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CEN302 – Software Engineering

PMS Requirements Specification

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PMS Requirements Specification

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1. Executive Summary

1.1 Project Overview

Nowadays, technology is developing really fast and it is being implemented in many areas of our lives. One of the main fields that is trying to incorporate technology, is the health field. A detailed and accurate anamnesis of the patient's health conditions is often the key to curing and healing him. However, keeping this detailed information for every patient and then analyzing this handwritten information whenever it is needed is usually a difficult and slow process.

Technology in this field has been developing continuously. Today, we can check our health parameters with just the help of a smartphone (glucometer – to measure glucose level in blood, otoscope – ear examination instrument, sphygmometer – to measure blood pressure, Doppler ultrasound machine – for blood vessel control etc.). There have also been developed some watches, smart devices, which helps you to measure the pulse, oxygen in blood, breathing etc. These watches contain software that allows them to communicate in real-time with devices that periodically measure some parameters that cause strokes and warns the patient before it happens.

What we described earlier is a huge revolution of technology in health field; however, the massive use of these technologies has not yet been implemented. Today, it is doctor's responsibility to examine and keep track of patient's detailed records. In developed countries, health centers have their own computerized systems that store and process information quickly and correctly. This removes administrative obligation from doctors and nurses, who are currently dealing with, here in Albania. It would also help to improve the performance of this existing medical system.

In Albanian polyclinics, the patient's information is stored in hardcopy files. These files are eternal and are physically transferred when the patient changes his polyclinic. At Appendix C you can see an example of the actual file format that stores the information for a patient.

1.2 Purpose and Scope of this Specification

The software's purpose is to facilitate the operations of a polyclinic in Albania by providing a web application that will make the documentation of the patient's records easier, by digitalizing them and removing the hardcopy files.

The web application should offer to the patient the possibility to access at any time his electronic medical files. It should make the process of medical examination easier for the doctor and it should also offer a solution for the administrative procedures, such as: adding a new patient, removing a patient, changing a patient's record etc. This should be done by the receptionist or an authorized nurse. The system should be transparent in order to avoid malicious operations, but at the same time it should be trustworthy because it is tightly connected with the patient's life and his private information.

This documentation is written for all the users of the software. It will give detailed information about how it works and its facilities.

2. Product/Service Description

Public healthcare in Albania is the major provider of health services, health promotion, prevention, diagnosis and treatments for the population of Albania. According to the Albanian law, citizens must have equal access to public healthcare services. The Ministry of Health is in charge of this health service, which is a rigidly structured centralized system experiencing difficulty meeting the medical needs of its citizens.

Polyclinics have an important role in this public health service. They are health centers that provide medical support for each specific neighborhood of each city. Explaining briefly how the system works, each citizen that needs medical care should first go to his polyclinic and consult with his family's doctor. If that doctor thinks that the patient needs more specialized medical consultancy, then he recommends him to another polyclinic or hospital.

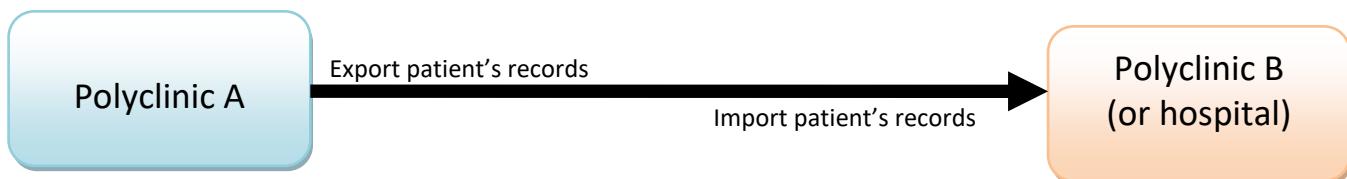
However, in our everyday life we see that this system is not well structured. One of the main problems that needs an immediate solution is digitalizing the patients' records. Until these days, their medical records are kept in hardcopy files, which makes the process of examination harder and slower. Also, these files are eternal and are physically transferred when the patient changes his polyclinic. In order to make it easier, faster and more secure, we need to keep these files in a digital form.

PMS is a platform that gives a solution to this problem. It is thought to be a management system for a polyclinic, with three main actors (receptionist, doctor, patient). It aims to remove these hardcopy files and make the documentation of patients' records easier.

Our software's conception is a web application based on object oriented PHP.

2.1 Product Context

Our software is directly related to the "Polyclinic Nr.5, Tiranë". It is conceived to be an independent system that will be available to three major genres of users that fall into one of these categories: doctors, patients or receptionists (or nurse). There is only one specific case where this system has to corporate with other polyclinics or hospitals. When a patient is moving from one polyclinic to another, it should be able to export a file with patient's records and send it to the other polyclinic, which can easily import that information. The same thing happens when the patient goes to a hospital.



2.2 User Characteristics

There are three types of users that will interact with the system:

1. Patient:

- Can look at general information about the polyclinic (main page)
- Can log in his account
- Can read his personal information
- Can look at the medical visits created by the doctor
- Can download his medical visits in PDF files
- Can contact his doctor by sending an email
- Can change his account password
- Can leave a feedback for the service
- Can log out

2. Doctor:

- Can look at general information about the polyclinic (main page)
- Can log in his account
- Can read his personal information
- Can see a list of all his patients
- Can see a list of his current patients waiting to be examined
- Can search in his patients' list
- Can fill the medical visit forms for each patient waiting to be examined
- Can view the profiles of his patients
- Can view the examination records of his patients
- Can download a specific examination record of a patient in a PDF file
- Can change his account password
- If the doctor is the director of the polyclinic, he can see some statistics generated by the system every month
- Can log out

3. Receptionist:

- Can look at general information about the polyclinic (main page)
- Can log in his account
- Can read his personal information
- Can view the list of all patients
- Can view the profiles of patients
- Can view the examination records of the patients
- Can change personal information of a patient
- Can export the files of a patient, which can be sent to another polyclinic or hospital
- Can add a new patient
- Can delete an existing patient
- Call create a visit and allow the doctor to fill the form for the current examination
- Can search for a patient
- Can view the list of all doctors
- Can view the profiles of doctors
- Can change personal information of a doctor
- Can add a new doctor
- Can delete an existing doctor
- Can search for a doctor
- Can change his account password
- Can log out

2.3 Assumptions

- It is assumed that some actions performed behind the scenes are performed regularly according to law.
- It is assumed that the profile of the receptionist is created initially by the administrator of the system and nobody else can add, delete or change information of the receptionist. If the receptionist changes, then the administrator of the system has to be contacted.
- It is assumed that while adding a new patient or changing his personal information, the receptionist should verify all the needed documents. That is why the receptionist is the only one who can do this.

- It is assumed that while adding a new doctor or changing his personal information, the receptionist should verify all the needed documents. That is why the receptionist is the only one who can do this.
- It is assumed that the receptionist is responsible for deleting patients or doctors from the polyclinic.
- It is assumed that the information of the patient is fully confidential. Apart from the patient himself, it can be read only by the receptionist or his family's doctor. The receptionist can export his file only if the patient is changing the polyclinic or has to continue some further examinations in the hospital. The doctor can download the file of a patient but he is fully responsible for this action and has to be careful with who he shares it.
- It is assumed that while filling the form for the current examination, the doctor is the only responsible person of what is written in that form. For security reasons, when the doctor finishes the examination, the system will ask him if he is sure he wants to finish it and if he clicks YES, he cannot change that record anymore.
- It is assumed that doctors and receptionist will be trained to use this software, in order not to have any misconceptions. As for the users there is no need for training, because their profile is only in read mode.
- It is assumed that all the doctors and the receptionist of the polyclinic are equipped with a computer connected to the internet, in order to be able to access this web application.

2.4 Constraints

- The receptionist of the polyclinic and every doctor of the polyclinic should have a personal computer available during the work hours in order to be able to access this web application.
- The receptionist of the polyclinic as well as every doctor of the polyclinic should know how to use this web application. They should know their capabilities and their duties in order not to interfere with each other and to respect the privacy of their patients. Using this application efficiently and correctly will increase the performance of it.
- The project is constrained also by the Internet connection. Since it is supposed to be a web application, it is crucial that there is stable Internet connection for the application to function. The internet is needed mainly because the data should be fetched from the database over the Internet. It is also needed for the reCaptcha module and Google Map. If the patient wants to contact the doctor through the application, in order for that email to be sent the Internet connection should be available.
- In order for Google Map to be available at any time, the Google Satellite should be available all the time too.

2.5 Dependencies

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

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

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

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

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

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

3. Requirements

3.1 Functional Requirements

Req#	Requirement	Comments	Priority	Date	Reviewed/ Approved
FR_01	The software should have different views for different user levels.	The view for patient, receptionist and doctor will be different.	2	27/03/2018	Kejda Balla/ Ilvana Dollaroviq
FR_02	A reCaptcha should be used for security issues while trying to log in.	To verify that you are not a robot, you should fill the reCaptcha.	1	27/03/2018	Sara Qirko/ Ariola Lami
FR_03	The user accounts have to be secured by passwords.	Ethics will be maintained by hashing the passwords before saving them in database.	1	27/03/2018	Ariola Lami/ Kejda Balla
FR_04	After the user has taken the password he/she can edit it, but he/she can't edit the username.	Editing usernames is not available since it is decided that the format that will be used will be the same for everybody.	1	28/03/2018	Sara Qirko/ Ilvana Dollaroviq
FR_05	The receptionist should be able to add a new patient.	The receptionist is the only user that is responsible for adding a new patient. He/she can fill a form or can import a file if that person already has a medical record file.	1	27/03/2018	Ilvana Dollaroviq/ Ariola Lami
FR_06	The information entered by the receptionist while creating or changing	It is important that all the information entered is accurate.	2	28/03/2018	Kejda Balla/ Sara Qirko

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	information about a specific user should be first validated.				
FR_07	The receptionist should be able to edit the personal information of a patient.	The receptionist is the only responsible user for editing the information of a patient.	1	27/03/2018	Ariola Lami/ Ilvana Dollaroviq
FR_08	The receptionist should be able to delete an existing patient.	The receptionist is the only responsible user for deleting an existing patient.	1	27/03/2018	Sara Qirko/ Kejda Balla
FR_09	The receptionist should be able to view the full profile of a patient.	In order to verify things when needed or to make the necessary updates, the receptionist should be able to view the current information of the patient.	2	27/03/2018	Ilvana Dollaroviq/ Sara Qirko
FR_10	The receptionist should be able to export the medical file of a patient. The system should be able to generate an XML file.	The receptionist is the only user responsible for exporting the medical file of a patient, in order to send it to another polyclinic or hospital when needed.	2	27/03/2018	Sara Qirko/ Ariola Lami
FR_11	The receptionist should be able to view all the patients of that polyclinic in a list.	All the patients of the polyclinic can be listed in order for the receptionist to see them.	1	27/03/2018	Kejda Balla/ Ilvana Dollaroviq
FR_12	The receptionist should be able to search for a specific patient.	The polyclinic will have many patients, so it would be efficient to have a search tool.	1	27/03/2018	Ariola Lami/ Kejda Balla

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FR_13	The receptionist should be able to add a new doctor.	The receptionist is the only user that is responsible for adding a new doctor.	1	27/03/2018	Ilvana Dollaroviq/ Ariola Lami
FR_14	The receptionist should be able to edit the personal information of a doctor.	The receptionist is the only responsible user for editing the information of a doctor.	1	27/03/2018	Ariola Lami/ Ilvana Dollaroviq
FR_15	The receptionist should be able to delete an existing doctor.	The receptionist is the only responsible user for deleting an existing doctor.	1	27/03/2018	Sara Qirko/ Kejda Balla
FR_16	The receptionist should be able to view the full profile of a doctor.	In order to verify things when needed or to make the necessary updates, the receptionist should be able to view the current information of the doctor.	2	27/03/2018	Kejda Balla/ Sara Qirko
FR_17	The receptionist should be able to view all the doctors of that polyclinic in a list.	All the doctors of the polyclinic can be listed in order for the receptionist to see them.	1	27/03/2018	Kejda Balla/ Ilvana Dollaroviq
FR_18	The receptionist should be able to search for a specific doctor.	It is supposed that the polyclinic will have many doctors therefore it would be efficient to have a search possibility.	1	27/03/2018	Ariola Lami/ Kejda Balla
FR_19	The receptionist should be able to allow the doctor to fill the form for the current examination.	The receptionist is the user that correlates the relationship between the doctor and the user. He/she is the one	1	27/03/2018	Sara Qirko/ Ariola Lami

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		that should give permission to the doctor to create a new record examination for the patient.			
FR_20	The doctor should be able to view all his patients.	The doctor needs to have a list of his patients.	1	28/03/2018	Ilvana Dollaroviq/ Sara Qirko
FR_21	The doctor should be able to view or even download the full profile of his patients.	In order to verify things when needed, the doctor should be able to view the current information of the patient.	1	28/03/2018	Sara Qirko/ Kejda Balla
FR_22	The doctor should be able to view all the patients that are waiting to be examined.	The doctor needs to have a list of the patients that are waiting to be examined.	1	28/03/2018	Kejda Balla/ Ariola Lami
FR_23	The doctor should be able to fill a form while examining a patient and save that new record.	The doctor should create a new record in his patient's file every time he examines him/her. However, this has to be allowed by the receptionist first.	1	28/03/2018	Ariola Lami/ Ilvana Dollaroviq
FR_24	The doctor who is the director of the polyclinic should be able to view statistics.	The director of the polyclinic should be able to view monthly statistics generated by the system, in order to analyze the situation and to make the necessary decisions.	1	15/05/2018	Sara Qirko/ Ilvana Dollaroviq
FR_25	The patient should be able to view his personal information	The system should be transparent and the patient can see	1	29/03/2018	Kejda Balla/ Ilvana Dollaroviq

	and medical visit records.	everything that the doctor writes for him.			
FR_26	The patient should be able to download a PDF file of his records.	The patient may want to have a hardcopy file of his records.	2	29/03/2018	Ilvana Dollaroviq/ Ariola Lami
FR_27	The patient should be able to contact the doctor.	An email will be sent to his doctor.	1	19/03/2018	Sara Qirko/ Kejda Balla
FR_28	A patient cannot see the profiles of other doctors of the polyclinic.	A patient has only to do with his family's doctor.	1	29/03/2018	Ariola Lami/ Sara Qirko
FR_29	A patient can leave a feedback for the service.	A patient should be able to rate and comment the service offered in the polyclinic.	2	15/05/2018	Sara Qirko/ Ilvana Dollaroviq
FR_30	Each user should be able to look at the general information of the polyclinic.	All users can see the general information of the polyclinic.	3	27/03/2018	Kejda Balla/ Ilvana Dollaroviq
FR_31	The web application has to be responsive.	The users should be able to access this web application from many devices.	3	31/03/2018	Sara Qirko/ Ariola Lami

Table 1. Functional Requirements

3.2 Non-Functional Requirements

3.2.1 Product Requirements

3.2.1.1 User Interface Requirements

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

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

The User interface could be grouped in 4 main interfaces:

- [Log In Interface](#)

Which will contain:

- The header bar containing PMS logo, “Polyclinic Nr. 5” and a telephone number.
- In the body, three icons will be shown, one for each user: receptionist, doctor and patient. These icons will serve as buttons to log in the system. When the button is pressed the log in form is displayed.
- The log in form contains fields <Username> and <Password>, a reCaptcha to make sure the user is not a robot and a button <Log In>. When that button is pressed the information is validated and the respective interface is showed to the user (patient/doctor/receptionist) or an error notification indicating a wrong username or password will be shown.

