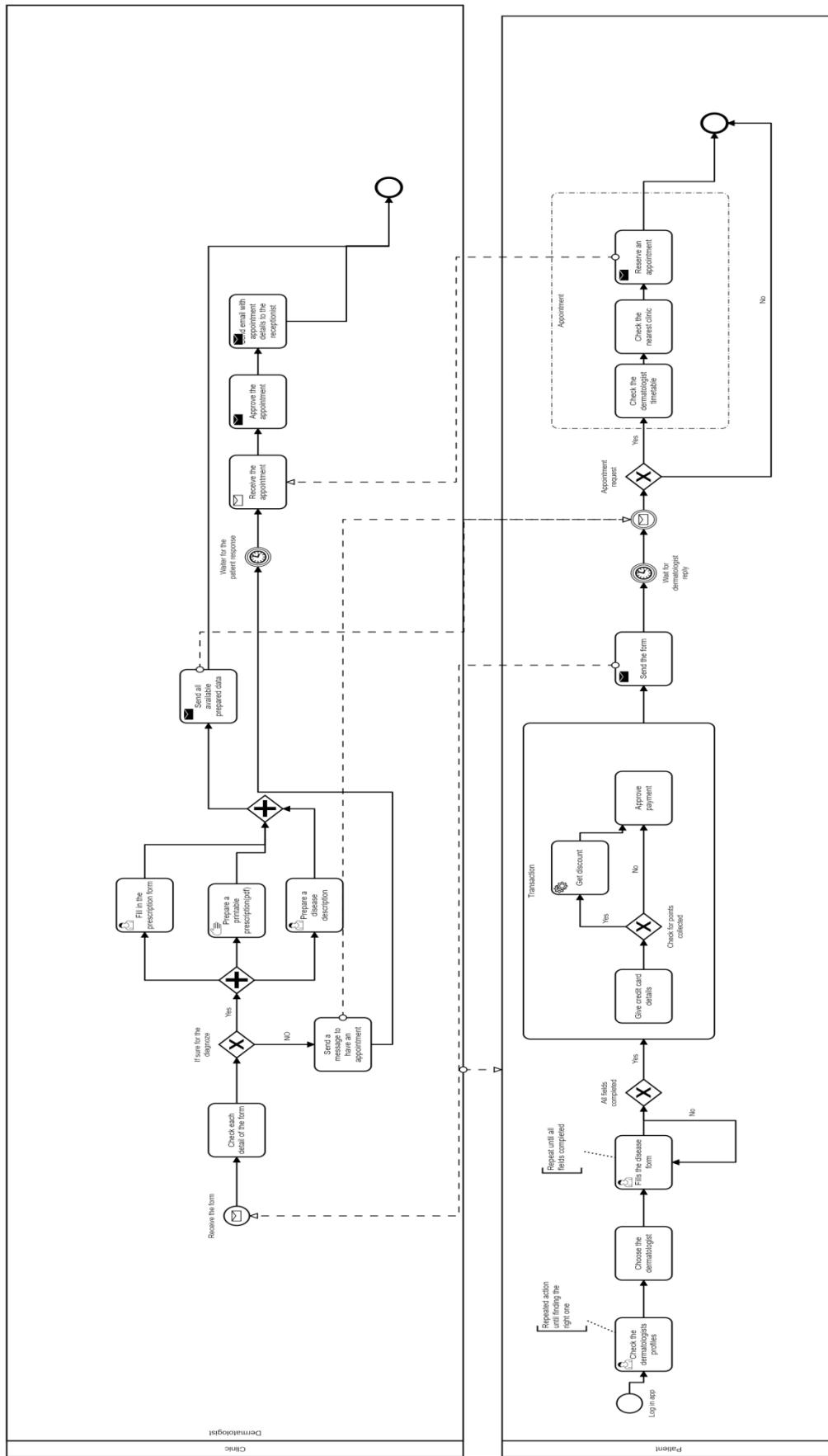
<b>Use Case (UC_4.4):</b>	Generate reports.
Scope:	Dermatology App
Level:	Admin level
Intention Context:	Admin generates different reports for statistical and management purposes, such as number of patients, cases solved.
Minimum Guarantees:	Admin cannot generate reports.
Success Guarantees:	Admin gains access to Admin Panel, and has the option to chose which report he wants to create.
Primary Actor:	Admin
Stakeholder's Interest:	By generating different reports, the clinic keeps track of the activity provided by the app.
Precondition:	Admin has access to Admin panel and can click the button to create different reports.

<b>Use Case (UC_4.5):</b>	Log out
Scope:	Dermatology App
Level:	Admin level
Intention Context:	Admin logs out after finishing using the system.
Minimum Guarantees:	Admin cannot log out and his access is not protected.
Success Guarantees:	Admin presses the log out button and ends the connection with the app.
Primary Actor:	Admin
Stakeholder's Interest:	If admin does not log out, their information may be leaked and used for other operations.

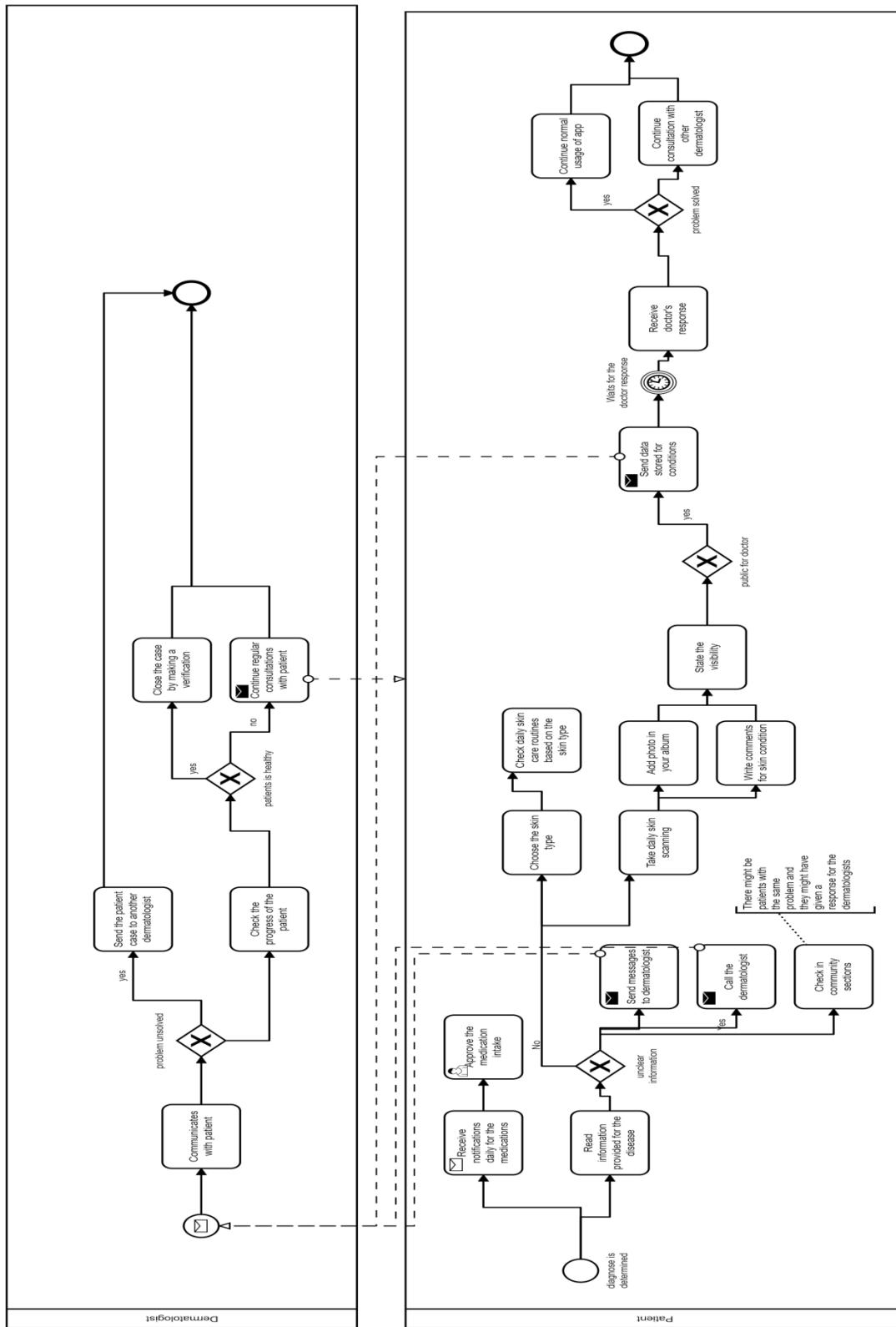
*Dermatology clinic app Requirements Specification*

**4.4 BPMN**

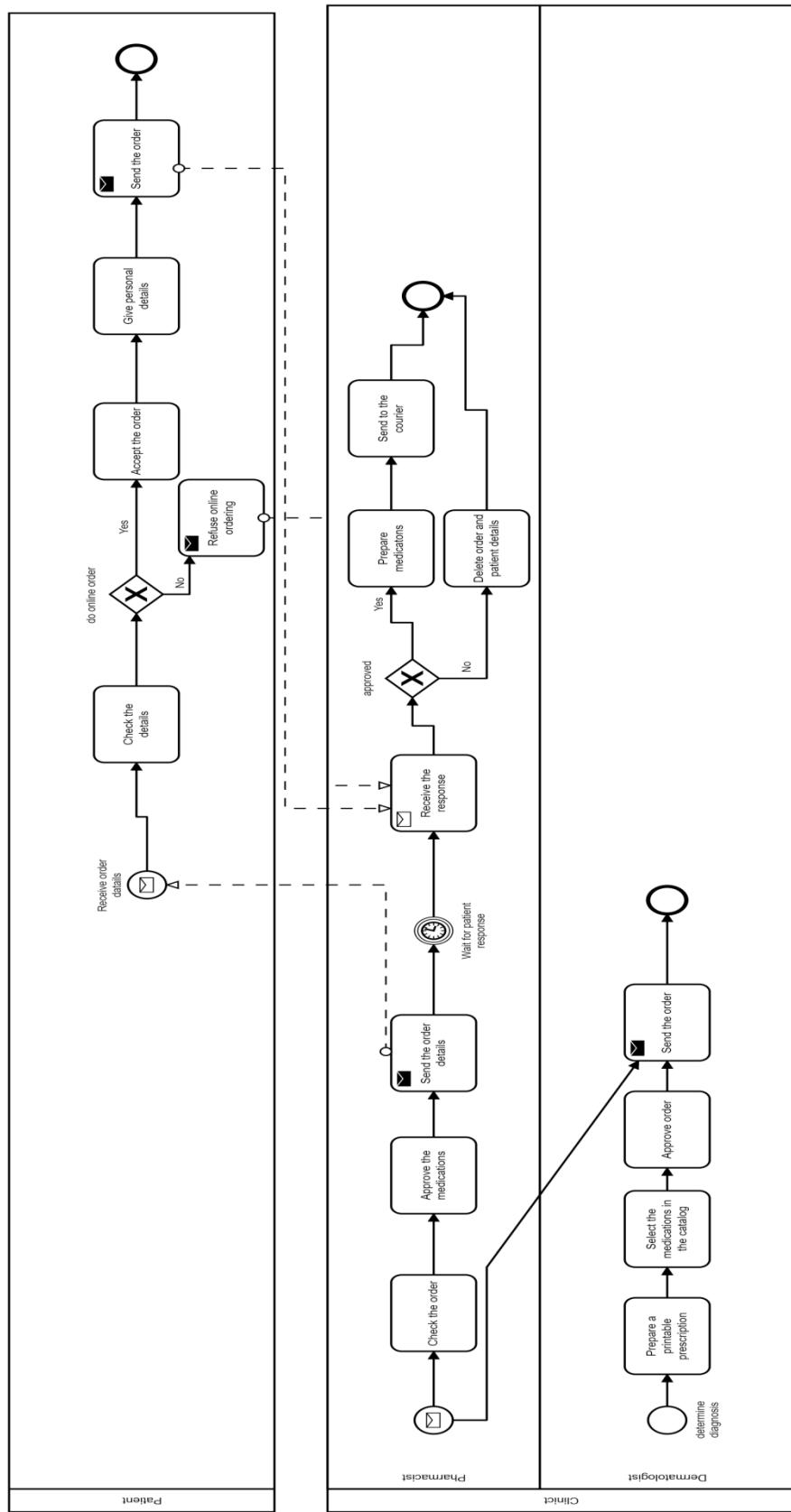
# Dermatology clinic app Requirements Specification



## Dermatology clinic app Requirements Specification



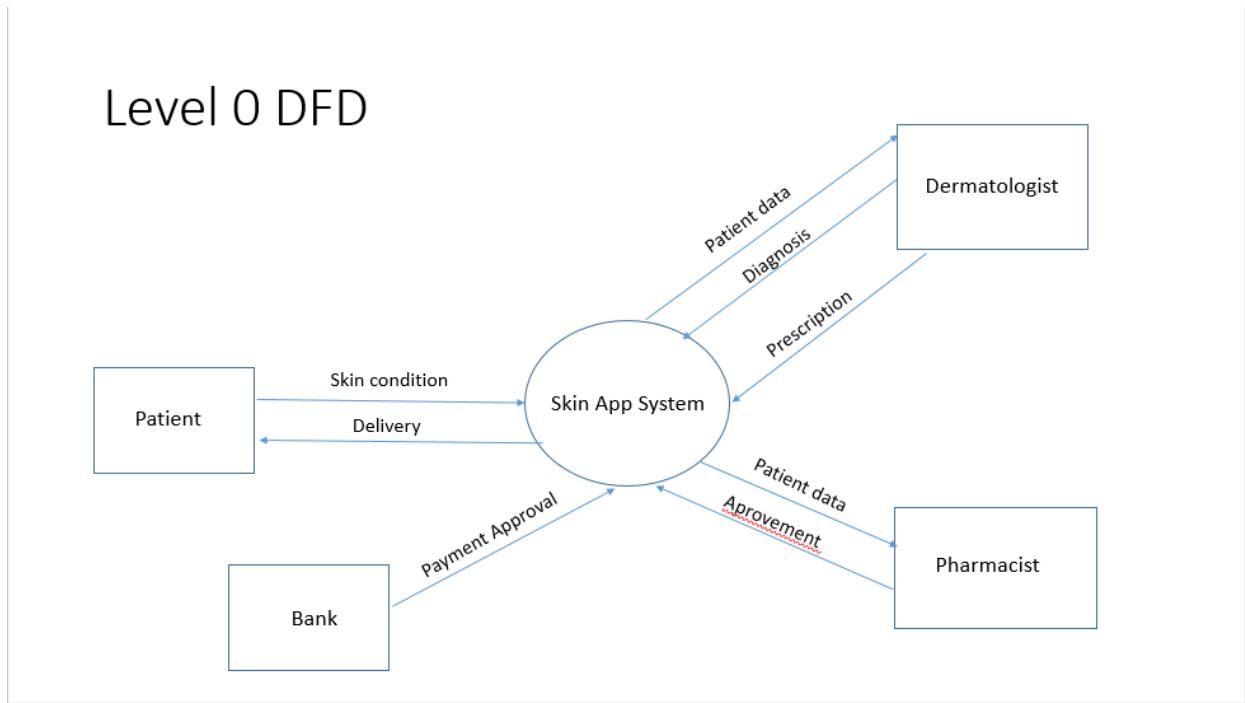
## Dermatology clinic app Requirements Specification



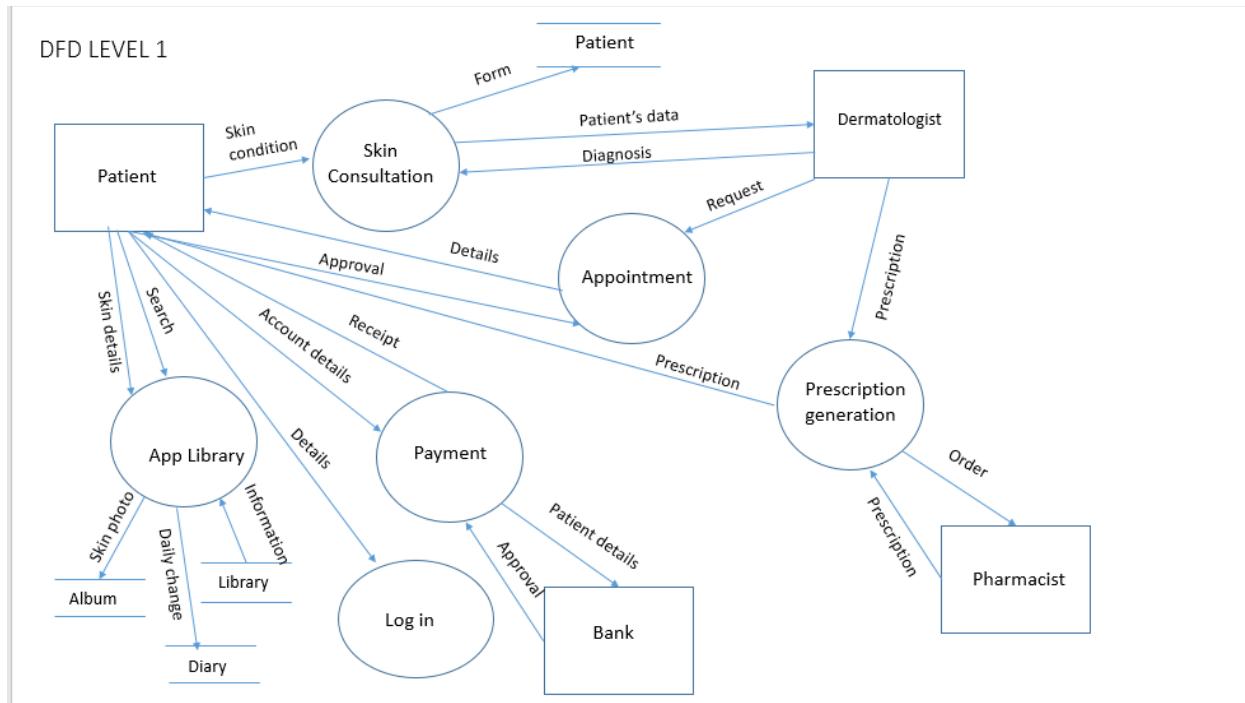
## Dermatology clinic app Requirements Specification

### 4.5 Data flow diagrams

#### a. DFD: LEVEL 0

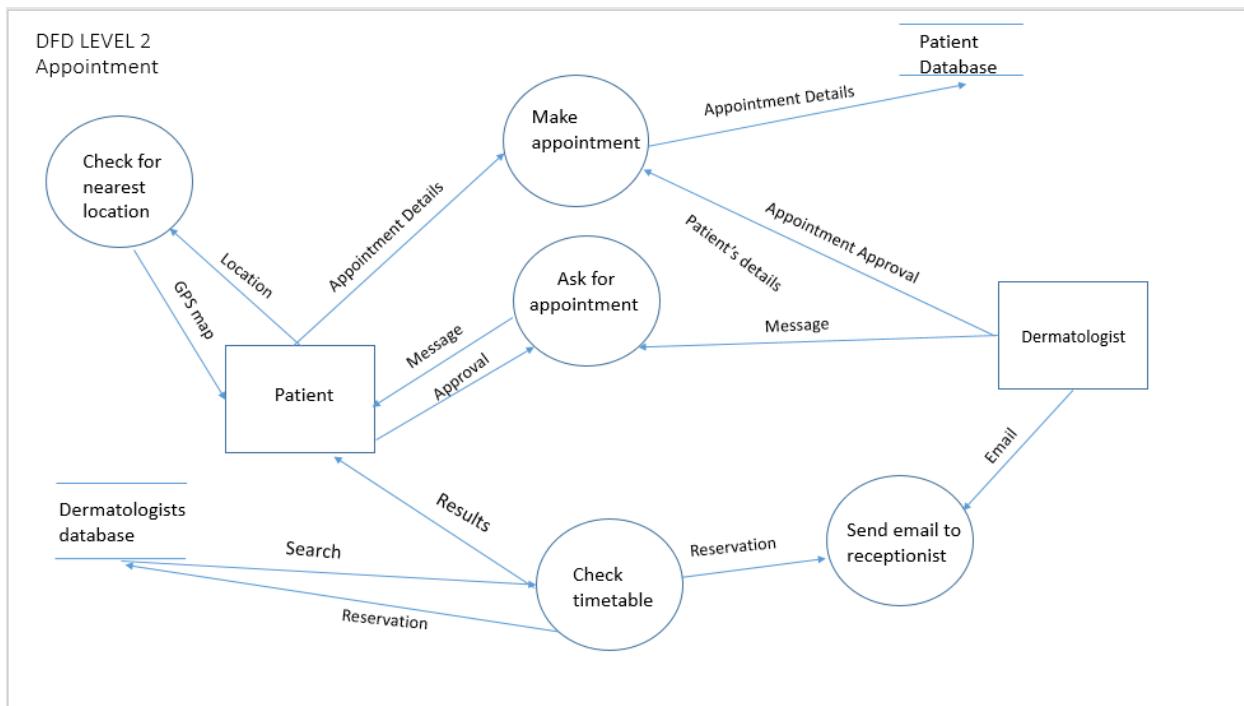
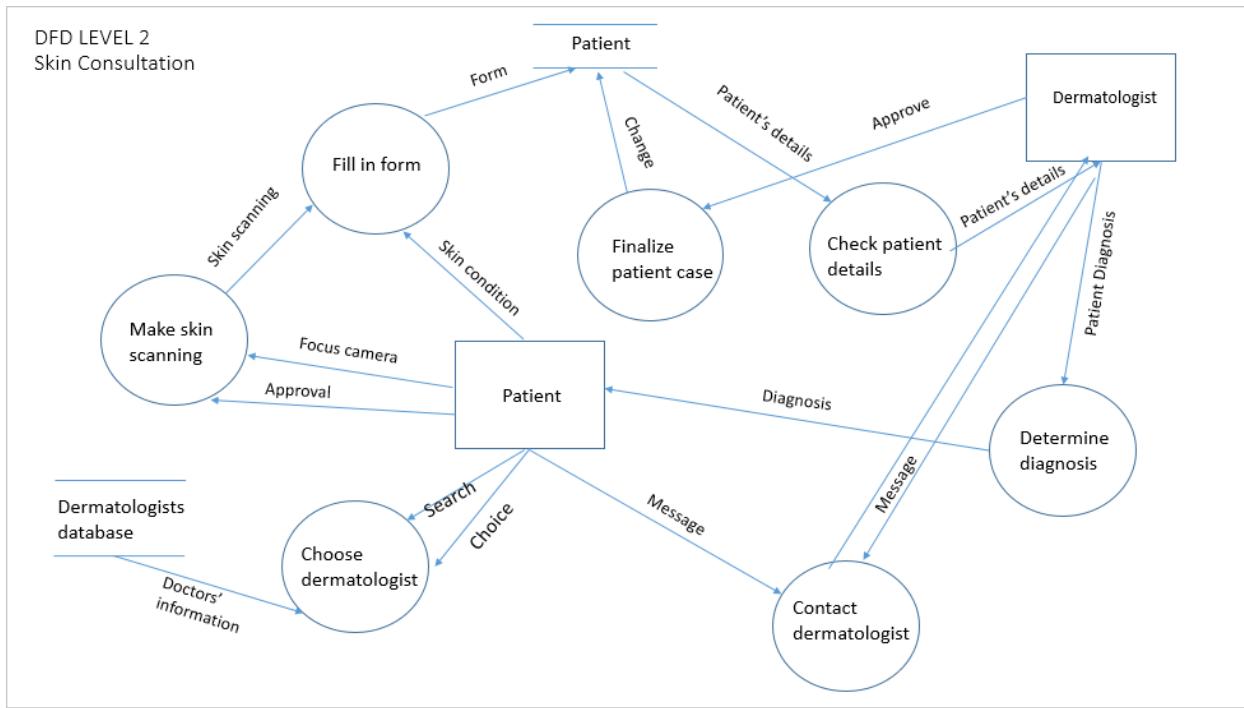


#### b. DFD: Level 1

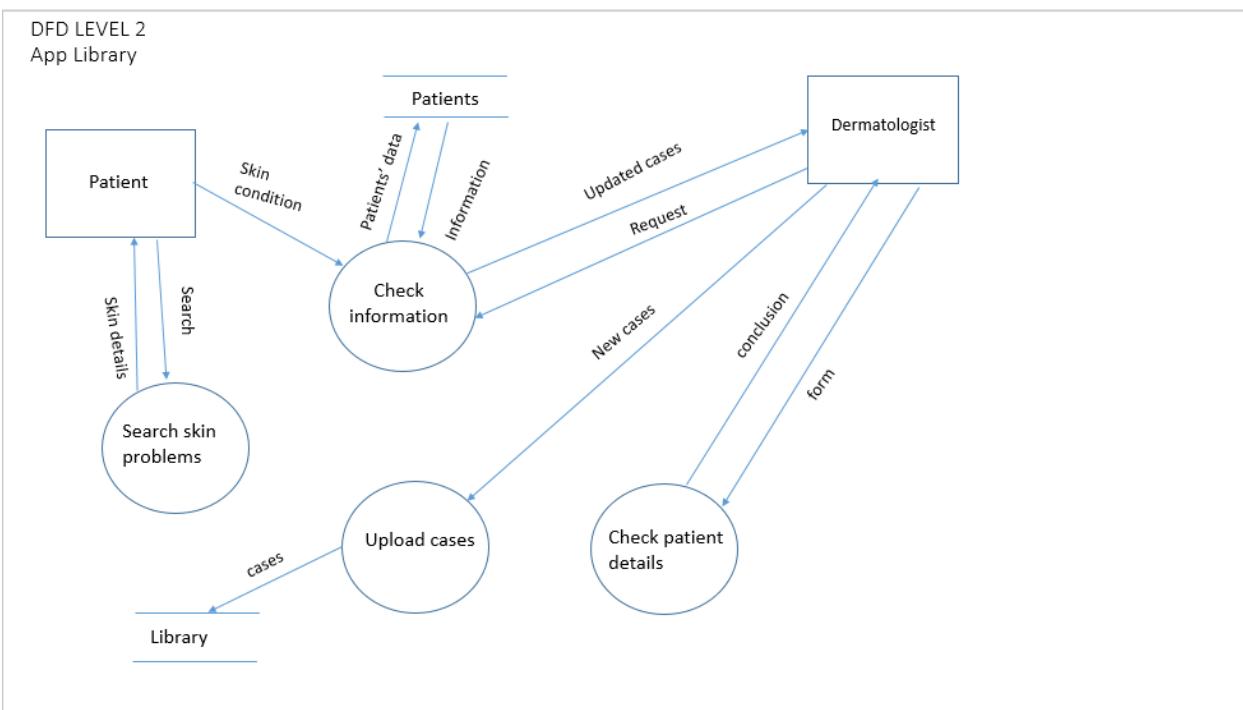
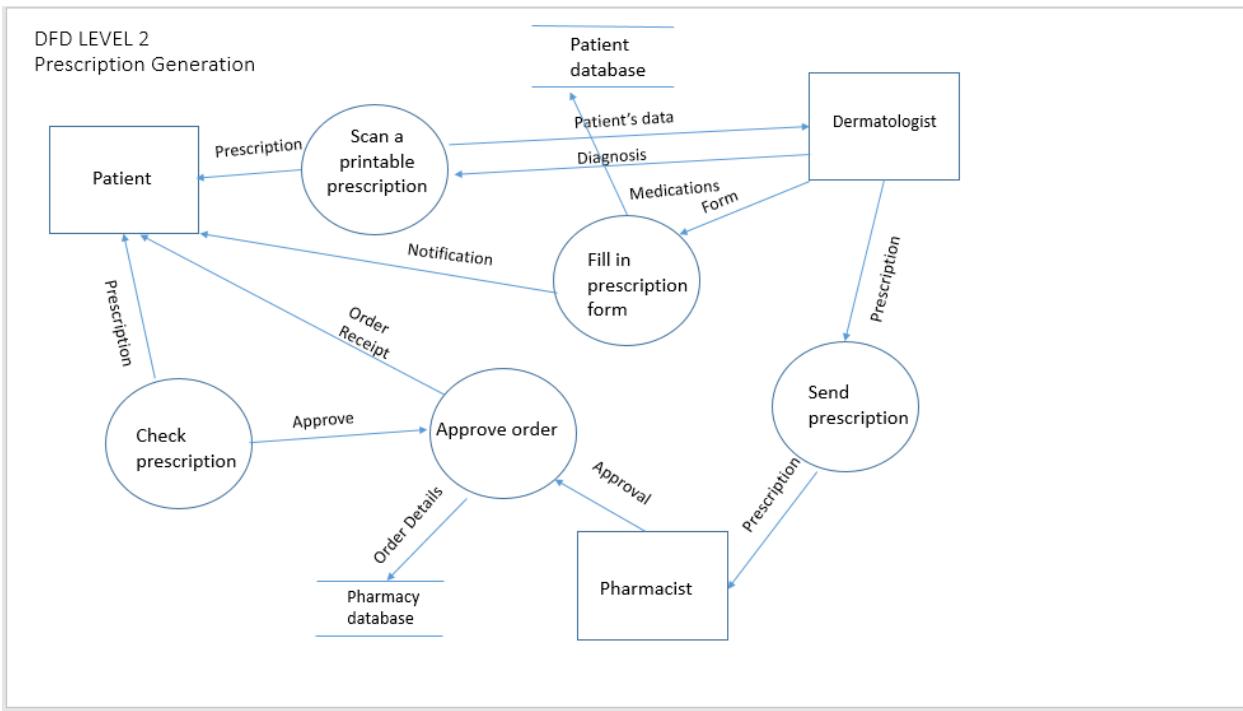


## Dermatology clinic app Requirements Specification

### c. DFD: Level 2

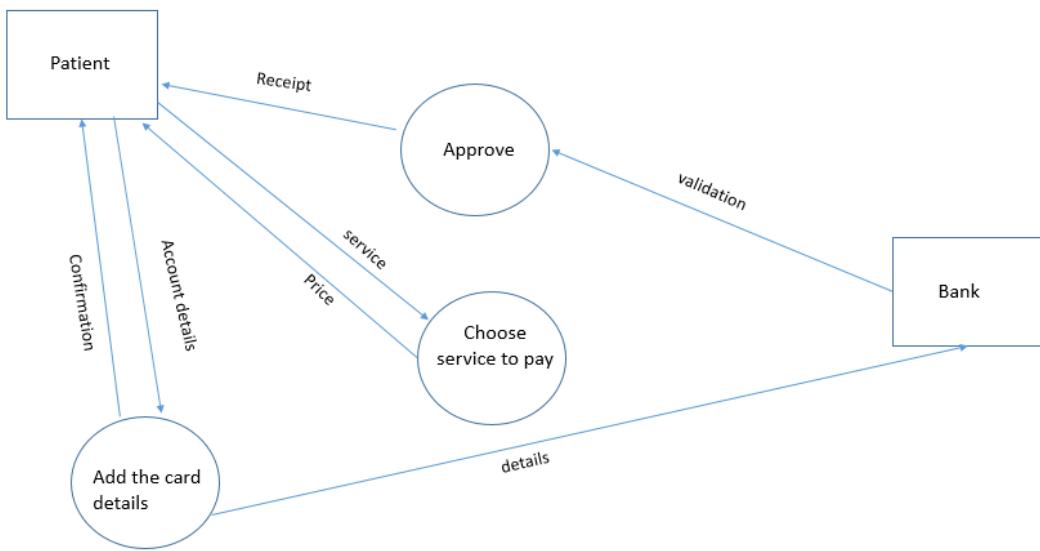


## Dermatology clinic app Requirements Specification



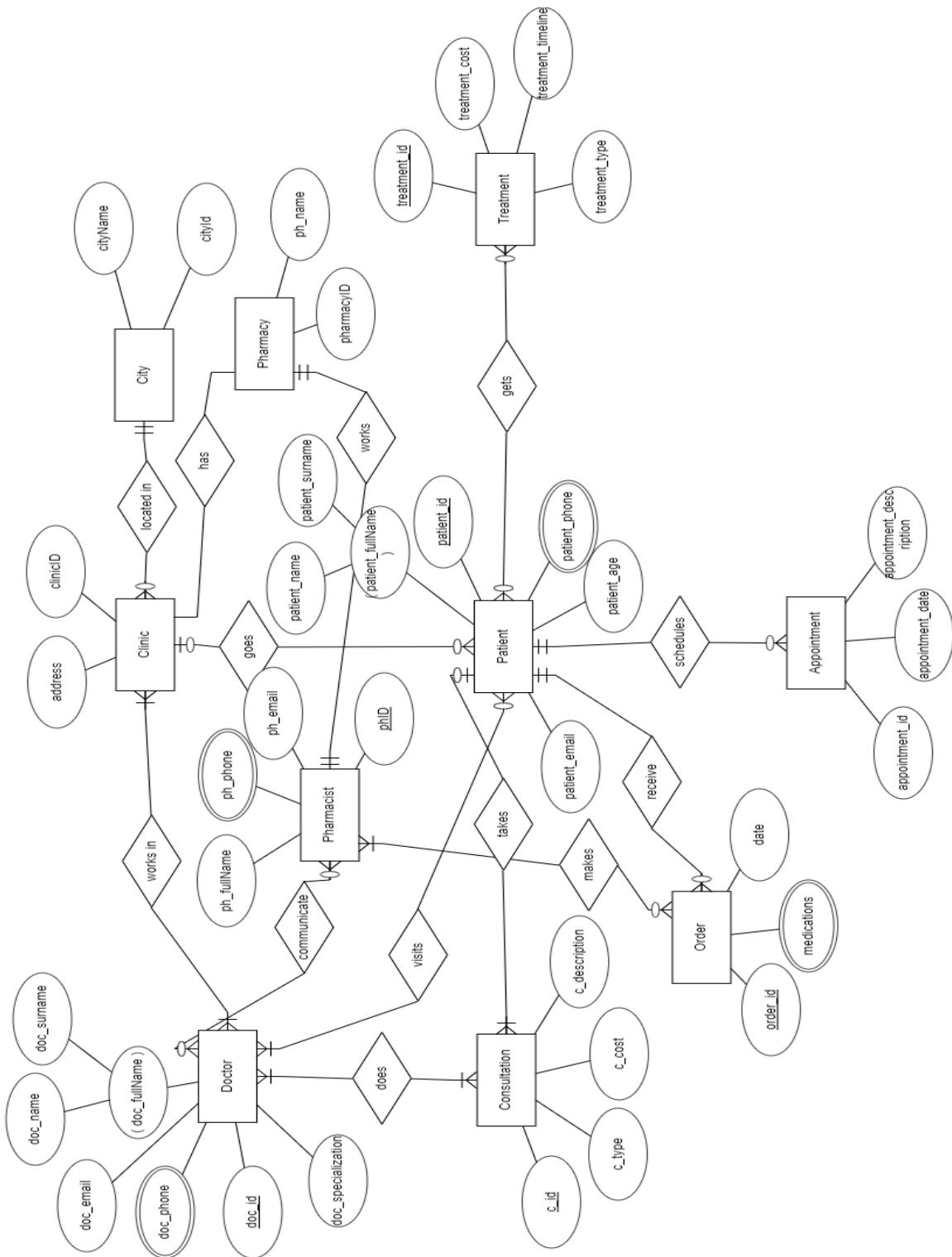
## Dermatology clinic app Requirements Specification