- [Patient Interface](#)

Which will contain:

- The header bar containing PMS logo, “Patient <Name> <Surname>” and a menu icon , which when pressed shows all available menus.
- The “**My Profile**” menu will allow the patient to see all his personal information and his medical record information.
- The “**My records**” menu will show to the patient all the medical visits created by his doctor. For each medical visit the patient can choose to download a PDF file of that.
- The “**Change Password**” menu will display a simple form which contains fields <Current Password>, <New Password>, <Confirm New Password> and a button <Save Changes>. When that button is pressed the system checks if the current password matches, then checks if the new password is the same in the both fields and validates the password format (for example: only alphanumeric characters at least one number and one uppercase). If all the validations are correct it displays a message that says “Password was changed successfully!”, otherwise displays a message with the respective error.
- The “**Contact Doctor**” menu will allow the patient to communicate with his/her doctor via e-mail. The page will provide a simple form containing the sender’s name which will be filled automatically from the patient’s personal information, as well as the respective doctor to whom the e-mail will be sent, a text field for the message and a <Send> button to deliver the email. This menu will be similar to the “New e-mail” menu of the well-known pages like www.gmail.com , www.yahoo.com etc.
- The “**Leave Feedback**” menu will allow the patient to rate the service offered by the polyclinic. The page will provide a simple form containing a rating scale from 1 to 5,

where 1 is the worst and 5 is the best, as well as a comment section. If this patient has previously left a feedback, the new one will replace the old one. If the patient has not left a feedback before, a new one will be added to the database.

- The “**Log out**” will terminate the current session and will resent the user to the main page.

- **Doctor Interface**

Which will contain:

- The header bar containing PMS logo, “Doctor <Name> <Surname>” and a menu icon , which when pressed shows all available menus.
- The “**Home**” menu directs the doctor to a page, where he can see the personal information on the left side of the screen and a table with all the patients waiting to be examined by him at the center. For these patients the doctor can choose to view their profiles or to write the examination. If he chooses “**Create Visit**” a form with all the necessary fields of an examination will be shown. If he chooses “**View Profile**” for a specific patient, he will be directed to a page where the personal information and the medical records are shown. From there, he can choose to view his medical visits and download them.
- The “**My Patients**” menu will display a table with all the patients of that specific doctor. For each patient he can view the full profile: personal information and all the medical examinations. He can also download a PDF file of this information. Above the table of the patients, there is a search box that can be used to find a specific patient.
- The “**Change Password**” menu will display a simple form which contains fields <Current Password>, <New Password>, <Confirm New Password> and a button <Save Changes>. When submit button is pressed the system checks if the current password matches, then checks if the new password is the same in the both fields and validates the password format (for example: only alphanumeric characters at least one number and one uppercase). If all the validations are correct it displays a message that says “Password was changed successfully!” otherwise displays a message with the respective error.
- Only in the case that the logged in doctor is also the director of the polyclinic, a “**Statistics**” menu will be shown. It will redirect the doctor to a page with monthly statistics generated by the system.
- The “**Log out**” will terminate the current session and will resent the user to the main page.

- Receptionist Interface

Which will contain:

- The header bar containing PMS logo and “Receptionist <Name> <Surname>”, a “Home” button and a “Log out” button.
- The main view (“**Home**”) contains six buttons: “My profile”, “Patients’ list”, “Add a new patient”, “Doctors’ list”, “Add a new doctor” and “Change password”.
- “**My Profile**” will allow the receptionist to see all his personal information.
- “**Patients’ List**” will show a full list of the patients of that polyclinic. For each patient the receptionist can view his full profile, can update his information, can delete his profile, can export his medical file or can allow the doctor to create a visit for that patient. When he clicks “**View profile**”, he can see the full details and the examinations of that patient. He can also download that information in a PDF file. When he clicks “**Update profile**”, he can change the personal information of that patient. When he clicks “**Delete**” a pop up window will appear to make sure that the receptionist really wants to delete that patient. When he clicks “**Export**”, an XML file will be created and it can be sent to other polyclinics or hospitals. When he/she clicks “**Create visit**”, it allows the doctor to add a new examination record for that patient.
- “**Add a New Patient**” allows the receptionist to create a new user, type patient. He will be responsible for filling all the obligatory fields with valid information provided by the patient. If there already exists an XML file of that patient, he can import that file.
- “**Doctors’ List**” will show a full list of the doctors of that polyclinic. For each doctor the receptionist can view his full profile, can update his information and can delete his profile. When he clicks “**View profile**”, he can see the full details of that doctor. When he clicks “**Update profile**”, he can change the personal information of that doctor. When he clicks “**Delete**” a pop up window will appear to make sure that the receptionist really wants to delete that doctor.
- “**Add a New Doctor**” allows the receptionist to create a new user, type doctor. He will be responsible for filling all the obligatory fields with valid information provided by the doctor.
- “**Change Password**” will display a simple form which contains fields <Current Password>, <New Password>, <Confirm New Password> and a button <Save Changes>. When that button is pressed the system checks if the current password matches, then checks if the new password is the same in the both fields and validates the password format (for example: only alphanumeric characters at least one number and one uppercase). If all the validations are correct it displays a

message that says “Password was changed successfully!” otherwise displays a message with the respective error.

- The “**Log out**” will terminate the current session and will resent the user to the main page.

3.2.1.2 Learnability

- Receptionists and doctors should be able to master using the system within a few hours.
- The patients will not need a specific training since the system will be intuitive.
- This documentation can serve as a user guide to the receptionist or the doctors of the polyclinic.
- In case of an error, a specific and detailed message will be shown to the user in order for him to understand what went wrong.
- The user is responsible for his/her own actions.

3.2.1.3 Accessibility

- Each user is provided with his/her username and password at the time they are registered at the system.
- The receptionist and the doctors who are part of the polyclinic can access the system.
- The patients of that polyclinic can access the system.
- The registered users can access the system at any time and at any place.

3.2.1.4 Efficiency

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

3.2.1.5 Memorability

- The system is intuitive hence, it is not a problem if you ‘vaguely remember’ how to use it.
- If the users return to the design after a period of not using it they will be able to re-establish proficiency within the first hour.
- The user interfaces are designed to be easy understandable by the user (pictures, icons, buttons, descriptions etc.)

3.2.1.6 Errors

- The error rate is lower than the current error rate.

- Each time sensitive data is entered in the system double check procedure is applied where the user confirms the entered data.
- If an error occurs it can be edited and corrected immediately.

3.2.1.7 Satisfaction

- The system is user-friendly and it is very easy to use.

3.2.1.8 Capacity

This application will be developed to cover all the necessities of one polyclinic. The application will work at the same time for the patient, doctor and receptionist. It will work on real time, so every change made will be reflected immediately to the other users (based on their clearance).

Every user will use the same database, therefore if multiple requests are made to the server the requests will form a query slightly delaying the process. To increase the capacity and to lower the amount of times this happens the user will make the changes storing them in his/her computer then they will be sent to the database. This way even if there is a delay it will allow them to continue their job.

The application will be stored in a web server. The applications itself is not large and the database that we are going to use does not occupy a large space either.

3.2.2 Organizational Requirements

3.2.2.1 Availability

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

3.2.2.2 Latency

The latency of the web application will depend on:

- Internet connection strength.
- The size of the database.
- The efficiency of the algorithms used to fetch data from the database.

3.2.2.3 Monitoring

- The system will be built to be secure and reliable. The user interfaces will be easy and it is assumed to not be any cases where the system crashes.
- Periodic reports shall be generated by the system maintenance group. These reports shall be used not only to detect problems but also to find possible ways to improve the system.
- Validation of fields will be used, for example when trying to log in, when a new patient is added, when a new doctor is added, when the personal information of a doctor or a patient is updated, when trying to change a password etc. In these cases when the input does not match the requirements a specific message will be shown to the user to inform about the problem that occurred.
- For most of the possible error scenarios, informative messages will be prepared to be shown to the user, in order for him to know what the problem is.

3.2.2.4 Maintenance

- The system will be developed using MySQL for the database and APACHE server. Therefore, these two platforms will be used to maintain the application.
- The application will be developed in modules so it can be easily extended. New modules can be easily added to the application anytime.
- In case of system malfunction, a system restart should help. If that does not help, then maybe the server is down, so the maintenance department should be contacted.
- In case of any software update or bug correction, the users will be informed.

3.2.2.5 Operations

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

- The users can log in and access their personal information anytime.
- The information entered to the system is accessed only by the people who really need access.
- Create, Read, Update and Delete doctors.
- Create, Read, Update and Delete patients.
- View personal information and medical records of patient.
- Download a PDF with the medical examinations of a specific patient.
- Export the medical file of a specific patient and use it to send it to another polyclinic or hospital.

- Allow the doctor to create a new examination record for a specific patient.
- Create a new examination record for a specific patient.
- Contact the doctor.
- Leave feedback for the service.
- View monthly statistics (director of polyclinic)

The application will be available 24/7, although the busiest time frames shall be 8 AM to 11 AM and from 4 PM to 7 PM. These time frames are based on the flux of the people requesting visits, thus it is not fixed and it varies from day to day.

The information entered to the system is considered to be sensitive, that is why it is secured with hashed passwords.

3.2.2.6 Standards Compliance

Our application is a new system developed to digitalize the filing system in polyclinics. Although the system is a new concept, it is bounded by some existing standards. Despite the view, the personal information of the user must have all the fields that are present in the current file format of the polyclinic. The same obligation is valid for the examination page. Also the user ID and other information will continue to follow the standards created by the Ministry of Health of Albania. Everything will be in accordance with the law and the Ministry of Health.

3.2.2.7 Portability

- The system will be web-based; therefore, it will operate the same regardless of the operating system.
- All you need is a computer or mobile phone and an Internet connection.

3.2.3 External Requirements

3.2.3.1 Security

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

3.2.3.2 Protection

To protect the system from malicious or accidental access, modification, disclosure, destruction, or misuse we will take the following precautions:

- Encrypt the most sensitive information such as passwords using hashing method to protect privacy.
- We will keep track of the activity of each user, such that in case of a problem the user will be held responsible.
- The receptionist is responsible for the personal data authenticity of the user he/she enters; hence the system is not responsible.
- The system will validate each data for special characters and other specific conditions before inserting or updating in the database.
- To make sure that some action is intentional and not accidental, most of the actions of the users are protected by a pop up window to confirm that action.
- Each patient will see only the information related to him/her.
- Each doctor will only see the data of his/her patients.

3.2.3.3 Authorization and Authentication

The Authorization and Authentication factors:

- The user authentication will be using username, password and reCaptcha.
- Authorization will be based on the user type. Each user will access only the respective information.
- Using sessions for the currently logged user.
- If the user tries to log in with the wrong credentials a message will be shown to him/her.

3.3 Domain Requirements

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

4. Software Design / Diagrams

4.1 Requirements Analysis

4.1.1 User Scenarios

4.1.1.1 User Scenarios List

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

US_18	View patient's examinations	Patients can view all of their examinations from this polyclinic. Doctors can view their patients' examinations. Receptionist can view examinations of all patients of the polyclinic.
US_19	Patient contacts doctor	Patient can contact the doctor by completing a form and an email will be sent to his doctor
US_20	Download patient's examinations	Receptionist can download the examinations of all patients. Doctor can download the examinations of his patients. Patient can download his examinations.
US_21	View statistics	The doctor, who is the director of the polyclinic, can view monthly statistics generated by the system.
US_22	Leave feedback	Patients can leave feedback about the service offered by the polyclinic.
US_23	User logs out	Receptionist, doctor and patient log out from their accounts

Table 2. User scenarios list

4.1.1.2 User Scenarios Extended

1. **US_01** – User logs in
 - a. User chooses his user type: patient/receptionist/doctor
 - b. User is redirected to the log in page
 - c. User enters his username and password
 - d. User checks the reCaptcha 'I am not a robot'
 - e. User presses the log in button
 - f. If data is correct the user is redirected to his profile page
 - g. If data is not correct an error message will be shown and user repeats the process from step b.

2. **US_02** – Change password
 - a. User logs in following the steps in **US_01**.
 - b. User chooses the menu "Change Password"
 - c. User types his old password and his new password (2 times)
 - d. User presses the button "Save Changes"
 - e. If the old password is correct and if the new password is the same in both fields the user is alerted: "Password was changed successfully!"
 - f. In case the old password is wrong or the new password is not the same in both fields then user is alerted: "Password was not changed. Please try again."

3. **US_03** – Add a new patient user

- a. Receptionist logs in following the steps **US_01**
- b. Receptionist clicks on “Add a New Patient”
- c. Receptionist fills all the empty fields
- d. Receptionist double checks if the data entered is correct
- e. Receptionist clicks the button “Add Patient”
- f. Alert: Are you sure you want to continue? YES/ NO
- g. If NO, do nothing, we stay at the same page
- h. If YES, system validates data according to the specified requirements
- i. If validation is passed successfully, the data is saved in the database and the account is created. An informative message “Patient added successfully!” will be shown and the receptionist is redirected to his/her home page.
- j. If validation is not passed successfully, informative messages will show where the problem is, so the receptionist can fix it and continue again from step d.

4. **US_04** – Add a new patient from existing files

- a. Receptionist logs in following the steps in **US_01**
- b. Receptionist clicks on “Add Patient”
- c. Receptionist clicks the button “Import data”
- d. Receptionist selects the file with the data and clicks OK
- e. Receptionist clicks the button “Add Patient”
- f. Alert: Are you sure you want to continue? YES/ NO
- g. If YES, the data is saved in the database and the account is created. An informative message “Patient added successfully!” will be shown and the receptionist is redirected to his/her home page.
- h. If NO, do nothing, stay at the same page

5. **US_05** – Add a new doctor user

- a. Receptionist logs in following the steps in **US_01**
- b. Receptionist clicks on “Add a New Doctor”
- c. Receptionist fills all the empty fields
- d. Receptionist double checks if the data entered is correct
- e. Receptionist clicks the button “Add Doctor”
- f. Alert: Are you sure you want to continue? YES/ NO
- g. If NO, do nothing, we stay at the same page
- h. If YES, system validates data according to the specified requirements
- i. If validation is passed successfully, the data is saved in the database and the account is created. An informative message “Doctor added successfully!” will be shown and the receptionist is redirected to his/her home page.
- j. If validation is not passed successfully, informative messages will show where the problem is, so the receptionist can fix it and continue again from step d.

6. US_06 – Patients' list

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

7. US_07 – Doctors' list

- a. Receptionist logs in following the steps in **US_01**
- b. Receptionist clicks on “Doctors’ list”
- c. A table with all the doctors of the polyclinic will be shown

8. US_08 – Search a patient

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

9. US_09 – Search a doctor

- a. Receptionist logs in following the steps in **US_01**
- b. Receptionist clicks on “Doctors’ list”
- c. A table with all the doctors will be shown and a search box above it
- d. Receptionist fills the name, the surname or both of the fields
- e. If results were found, they will be shown in the table
- f. If no result was found, the table will be shown empty

10. US_10 – Update user patient

- a. Receptionist searches a patient following the steps in **US_08/a**
- b. Receptionist clicks the button “Update” for that specific patient
- c. A form with fields filled with current information of the patient is shown
- d. Receptionist makes the necessary changes
- e. Receptionist double checks if the data entered is correct
- f. Receptionist clicks the button “Update”
- g. Alert: Are you sure you want to continue? YES/ NO
- h. If NO, do nothing, we stay at the same page
- i. If YES, system validates data according to the specified requirements
- j. If validation is passed successfully, the data is saved in the. An informative message “Patient updated successfully!” will be shown and the receptionist is redirected to his/her home page.
- k. If validation is not passed successfully, informative messages will show where the problem is, so the receptionist can fix it and continue again from step e.

11. US_11 – Update user doctor

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

12. US_12 – Delete user

- For patients
 - a. Receptionist searches a patient following the steps in **US_08/a**
 - b. Receptionist clicks the button “Delete” for that specific patient
 - c. Alert: Are you sure you want to continue? YES/ NO
 - d. If NO, do nothing, we stay at the same page
 - e. If YES, the information for that patient is deleted from the database. The message “Patient deleted successfully!” will be shown and the receptionist is redirected to his/her home page.

- For doctors
 - f. Receptionist searches a doctor following the steps in **US_09**
 - g. Receptionist clicks the button “Delete” for that specific doctor
 - h. Alert: Are you sure you want to continue? YES/ NO
 - i. If NO, do nothing, we stay at the same page
 - j. If YES, the information for that doctor is deleted from the database. The message “Doctor deleted successfully!” will be shown and the receptionist is redirected to his/her home page.

13. US_13 – Allow doctor to create an examination/visit

- a. Receptionist searches a patient following the steps in **US_08/a**
- b. Receptionist clicks the button “Create Visit” for that specific patient
- c. Alert: Are you sure you want to continue? YES/ NO
- d. If NO, do nothing, we stay at the same page
- e. If YES, some changes will be made to the database. An informative message “You allowed the doctor to visit this patient!” will be shown and the receptionist is redirected to his/her home page.
- f. That patient will now appear on the list of patients waiting to be examined in doctor’s page

14. US_14 – Patients waiting for examination list

- a. Doctor logs in following the steps in **US_01**
- b. Doctor is redirected to his home page (or he can manually click “Home” menu)
- c. A table with the patients waiting to be examined will appear

15. US_15 – Create examination/visit

- a. Doctor views the list of patients waiting to be examined following the steps in **US_14**
- b. Doctor clicks the button “Create Visit” for a specific patient
- c. A form with all the needed fields to be filled during a medical visit will be shown
- d. Doctor fills all the empty fields
- e. Doctor double checks if the data entered is correct
- f. Doctor clicks the button “Finish Examination”
- g. Alert: Are you sure you want to continue? YES/ NO
- h. If NO, do nothing, we stay at the same page
- i. If YES, the data is saved in the database. An informative message “Visit created successfully!” will be shown and the doctor is redirected to his/her home page. Also a PDF file is created.

16. US_16 – Export user

- a. Receptionist searches a patient following the steps in **US_08/a**
- b. Receptionist clicks the button “Export” for that specific patient
- c. Alert: Are you sure you want to continue? YES/ NO
- d. If NO, do nothing, we stay at the same page
- e. If YES, the information for that patient is written in an XML file and downloaded in the computer. The message “Patient exported successfully!” will be shown and the receptionist is redirected to his/her home page.
- f. The exported file can be sent to another polyclinic or hospital for further examinations

17. US_17 – View profile

- Receptionist views his/her profile
 - a. Receptionist logs in following the steps in **US_01**
 - b. Receptionist clicks on “My profile”
 - c. Receptionist will be redirected to a page with his/her personal information
- Patient views his/her profile
 - a. Patient logs in following the steps in **US_01**
 - b. Patient clicks on “My profile”
 - c. Patient will be redirected to a page with his/her personal information
- Doctor views his/her profile
 - a. Doctor logs in following the steps in **US_01**
 - b. Doctor is redirected to his home page (or he can manually click “Home” menu)
 - c. A page with personal information on the left side of the screen and the table of patients waiting to be examined at the center will be shown
- Receptionist views profile of a patient
 - a. Receptionist searches a patient following the steps in **US_08/a**
 - b. Receptionist clicks the button “View Profile” for that specific patient
 - c. Receptionist is redirected to a page showing the personal information of that patient
- Receptionist views profile of a doctor
 - a. Receptionist searches a doctor following the steps in **US_09**
 - b. Receptionist clicks the button “View Profile” for that specific doctor
 - c. Receptionist is redirected to a page showing the personal information of that doctor
- Doctor views profile of one of his patients
 - a. Doctor searches a patient following the steps in **US_08/b**
 - b. Doctor clicks the button “View Profile” for that specific patient
 - c. Doctor is redirected to a page showing the personal information of that patient

18. US_18 – View patient's examinations

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

19. US_19 – Patient contacts doctor

- a. Patient logs in following the steps in **US_01**
- b. Patient clicks on “Contact Doctor” menu
- c. A form containing his name and email, his doctor’s name and email as well as a place to write the message is shown
- d. Patient fills the empty fields
- e. Patient double checks what he has written
- f. Patient clicks “Send”
- g. Alert: Are you sure you want to continue? YES/ NO
- h. If NO, do nothing, we stay at the same page
- i. If YES, the system will try to send an email to his doctor
- j. If the email is sent successfully, the message “Email was sent successfully!” will be shown and the patient will be redirected to his home page.
- k. If the email is not sent successfully, the message “Email couldn’t be sent due to some problems! Please try again later!” will be shown

20. US_20 – Download patient's examinations

- Receptionist
 - a. Receptionist views examinations of a patient following the steps in **US_18/a**
 - b. Receptionist clicks “Download” button for a specific examination
 - c. A PDF file will be downloaded in the computer
- Doctor
 - a. Doctor views examinations of a patient following the steps in **US_18/b**
 - b. Doctor clicks “Download” button for a specific examination
 - c. A PDF file will be downloaded in the computer

- Patient
 - d. Patient views examinations of himself following the steps in **US_18/c**
 - e. Patient clicks “Download” button for a specific examination
 - f. A PDF file will be downloaded in the computer

21. US_21 – View statistics

- a. Doctor, who is also the director of the polyclinic, logs in following the steps in **US_01**
- b. Doctor clicks “Statistics”
- c. He will be redirected to a page showing monthly statistics generated by the system, ex. number of new patients, number of new doctors, number of infectious diseases etc.

22. US_22 – Leave feedback

- a. Patient logs in following the steps in **US_01**
- b. User clicks “Leave feedback”
- c. He will leave comments about the service
- d. Alert: Are you sure you want to leave feedback? YES/ NO
- e. If NO, do nothing, we stay at the same page
- f. If YES, the feedback will be saved in the database and will be shown in statistics

23. US_23 – User logs out

- a. User logs in following the steps in “Scenario - User logs in”
- b. User follows some of the scenarios listed above
- c. User clicks “Log out”
- d. User will be logged out from the system and he will be redirected to the main page

4.1.2 User Cases

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

UC_01 – US_01 - User logs in

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

UC_02 – US_02 - Change password

PMS Documentation

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

UC_03 – US_03 – Add a new patient user

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

UC_04 – US_04 – Add a new patient from existing files

PMS Documentation

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

UC_05-US_05 – Add a new doctor user

Name	Patients’ list
Summary	Access the list of patients.
Actor	Receptionist / Doctor
Description	In the receptionist’s version he/she logs in then clicks on “Patients’ list”, to access the list of all patients of the polyclinic. In the doctor’s version, he/she logs in and clicks on “My Patients”, to access the list of his/her patients.
Precondition	To access this list you should be logged in as a receptionist or doctor. Patients have no access on the list.
Alternatives	Receptionist can view the whole list of the patients of the polyclinic, whereas the doctor can view only the list of his patients. If there is no patient registered yet, an informative message will be shown.
Post Condition	A table with the list of the patients is shown.

UC_06-US_06 – Patients’ list

PMS Documentation

Name	Doctors' list
Summary	Access the list of the doctors of the polyclinic.
Actor	Receptionist
Description	The receptionist logs in then clicks on "Doctors' List", to access the list of all doctors of the polyclinic.
Precondition	To access this list you should be logged in as the receptionist. Patients and doctors have no access on the list.
Alternatives	Receptionist can view the whole list of the doctors of the polyclinic. If there is no doctor registered yet, an informative message will be shown.
Post Condition	A table with the list of the doctors is shown.

UC_07 – US_07 – Doctors' list

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

UC_08 – US_08 – Search a patient

PMS Documentation

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

UC_09 – US_09 – Search a doctor

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

UC_10 – US_10 – Update user patient

PMS Documentation

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

UC_11 – US_11 – Update user doctor

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

UC_12 – US_12 – Delete user

PMS Documentation

Name	Allow doctor to create an examination/visit
Summary	Receptionist allows the doctor to create an examination for a specific patient.
Actor	Receptionist
Description	Receptionist logs in and searches for a patient as we described before in UC_08 . After that, he/she clicks the “Create Visit” button for that specific patient that was the result of the search.
Precondition	You should be logged in as a receptionist. Patients and doctors will not have this right. Also, the patient should exist in the database in order to create a visit for him/her.
Alternatives	If the receptionist is sure he/she should press YES to create a visit for that user, if not then he/she should press NO and go back to the previous page.
Post Condition	The visit is created and that patient will now appear on the list of patients waiting to be examined in doctor's page.

UC_13 – US_13 – Allow doctor to create an examination/visit

Name	Patients waiting for examination list
Summary	The doctor can view the list of the patients that are waiting to be examined.
Actor	Doctor
Description	Doctor logs in and he is redirected to his main page where a table with the patients waiting to be examined is shown. He can also access this list by clicking on “Home” menu.
Precondition	Doctor should be logged in and the receptionist must have previously allowed the doctor to visit that patient.
Alternatives	If the receptionist has not allowed the doctor to make any visits, that list will be empty. An informative message will be shown.
Post Condition	The list of the patients waiting to be examined will be shown.

UC_14 – US_14 - Patients waiting for examination list

PMS Documentation

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

UC_15 – US_15 - Create examination/visit

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

UC_16 – US_16 – Export user

PMS Documentation

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

UC_17/a – US_17/a, b, c – View profile

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

UC_17/b – US_17/d, e, f – View profile

PMS Documentation

Name	View patient's examinations
Summary	Receptionist can view the examinations of all the patients. Doctor can view examinations of his patients. Patient can view his examinations.
Actor	Receptionist / Doctor / Patient
Description	<p>In case of a receptionist that wants to view the examinations of a patient, he/she first logs in, views the profile of a specific patient as we described before in UC_17/b and clicks “View Examinations”.</p> <p>In case of a doctor that wants to view the examinations of a patient, he/she first logs in, views the profile of a specific patient as we described before in UC_17/b and clicks “View Examinations”.</p> <p>In case of a patient that wants to view his examinations, he/she first logs in and clicks “Records” menu.</p>
Precondition	<p>The receptionist should be logged in if he/she wants to see the examinations of a patient. That patient should exist in the database.</p> <p>The doctor should be logged in if he/she wants to see the examinations of a patient. That patient should exist in the database.</p> <p>The patient should be logged in if he/she wants to see his examinations.</p>
Alternatives	Examinations of a specific patient can be seen from the receptionist, from his family's doctor or from the patient himself.
Post Condition	A page with all the examinations of the patient ordered chronologically will be shown.

UC_18 – US_18 – View patient's examinations

PMS Documentation

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

UC_19 – US_19 – Patient contacts doctor

PMS Documentation

Name	Download patient's examinations
Summary	The receptionist can download the examinations of a patient. The doctor can download the examinations of one of his patients. The patient can download his examinations.
Actor	Receptionist / Doctor / Patient
Description	<p>In case of a receptionist that wants to download the examinations of a patient, he/she logs in, views the patient's examinations as described before in UC_18 and clicks "Download".</p> <p>In case of a doctor that wants to download the examinations of a patient, he/she logs in, views the patient's examinations as described before in UC_18 and clicks "Download".</p> <p>In case of a patient that wants to download his examinations, he/she logs in, views his examinations as described before in UC_18 and clicks "Download".</p>
Precondition	The user should be logged in and the examinations should exist in the database.
Alternatives	Receptionist, family's doctor and patient have the right to download and use carefully the information for each examination of a patient.
Post Condition	A PDF file with the information of a specific examination of a user will be downloaded in the computer.

UC_20 – US_20 – Download patient's examinations

Name	View statistics
Summary	The doctor, who is the director of the polyclinic, can view monthly statistics.
Actor	Doctor
Description	The director of the polyclinic can log in and view monthly statistics generated by the system, for example: number of patients visited, number of new patients etc.
Precondition	The logged in doctor should be the director of the polyclinic.
Alternatives	The doctor can view different statistics, for example: number of patients visited, number of new patients etc.
Post Condition	The doctor views statistics and make necessary decisions to improve the service.

UC_21 – US_21 – View statistics

PMS Documentation

Name	Leave feedback
Summary	Patient can leave a feedback about the service.
Actor	Patient
Description	The patient logs in and goes to “Leave feedback” page. He rates and makes comments about the service of the polyclinic.
Precondition	The patient must first be logged in.
Alternatives	The patient can assign a grade and leave a comment about the service offered at the polyclinic.
Post Condition	The feedback is used to improve the service offered at the polyclinic.