DFD LEVEL 2  
Payment



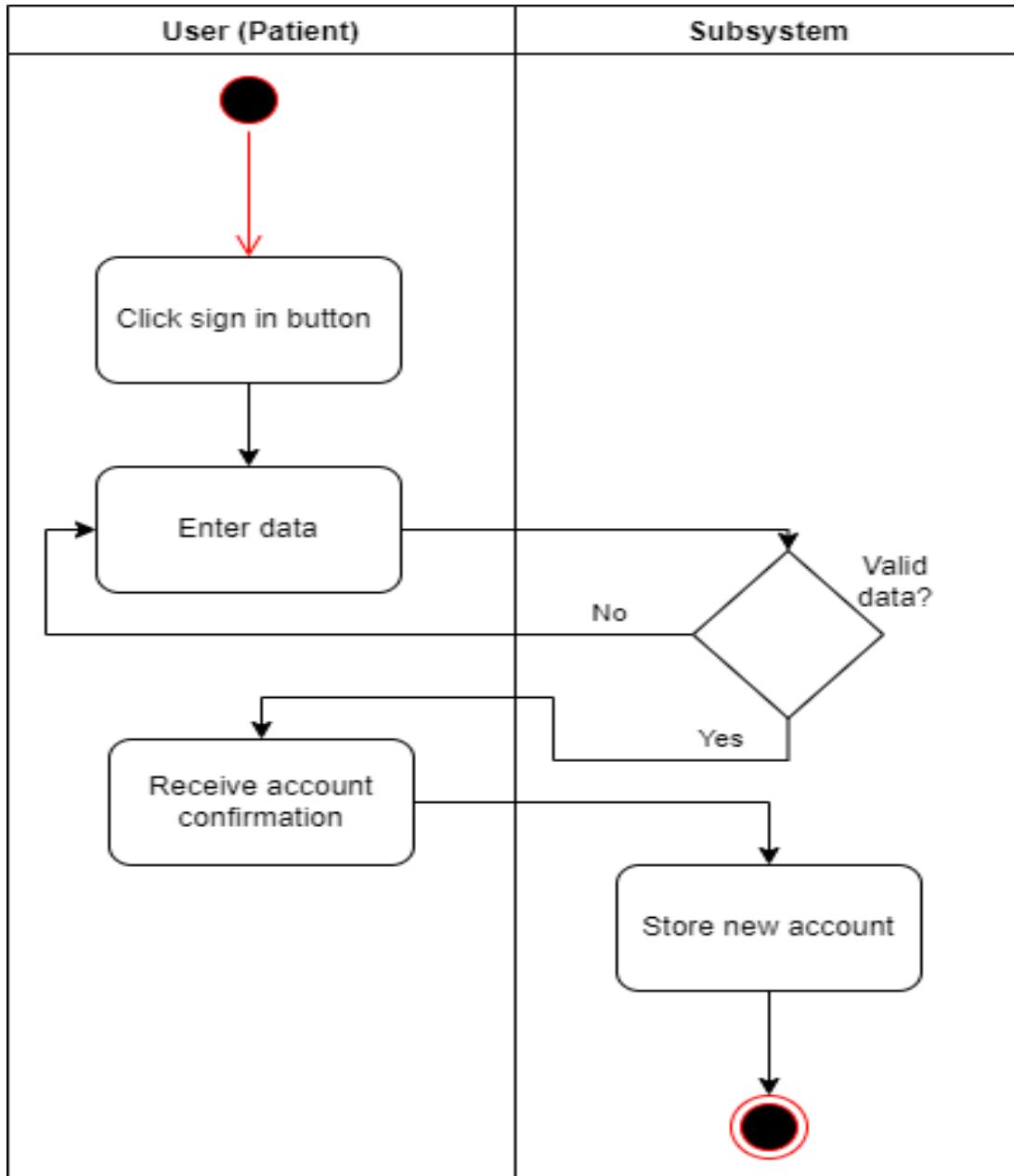
### 4.6 Entity-Relationship (ER) Diagram

## Dermatology clinic app Requirements Specification



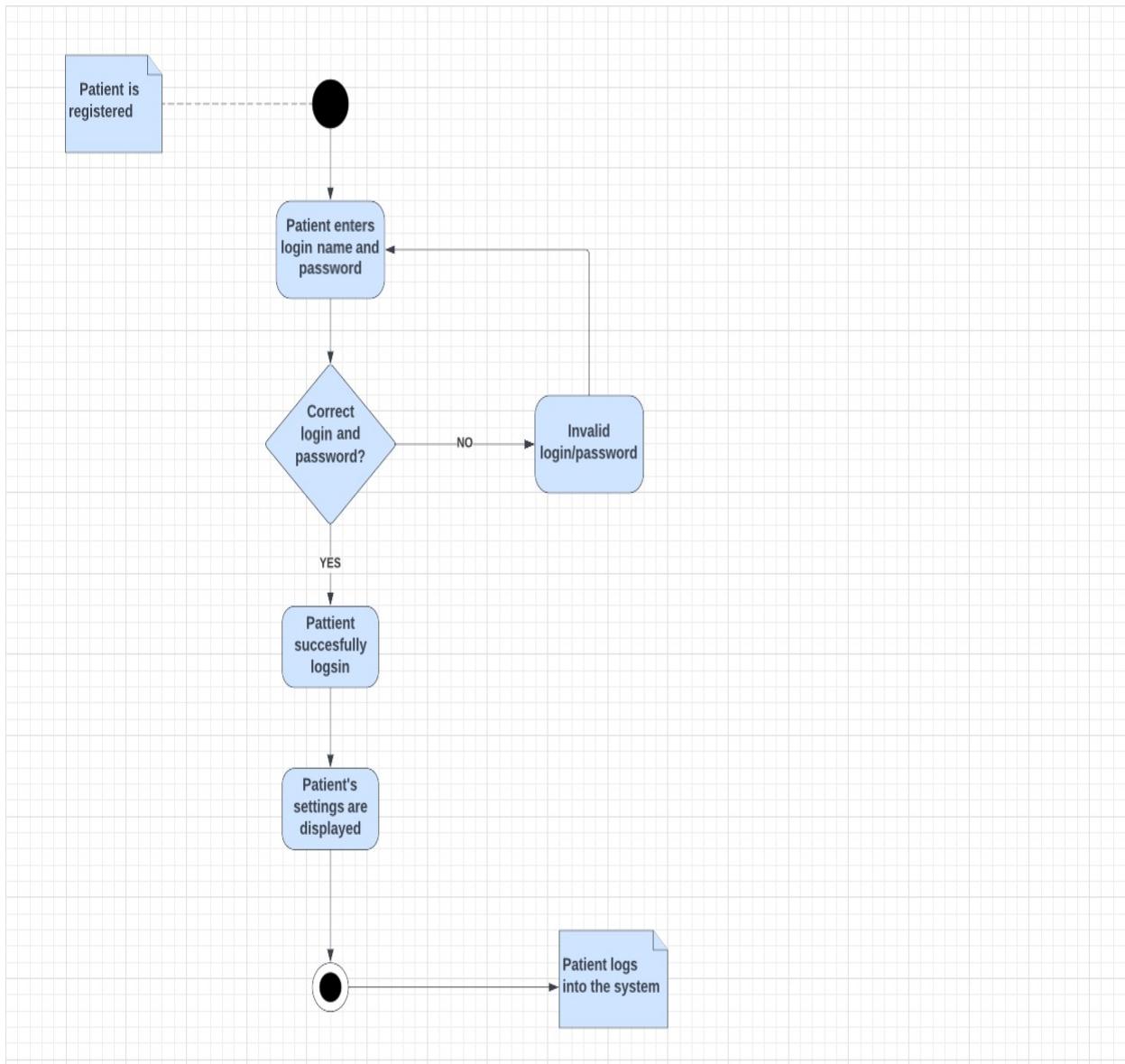
#### **4.7 Activity Diagrams**

AC\_1: Patient creates account



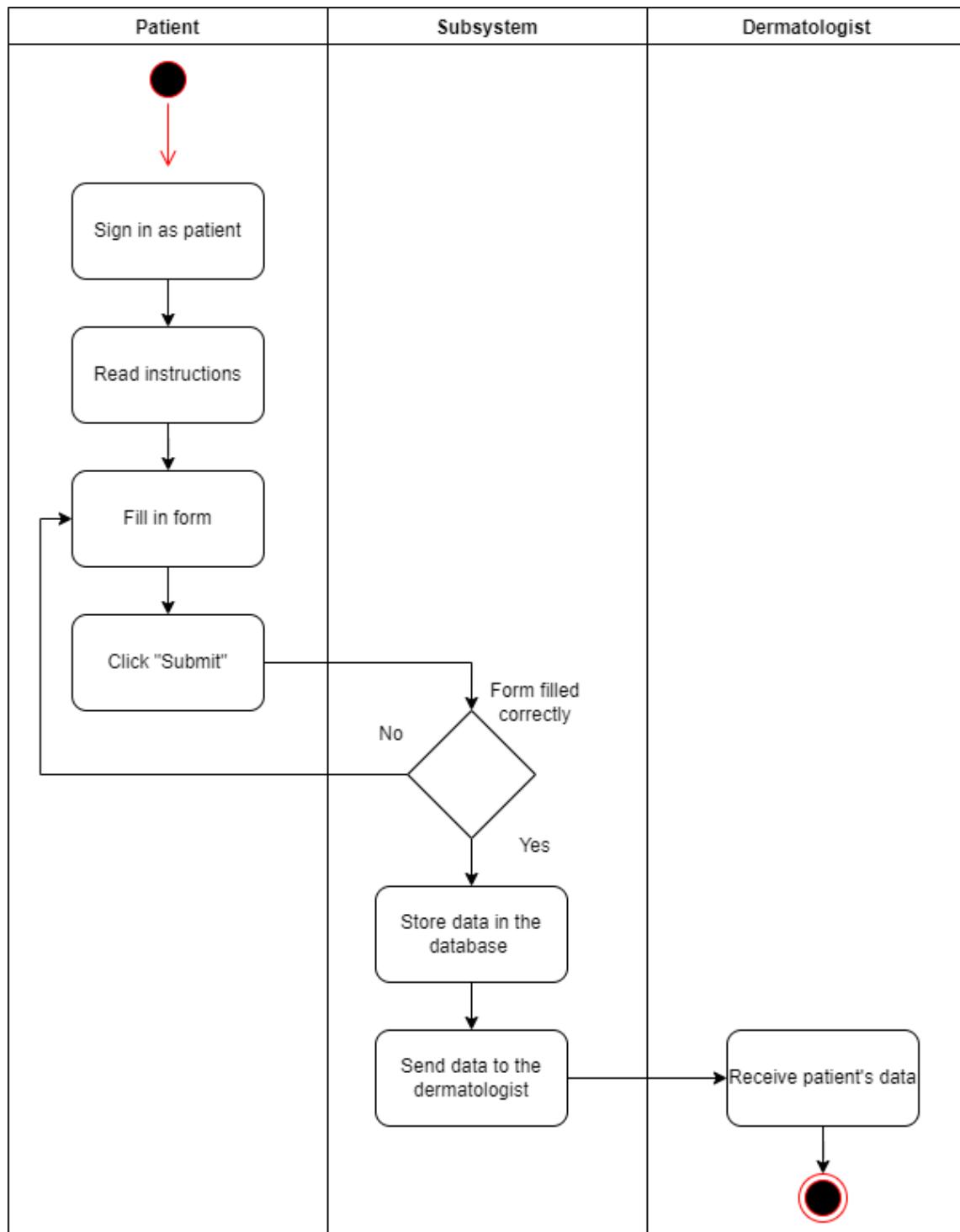
## *Dermatology clinic app Requirements Specification*

### AC\_2: Patient log in



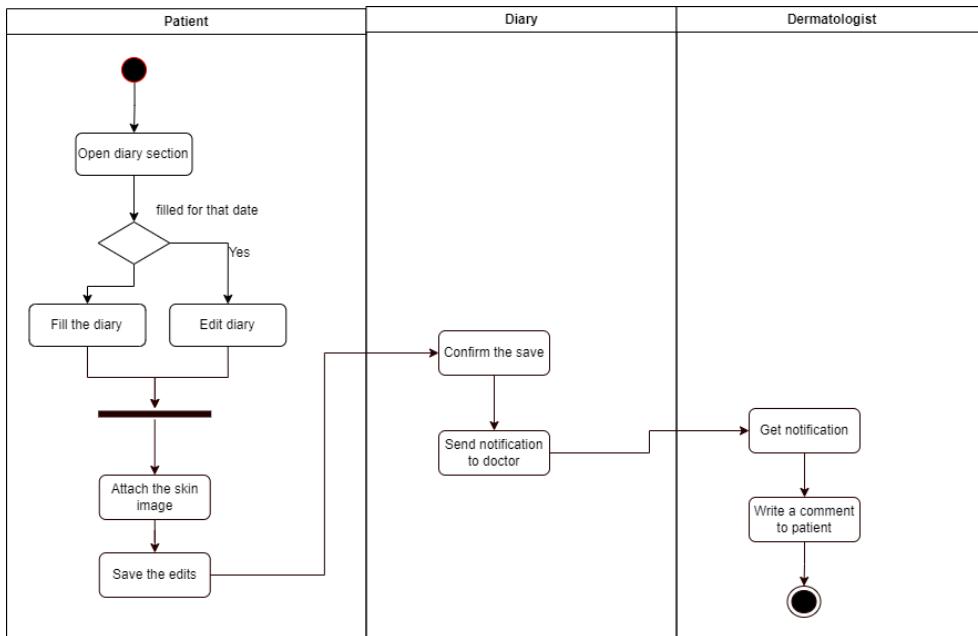
## Dermatology clinic app Requirements Specification

AC\_3: Patient fills form

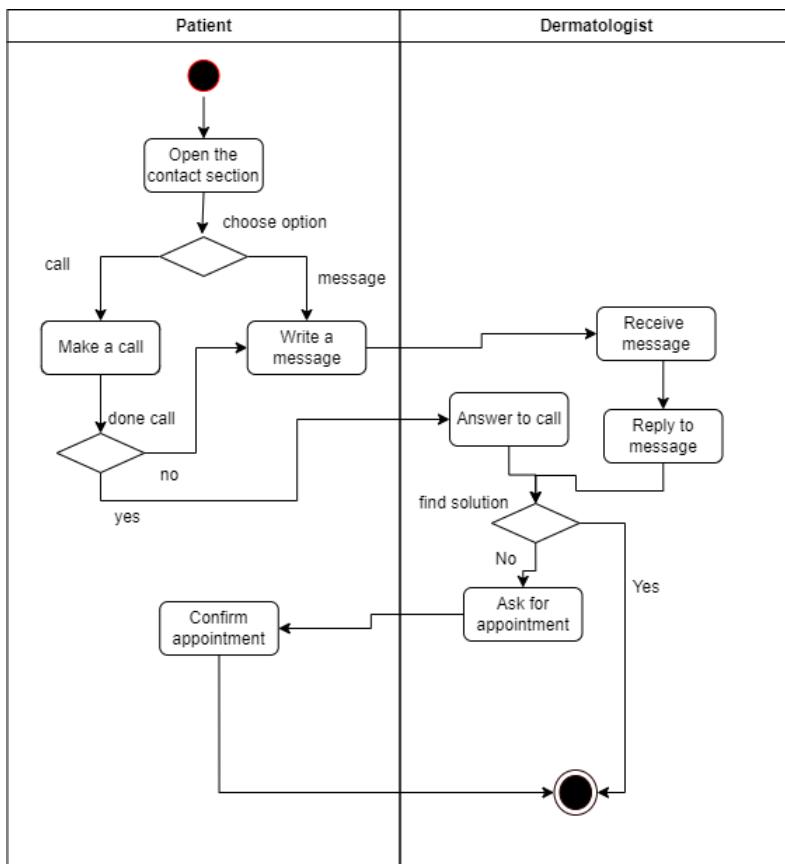


## Dermatology clinic app Requirements Specification

### AC\_4: Patient diary

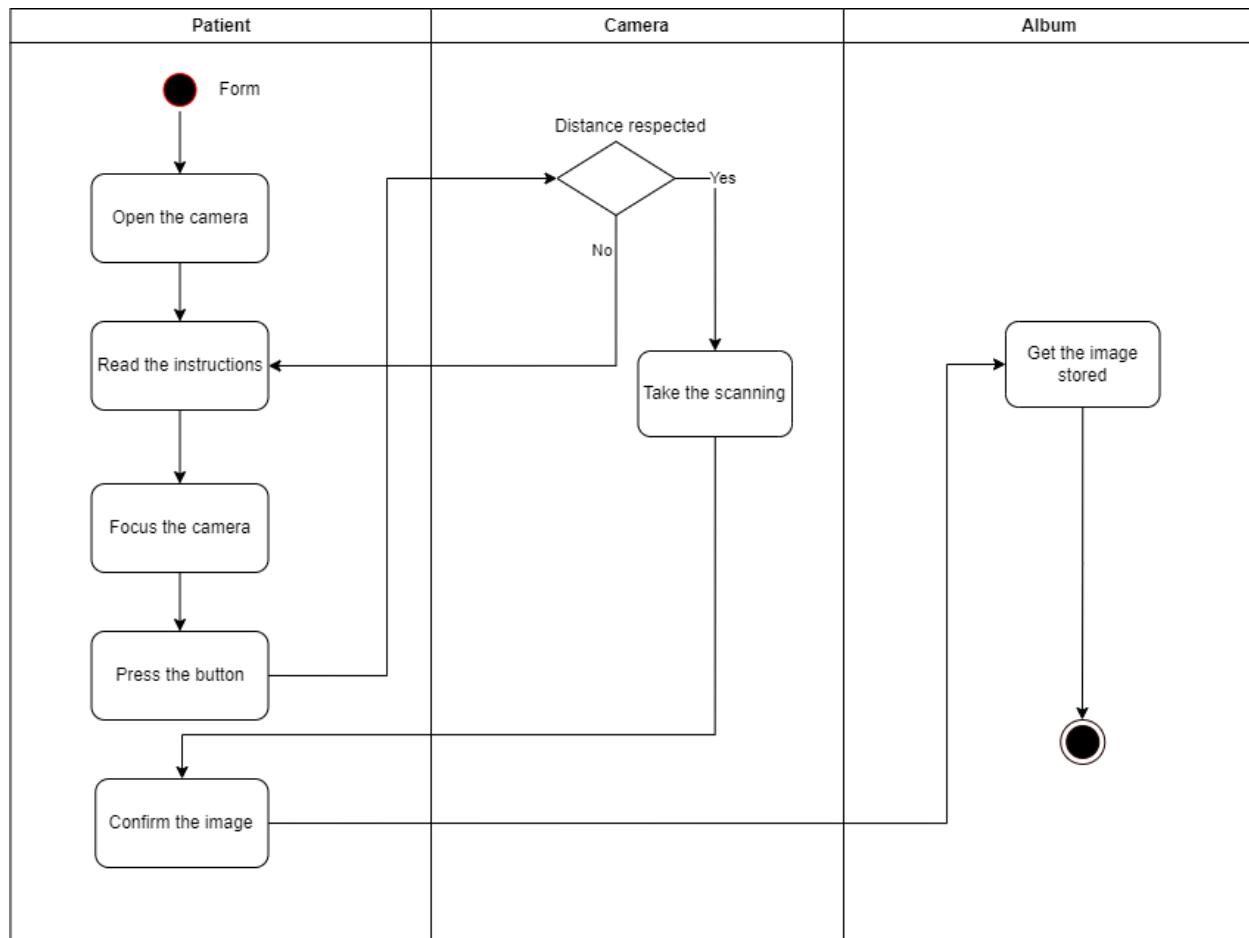


### AC\_5: Patient communicates with dermatologist



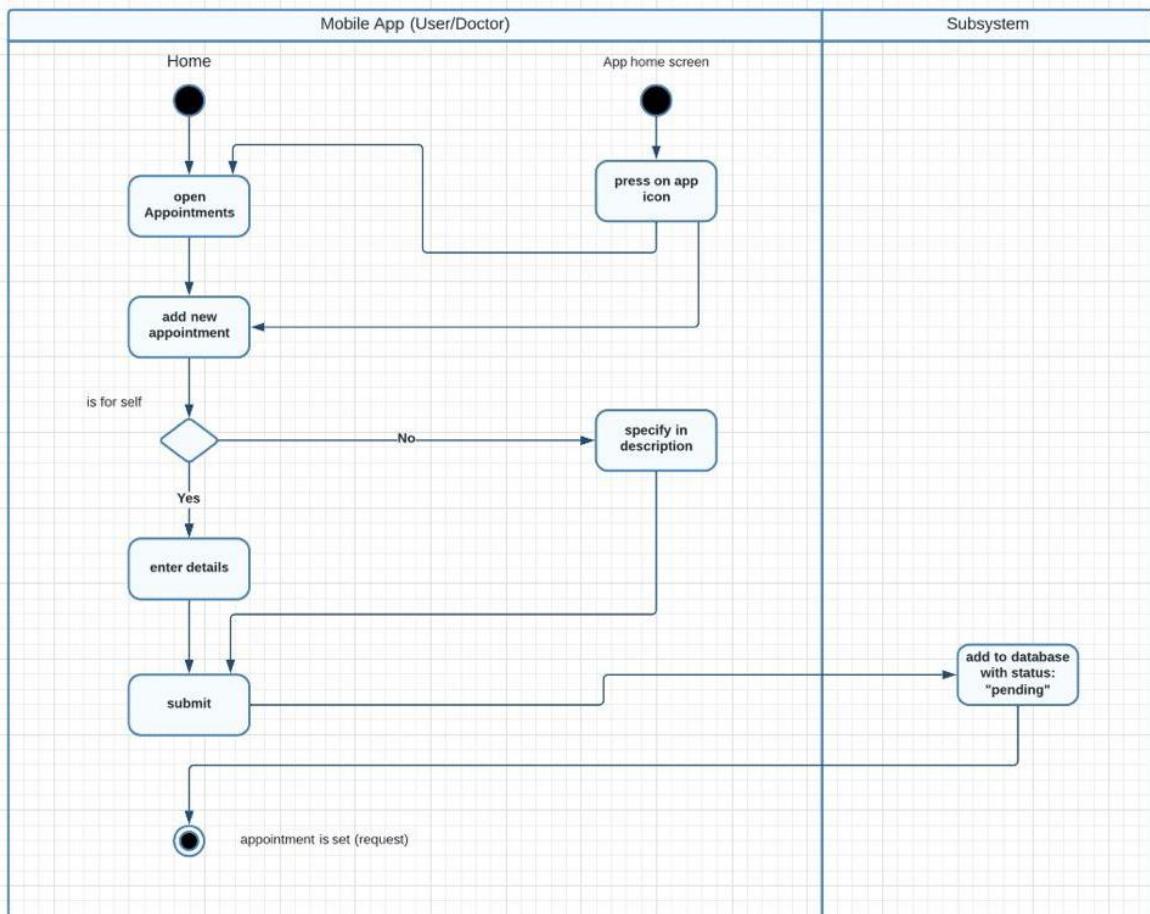
*Dermatology clinic app Requirements Specification*

## AC\_6: Patient scans skin



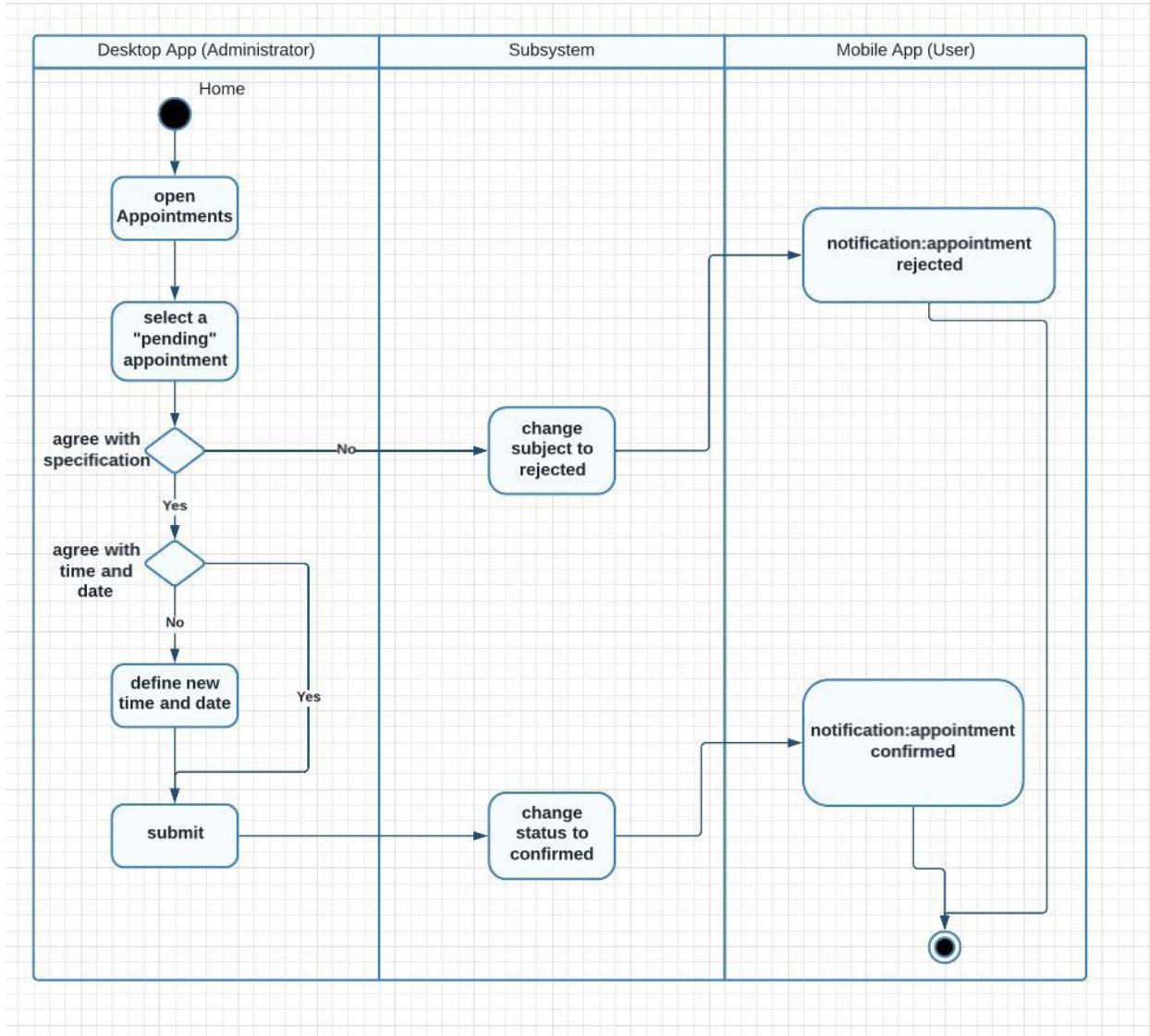
## *Dermatology clinic app Requirements Specification*

### AC\_7: Set appointment



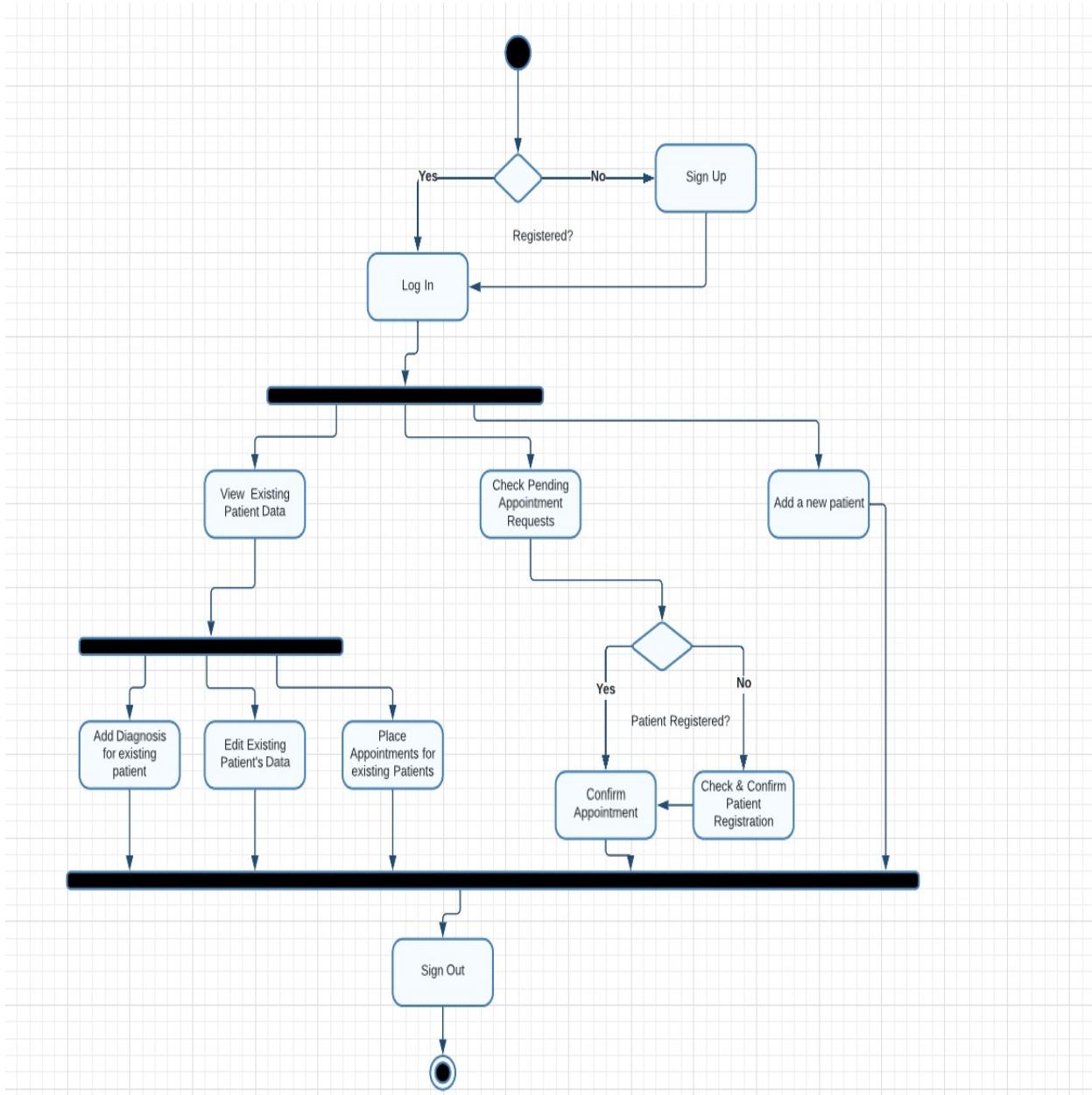
## Dermatology clinic app Requirements Specification