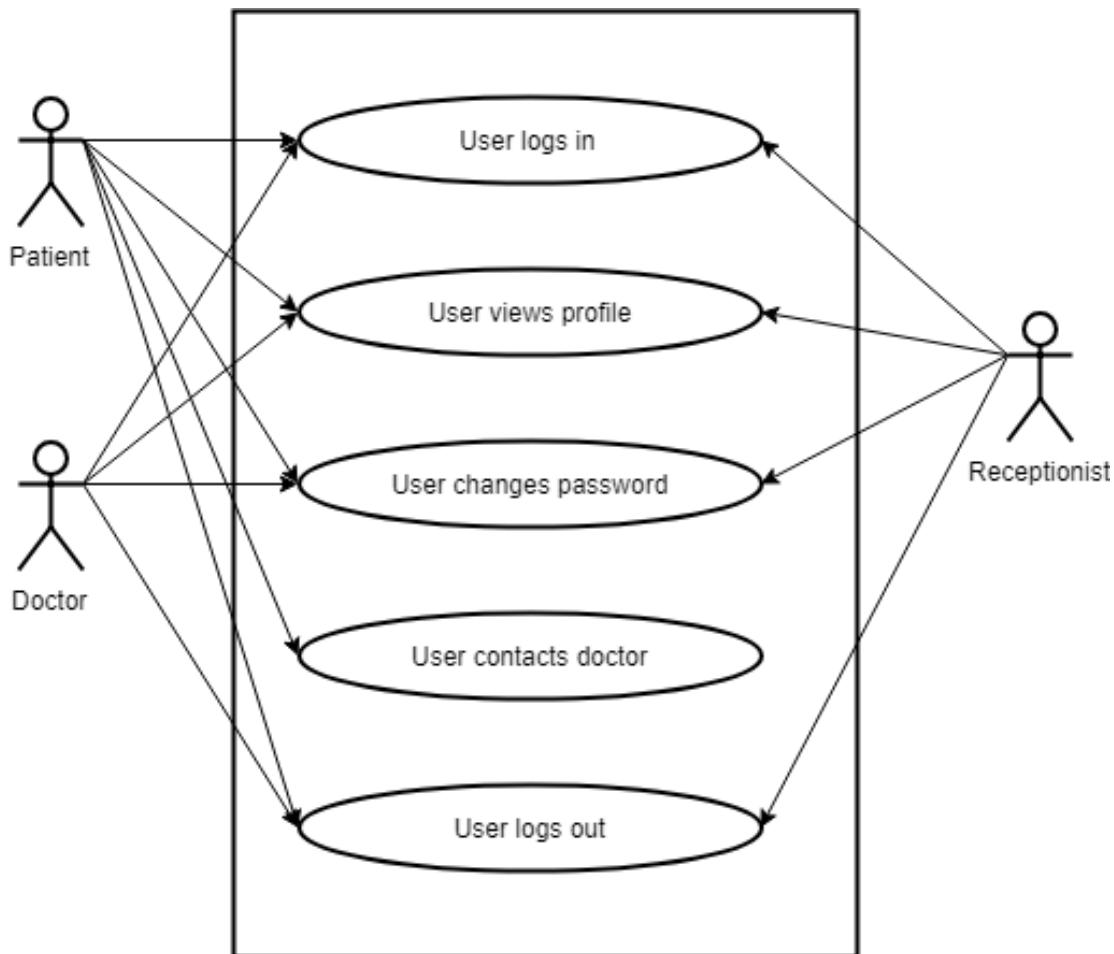
UC_22 – US_22 – Leave feedback

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

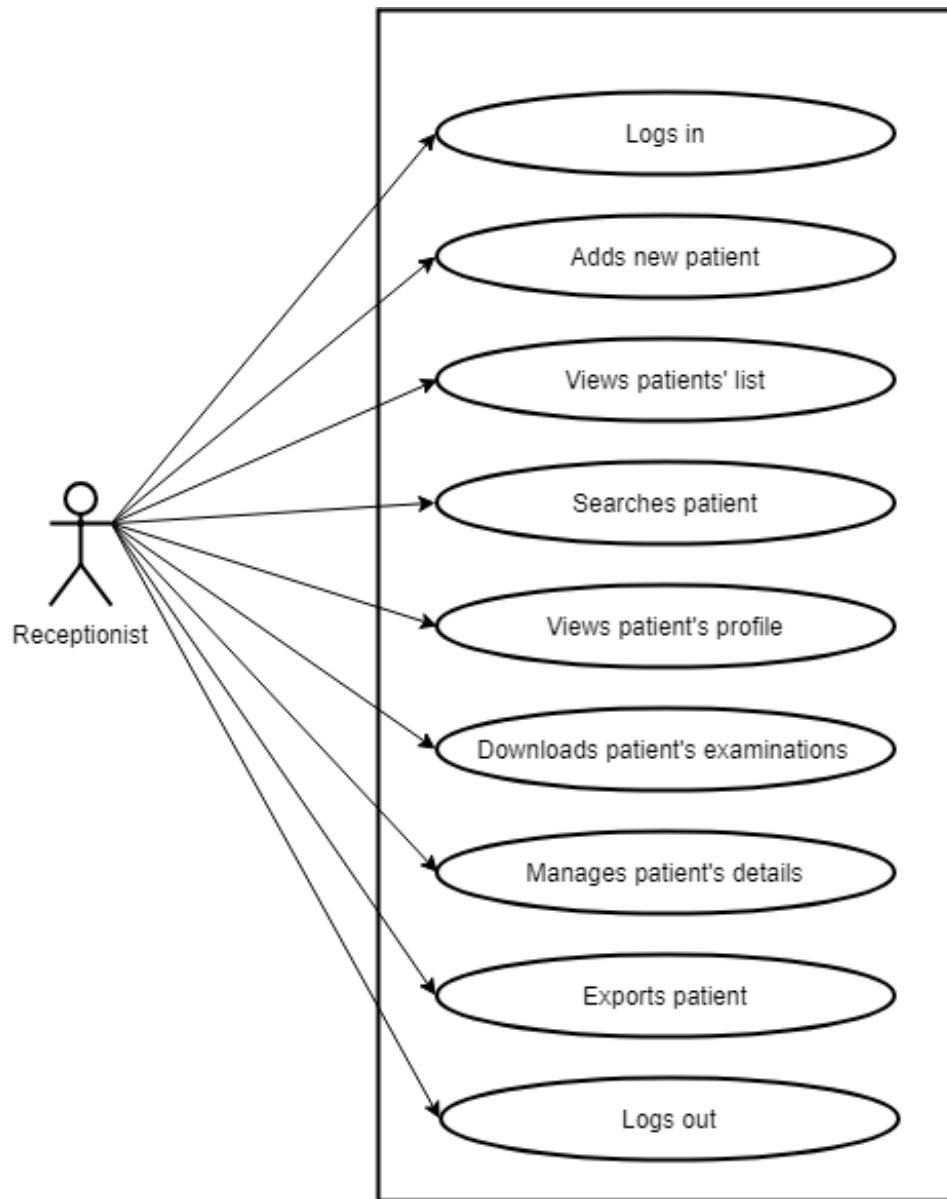
UC_23 – US_23 – User logs out

4.2 Behavioral Diagrams

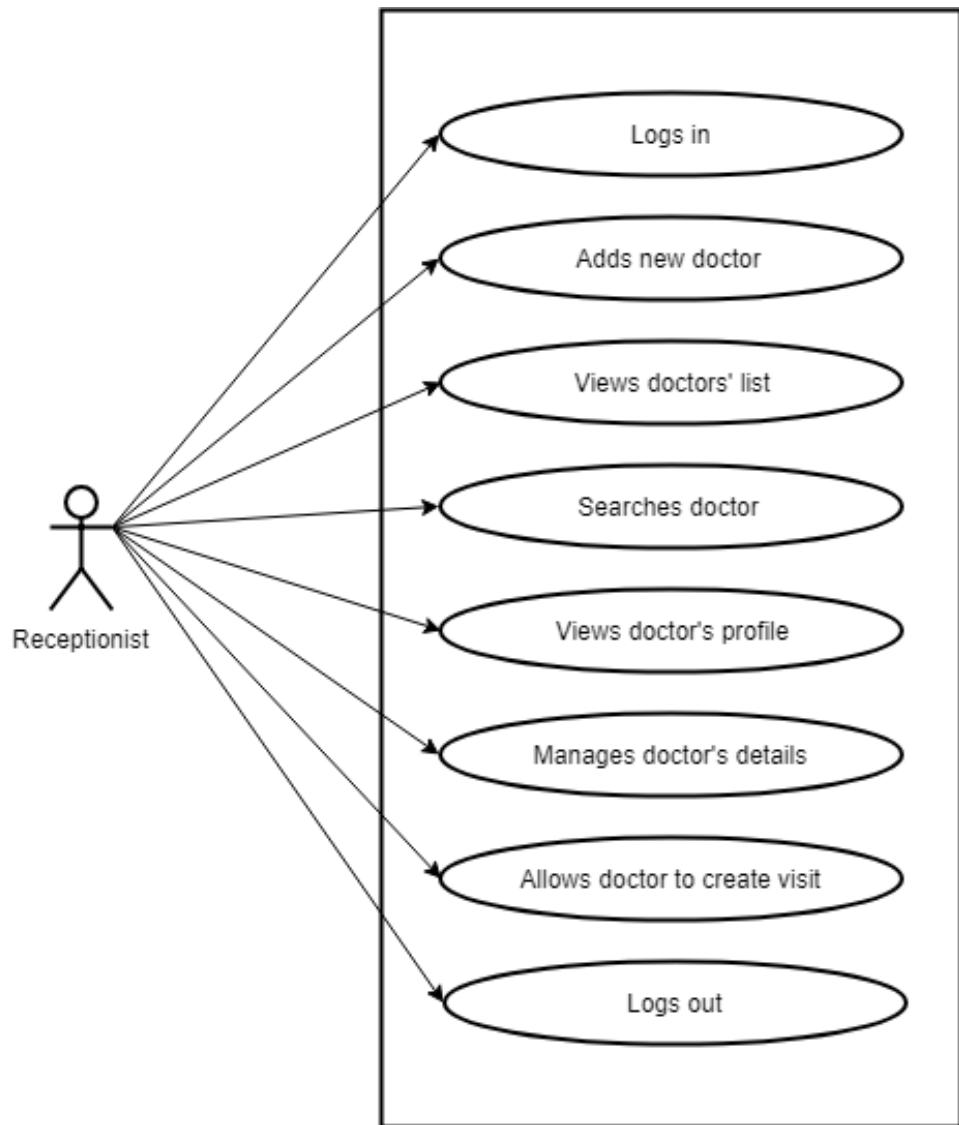
4.2.1 Use Case Diagrams



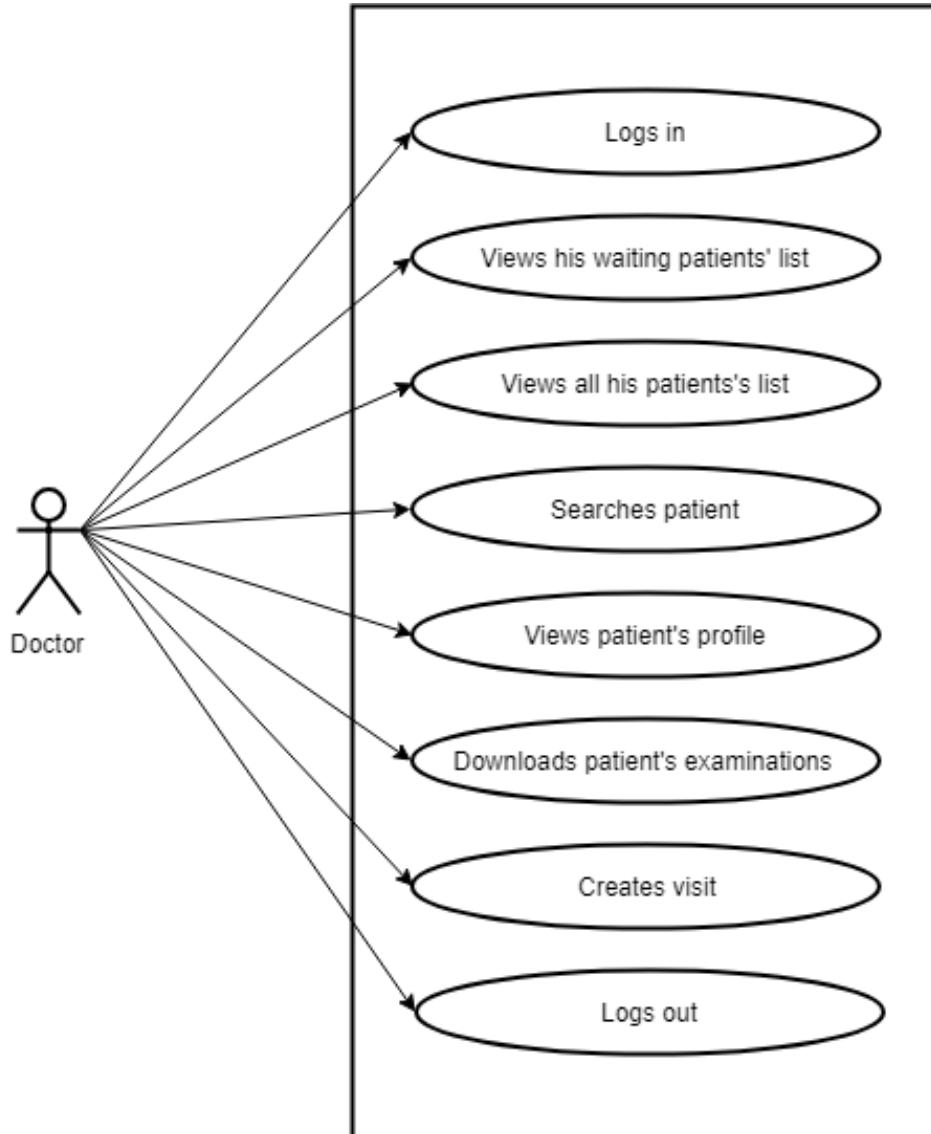
CD_01 – UC_01, UC_02, UC_17/a, UC_19, UC_23 – Basic Operations



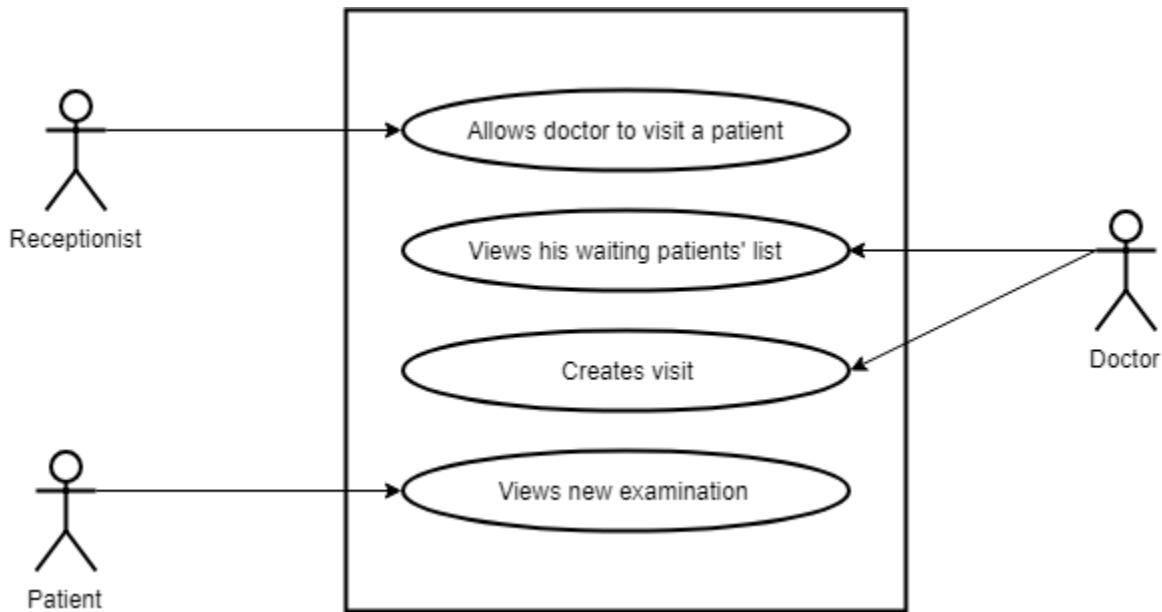
*CD_02 – UC_01, UC_03, UC_04, UC_06, UC_08, UC_10, UC_12, UC_16, UC_17b, UC_18, UC_20, UC_23 – Relationship
between receptionist and patient*



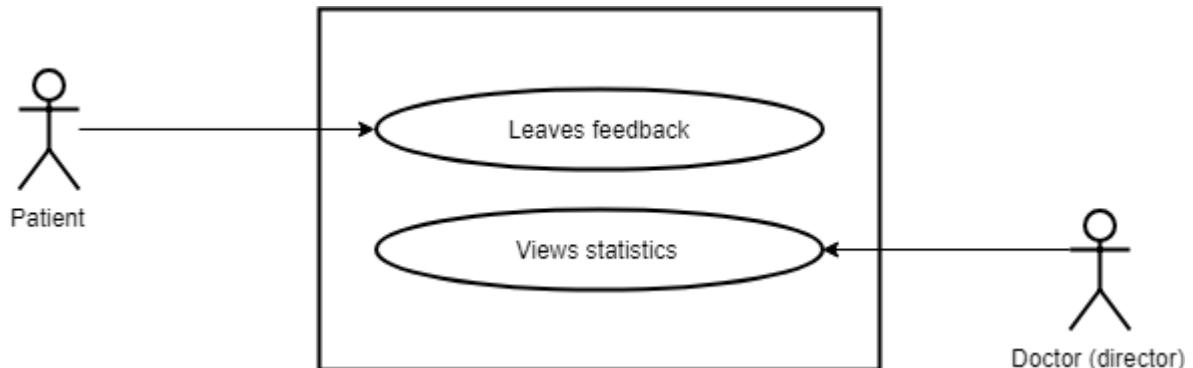
CD_03 – UC_01, UC_05, UC_07, UC_09, UC_11, UC_12, UC_12, UC_17b, UC_23 – Relationship between receptionist and doctor



CD_04 – UC_01, UC_06, UC_14, UC_15, UC_17b, UC_18, UC_20, UC_23 – Relationship between doctor and patient

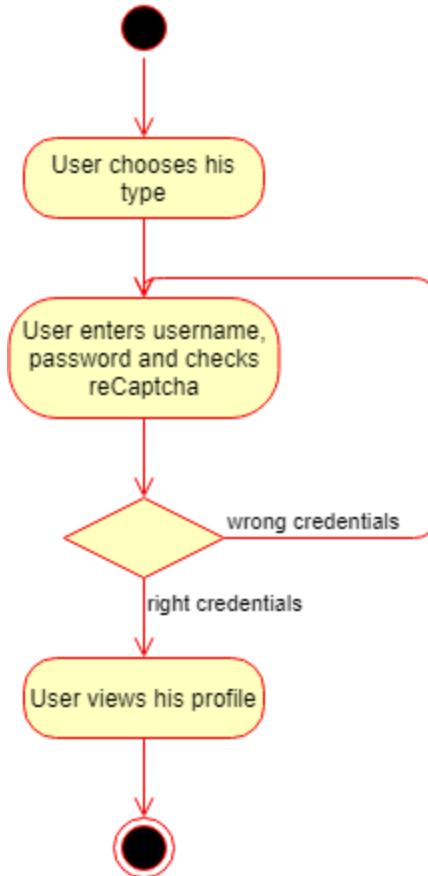


CD_05 – UC_13, UC_14, UC_15, UC_18 – Create visit

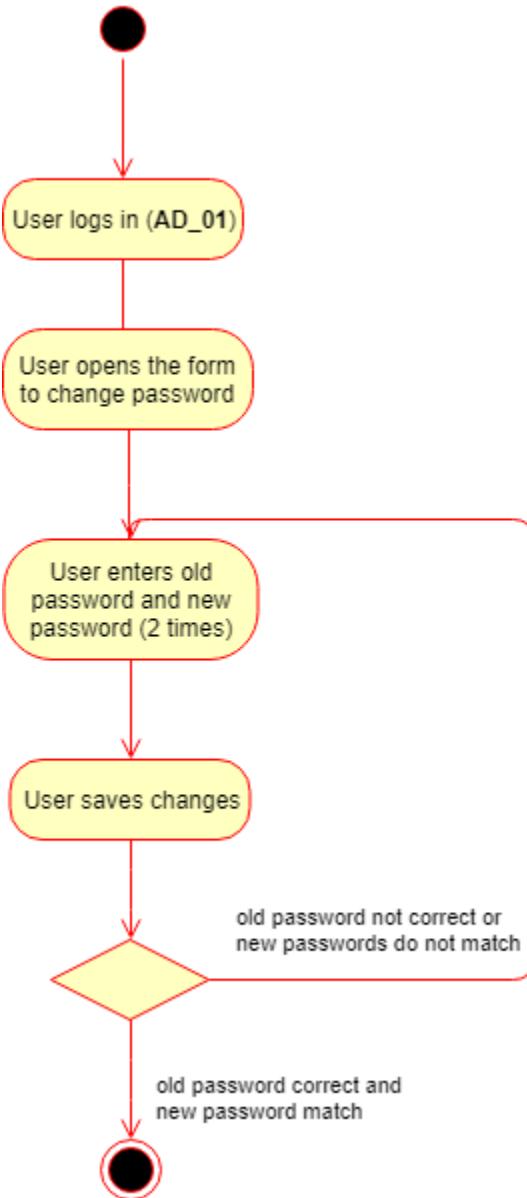


CD_06 – UC_22, UC_23 – Feedback

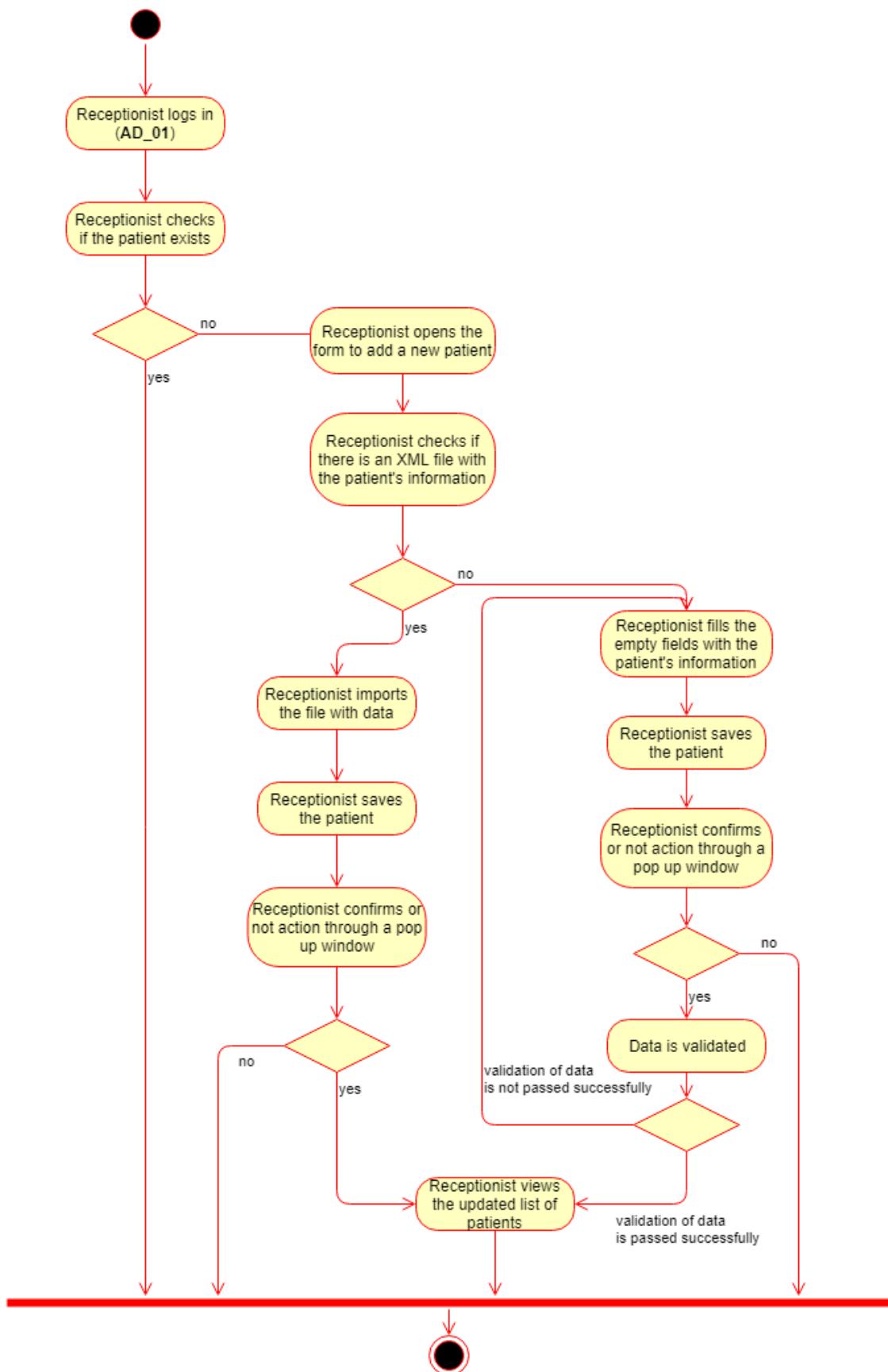
4.2.2 Activity Diagrams



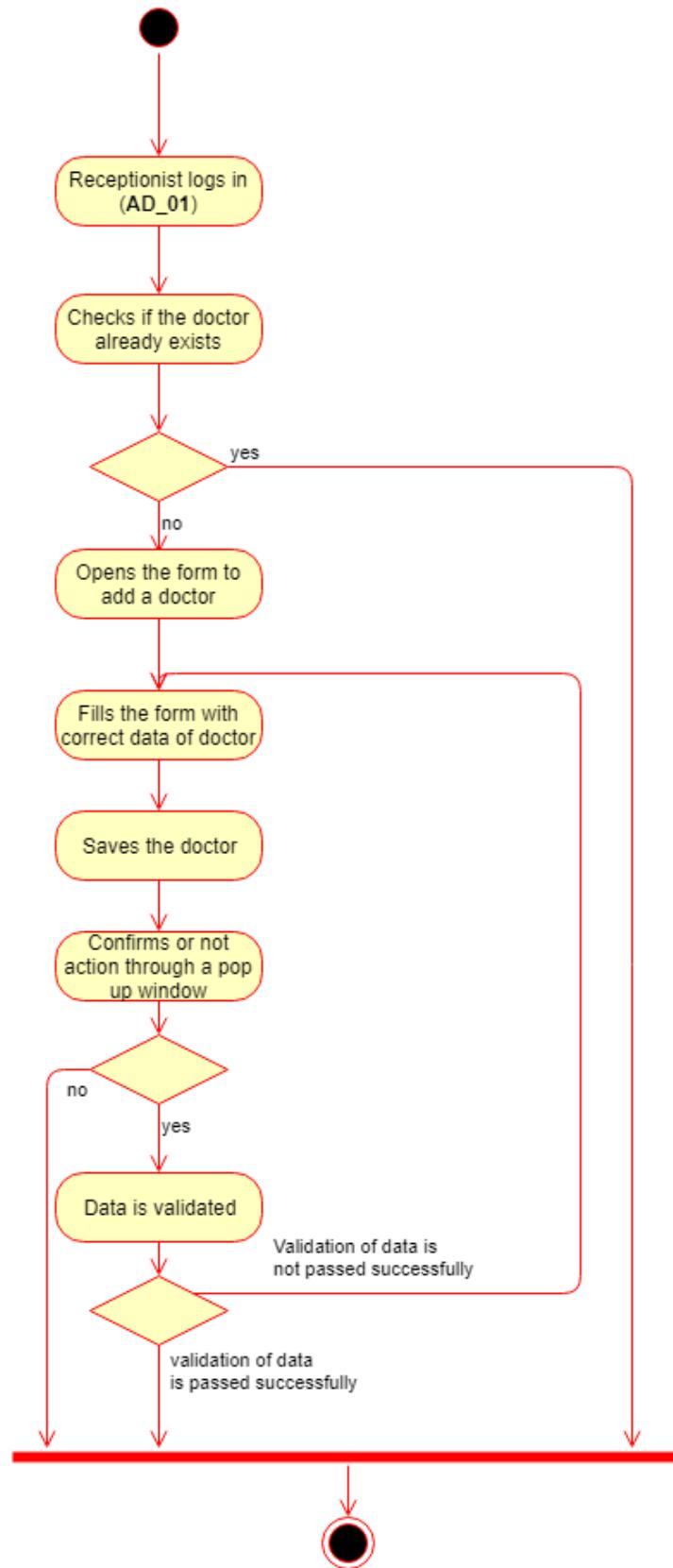
AD_01 – US_01 - User logs in



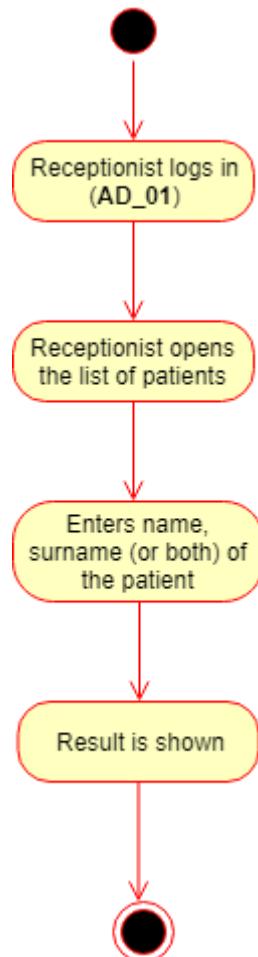
AD_02 – US_02 - Change password



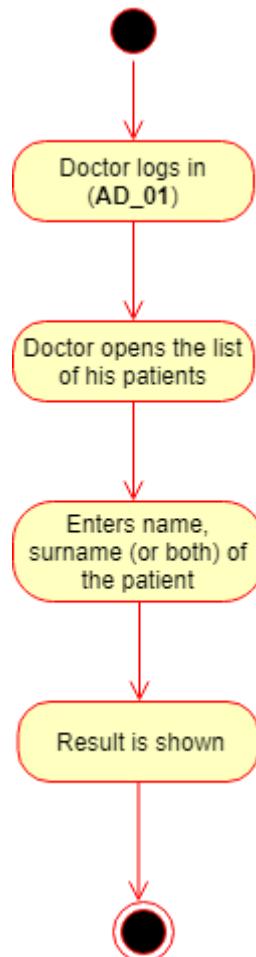
AD_03 – US_03, US_04 - Add new patient



AD_04 – US_05 - Add new doctor



AD_05 – US_08/a - Receptionist searches patient



AD_06 – US_08/b - Doctor searches patient



Receptionist logs in
(AD_01)