### AC\_8: Admin schedule appointment



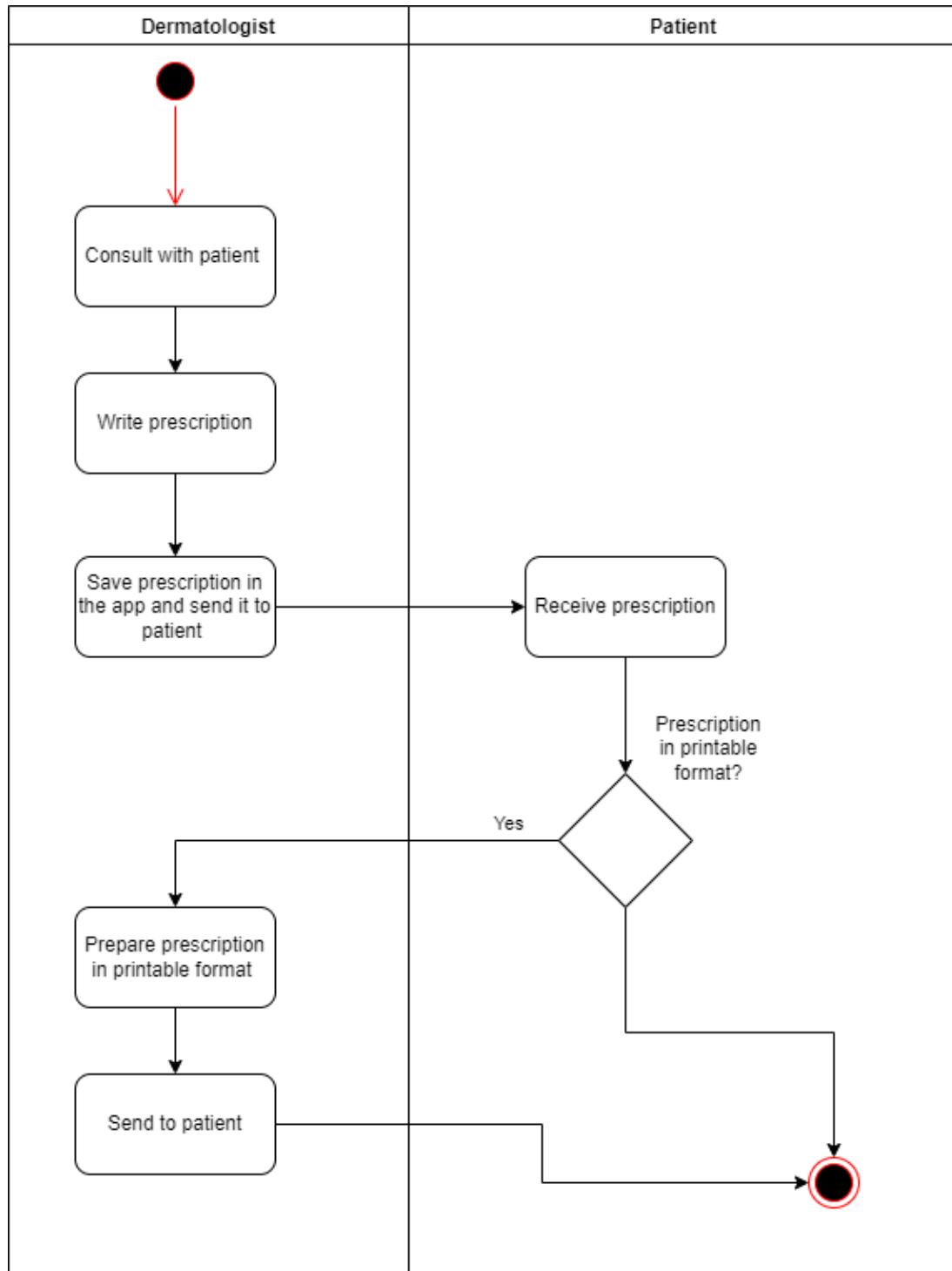
## Dermatology clinic app Requirements Specification

### AC\_9: Dermatologist response



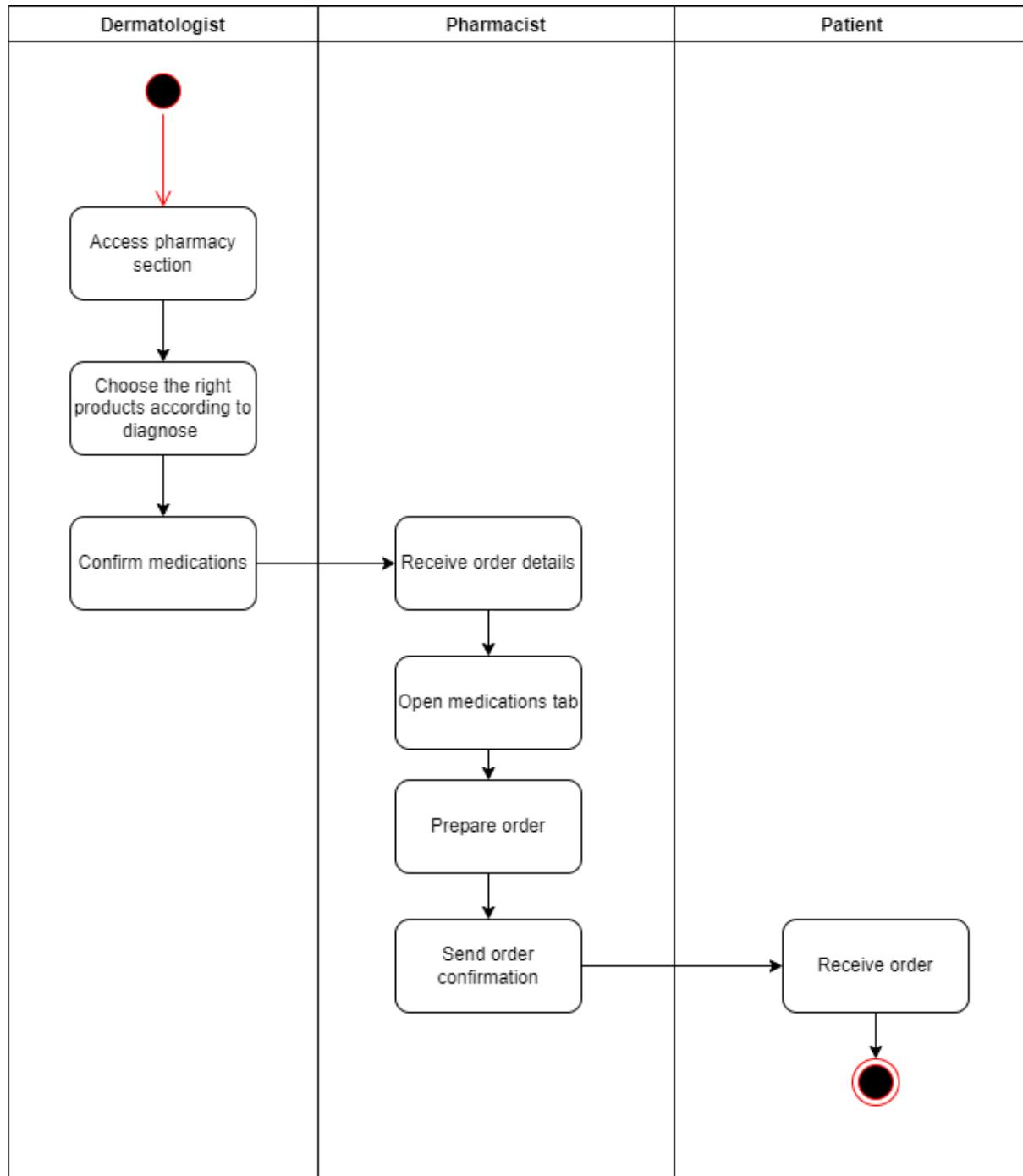
## Dermatology clinic app Requirements Specification

### AC\_10: Prescription in different formats



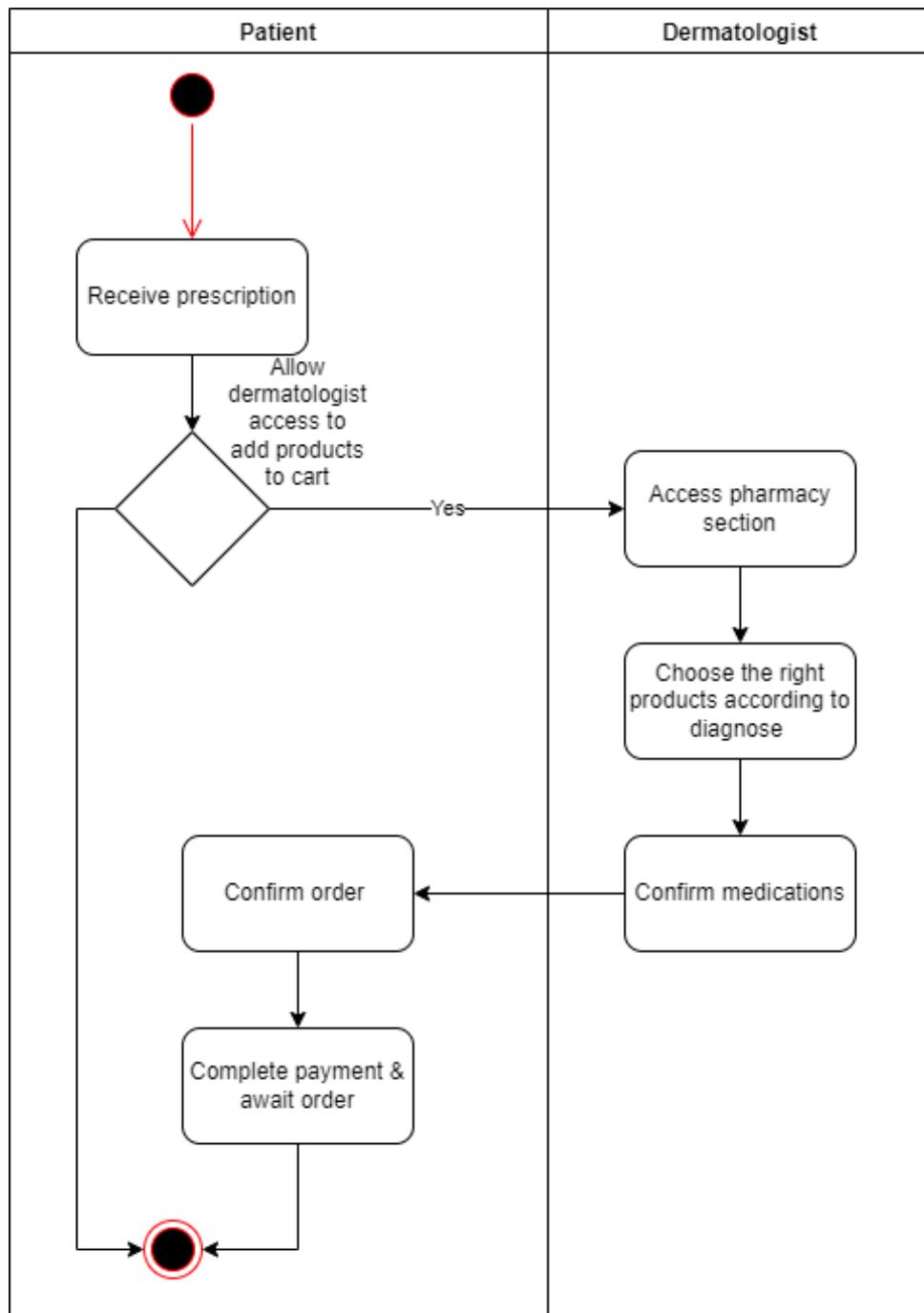
## *Dermatology clinic app Requirements Specification*

AC\_11: Pharmacist prepares order



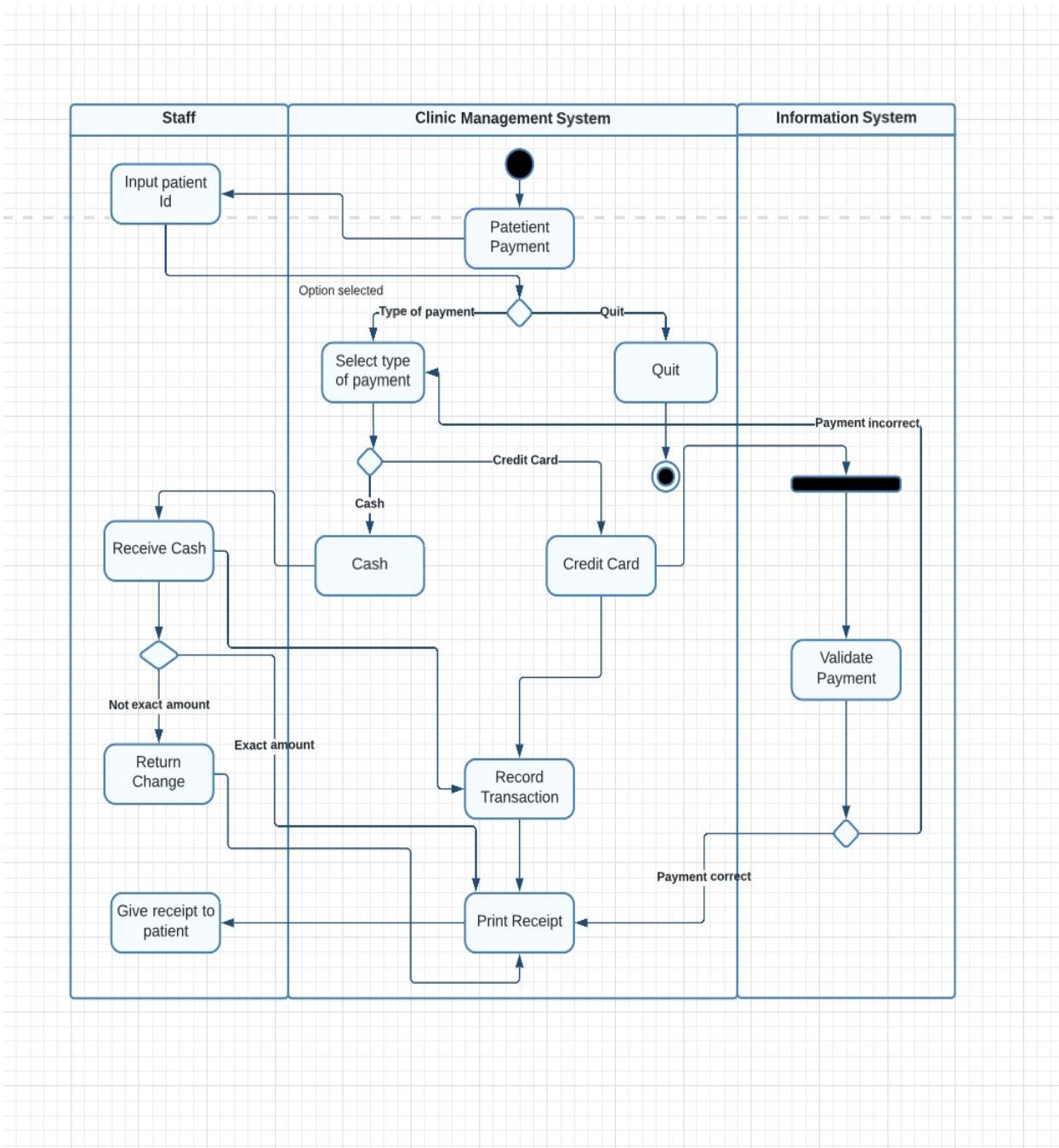
## Dermatology clinic app Requirements Specification

AC\_12: Patient receives order



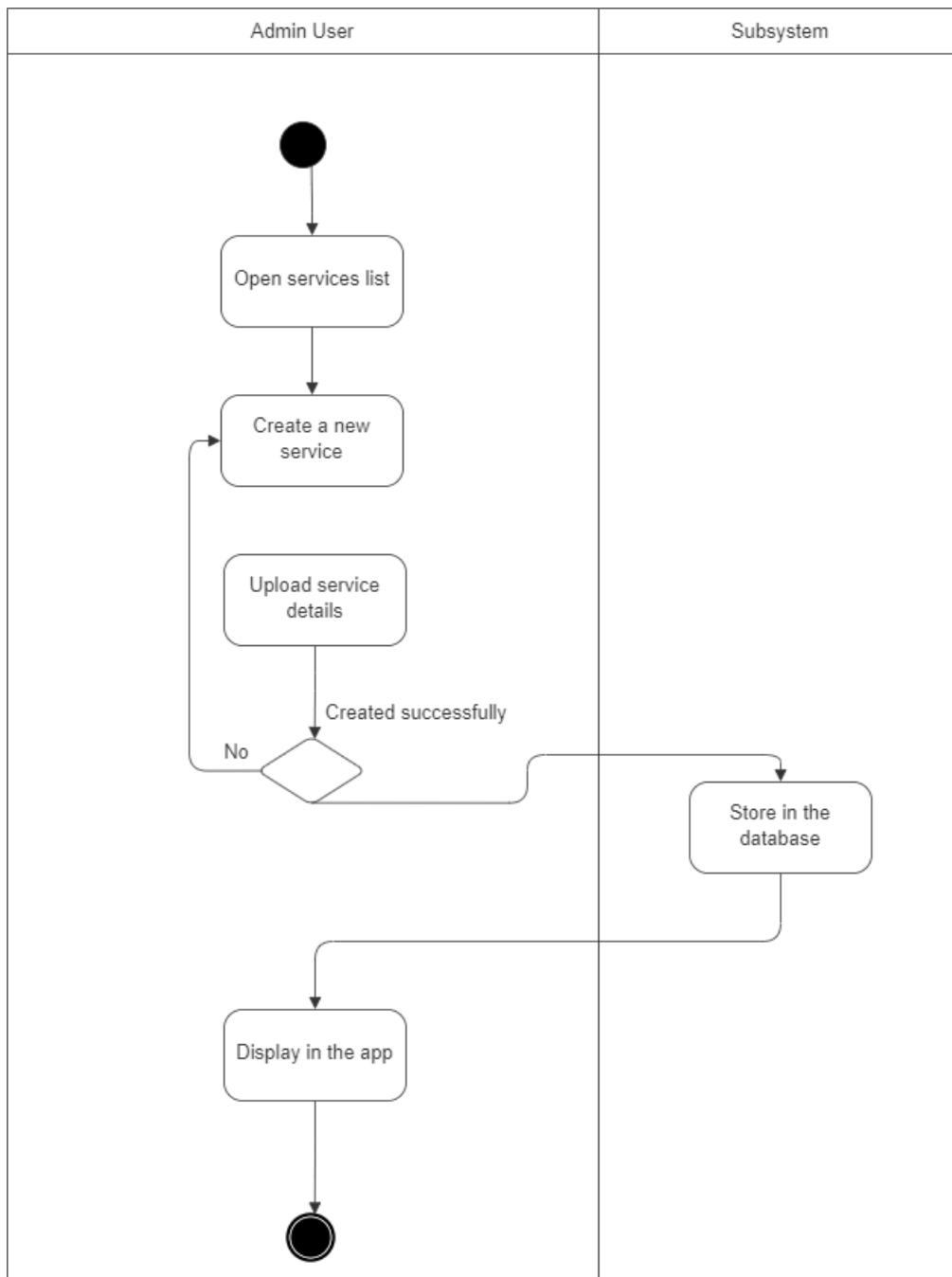
## Dermatology clinic app Requirements Specification

### AC\_13: Payment



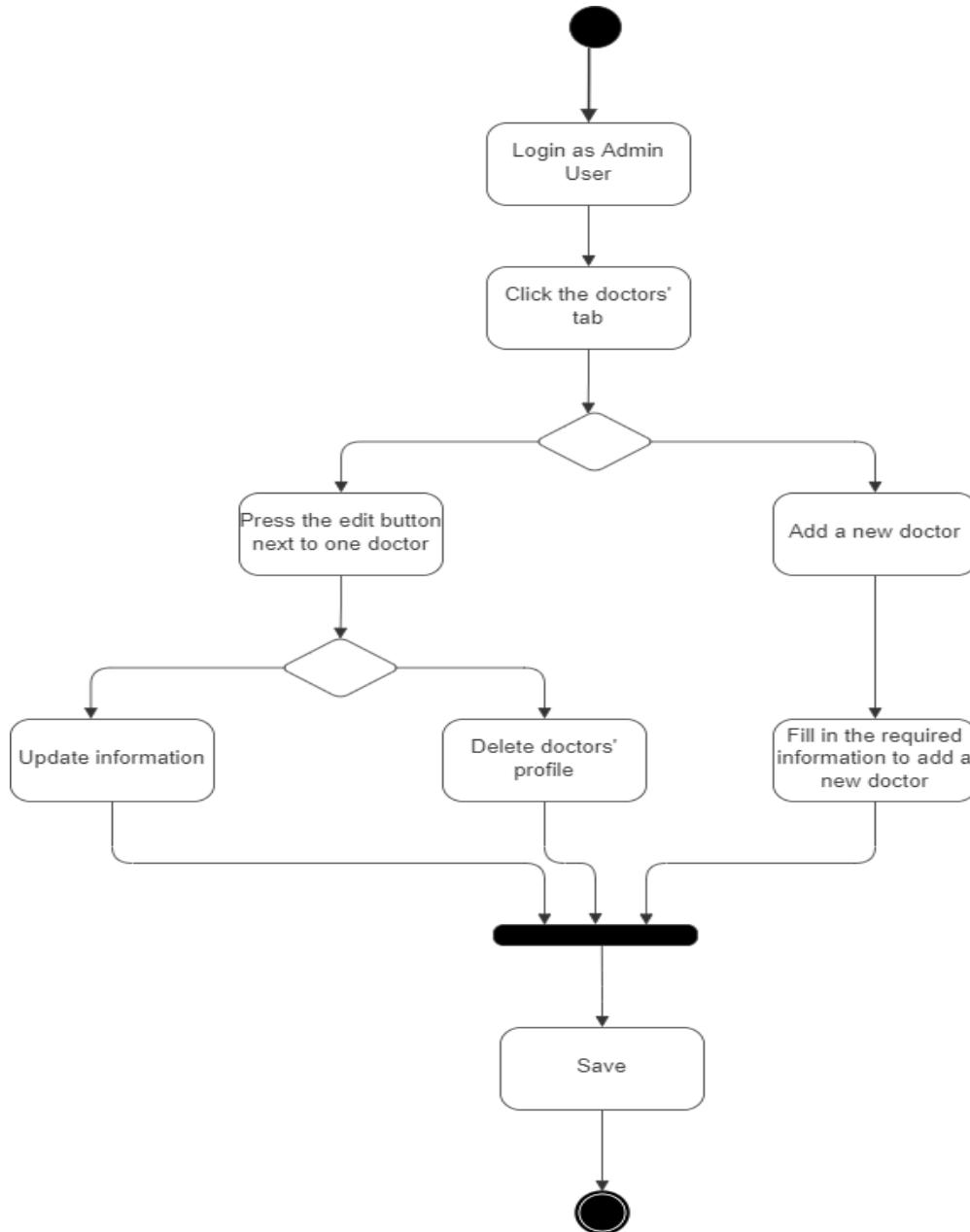
## *Dermatology clinic app Requirements Specification*

AC\_14: Admin adds a service



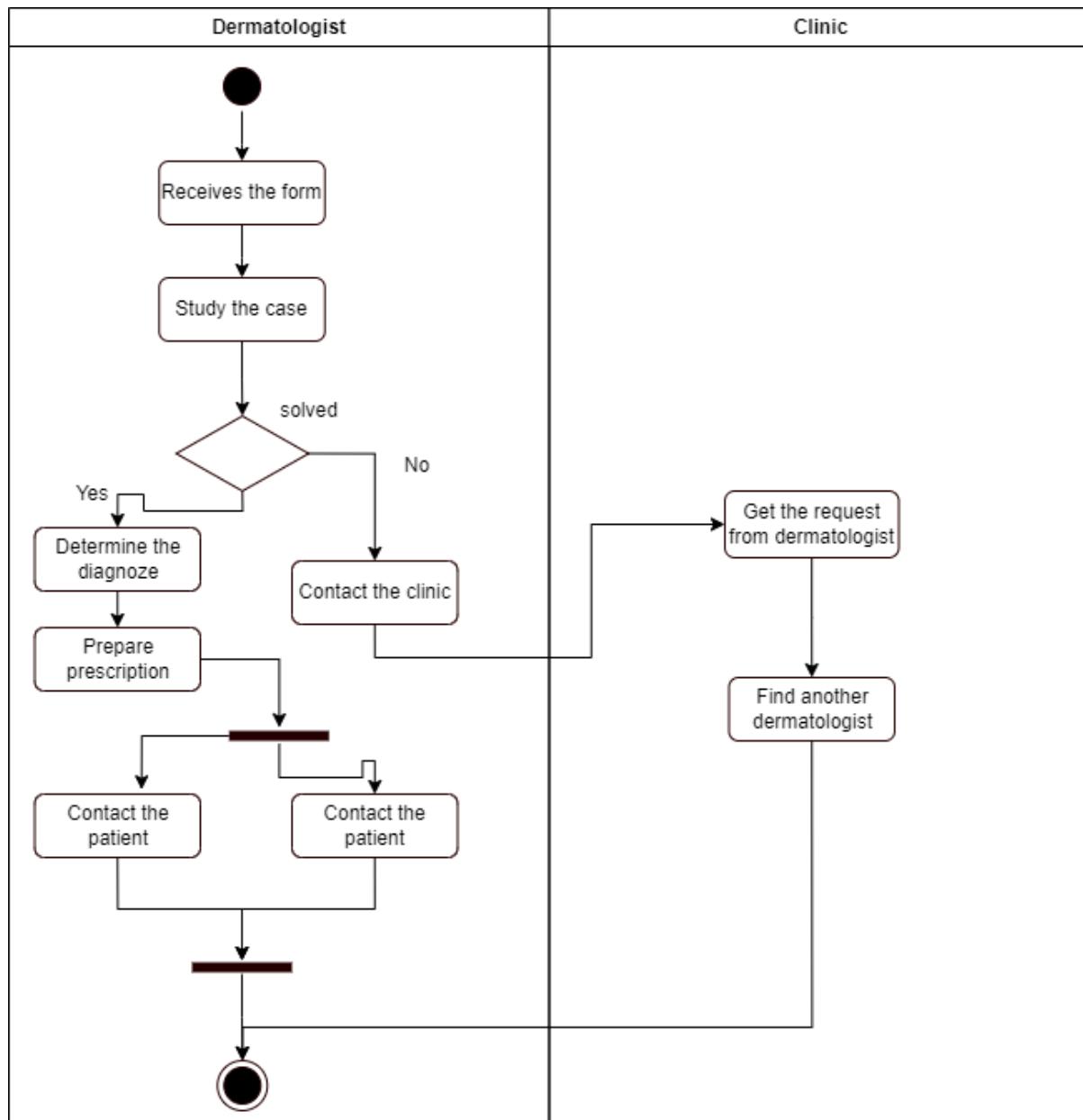
## *Dermatology clinic app Requirements Specification*

AC\_15: Admin modifies doctor's profile



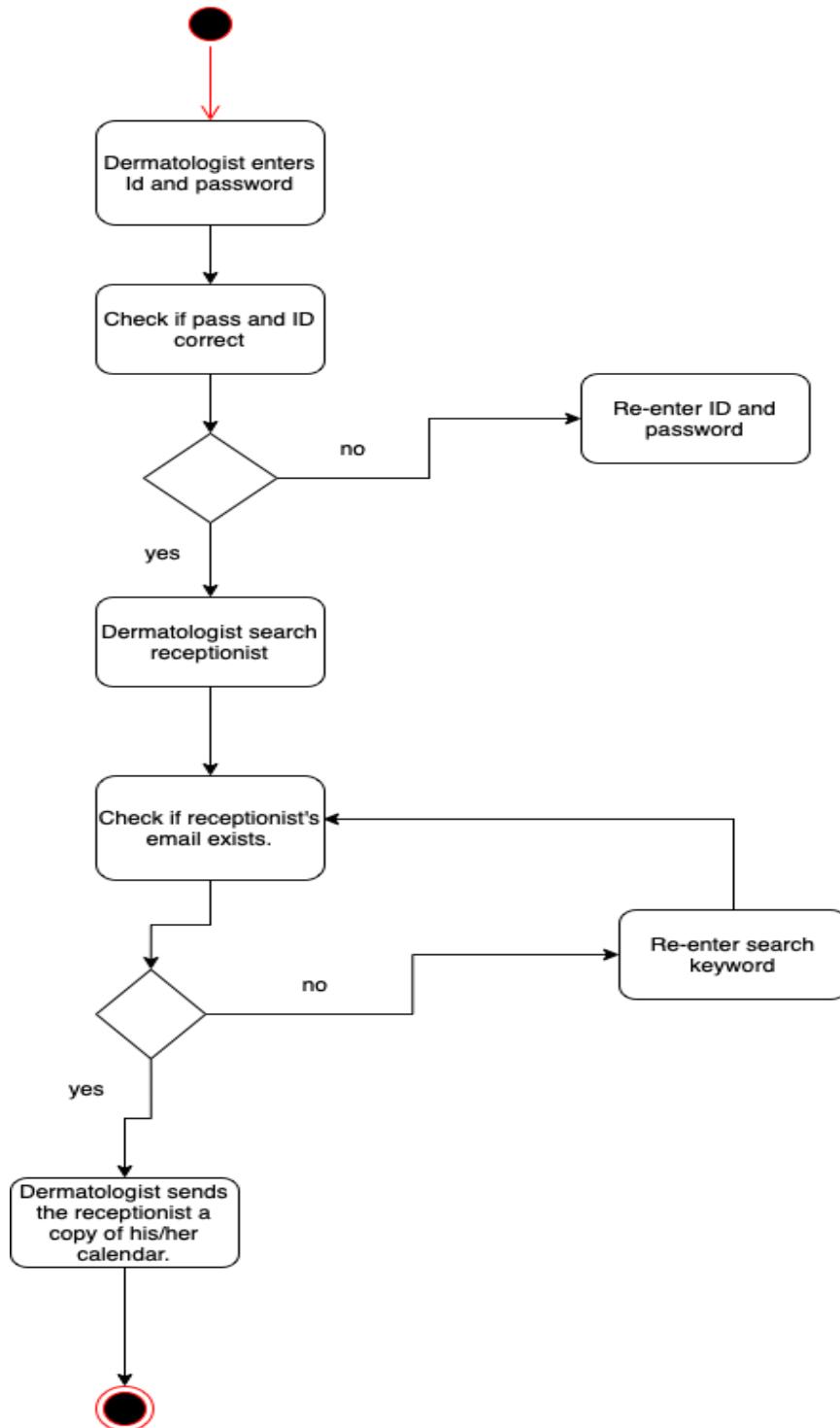
## Dermatology clinic app Requirements Specification

AC\_16: Dermatologist sends case to another dermatologist



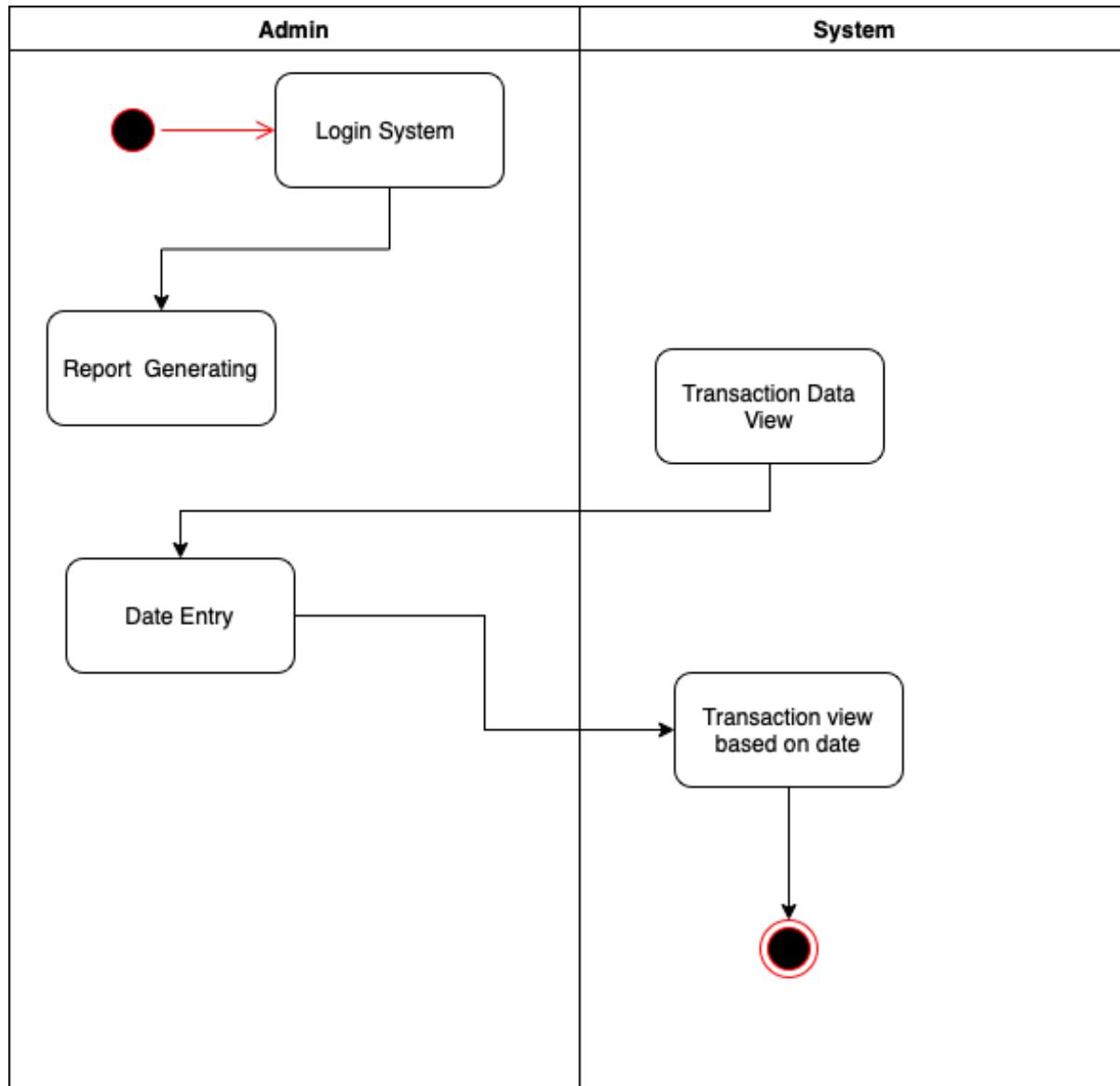
## Dermatology clinic app Requirements Specification

AC\_17: Dermatologist sends a copy of the calendar to the receptionist



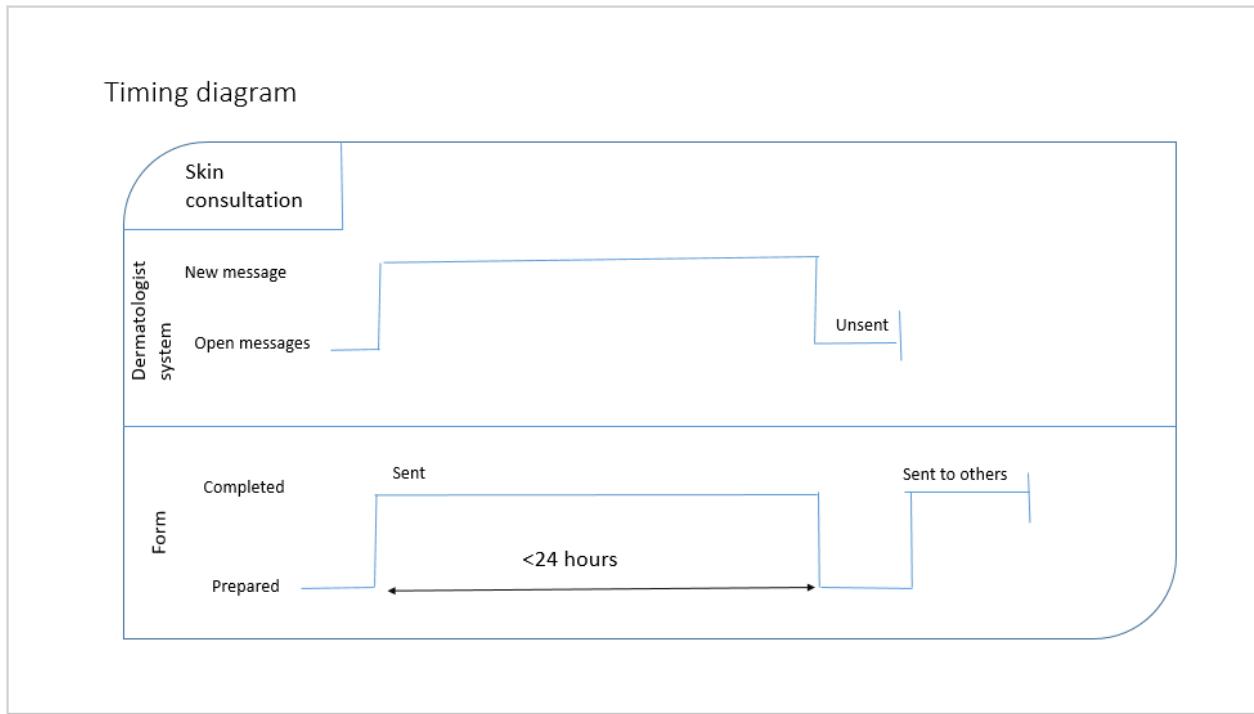
## *Dermatology clinic app Requirements Specification*

AC\_18: Admin generates reports

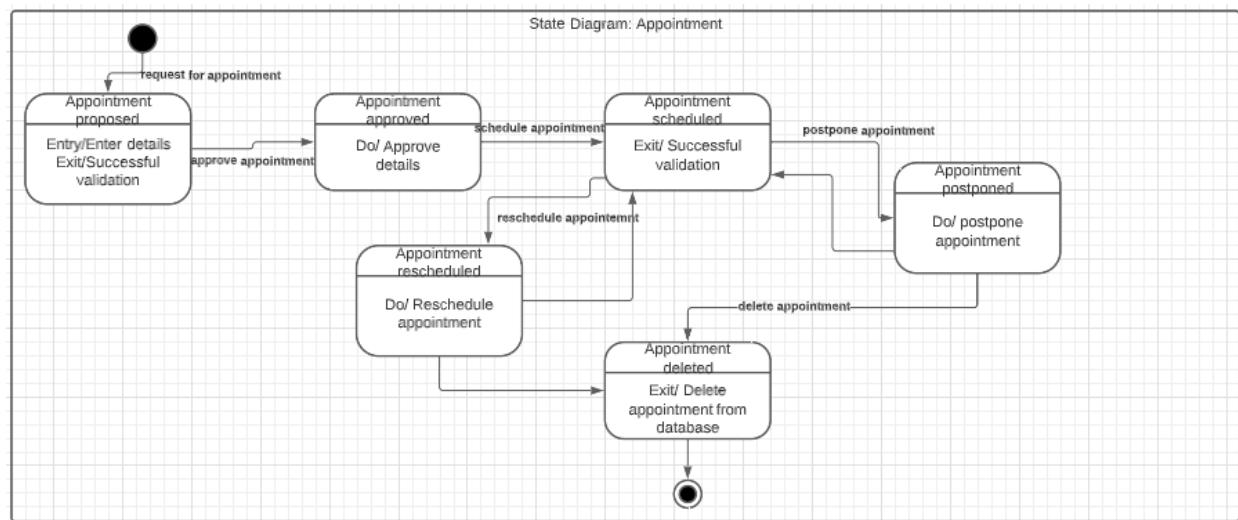


## 4.8 Timing Diagram

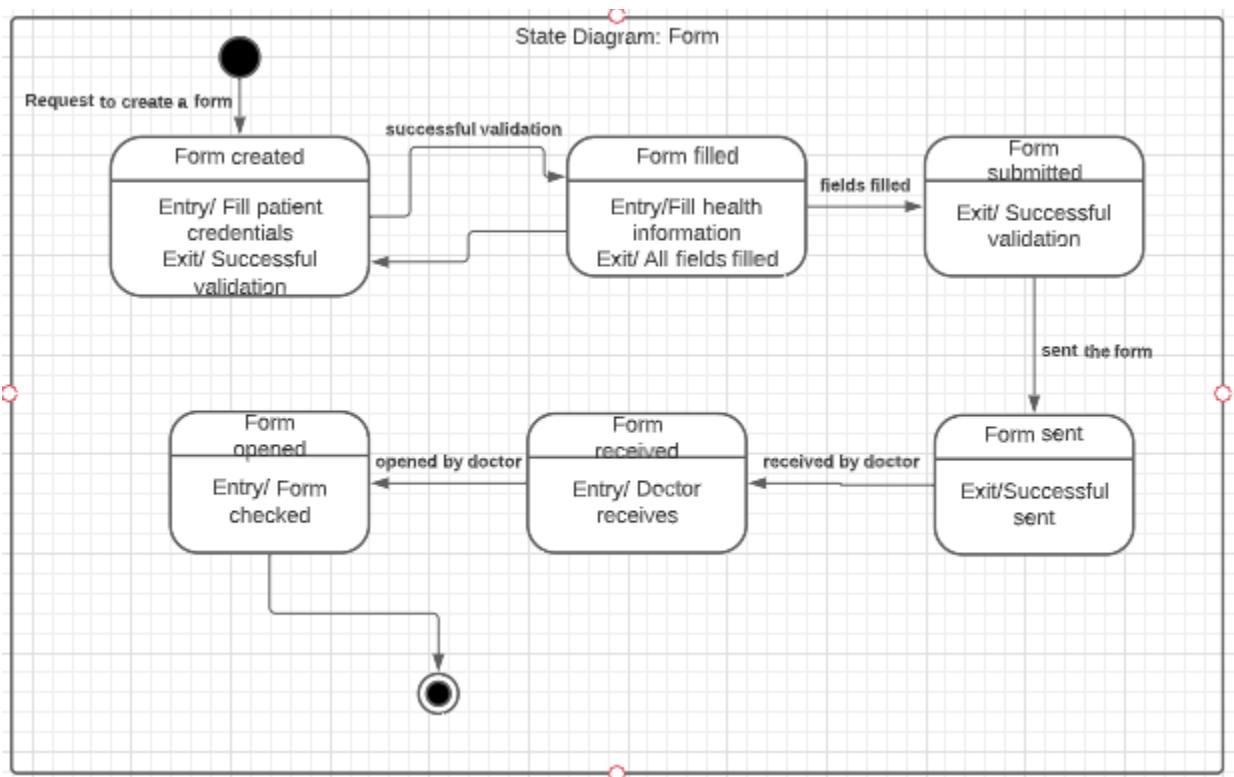
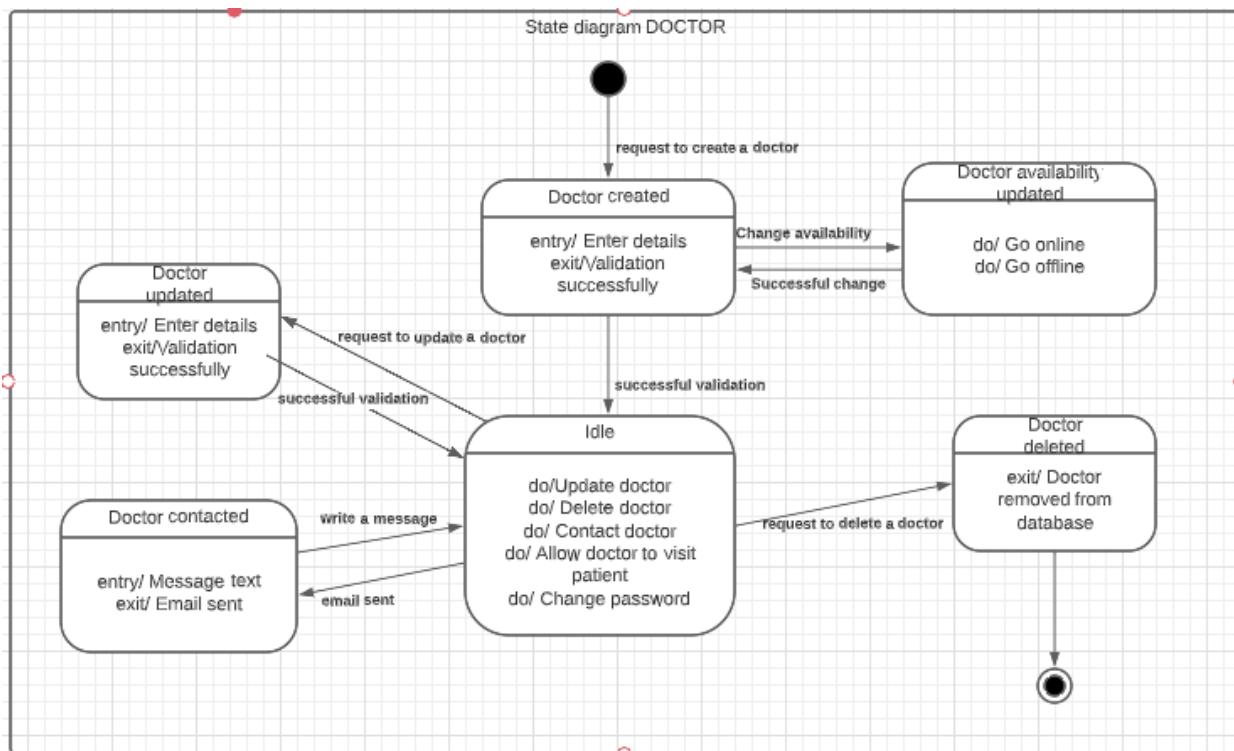
Dermatologist's response



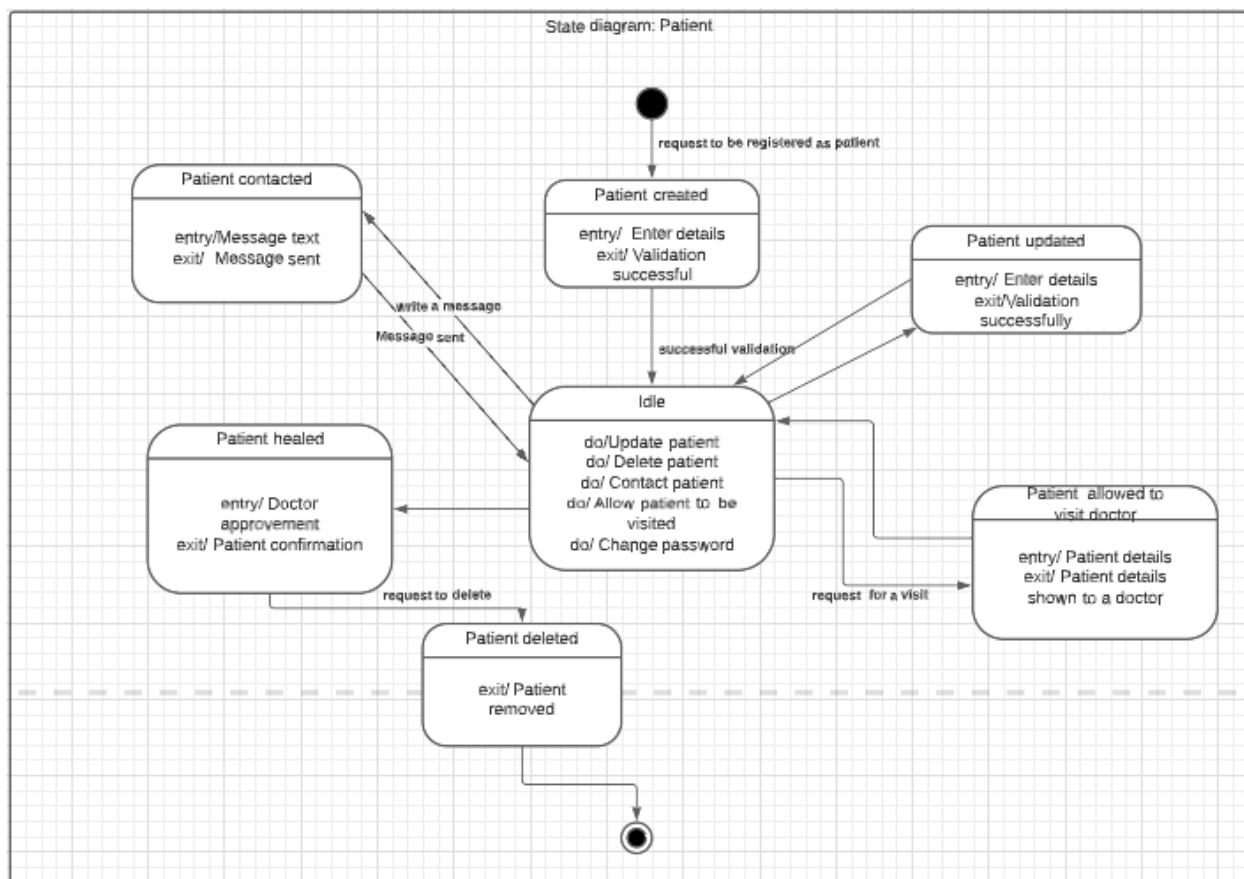
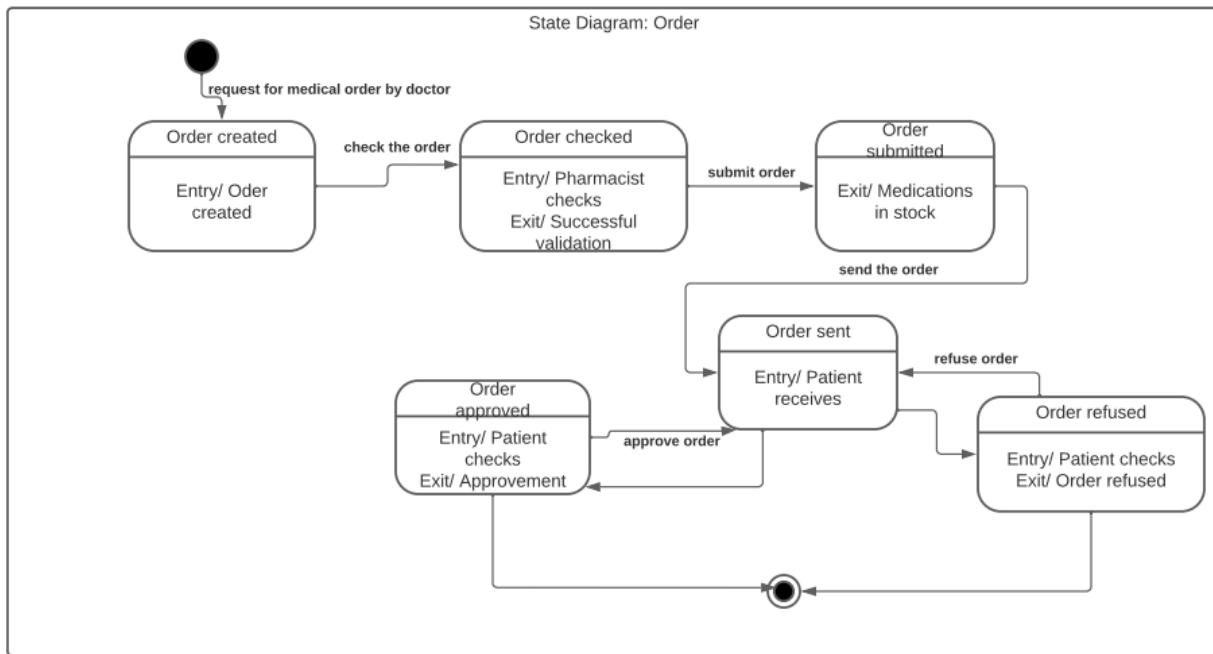
## 4.9 State Diagrams



## Dermatology clinic app Requirements Specification

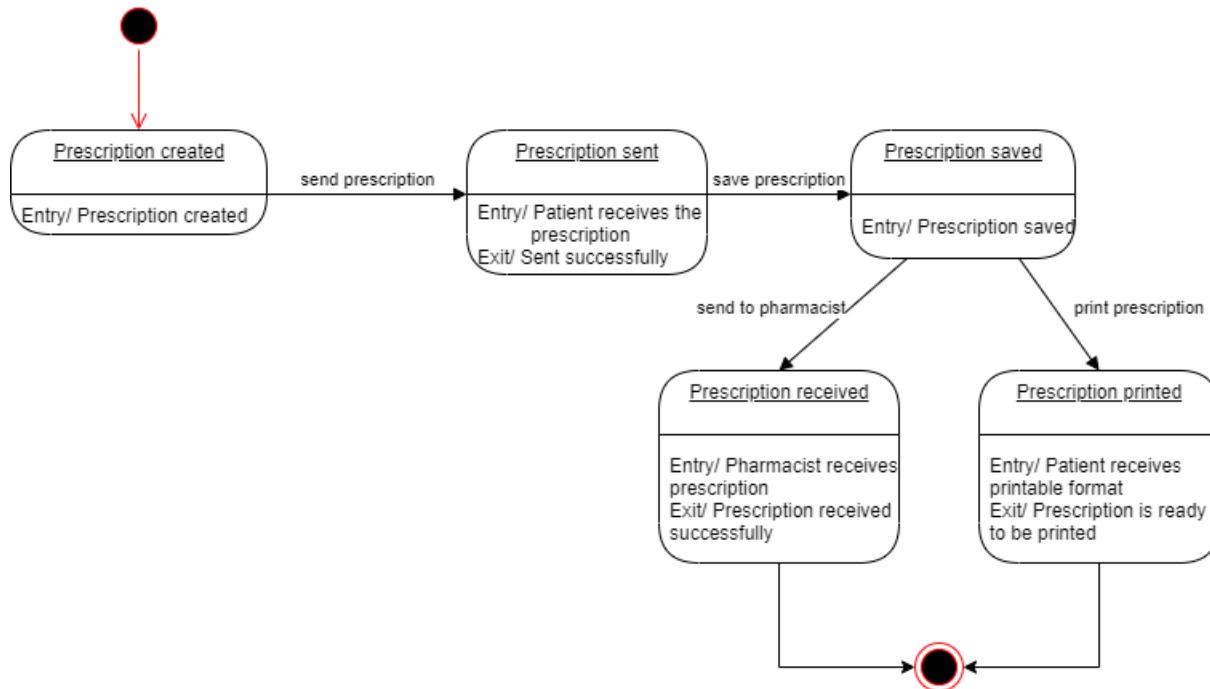


## Dermatology clinic app Requirements Specification

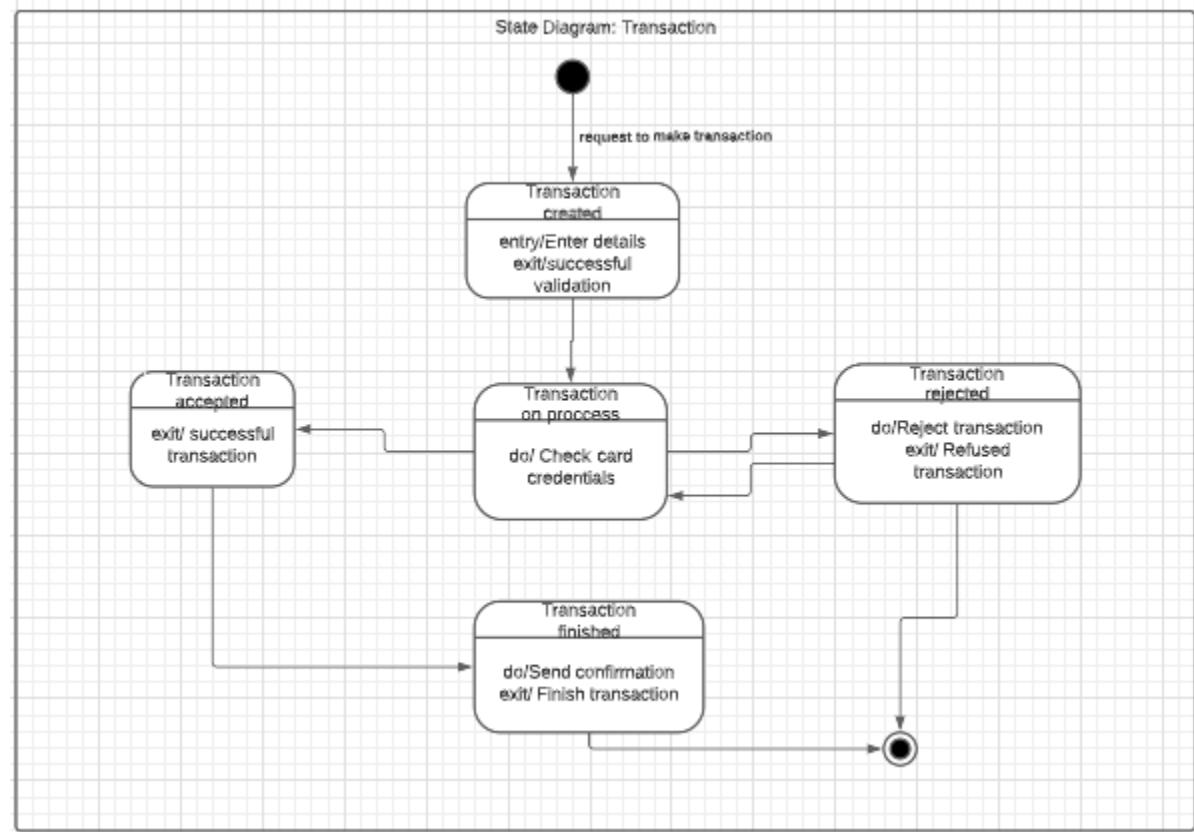


## Dermatology clinic app Requirements Specification

State Diagram: Prescription



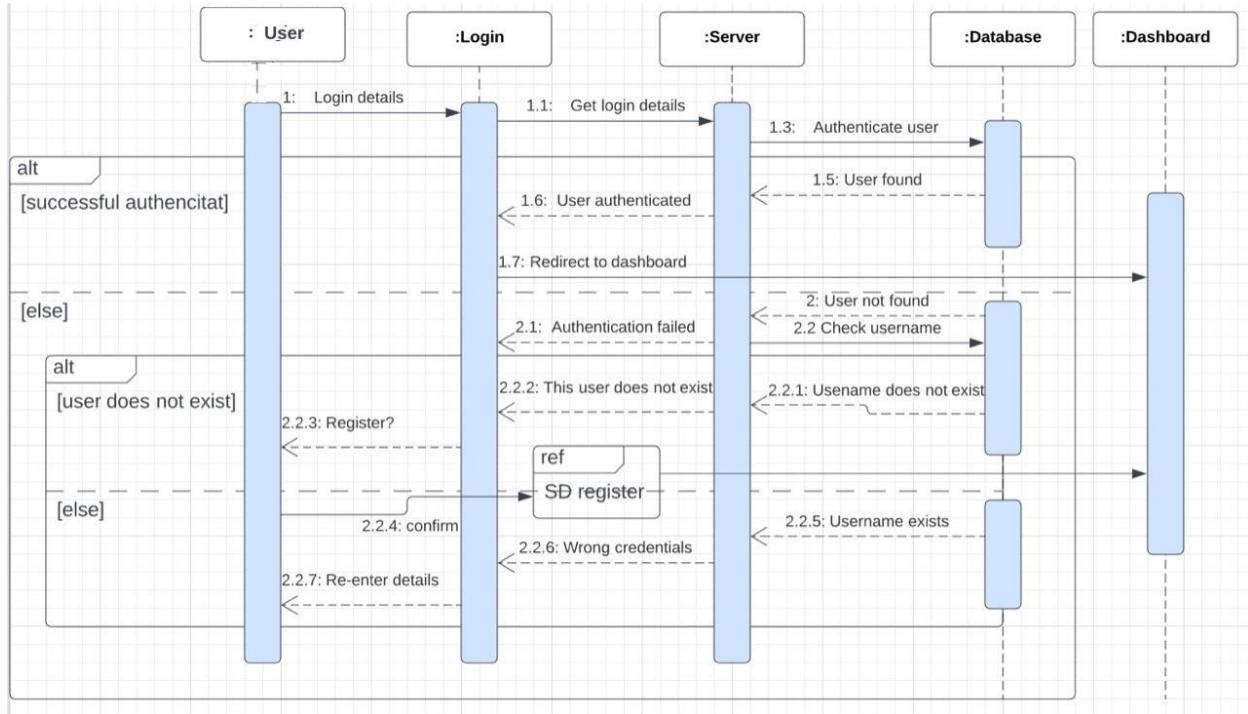
State Diagram: Transaction



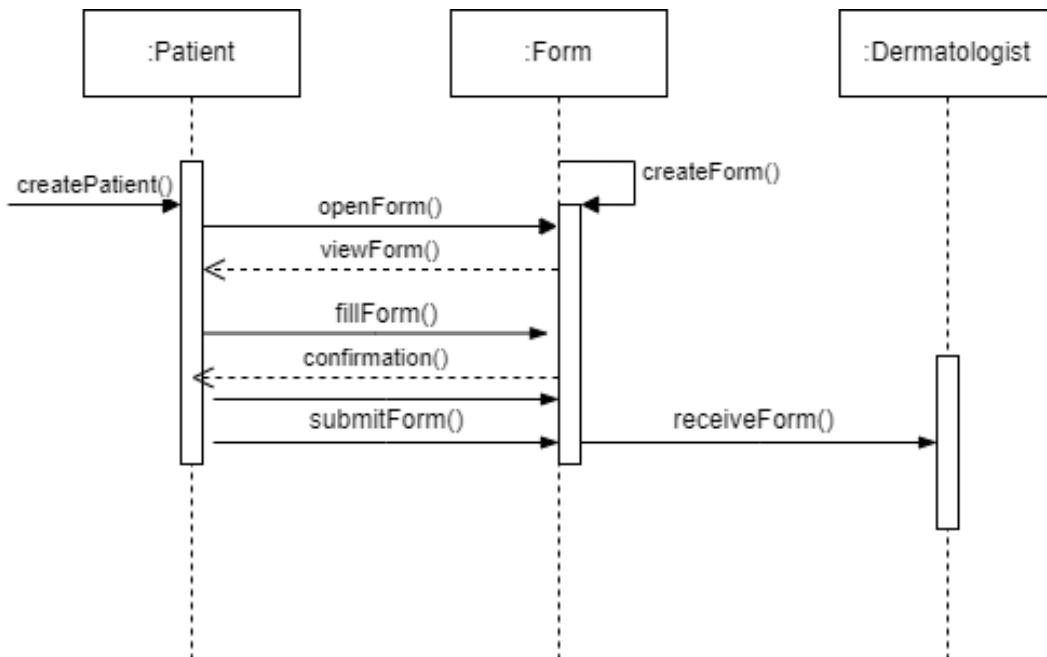
## Dermatology clinic app Requirements Specification