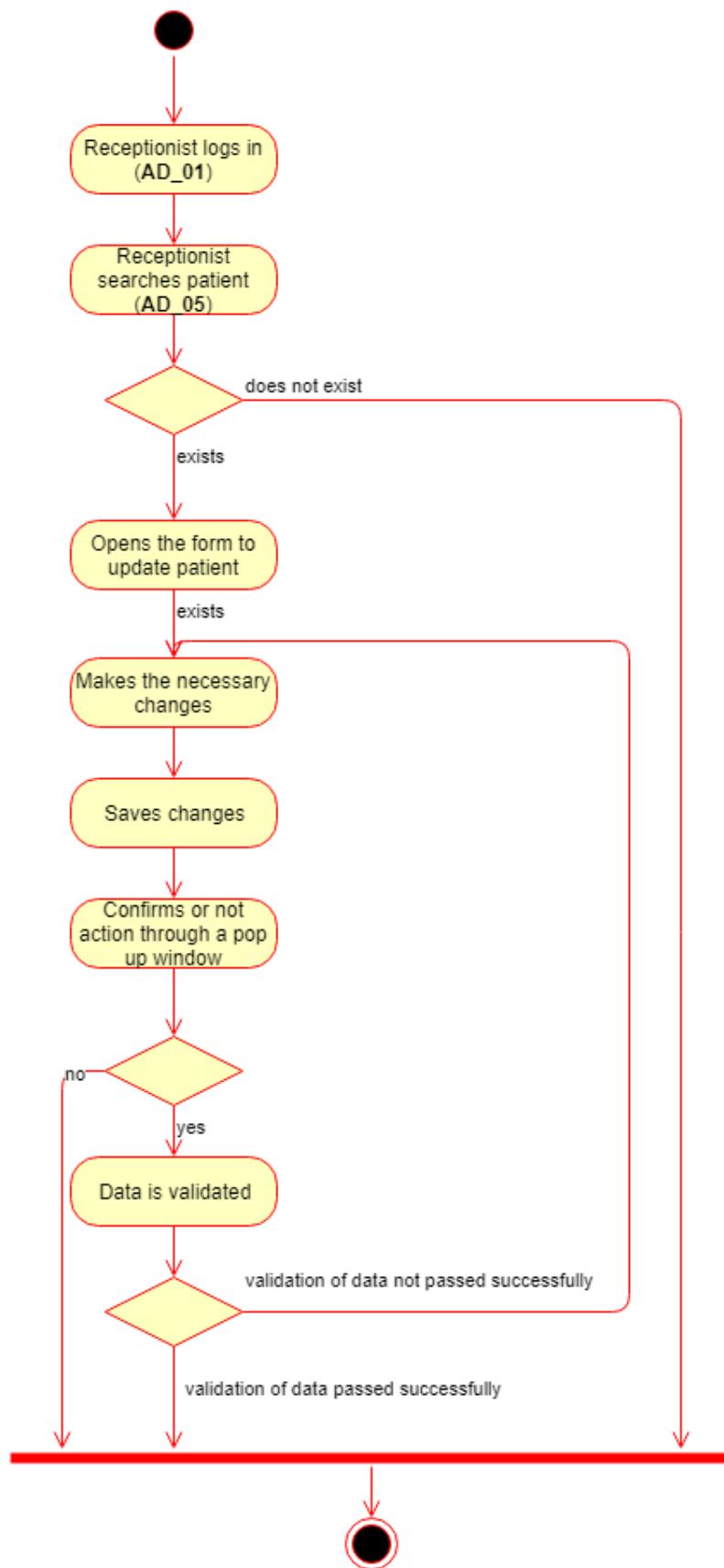
Receptionist opens
the list of the doctors

Enters name,
surname (or both) of
the doctor

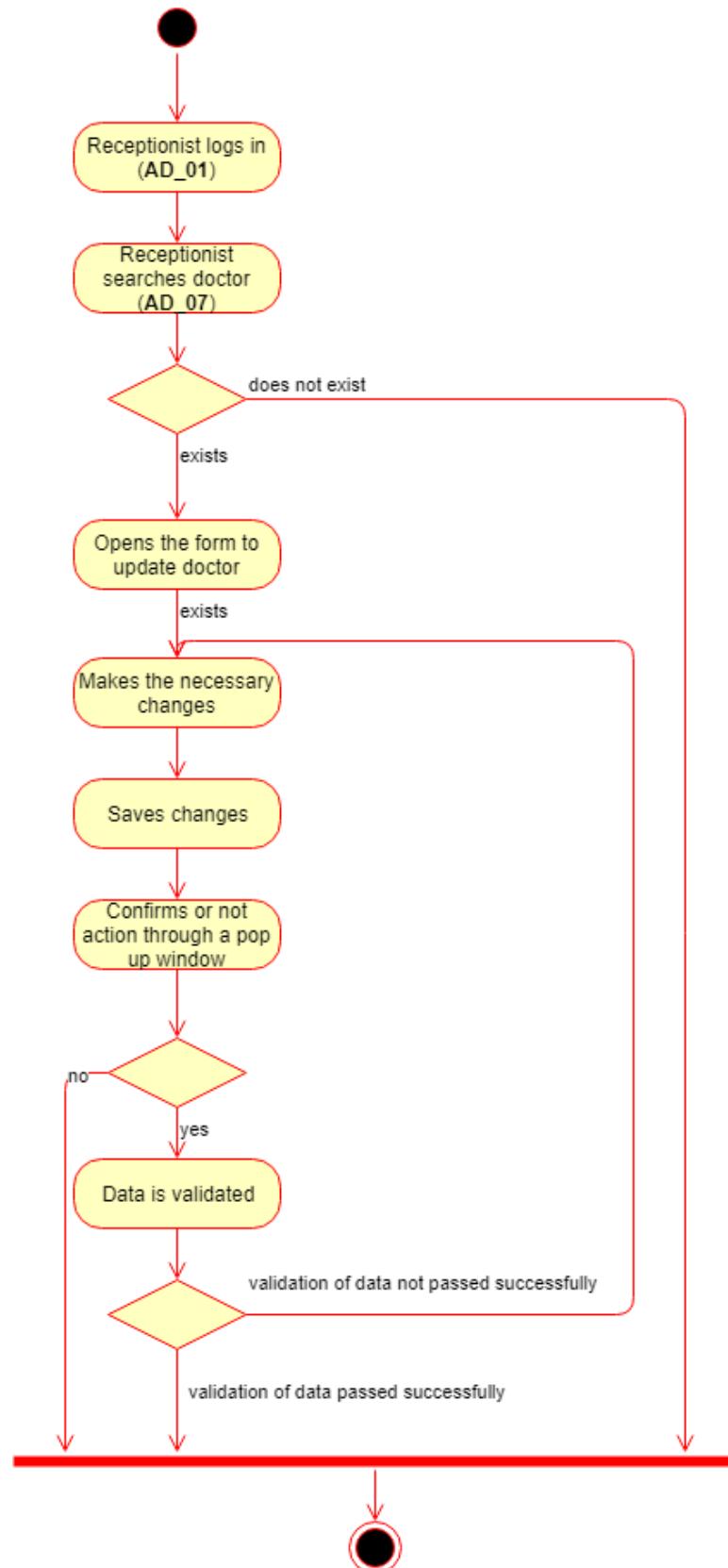
Result is shown



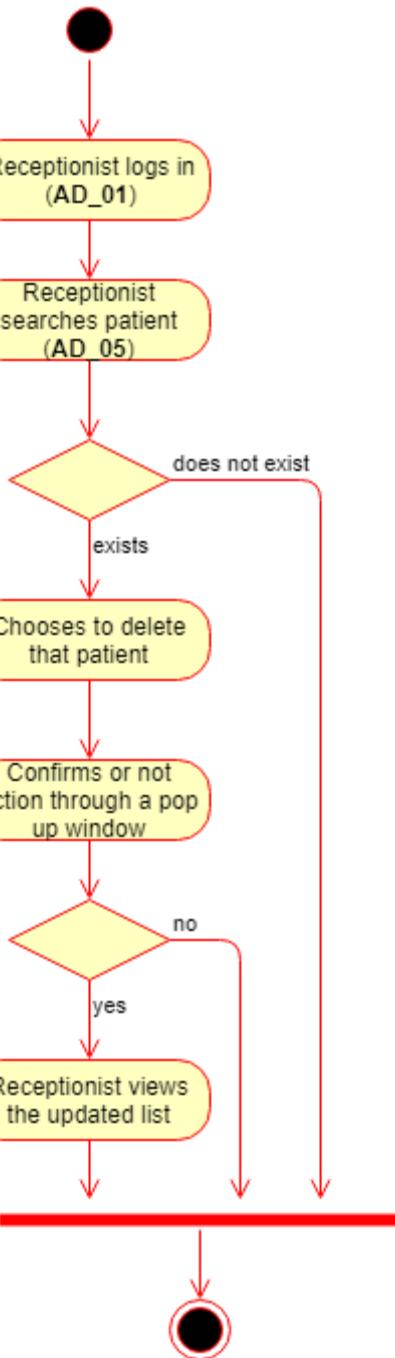
AD_07 – US_09 - Receptionist searches doctor