### 4.10 Sequence Diagrams

S\_1: Log in

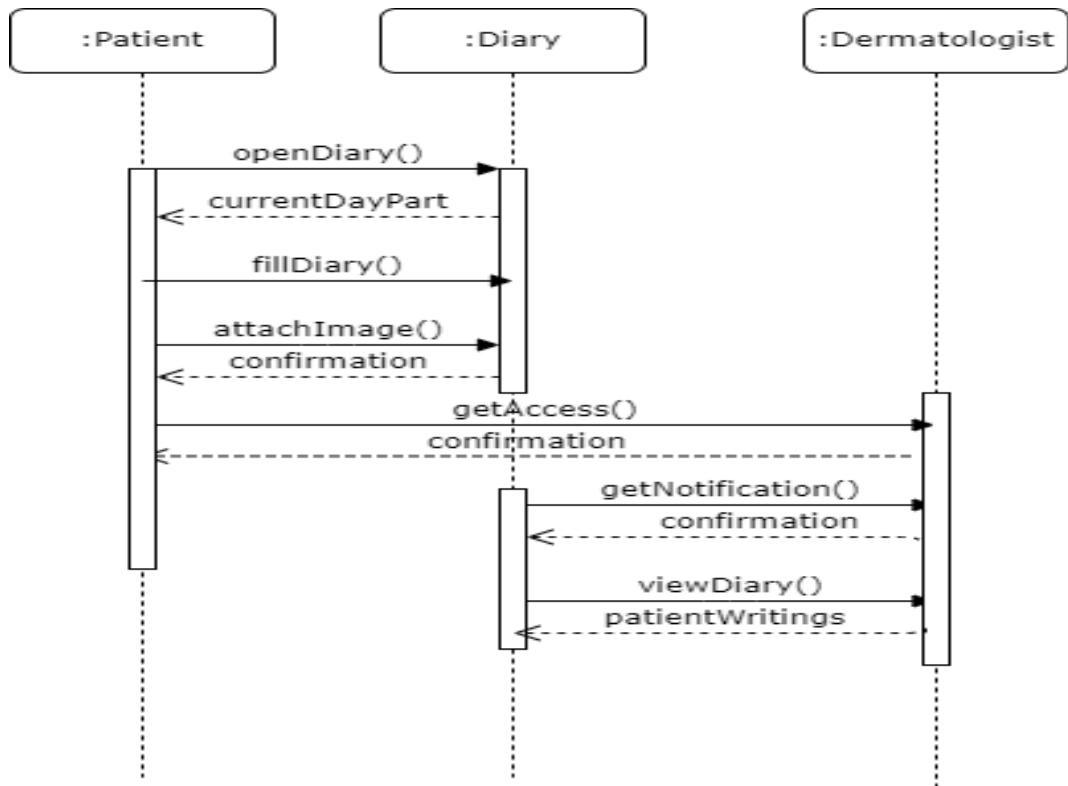


S\_2: Patient fills form

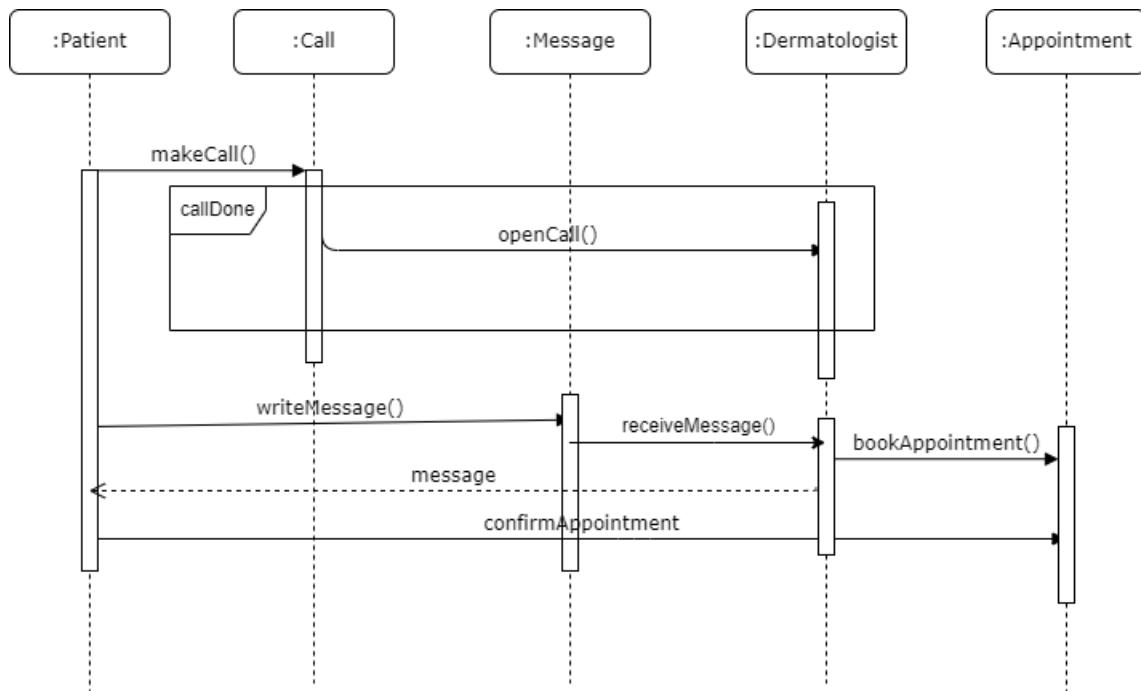


## Dermatology clinic app Requirements Specification

### S\_3: Patient diary

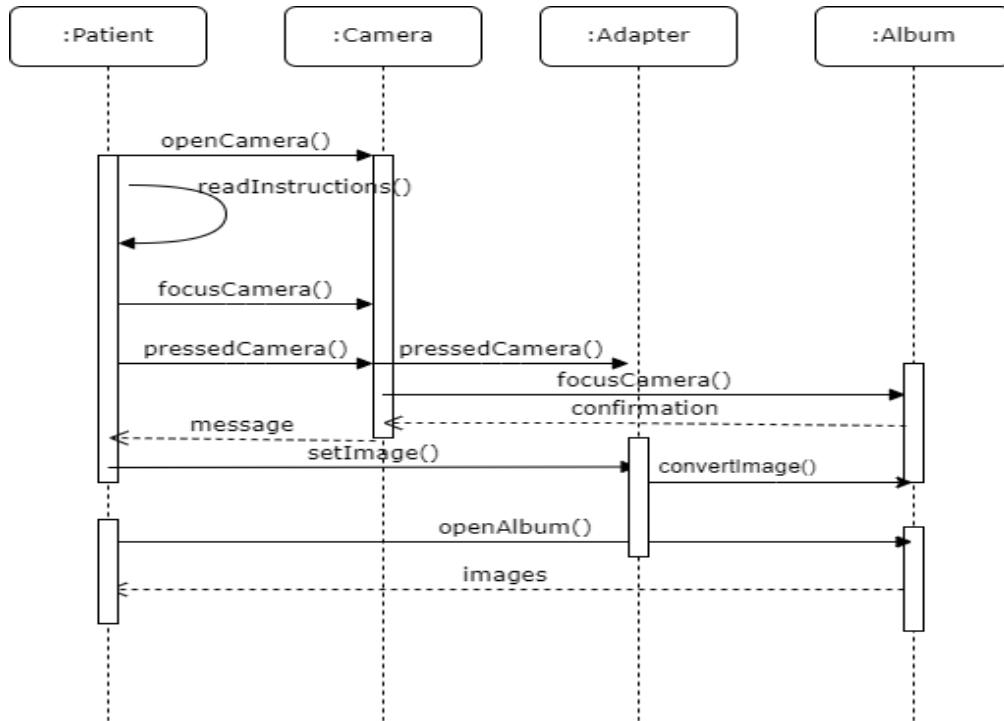


### S\_4: Patient communicates with dermatologist

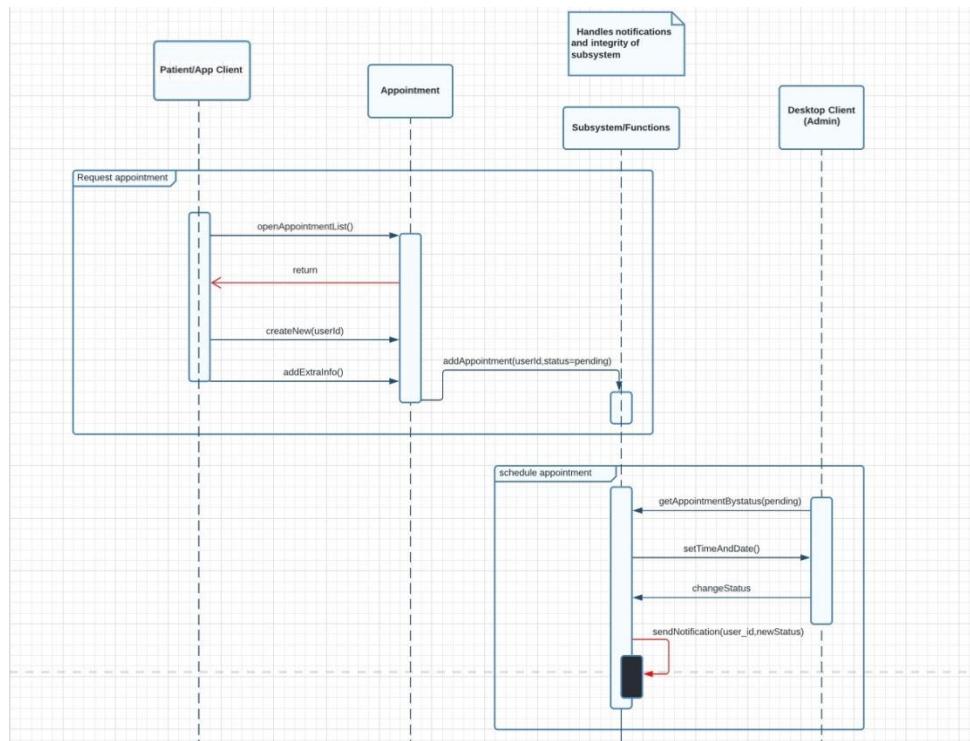


## Dermatology clinic app Requirements Specification

### S\_5: Patient scans skin

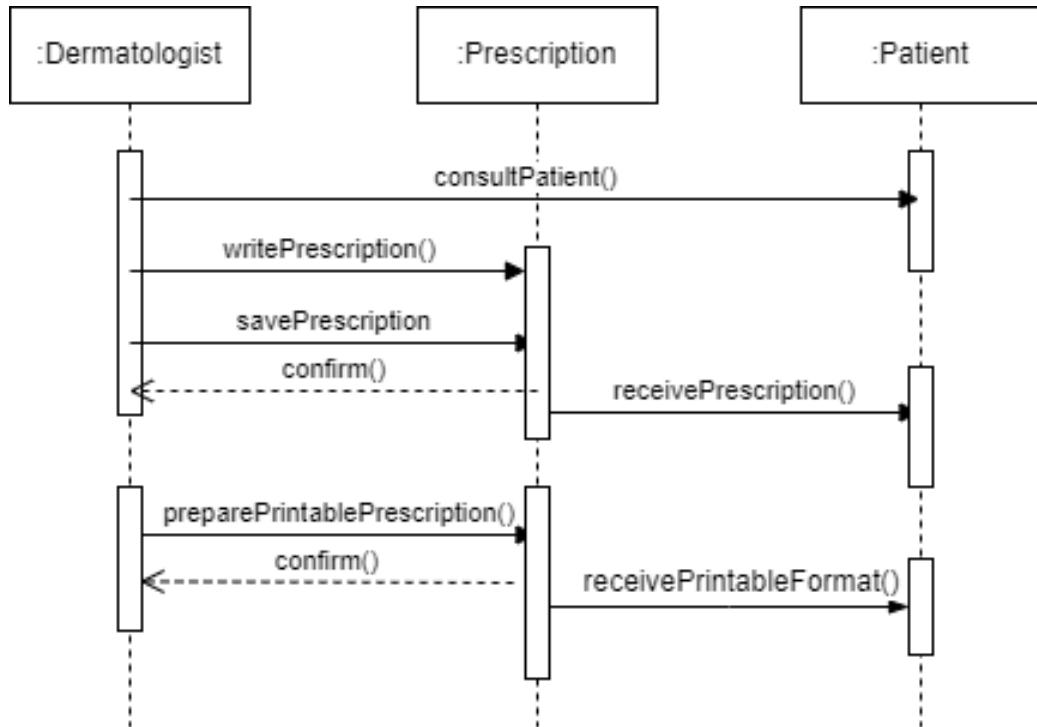


### S\_6: Appointments

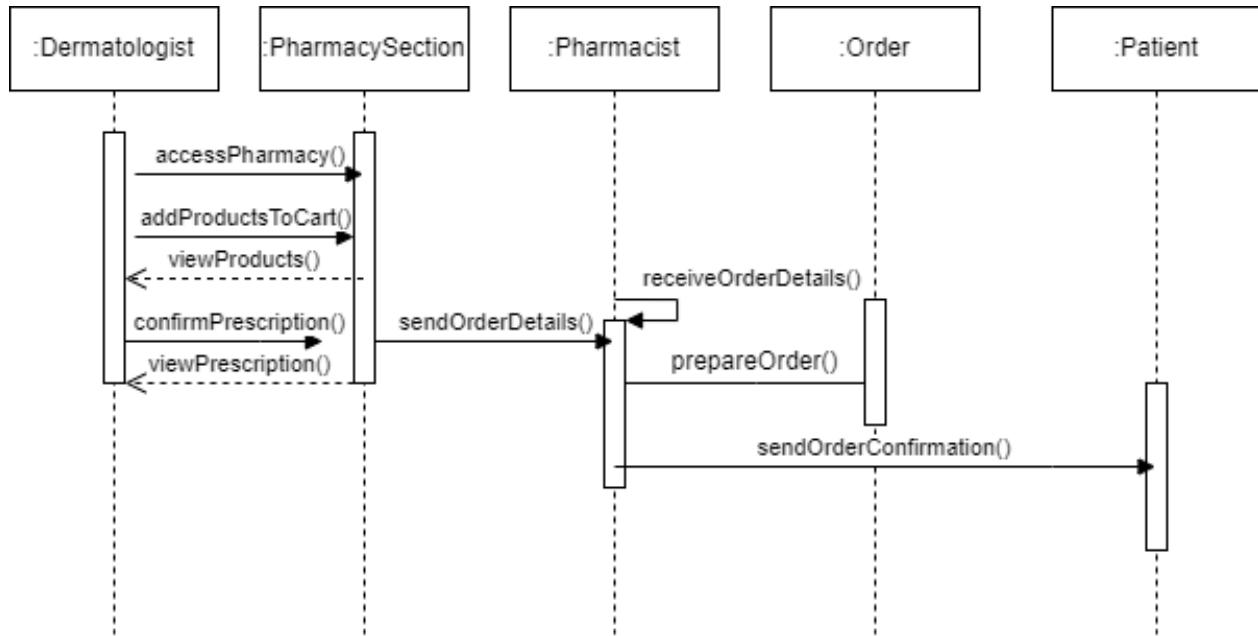


## Dermatology clinic app Requirements Specification

### S\_7: Prescription in different formats

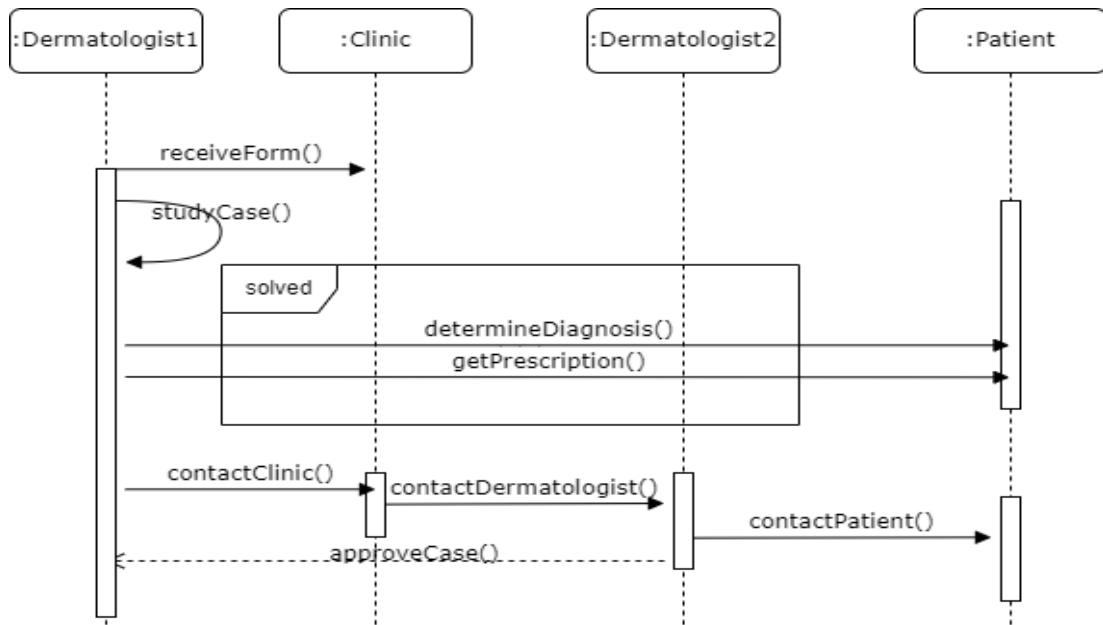


### S\_8: Preparing order

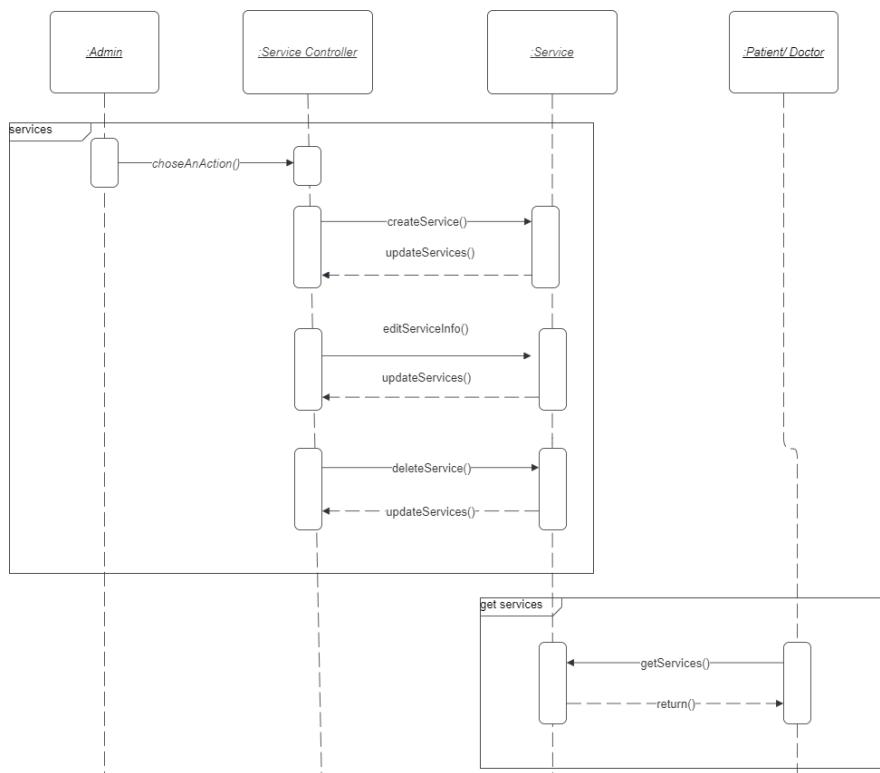


## Dermatology clinic app Requirements Specification

S\_9: Dermatologist sends patient's case to another dermatologist



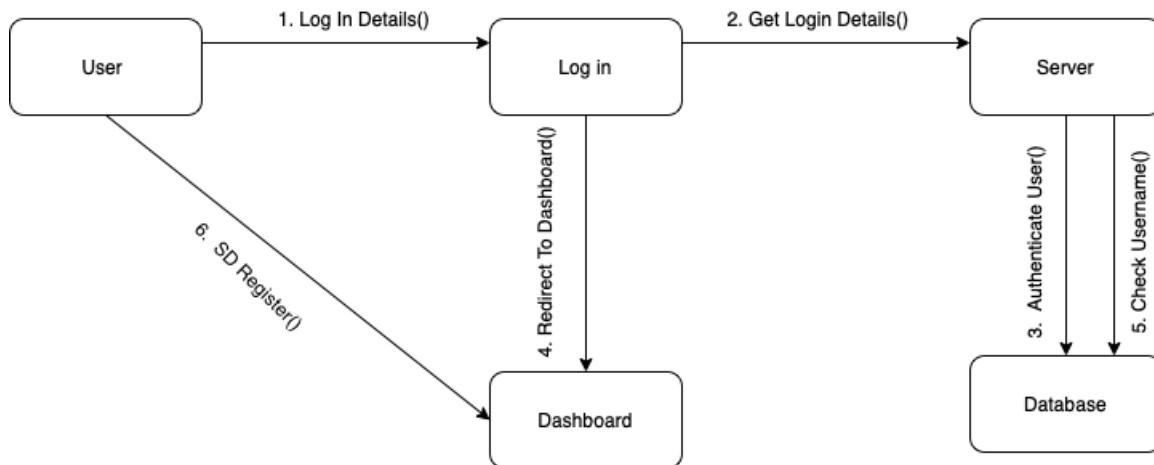
S\_10: Admin modifies services



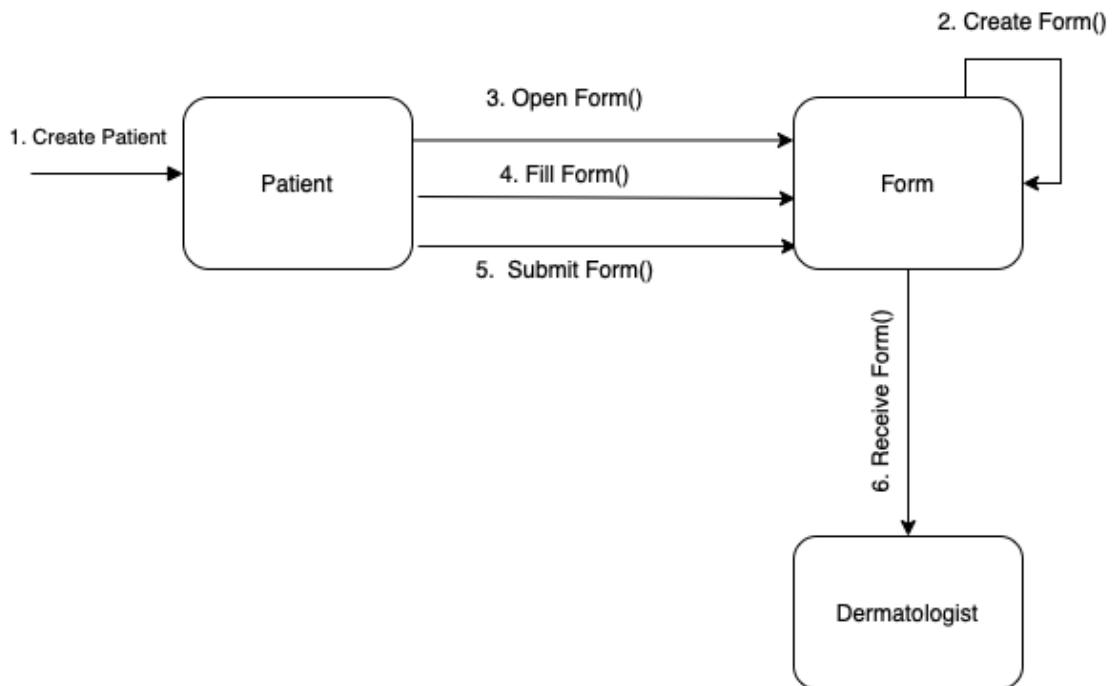
## *Dermatology clinic app Requirements Specification*

### **4.11 Collaboration Diagrams**

C\_1: Log in

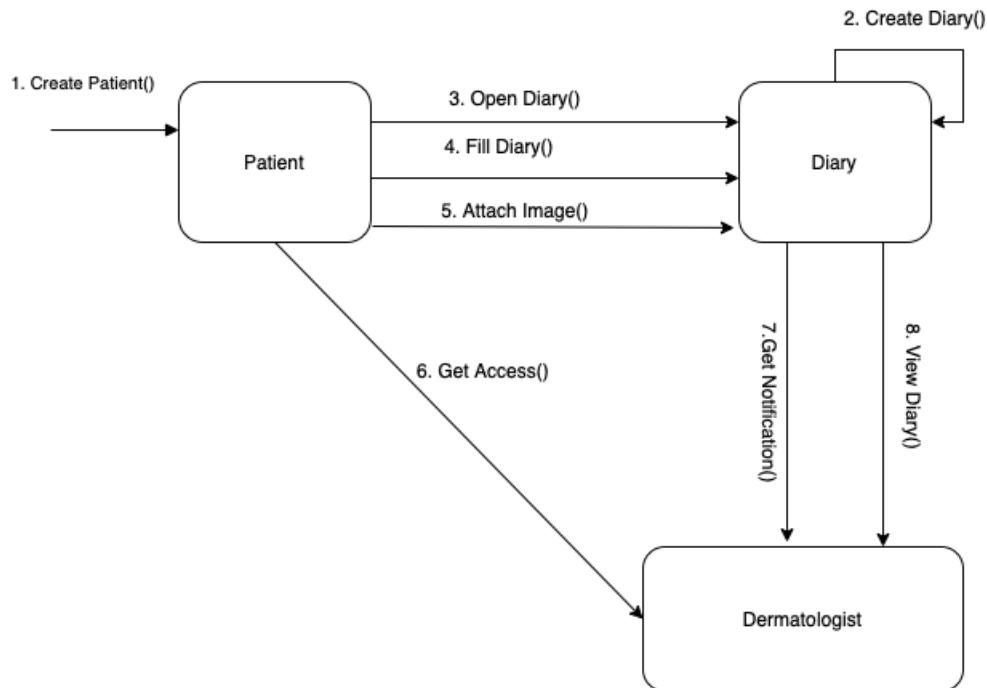


C\_2: Patient fills form

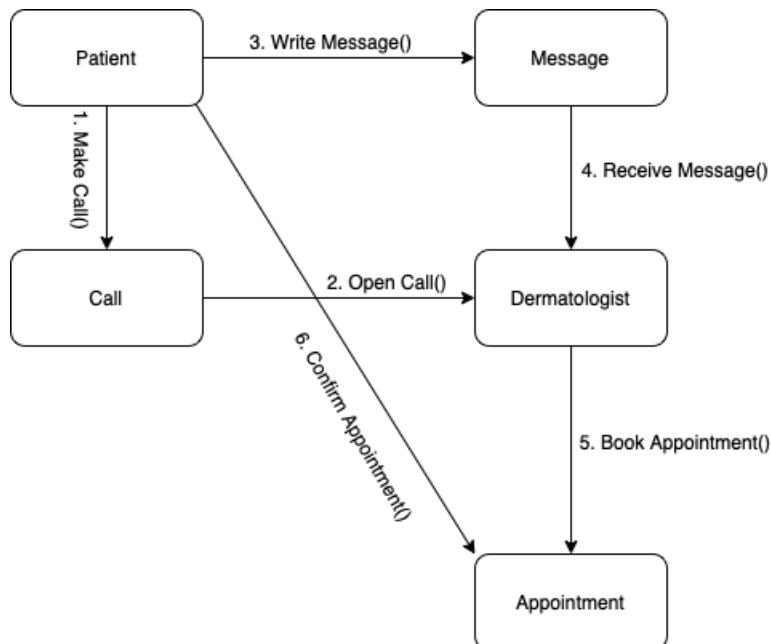


## *Dermatology clinic app Requirements Specification*

### C\_3: Patient diary

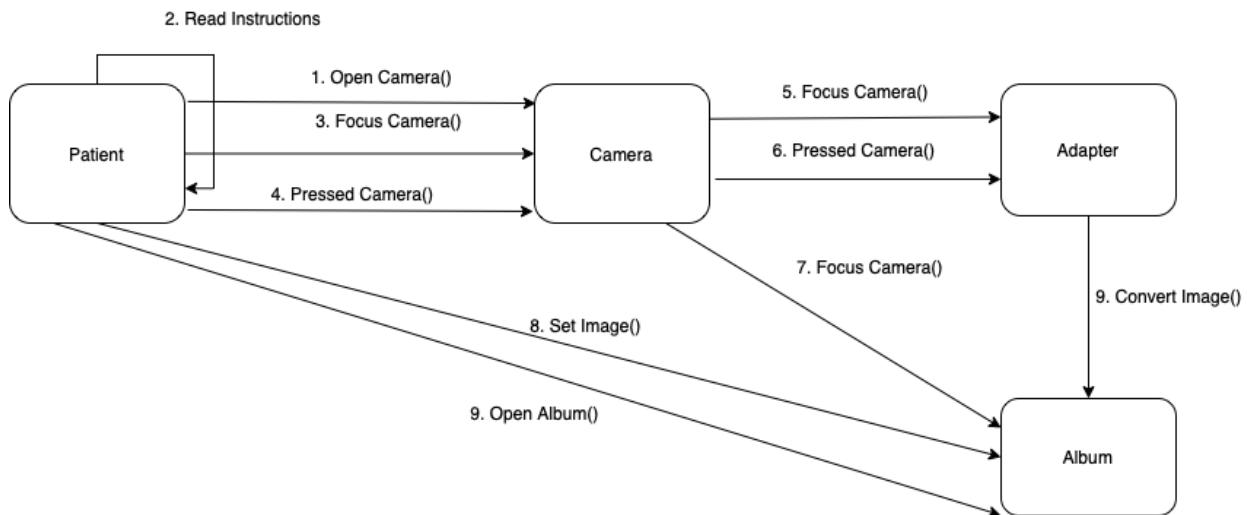


### C\_4: Patient communicates with dermatologist

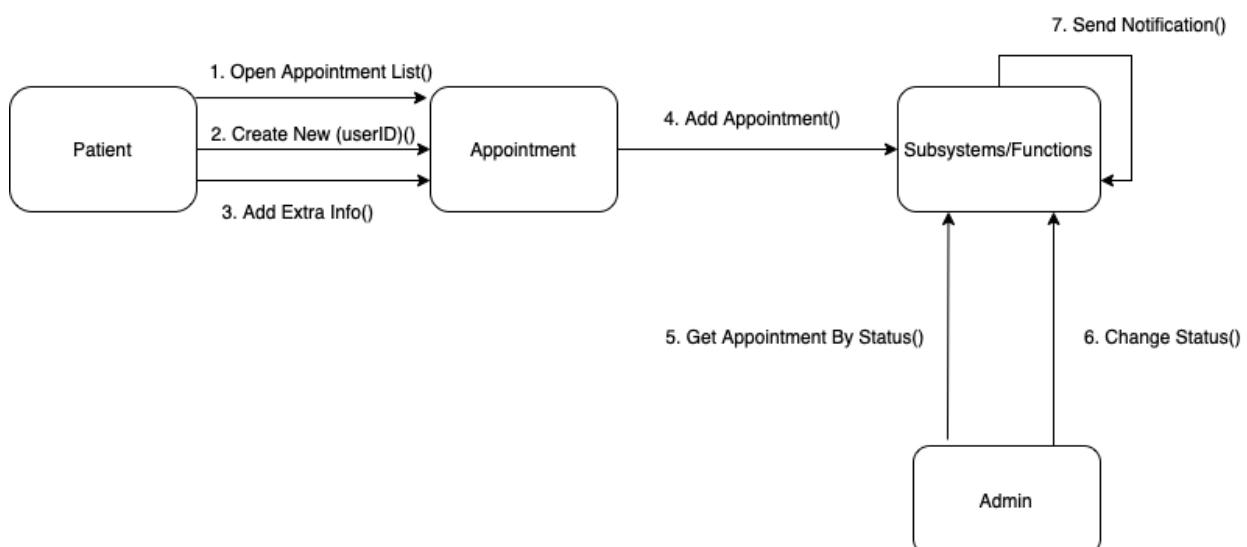


## *Dermatology clinic app Requirements Specification*

### C\_5: Patient scans skin



### C\_6: Request appointment

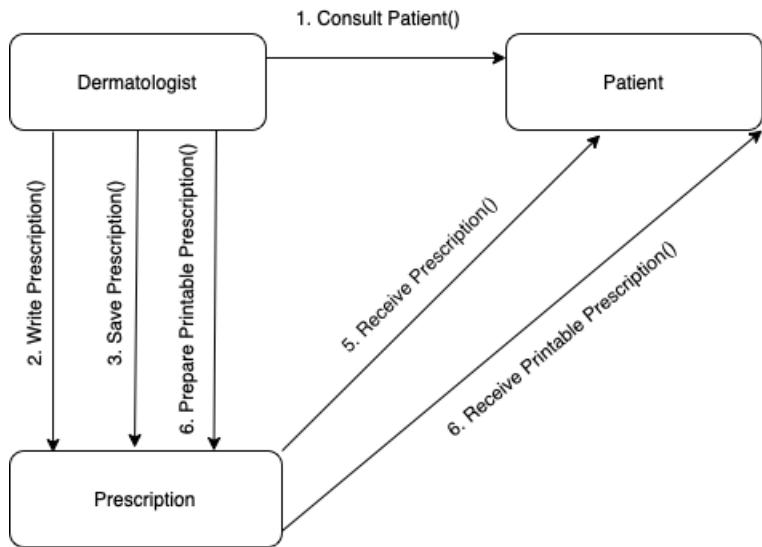


### C\_7: Confirm appointment

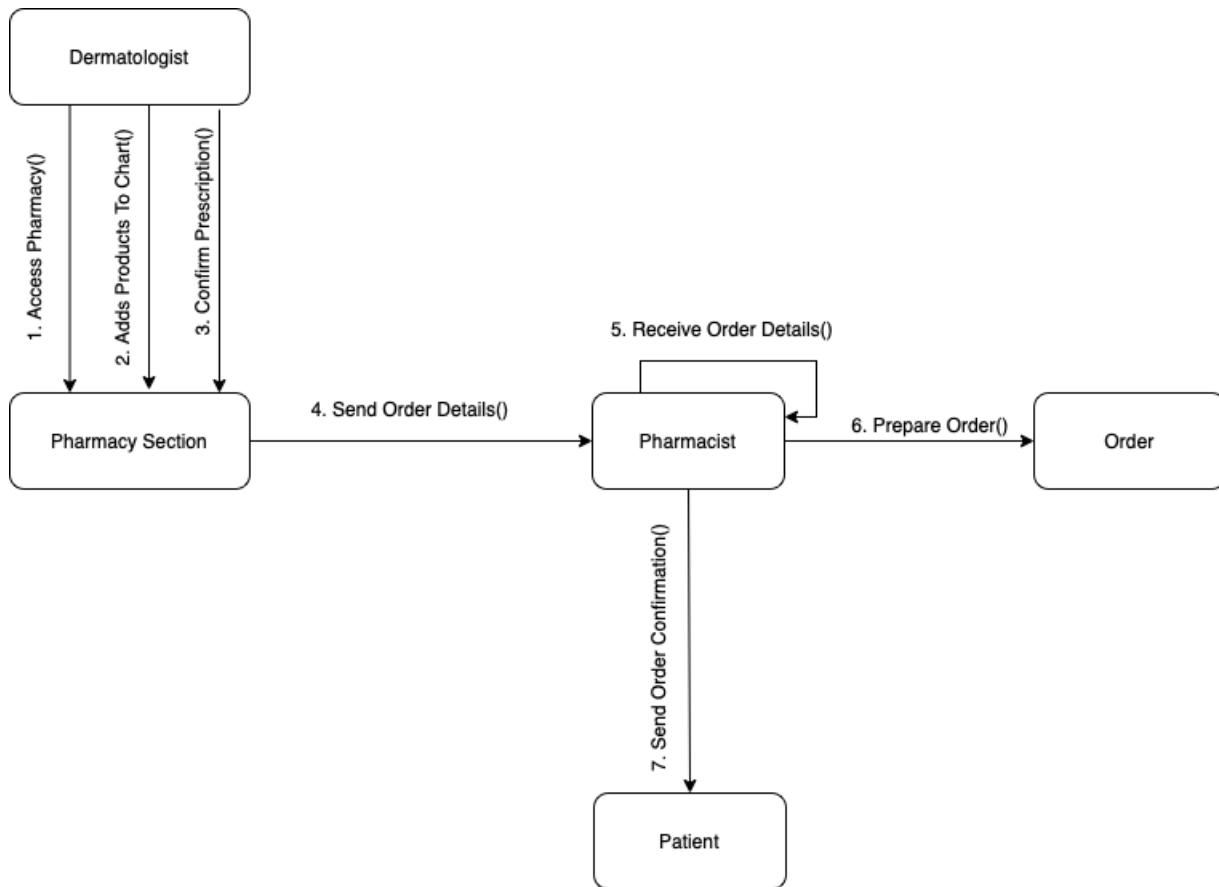


## *Dermatology clinic app Requirements Specification*

### C\_8: Prescription in different formats

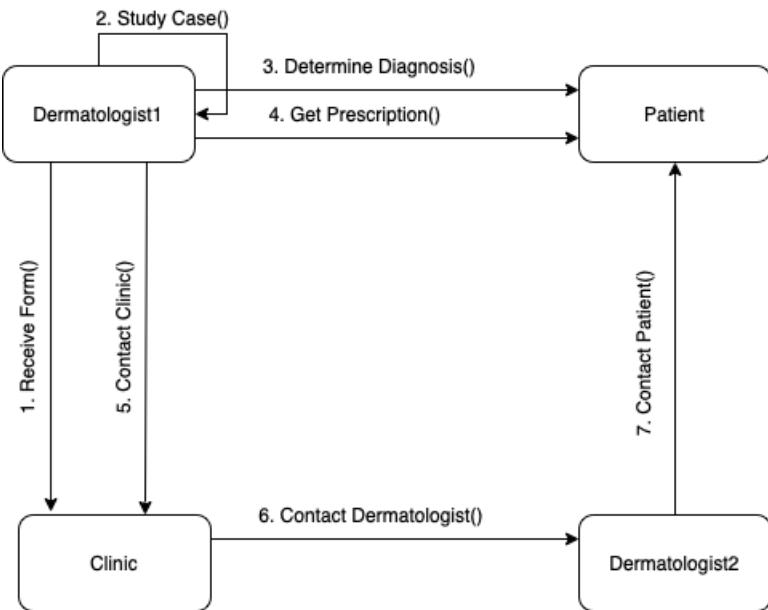


### C\_9: Preparing order



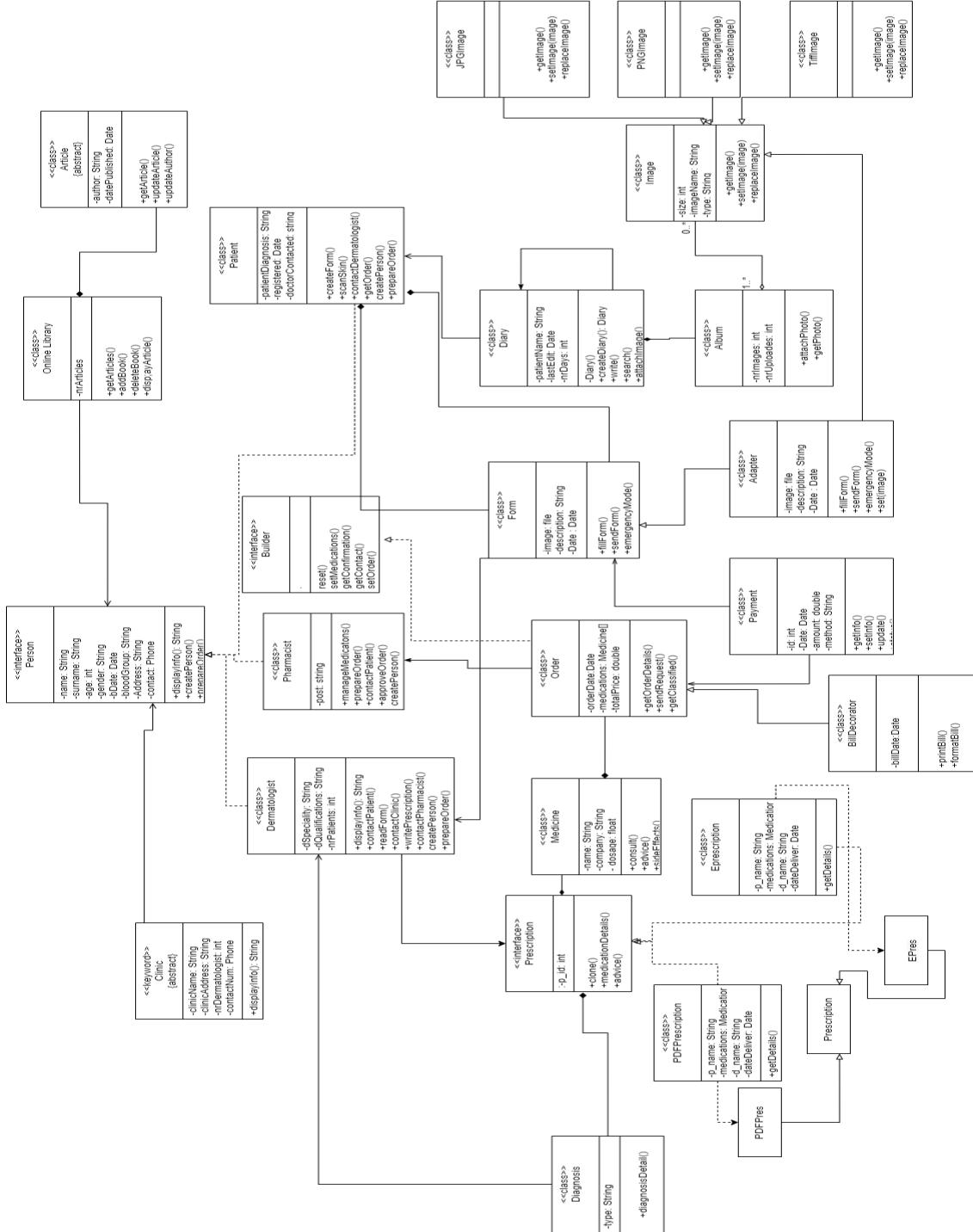
## *Dermatology clinic app Requirements Specification*

C\_10: Dermatologist sends patient's case to another dermatologist



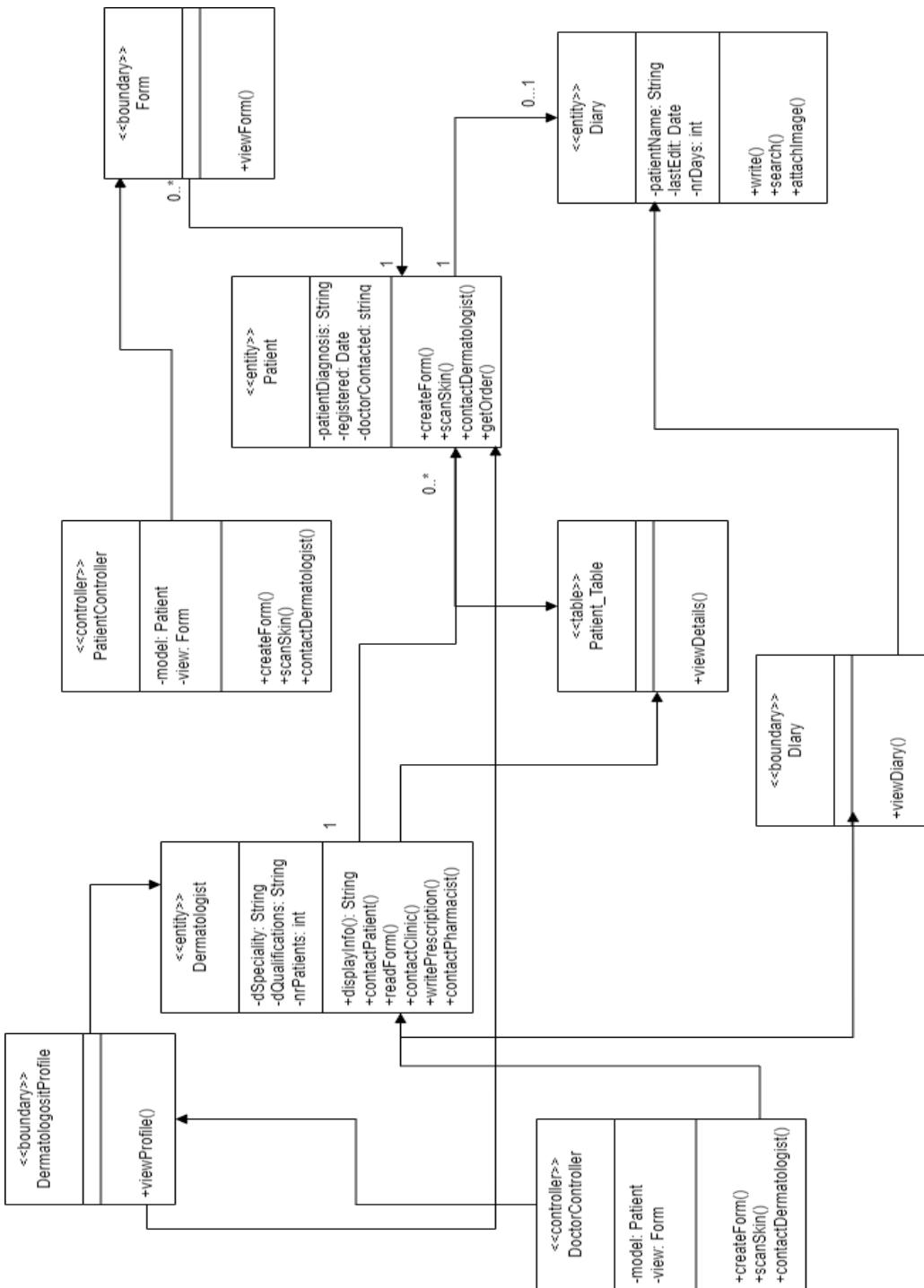
## Dermatology clinic app Requirements Specification

### 4.12: Class Diagram



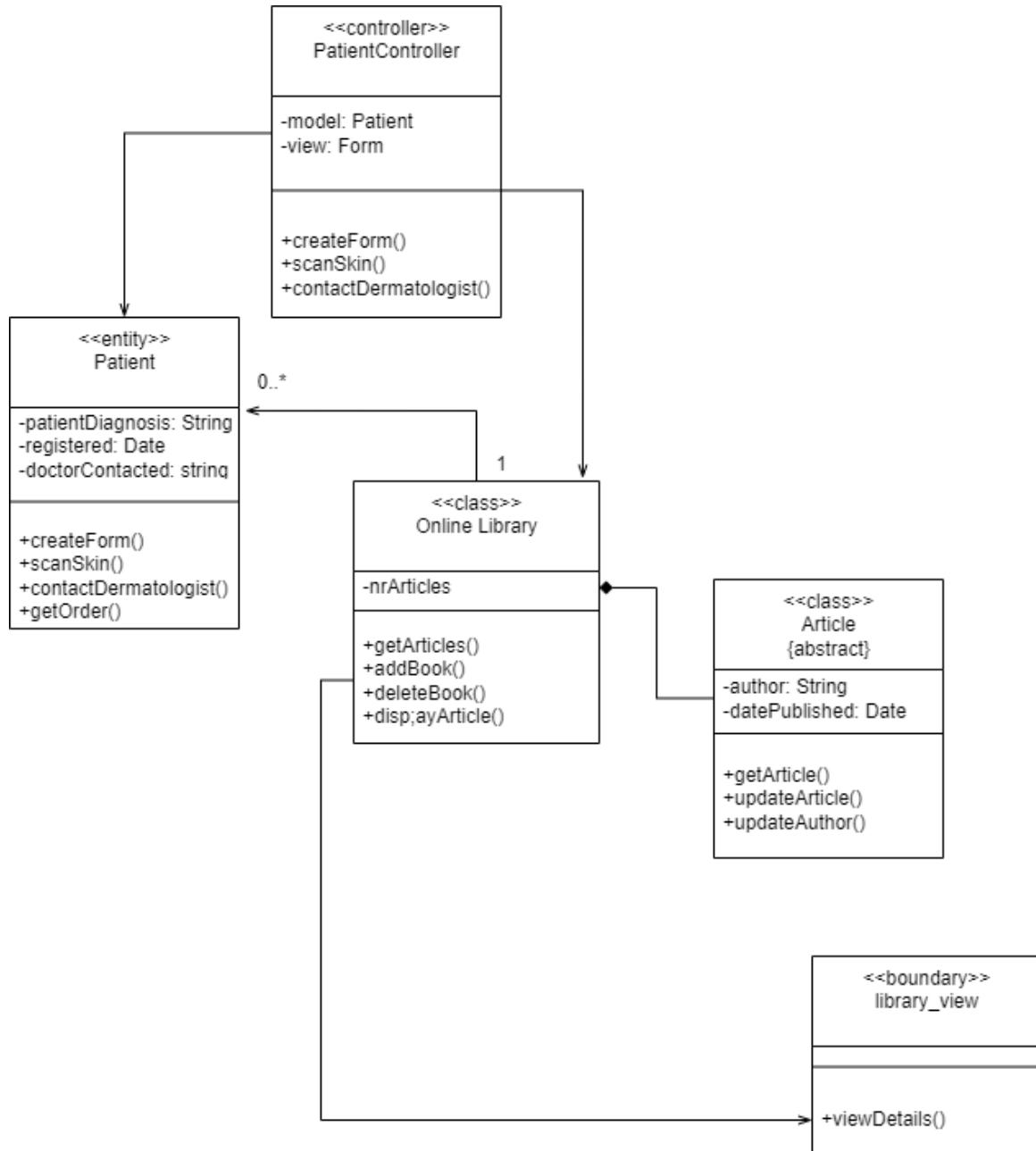
## Dermatology clinic app Requirements Specification

### Expanded Class 1



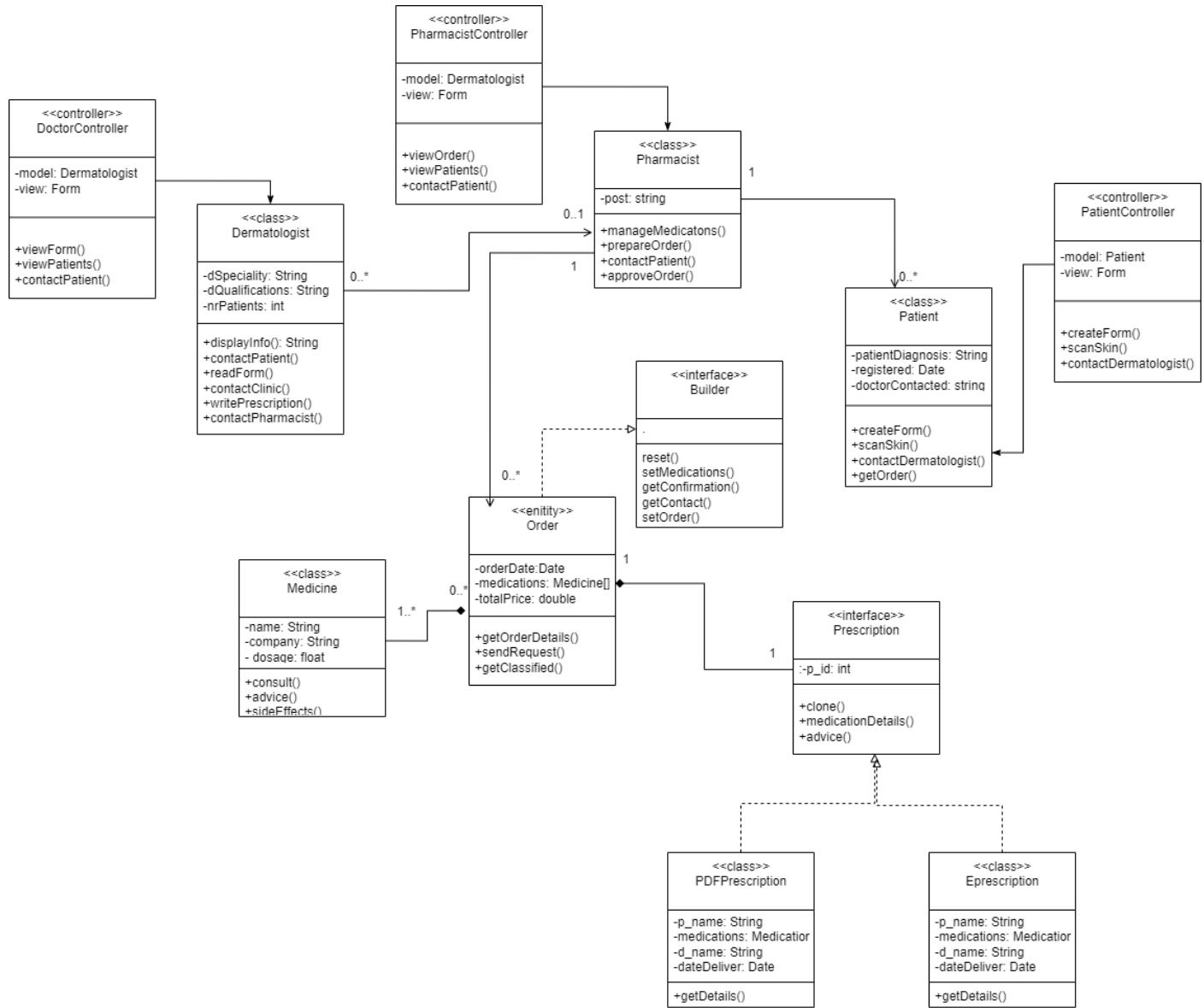
## Dermatology clinic app Requirements Specification

### Expanded Class 2



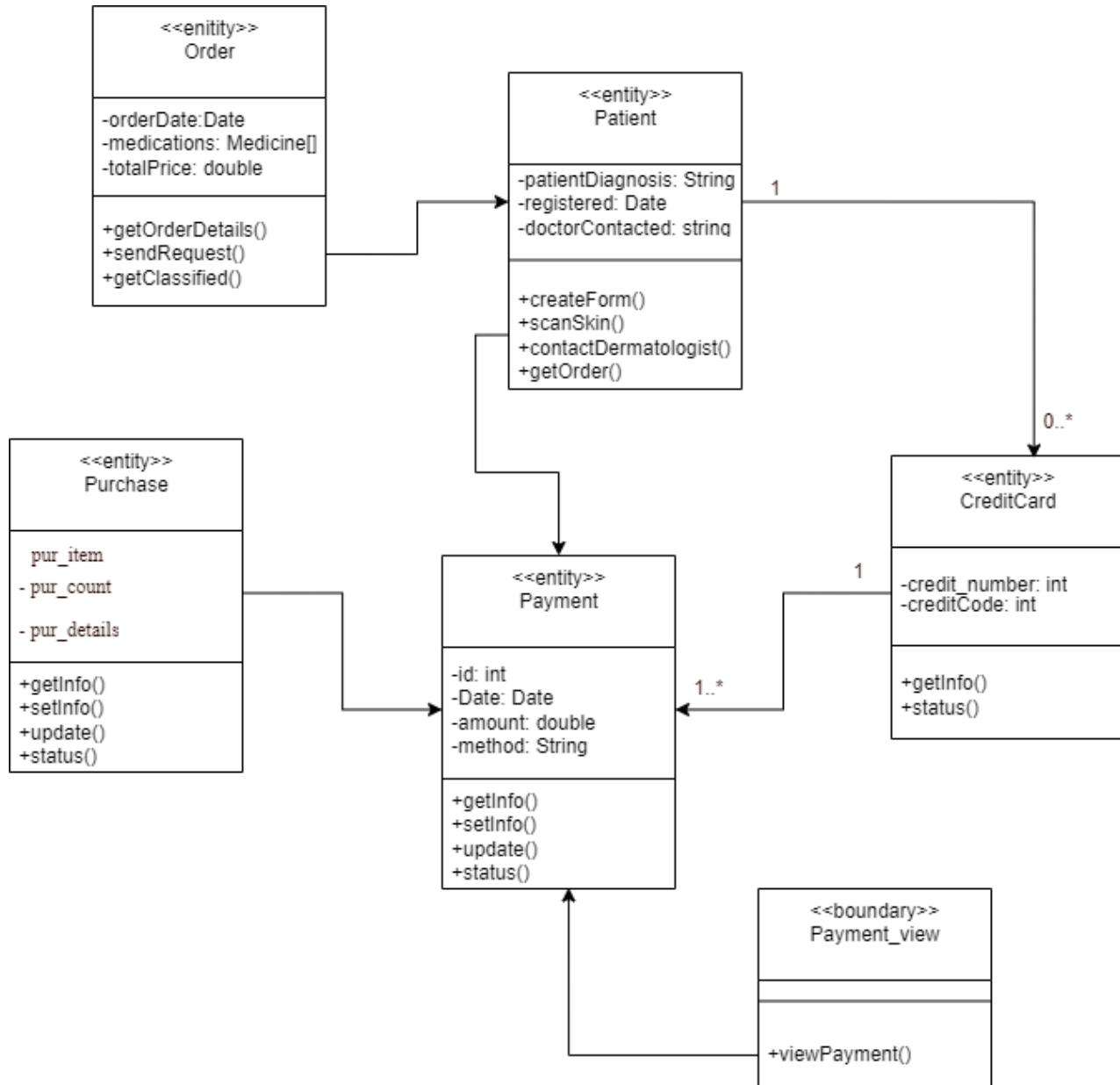
## Dermatology clinic app Requirements Specification

### Expanded Class 3



## Dermatology clinic app Requirements Specification

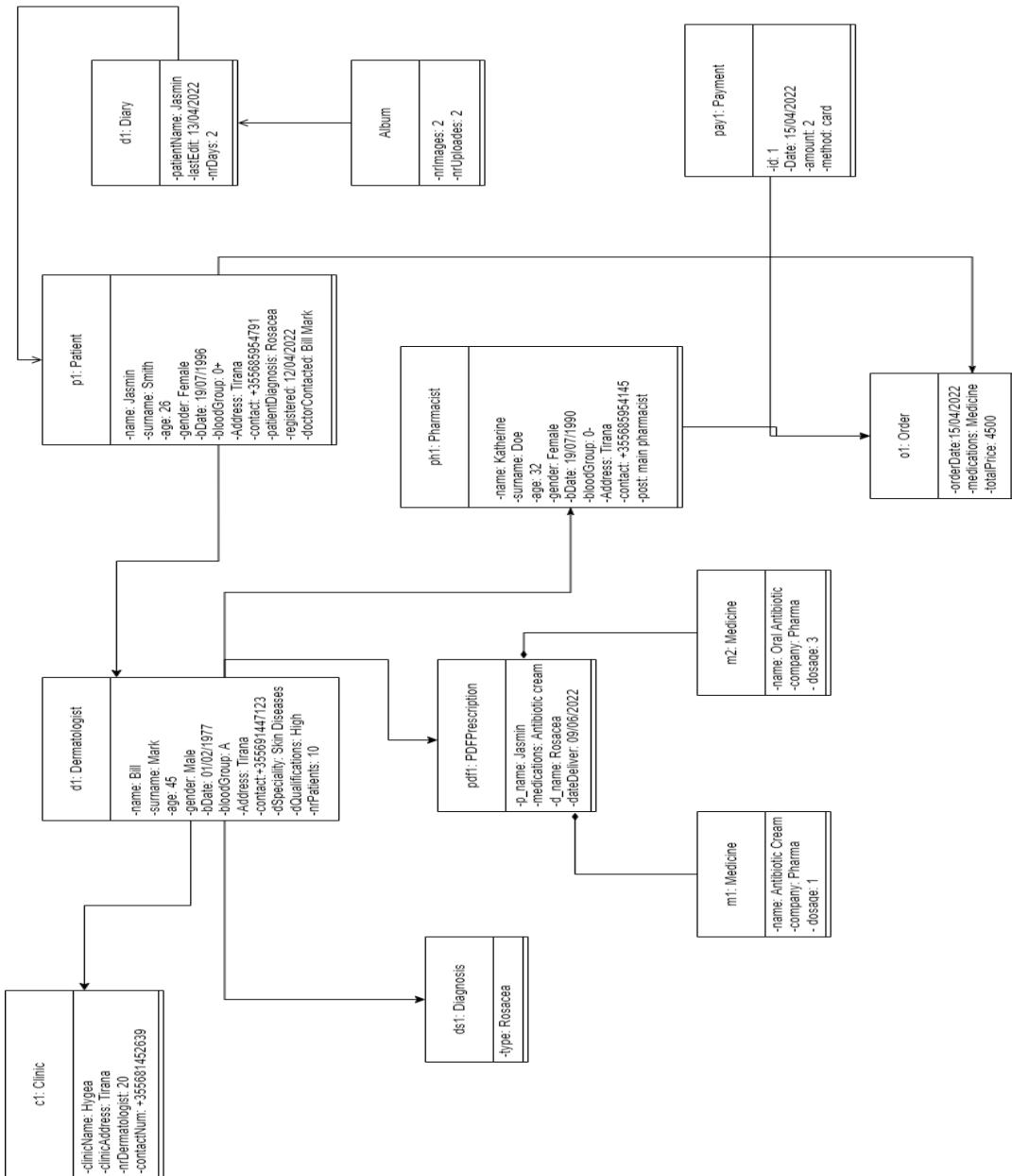
### Expanded Class 4



## Dermatology clinic app Requirements Specification

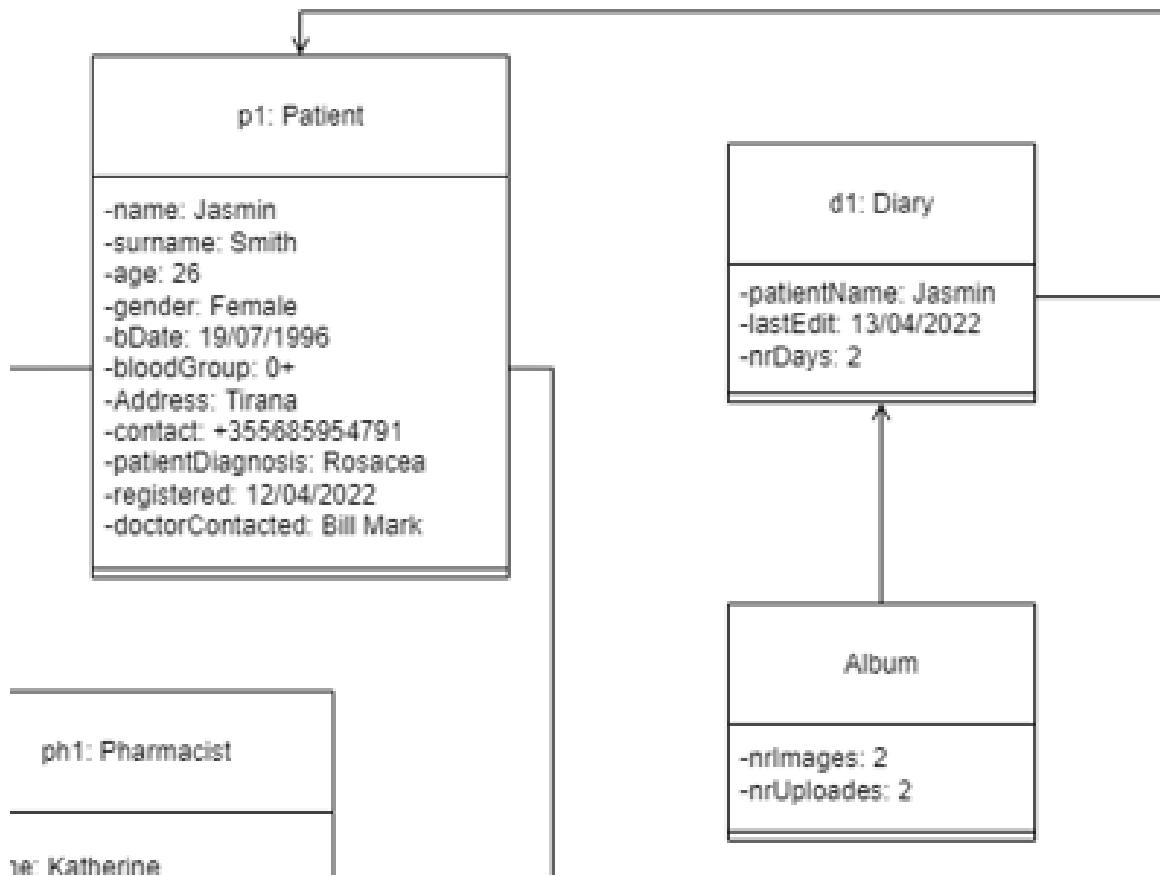
### 4.13 Object Diagram

#### Object 1



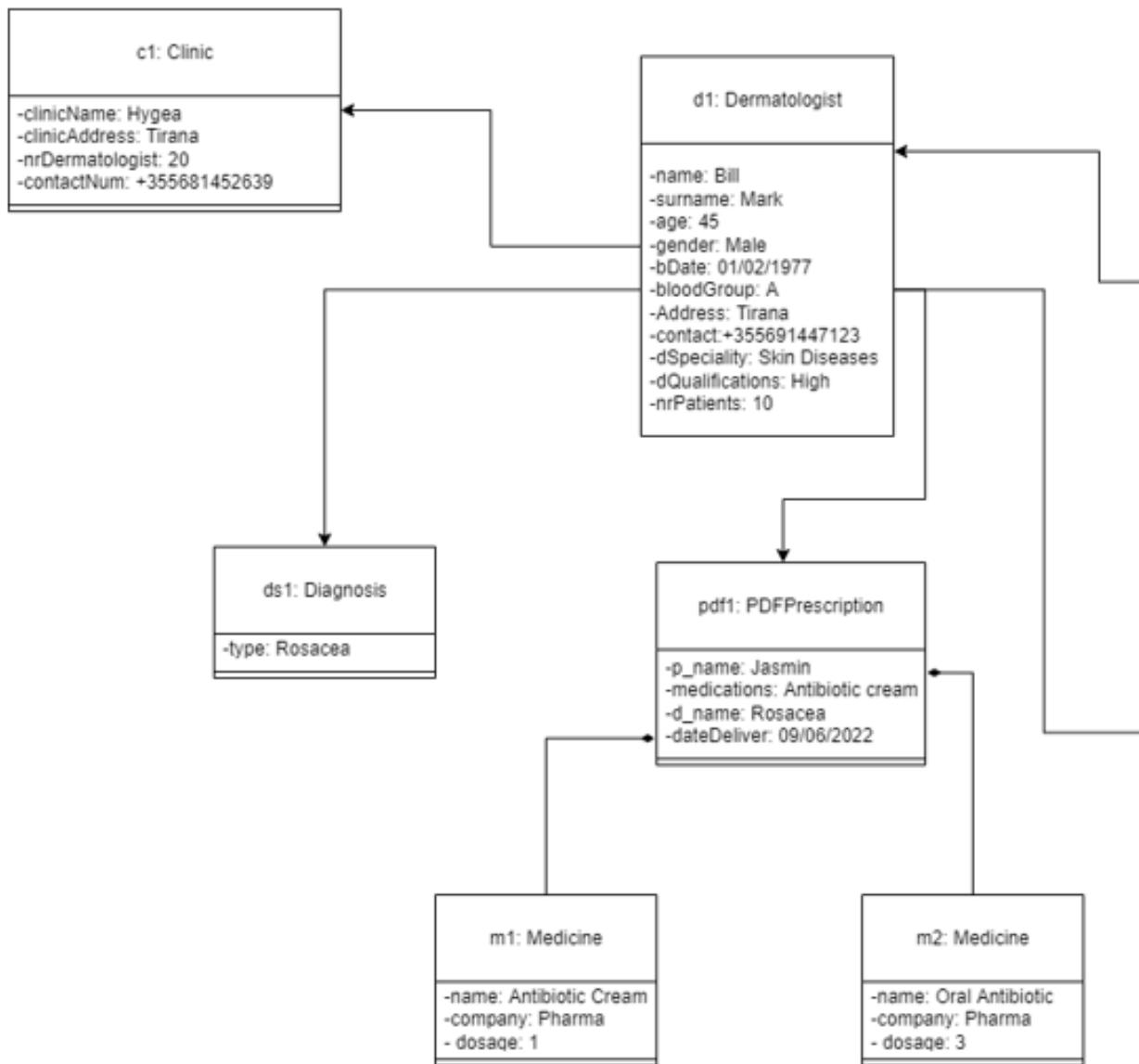
## *Dermatology clinic app Requirements Specification*