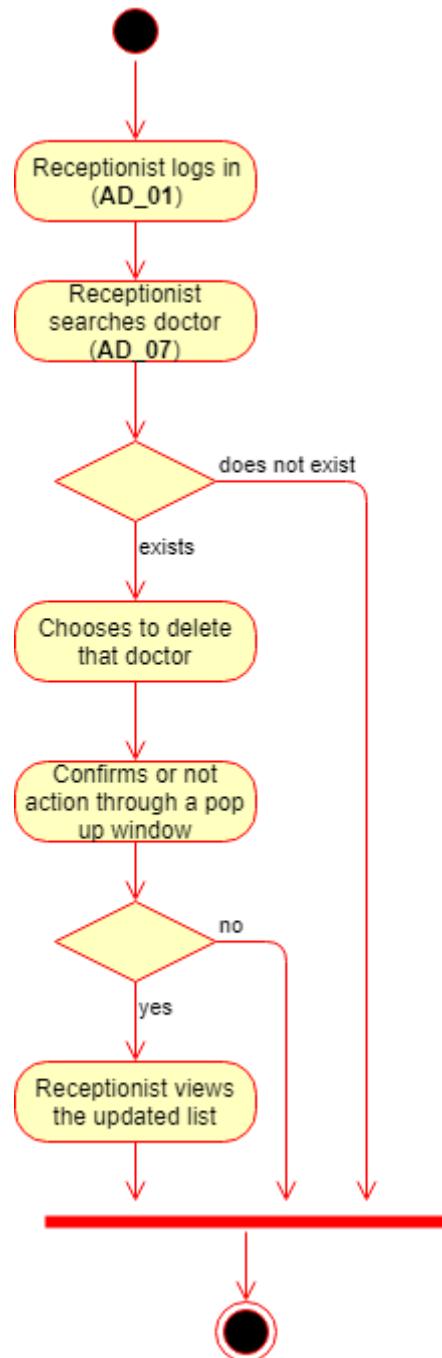
AD_08 – US_10 - Update patient



AD_09 – US_11 - Update doctor

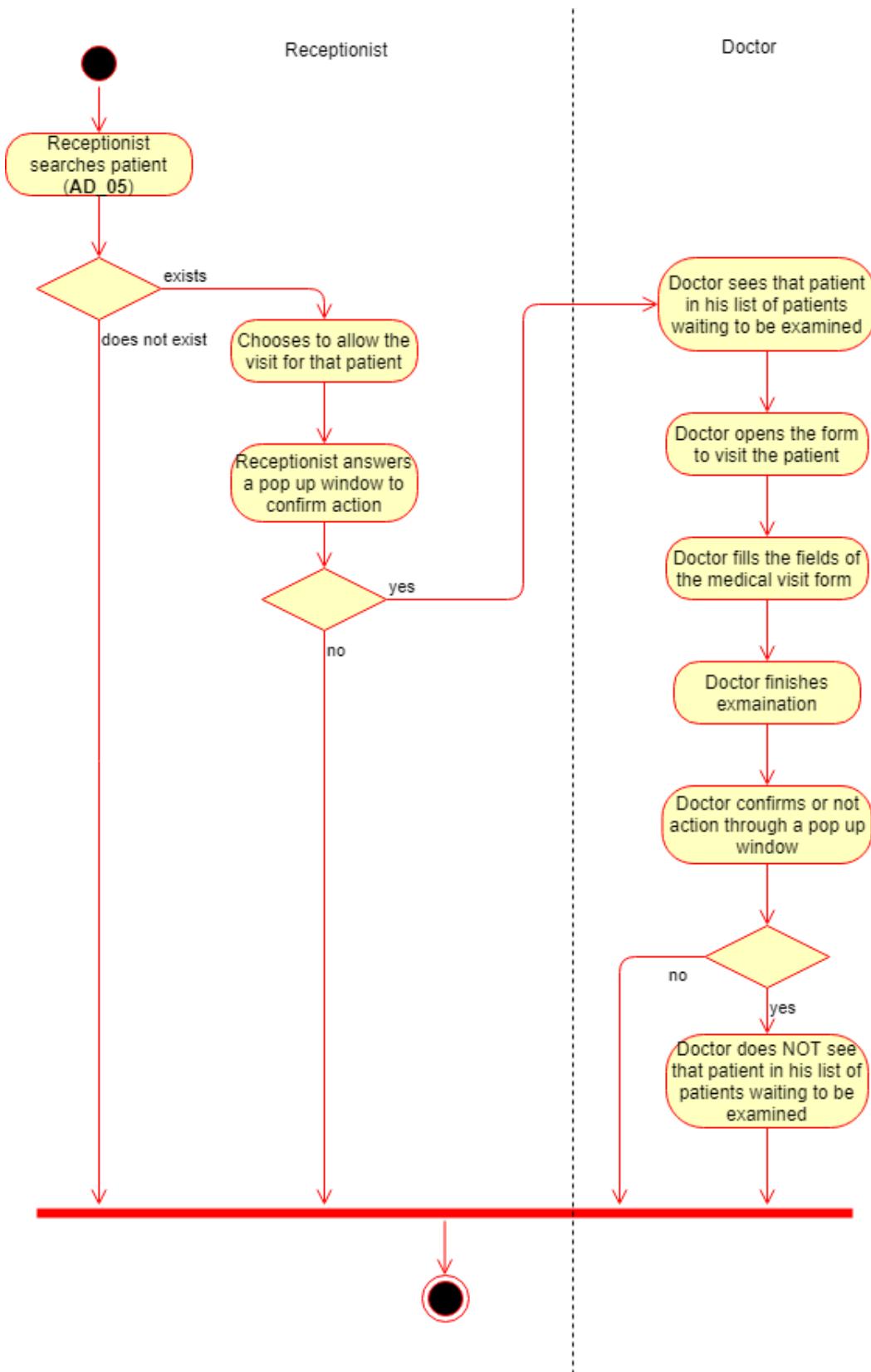


AD_10 – US_12/a - Delete patient

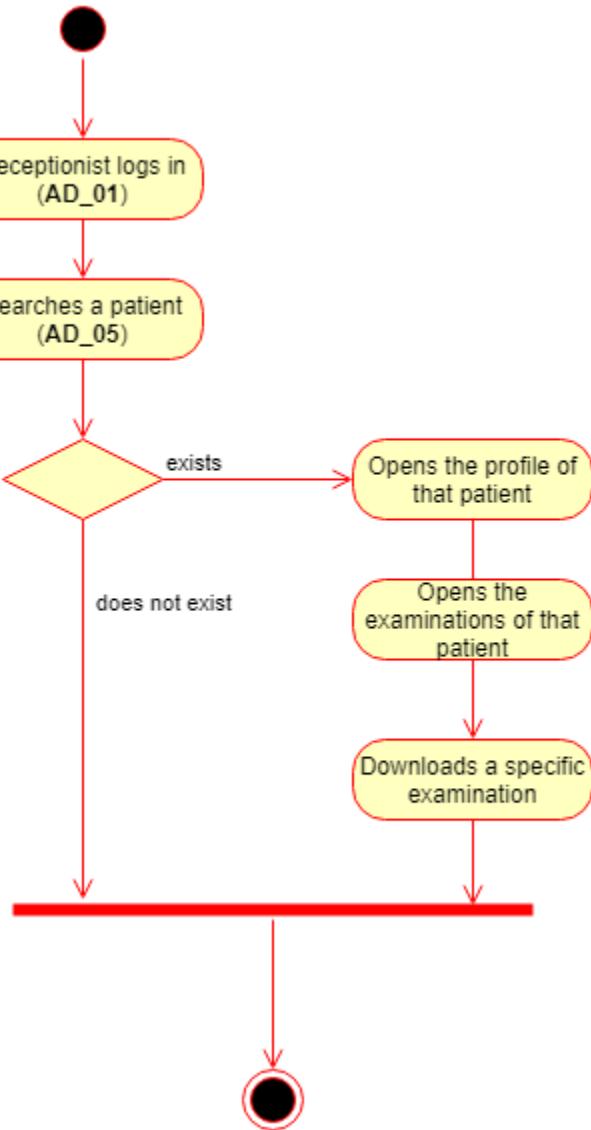


AD_11-US_12/b - Delete doctor

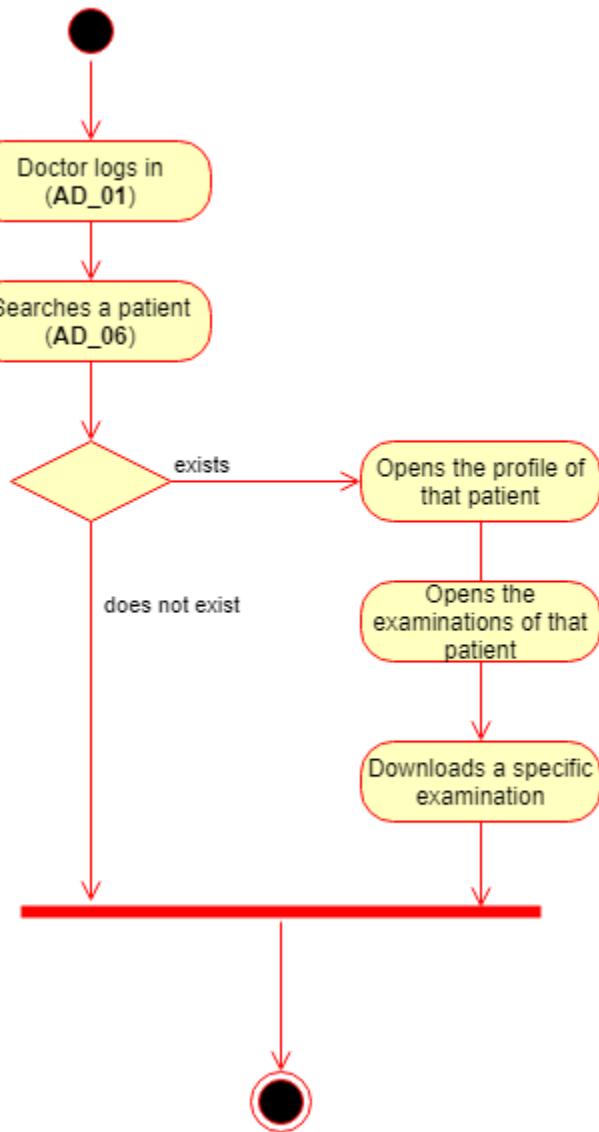
PMS Documentation



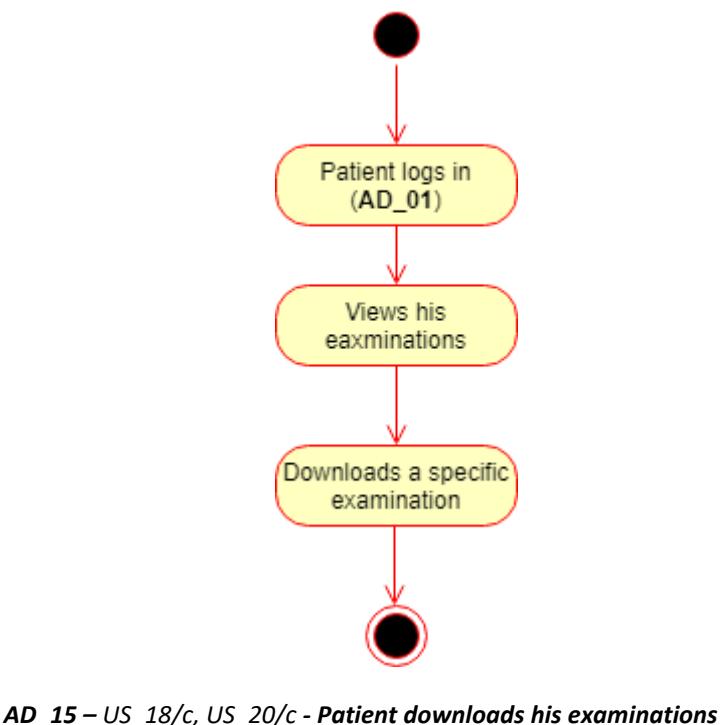
AD_12 – US_13, US_14, US_15 - Create visit



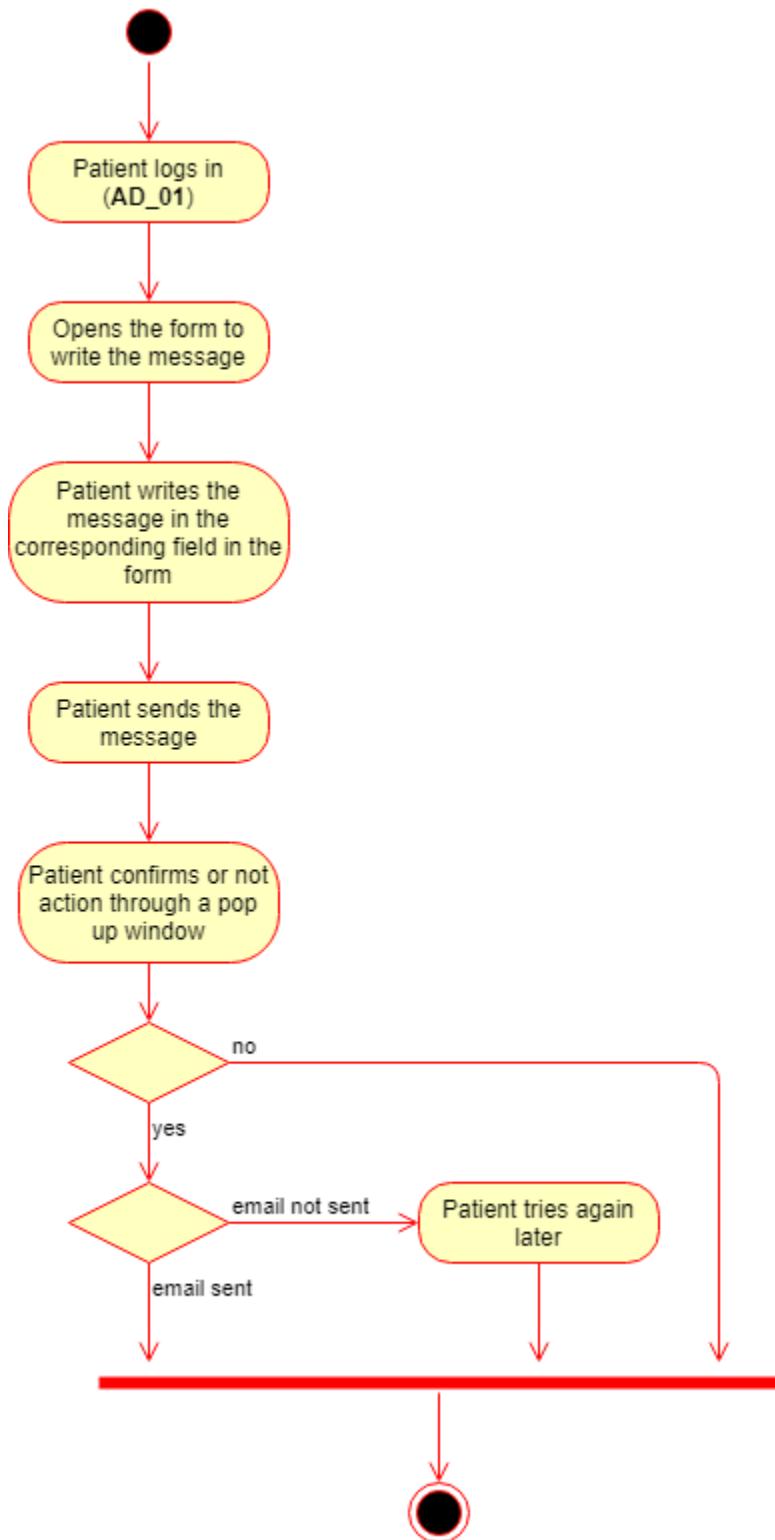
AD_13 – US_17/d, US_18/a – US_20/a - Receptionist downloads patient's examinations



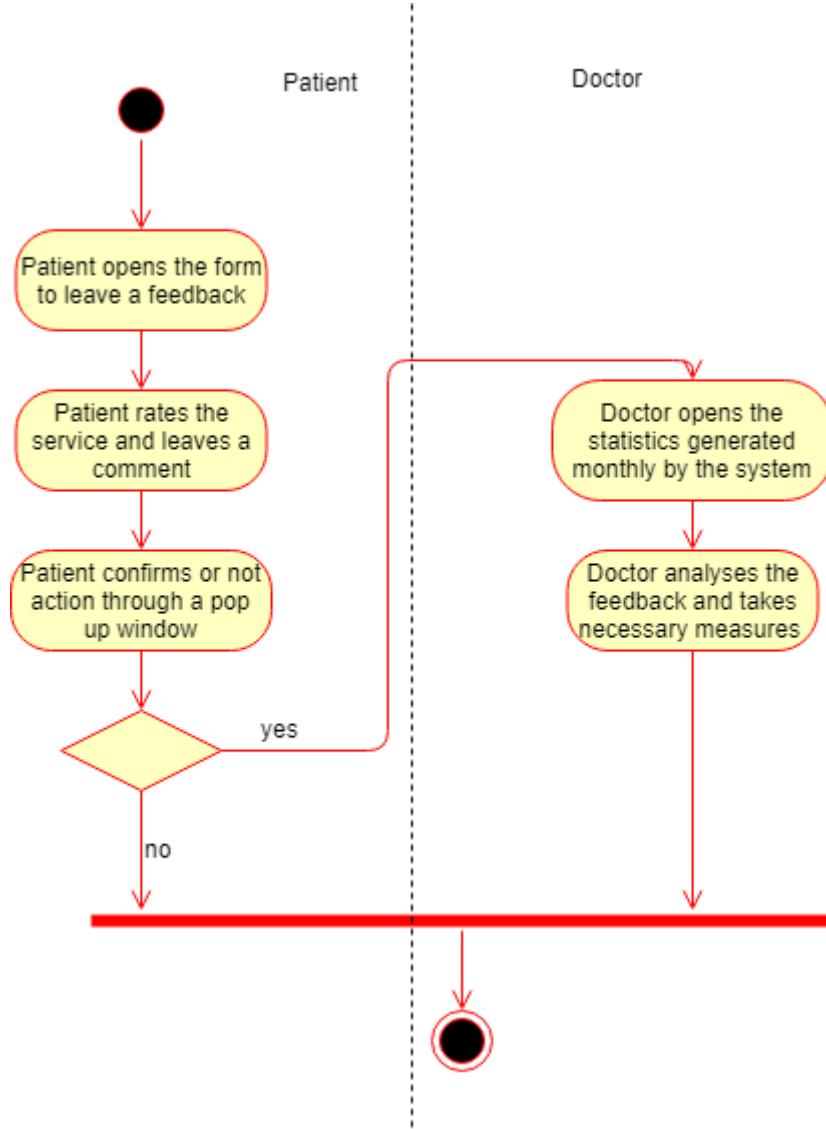
AD_14 – US_17/f, US_18/b, US_20/b - Doctor downloads patient's examinations