### Object 2



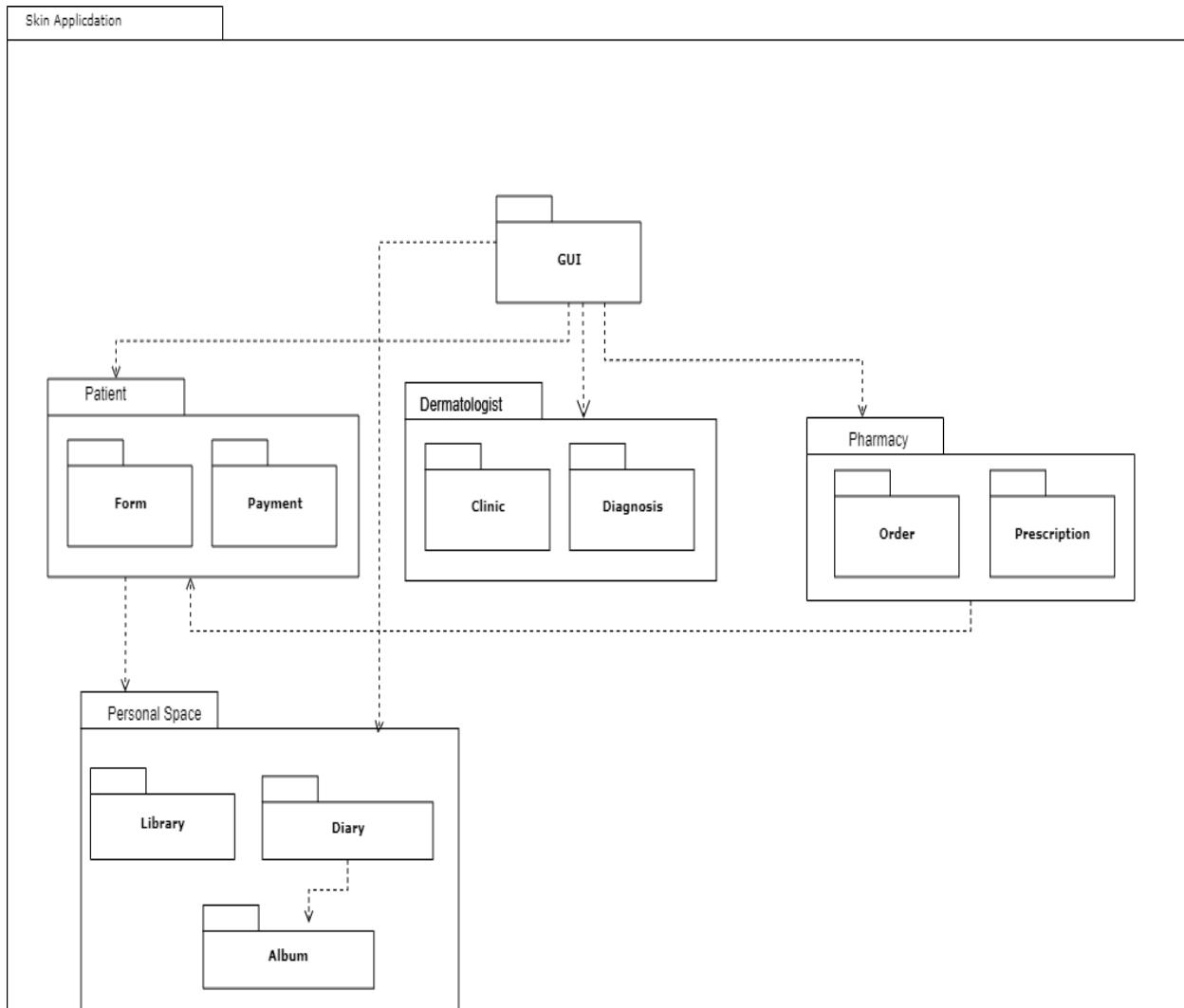
## Dermatology clinic app Requirements Specification

### Object 3



## *Dermatology clinic app Requirements Specification*

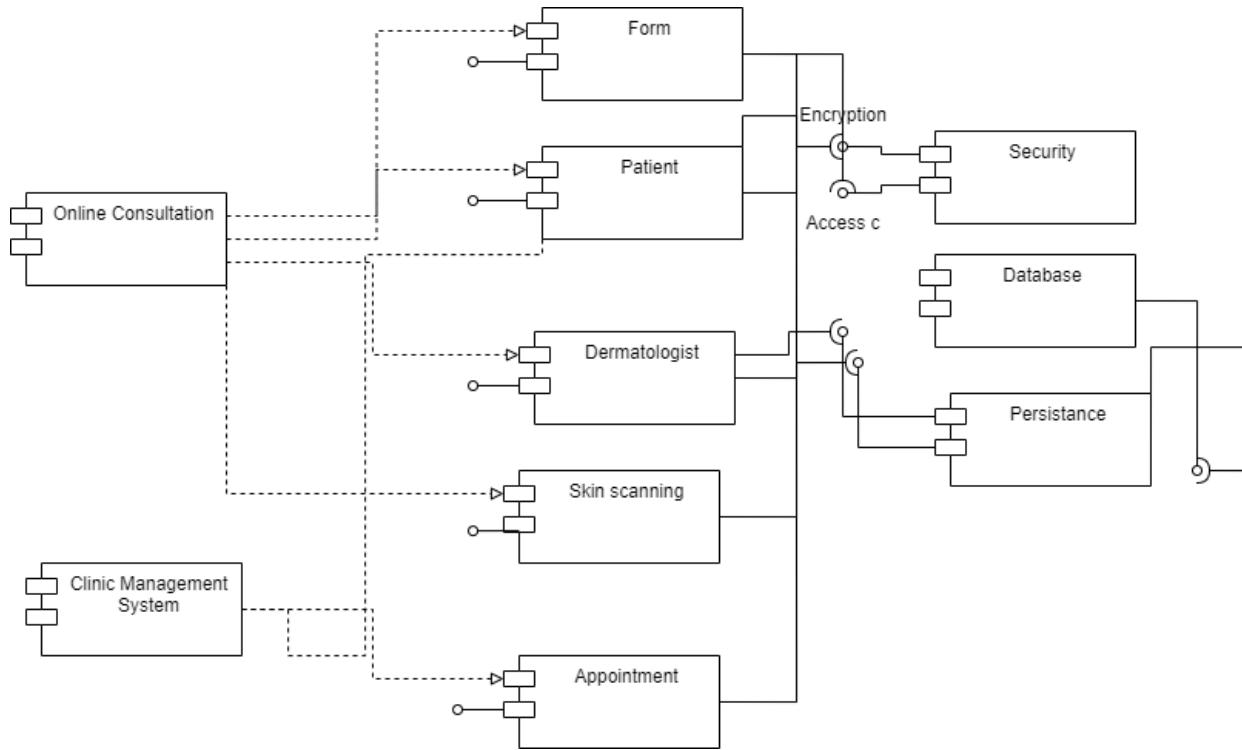
### **4.14 Package Diagram**



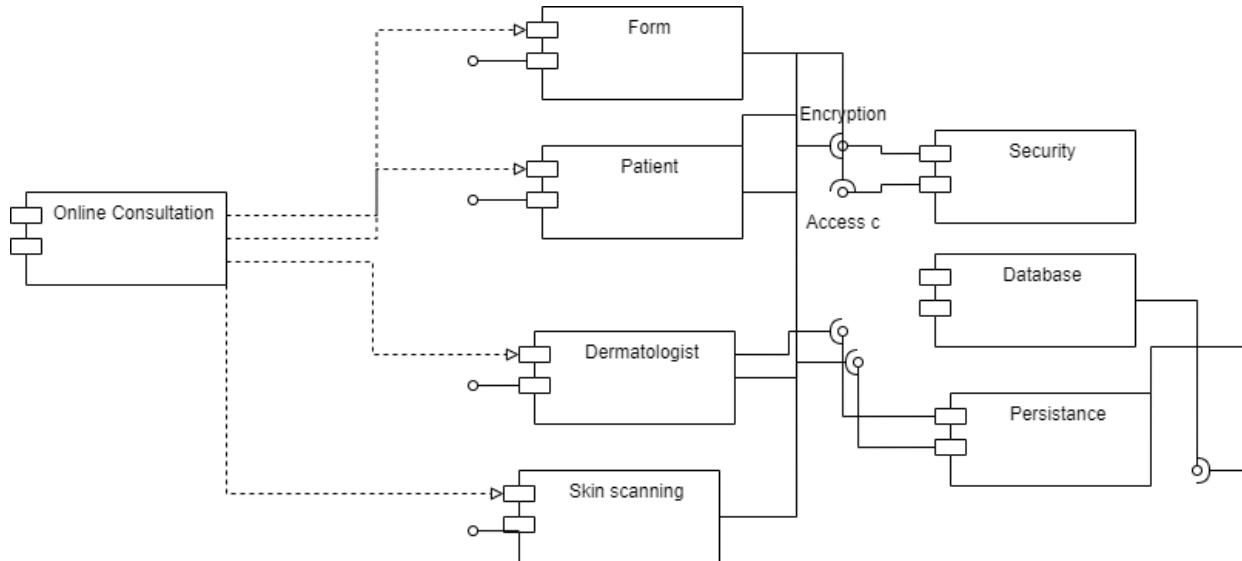
## Dermatology clinic app Requirements Specification

### 4.15 Component Diagrams

#### Component 1

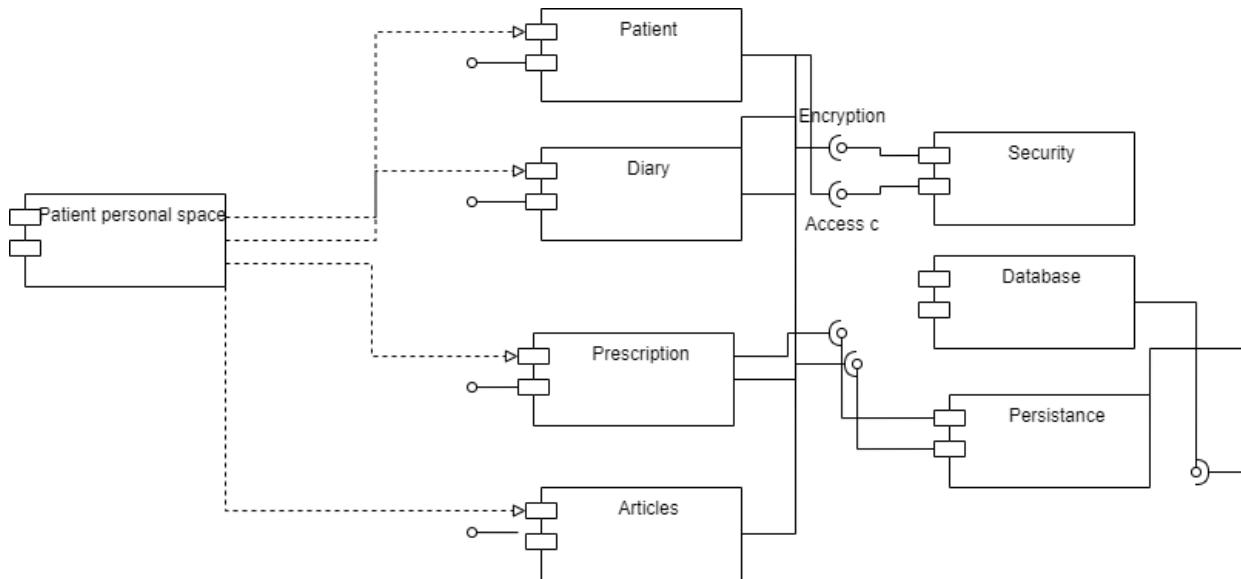


#### Component 2

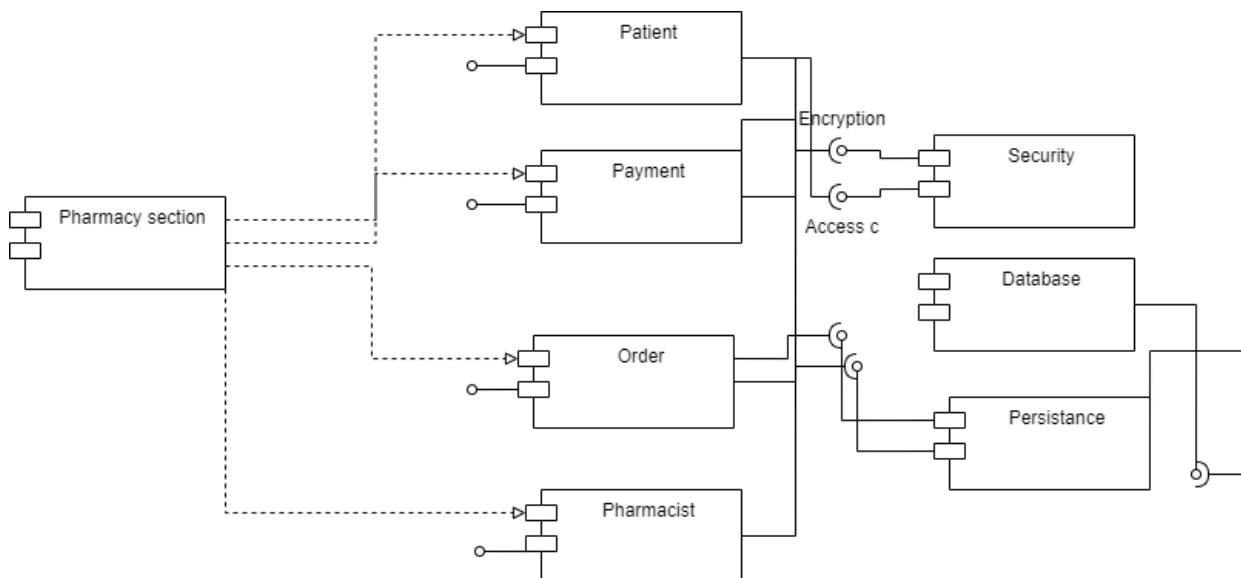


## *Dermatology clinic app Requirements Specification*

### Component 3

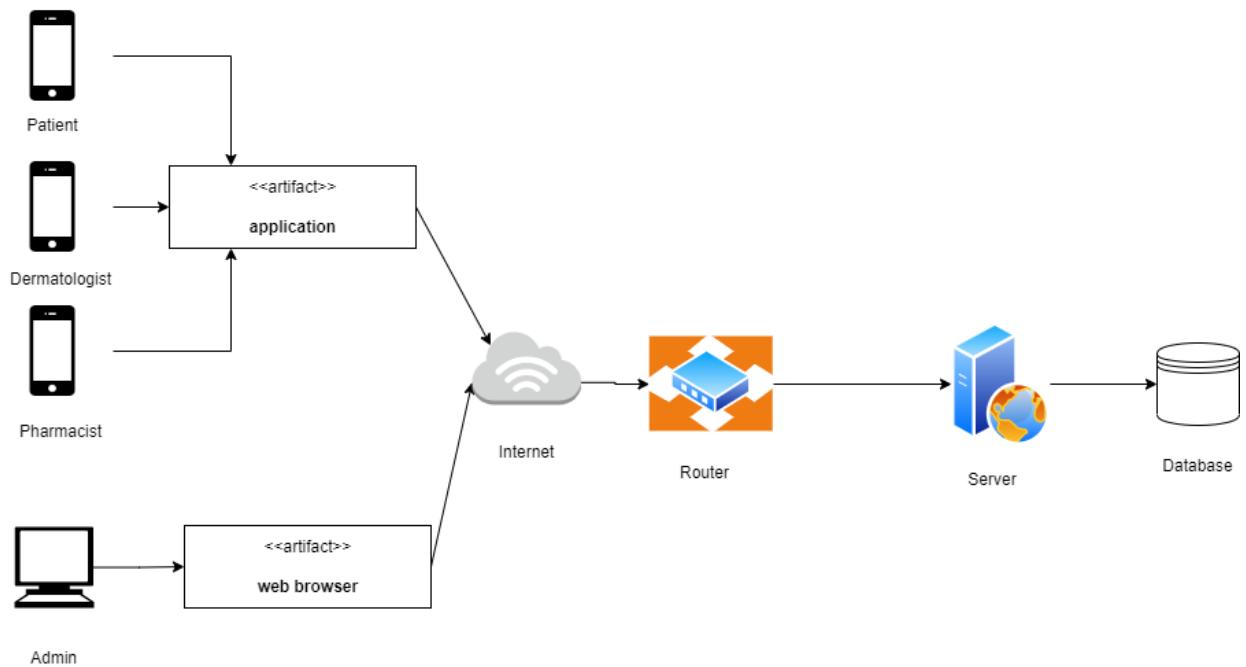


### Component 4



## *Dermatology clinic app Requirements Specification*

### **4.16 Deployment Diagram**



## **5.Design Patterns**

- **Creational:**

1.FACTORY – By using the Factory Method pattern, we replace direct object construction calls using the new operator with calls to a special *factory* method. In our project, we have used factory design pattern in the case of creating different types of objects of classes which have as interface Person. This type of pattern is used as we can replace for example the class dermatologist with a doctor of another specialization. So one factory method is createPerson(). Moreover, we also can use a factory method prepareOrder() as they implement this method differently. The client knows that all person objects are supposed to have the prepareOrder() method, but for the client is not important how it works.

2.ABSTRACT FACTORY – By using the abstract factory design pattern, we can create Prescription interface, where the PDFPrescription and Eprescription implement this interface. As they are related to each other with slight differences, this design pattern is applicable.

3.PROTOTYPE – As the prescription contains the same information for both PDF and the virtual form, it is needed to make an interface class called prescription. In this interface, it is found the clone() method that will be used by the inherited classes to make the prototypes.

4.SINGLETON – It is a creational design pattern that lets you make sure that a class has only one instance, and at the same time, we are providing a global access point to this instance. In this program, we need to create the diary for a patient only once. So, the design pattern singleton is used in the case of the diary class. Once a patient is created, the diary object is created only once. In the diary class, we declare the constructor as private and we declare a method createDiary() which creates the object diary only once.

5.BUILDER – It is a pattern that is used to create an object step by step. In this software, the order is created step by step because it is firstly proposed by the dermatologist, then the pharmacist selects the medications and ask the patient if he/she wants to make the order. Then, they need to send the contact and address, make the payment and then the order is finished.

- **Behavioral:**

6.OBSERVER –Observer is a behavioral design pattern that lets you define a subscription mechanism to notify multiple objects about any events that happen to the object they're observing. In this software, the dermatologist subscribes the diary of the patient. He/she doesn't need to make continuous checking if the patient hasn't made changes.

7.STATE: In the case of state pattern, there are present the different behaviors that user shows when his/her states changes. For instance, if the normal user becomes a patient, he/she will have different behaviors from a normal user, or from a previous patient who is healed.

- Structural:

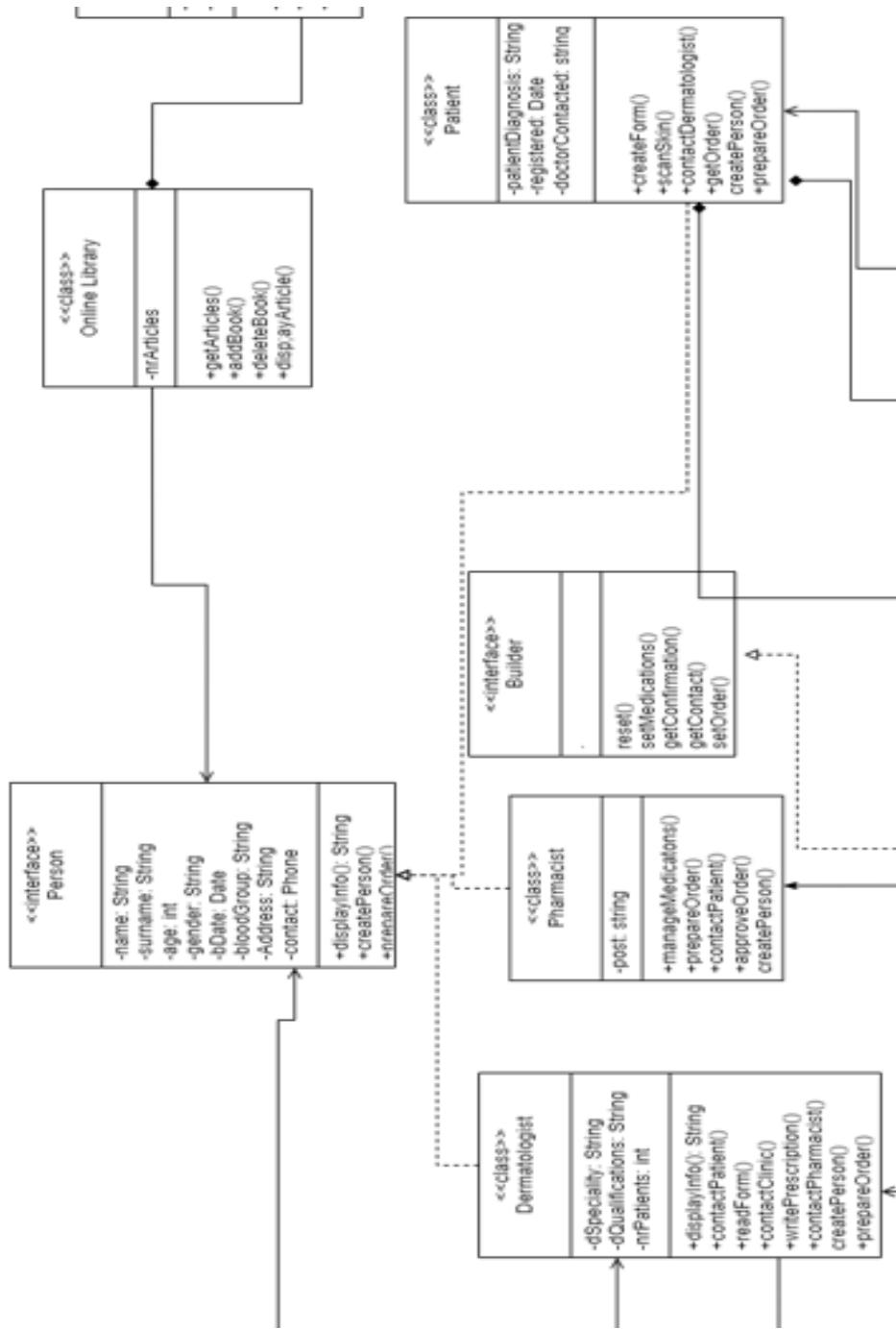
8.ADAPTER – This design pattern improves the quality of this application. As the images scanned should be of high quality to have a proper diagnosis from the dermatologist, we have to use an adapter which make the conversion of the image from any type to png as it is a lossless format with the highest quality. After it is converted, it is used in the form.

9.BRIDGE – By using this design pattern, we have split the image class into subclasses (child classes) which are the types of images: jpg, png, tiff. This design pattern improves the functionalities of the image class.

10.DECORATOR - It is a structural design pattern gives the opportunity to new behaviors to objects by placing these objects inside the wrapper objects that contain the behaviors. In this project, it can be used in the case where the order needs to be transform into a bill and the main difference that they have is the fact that bill is printable, so to solve this we create bill decorator which has the methods to format the order in bill format and print().

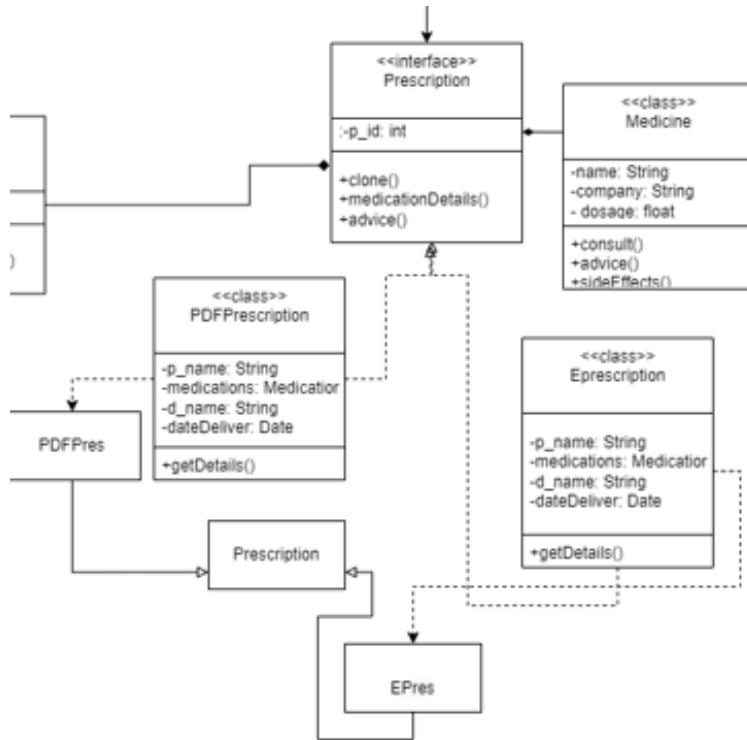
## Dermatology clinic app Requirements Specification

### Factory Pattern

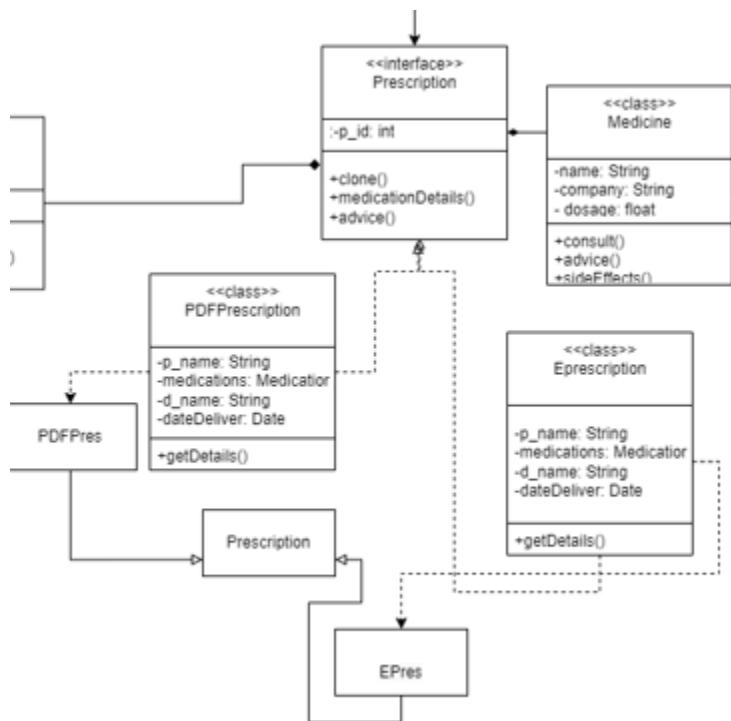


## Dermatology clinic app Requirements Specification

### Abstract Pattern

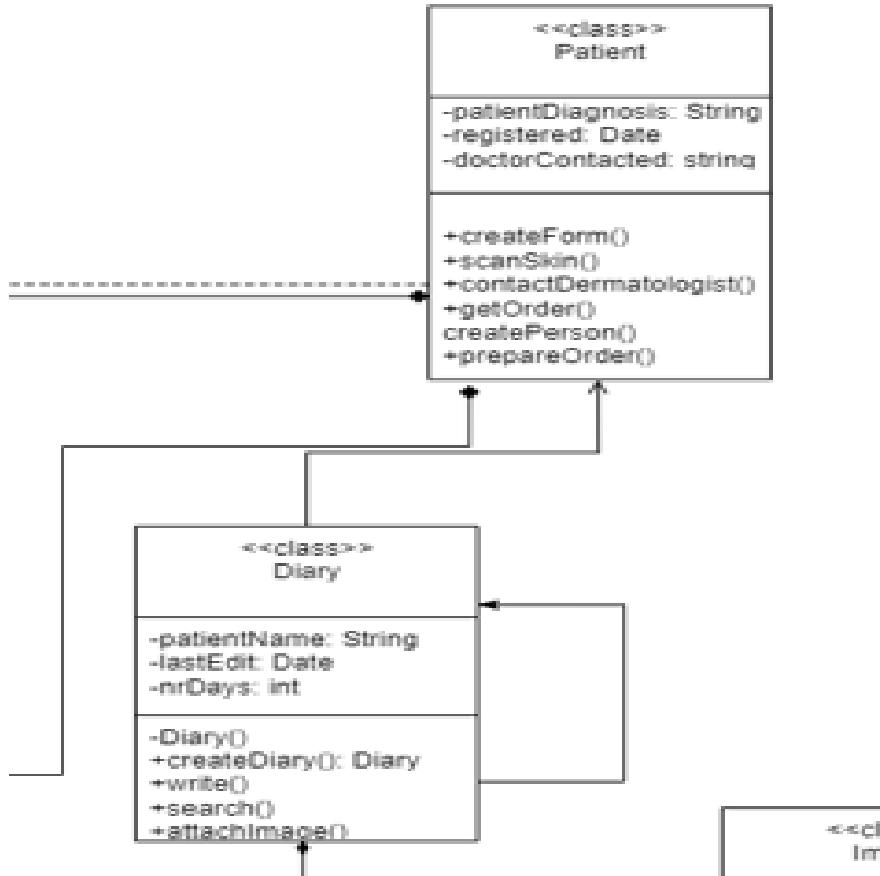


### Prototype Pattern



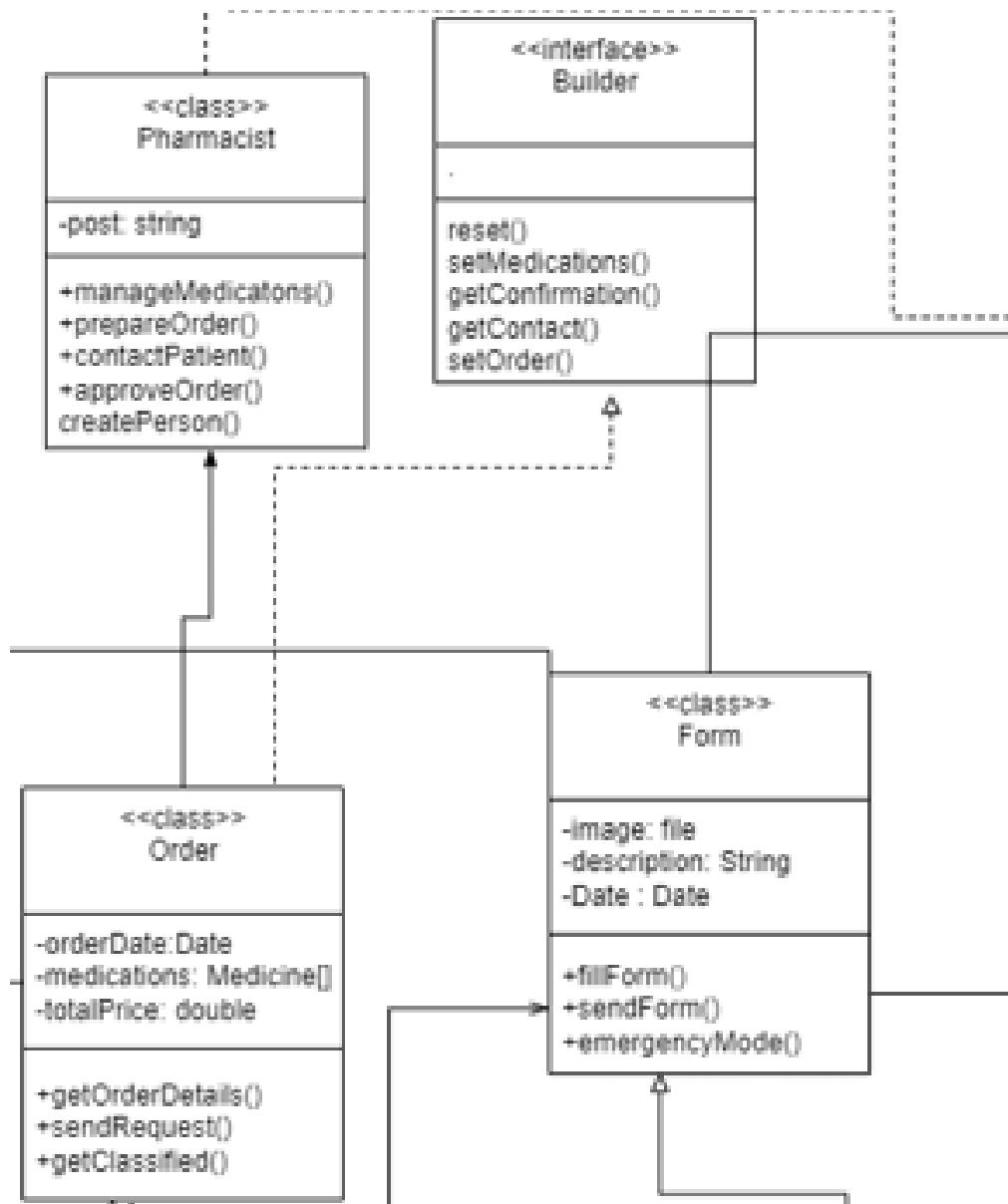
## Dermatology clinic app Requirements Specification

### Singleton Pattern



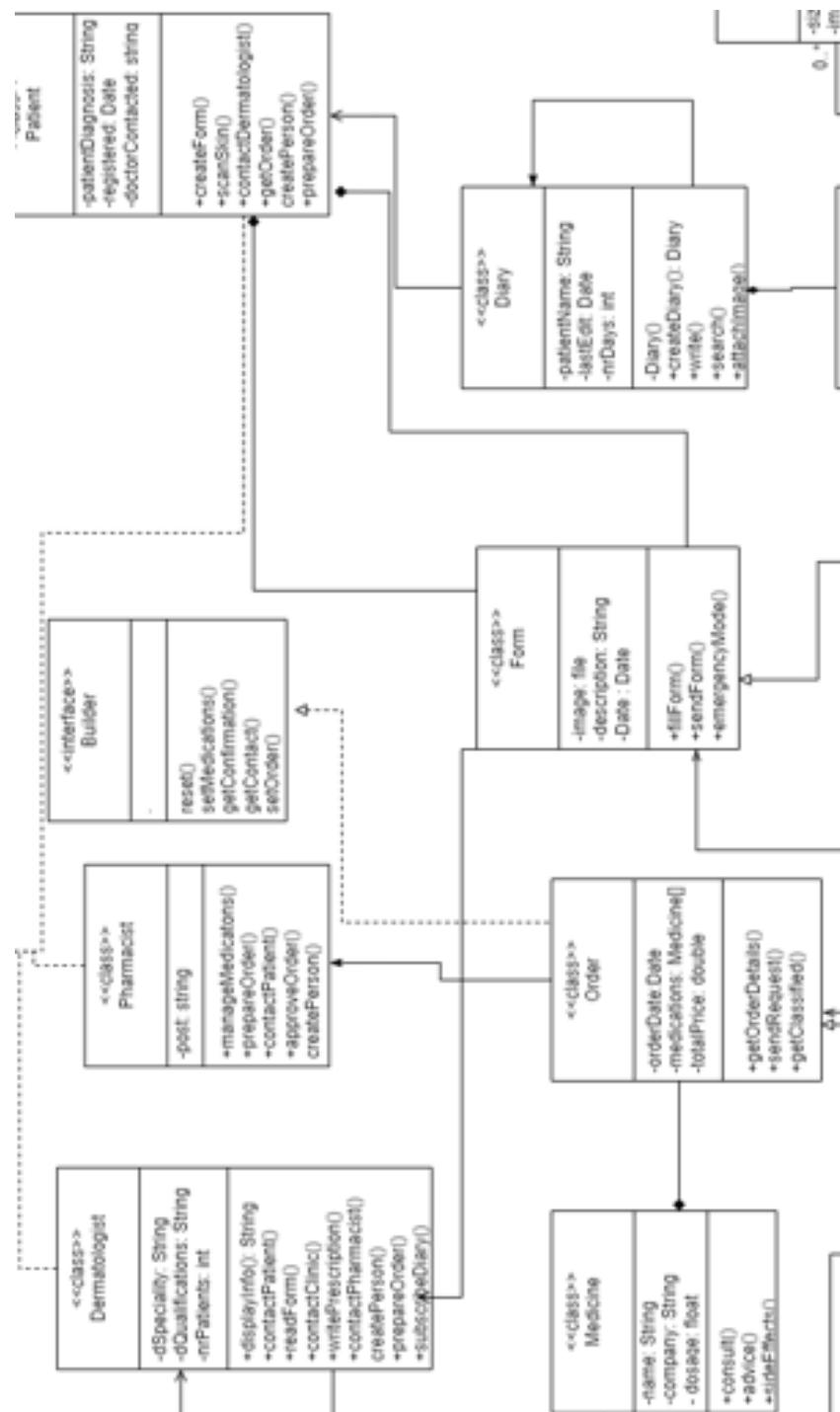
## Dermatology clinic app Requirements Specification

### Builder Pattern



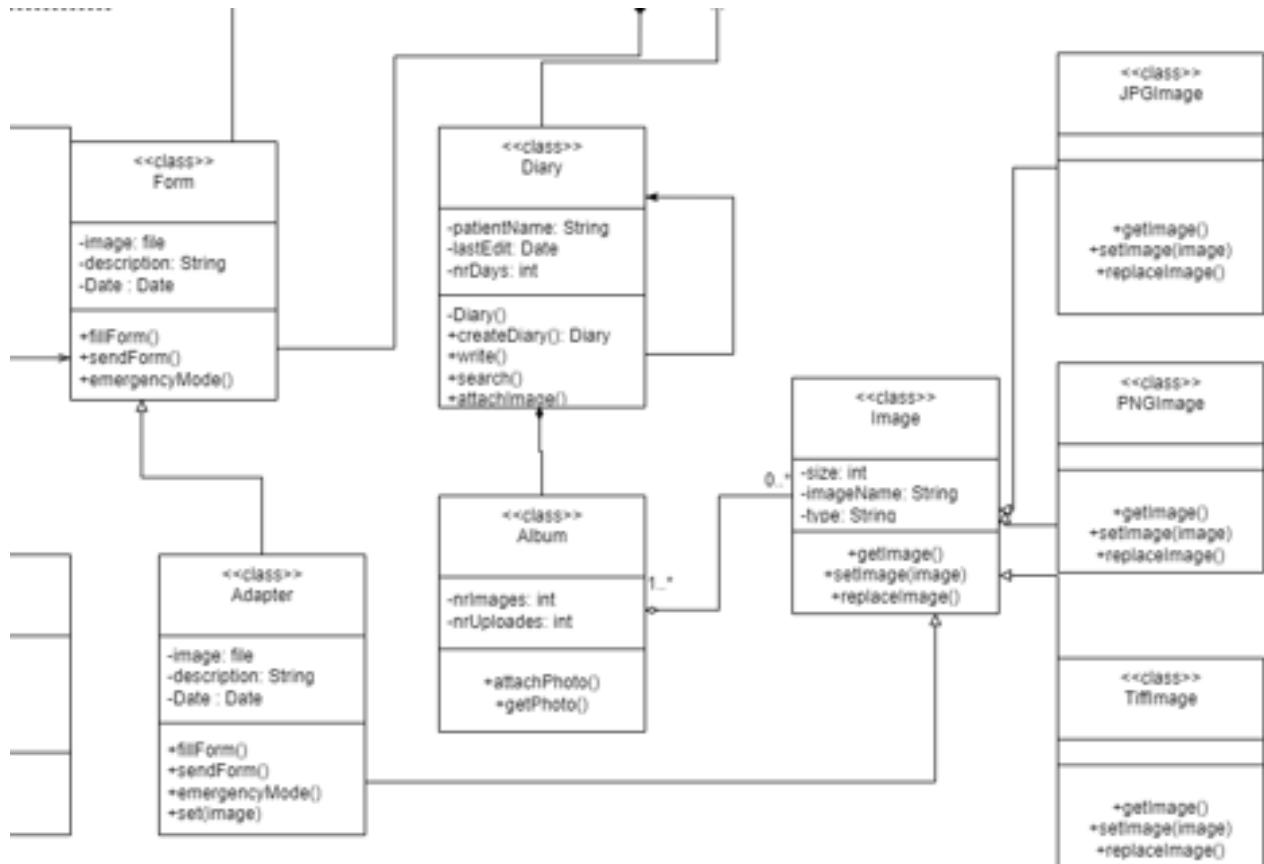
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### Observer Pattern

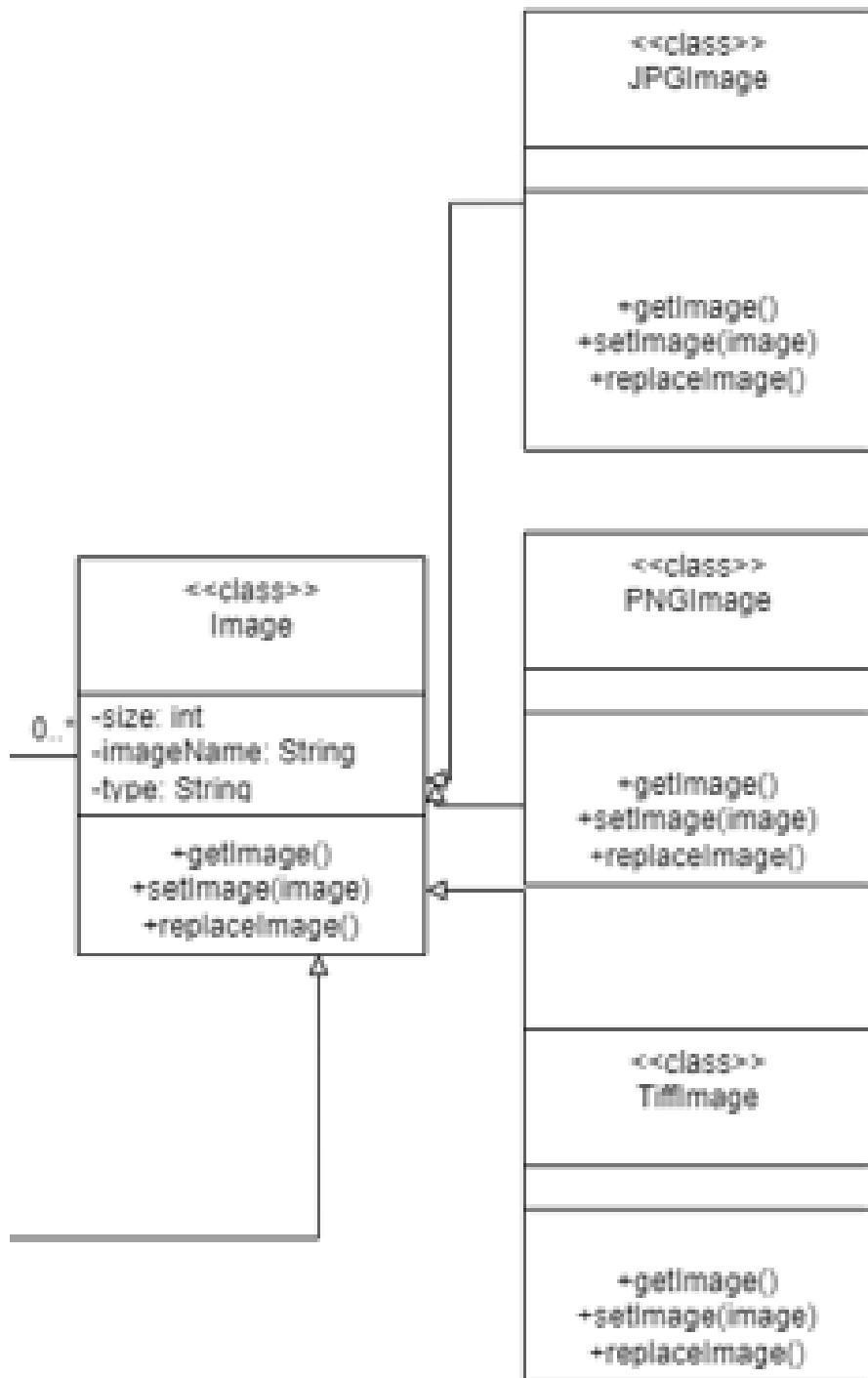


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### Adapter Pattern



Bridge Pattern



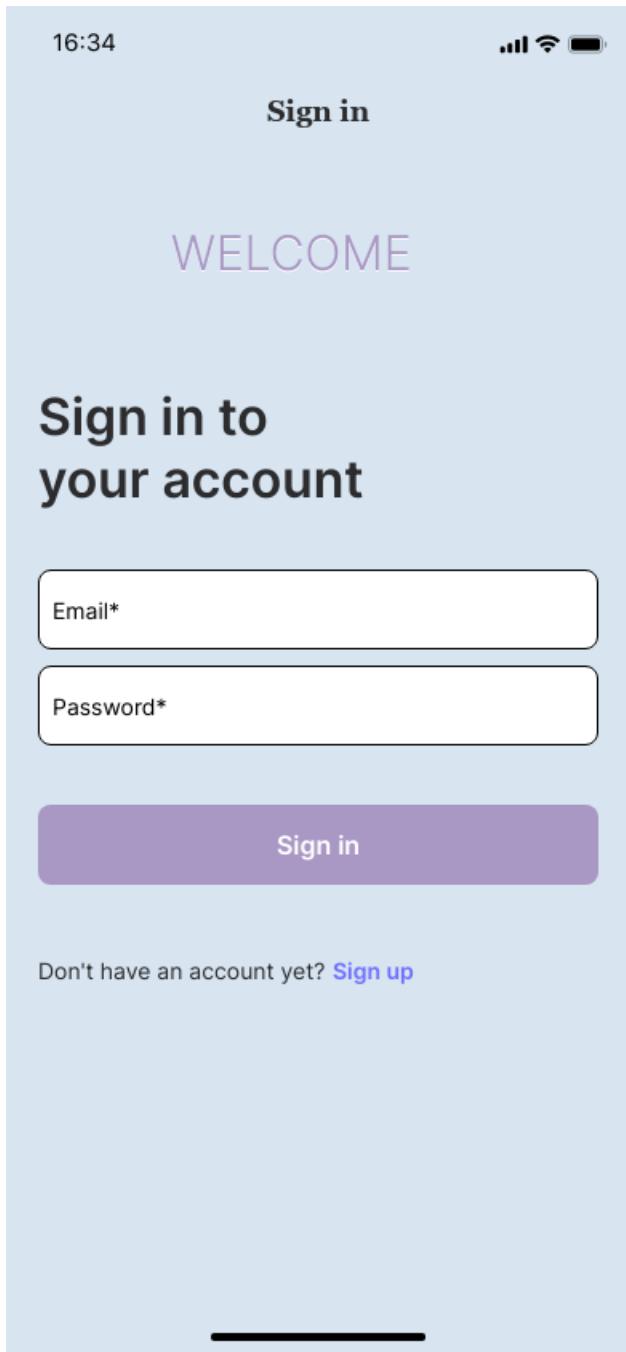
## **6. Appendix**

### 1. First View



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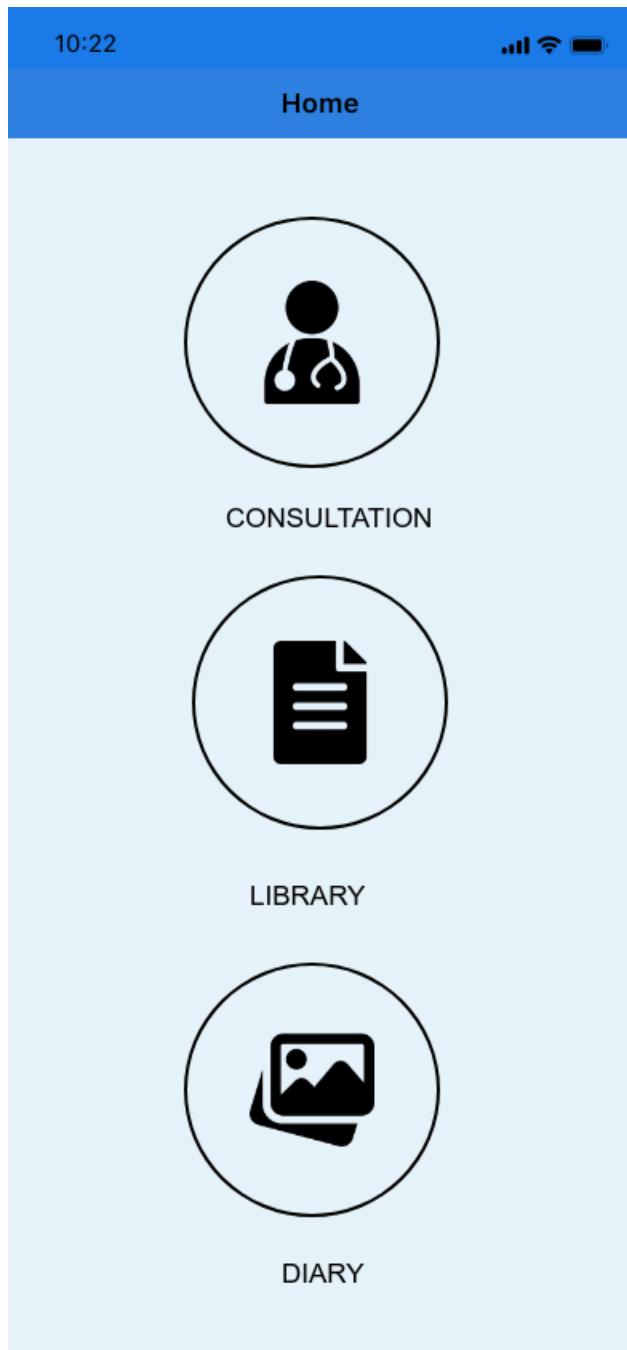
Sign in



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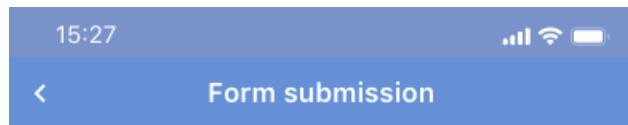
### 2. Patient

#### Main Screen



## *Dermatology clinic app Requirements Specification*

### Patient Form



## FORM

You have to fill all the required input field to continue the further contact with the dermatologist

Email\*

Skin problem\*

Previous skin problem\*

Blood group\*

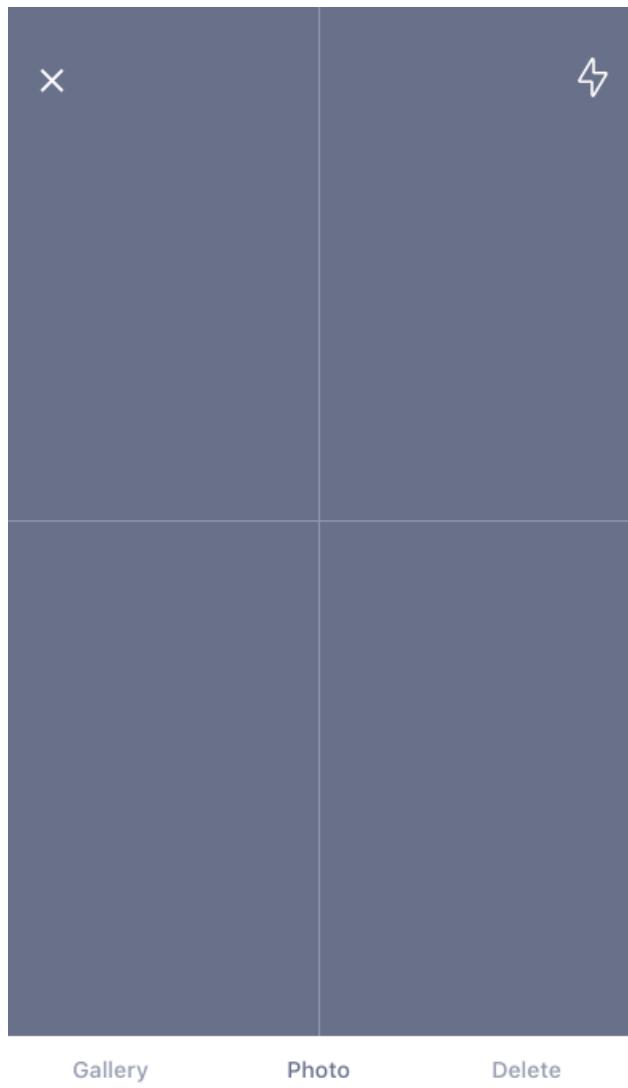
Choose the dermatologist\*



Continue

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Patient scans skin



Gallery

Photo

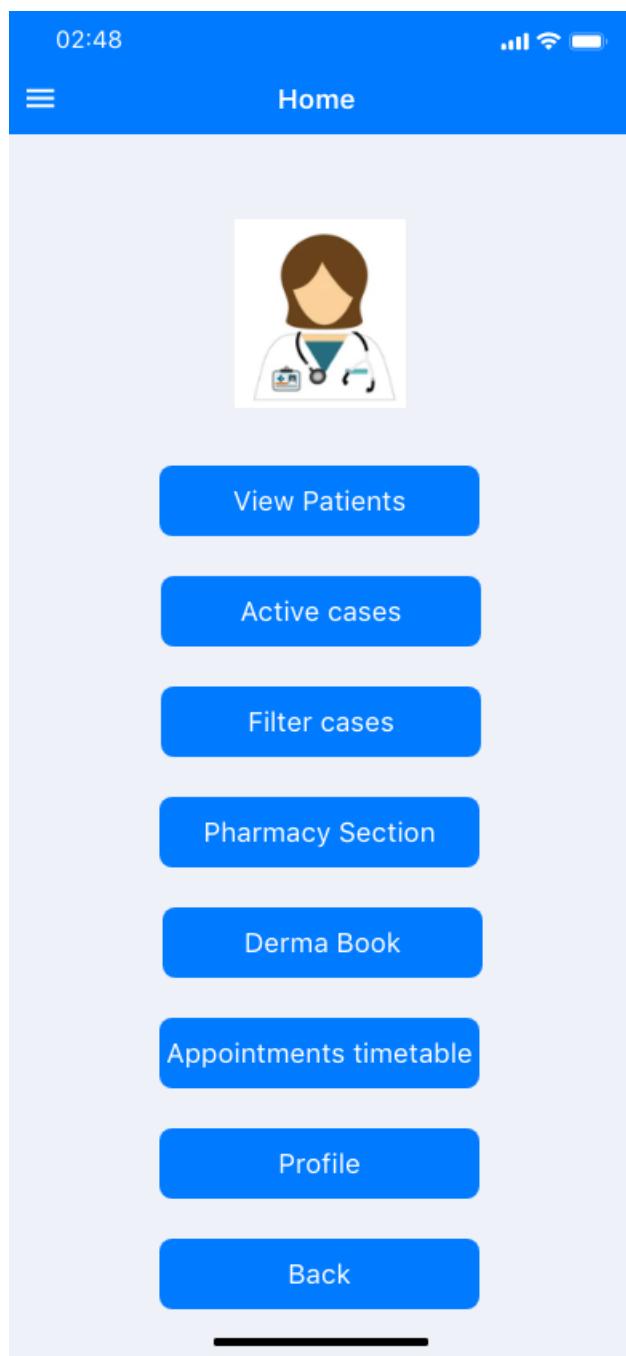
Delete



## *Dermatology clinic app Requirements Specification*

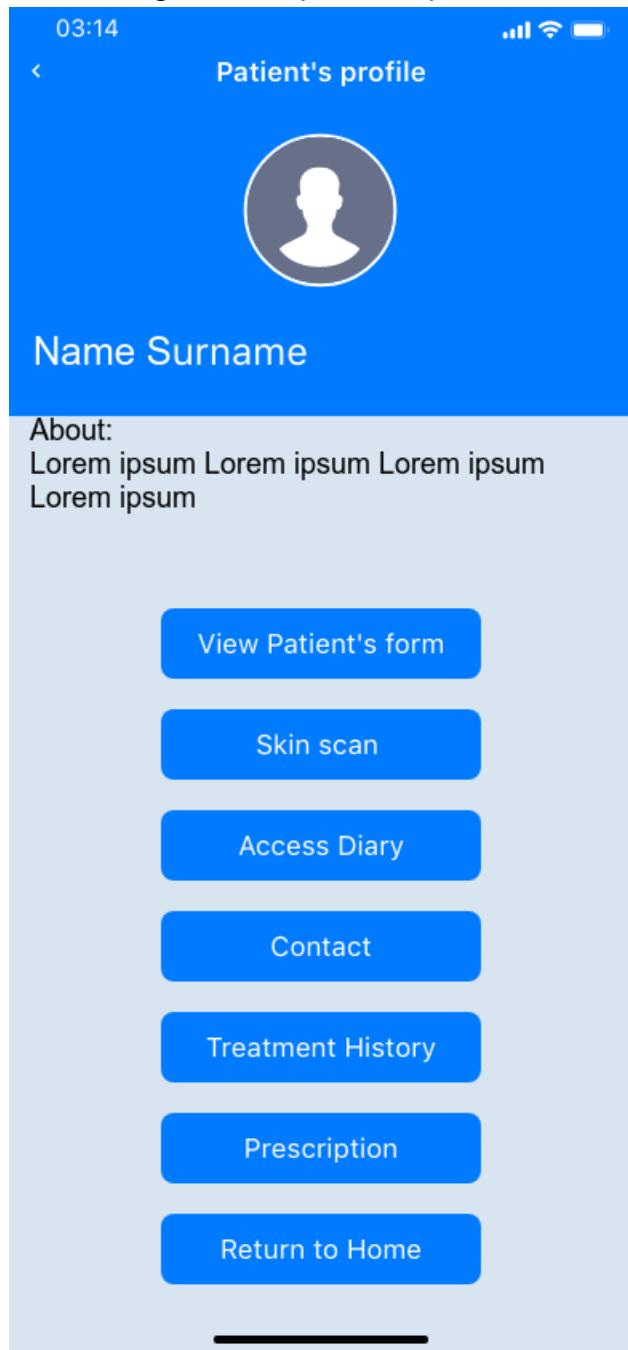
### 3.Dermatologist

#### Main Screen



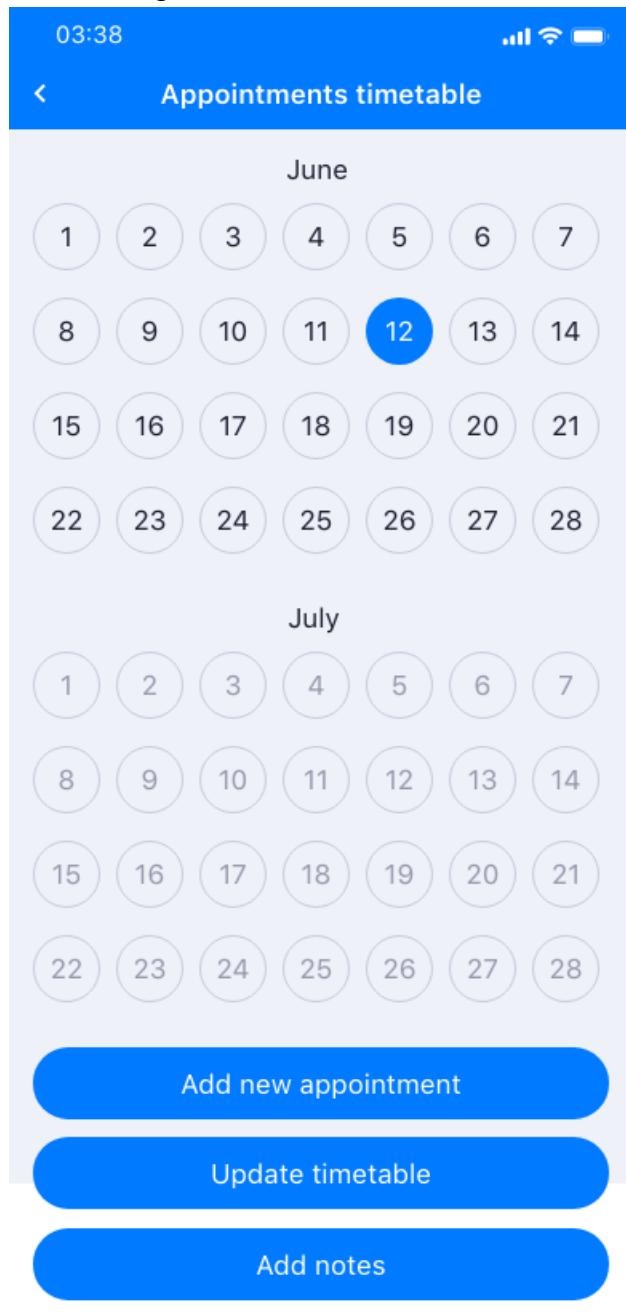
## *Dermatology clinic app Requirements Specification*

Dermatologist views patient's profile



## *Dermatology clinic app Requirements Specification*

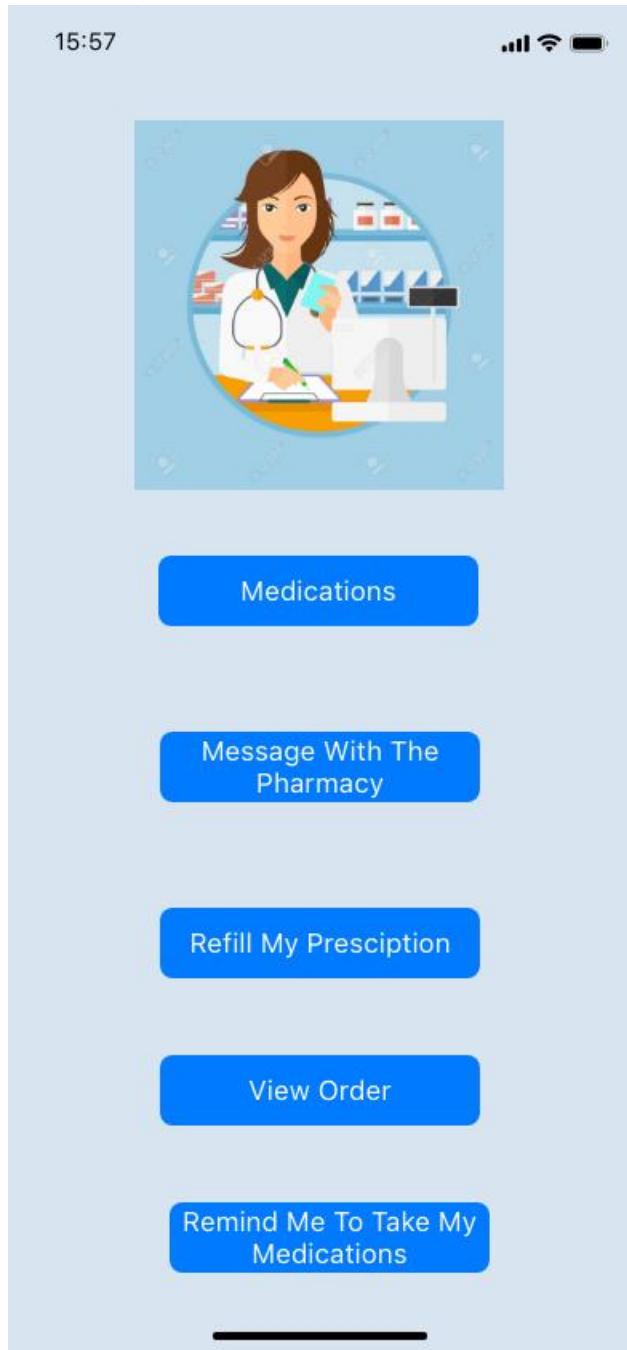
### Dermatologist timetable



## *Dermatology clinic app Requirements Specification*

### 4.Pharmacist

#### Home page



## *Dermatology clinic app Requirements Specification*

### **View Order**