AD_15 – US_18/c, US_20/c - Patient downloads his examinations

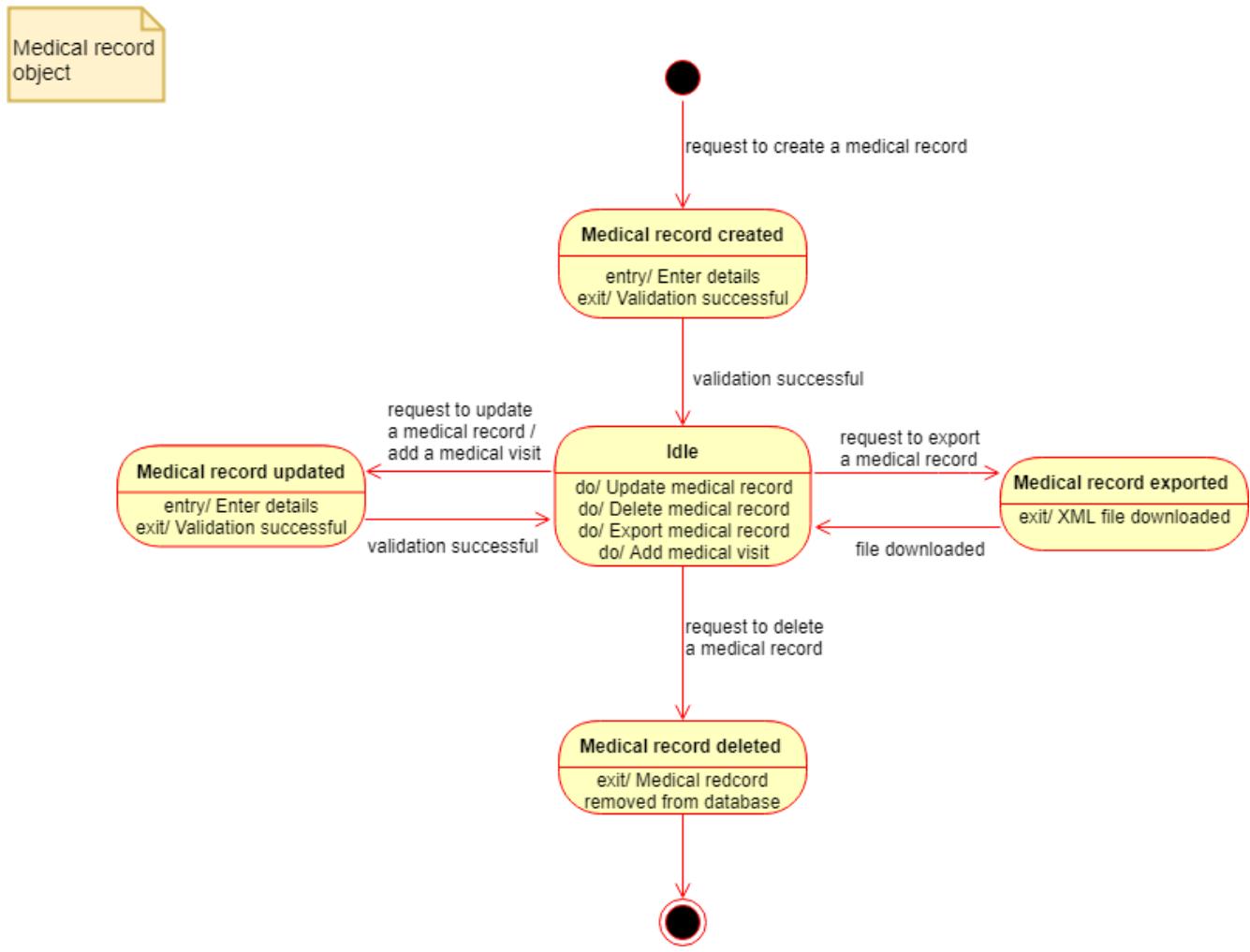


AC_16 – US_19 - Contact doctor

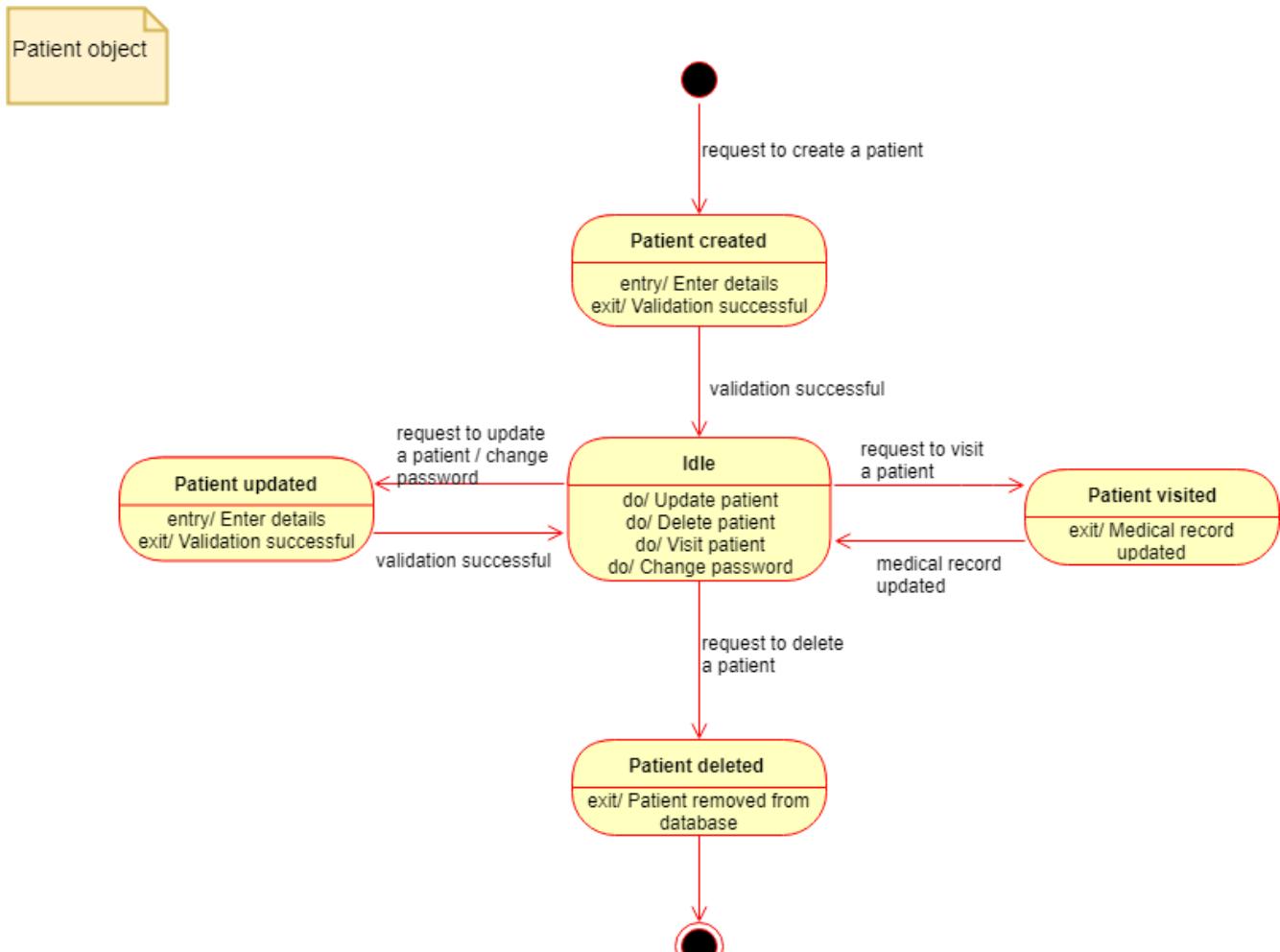


AD_17 – US_21, US_22 - Feedback

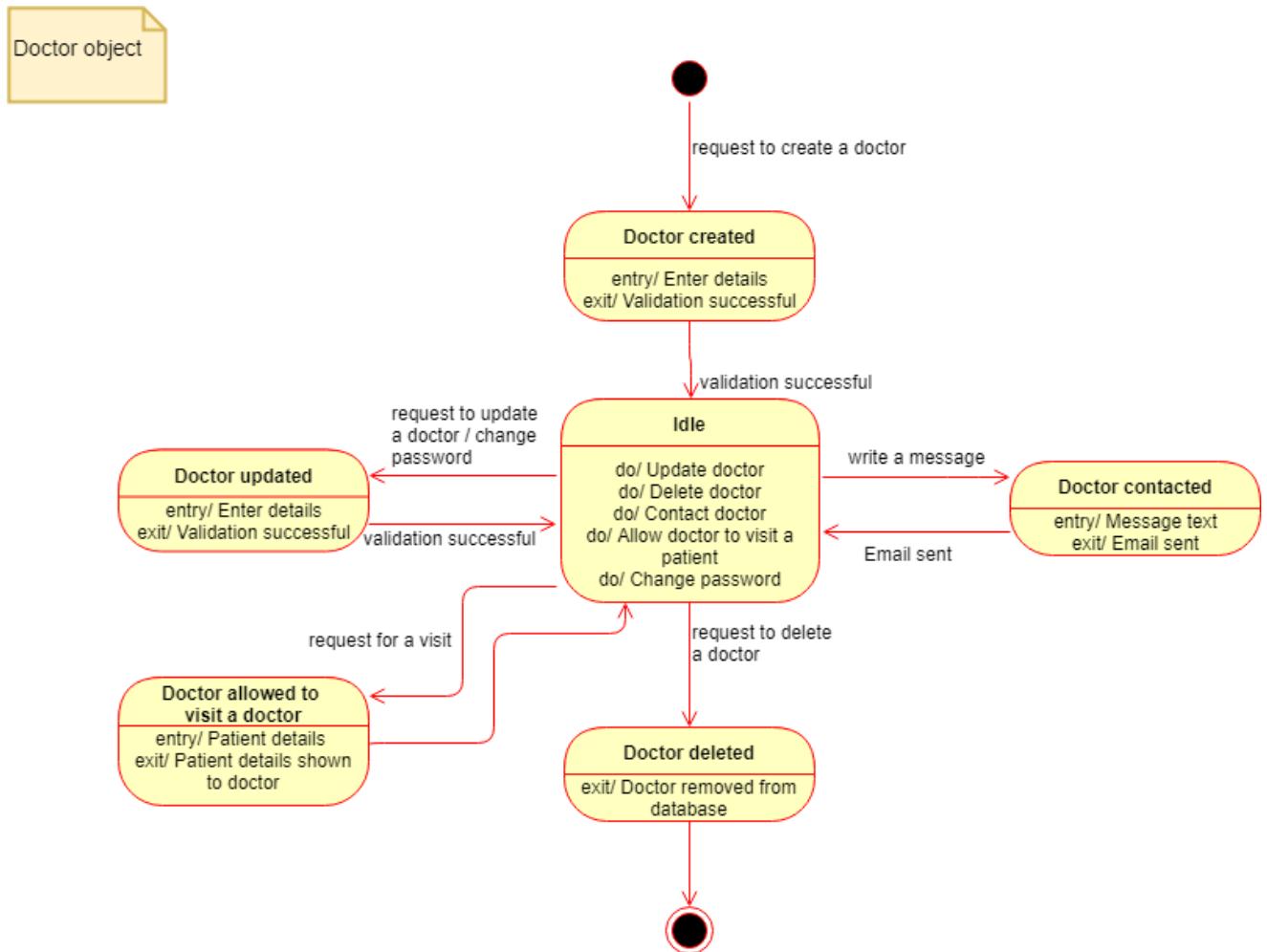
4.2.3 State Diagrams



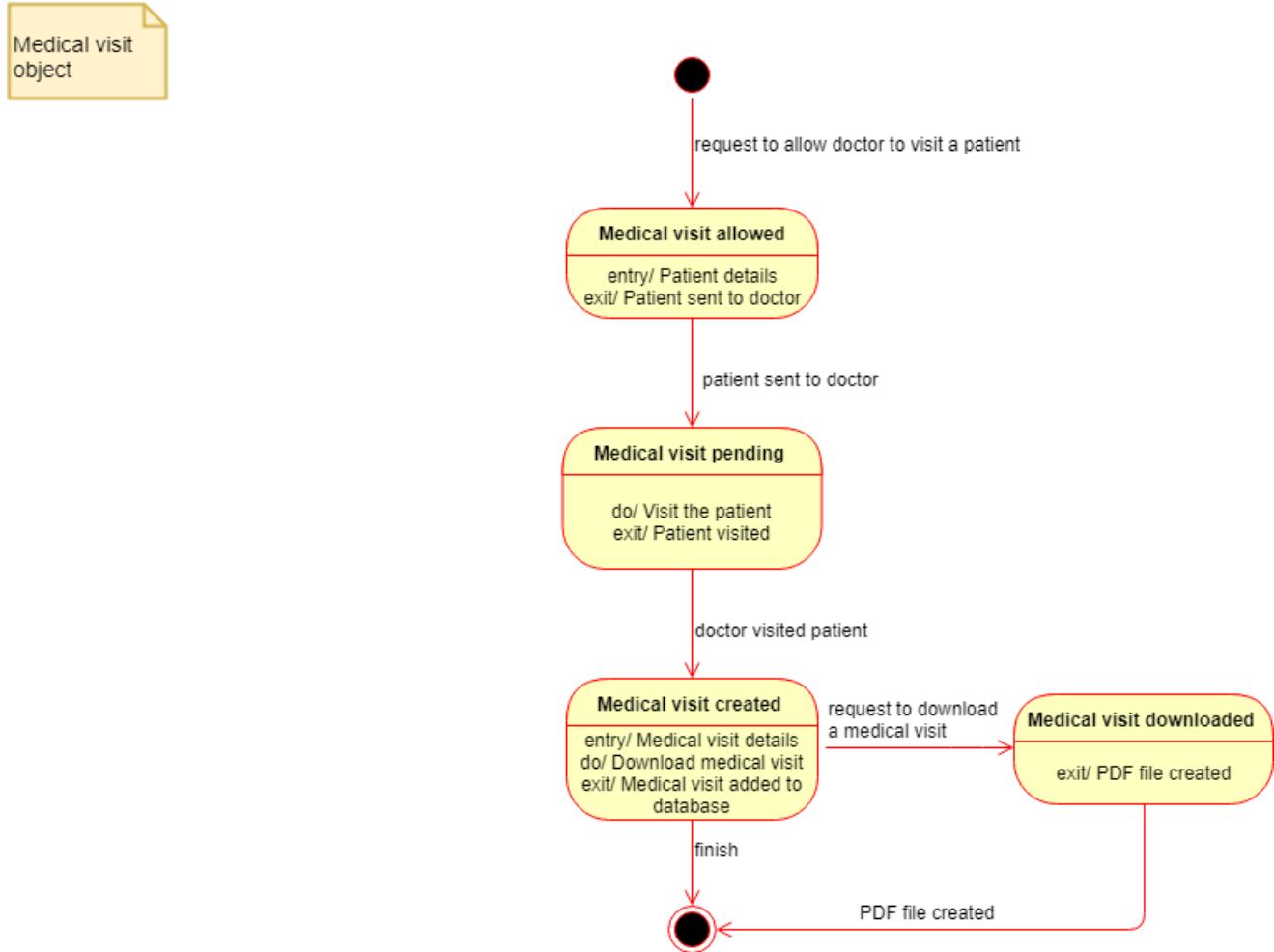
SD_01 – Medical record



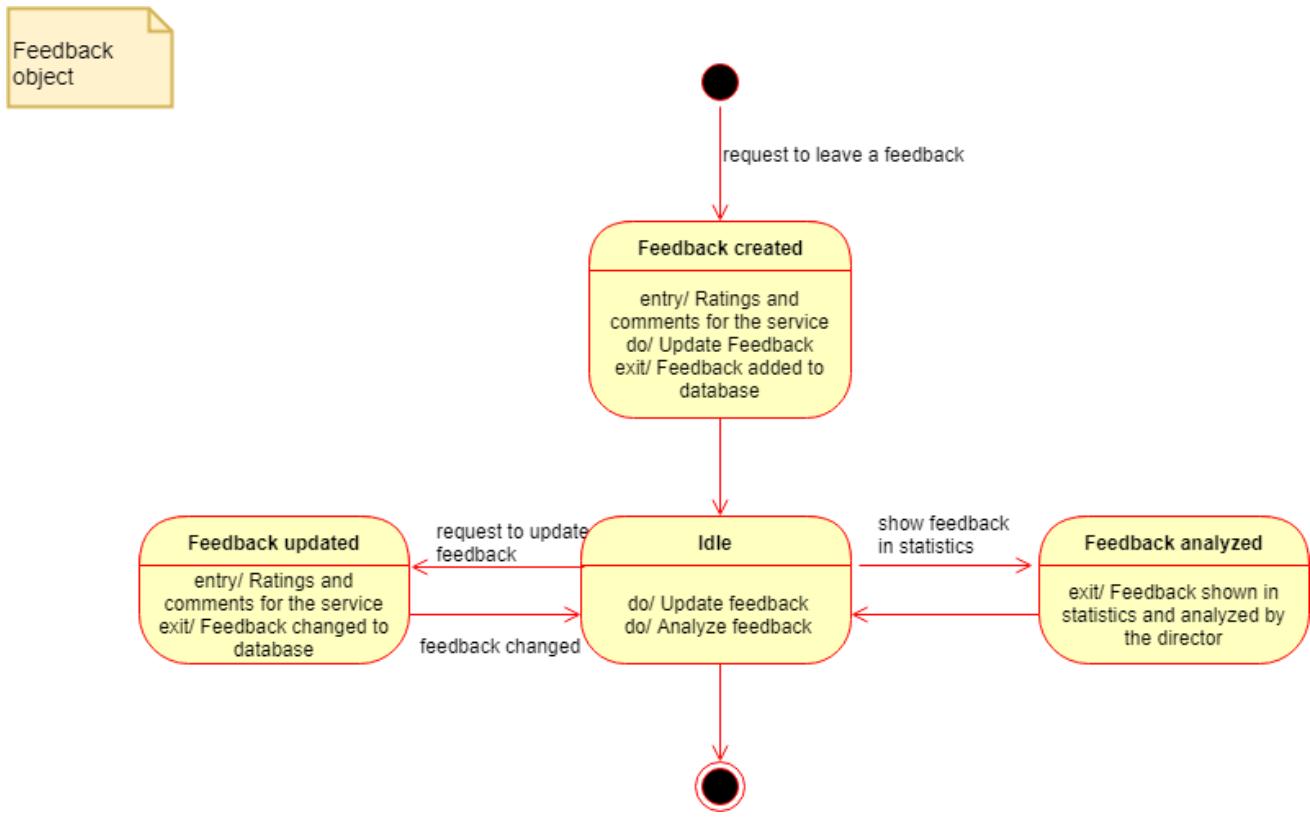
SD_02 – Patient



SD_03 – Doctor

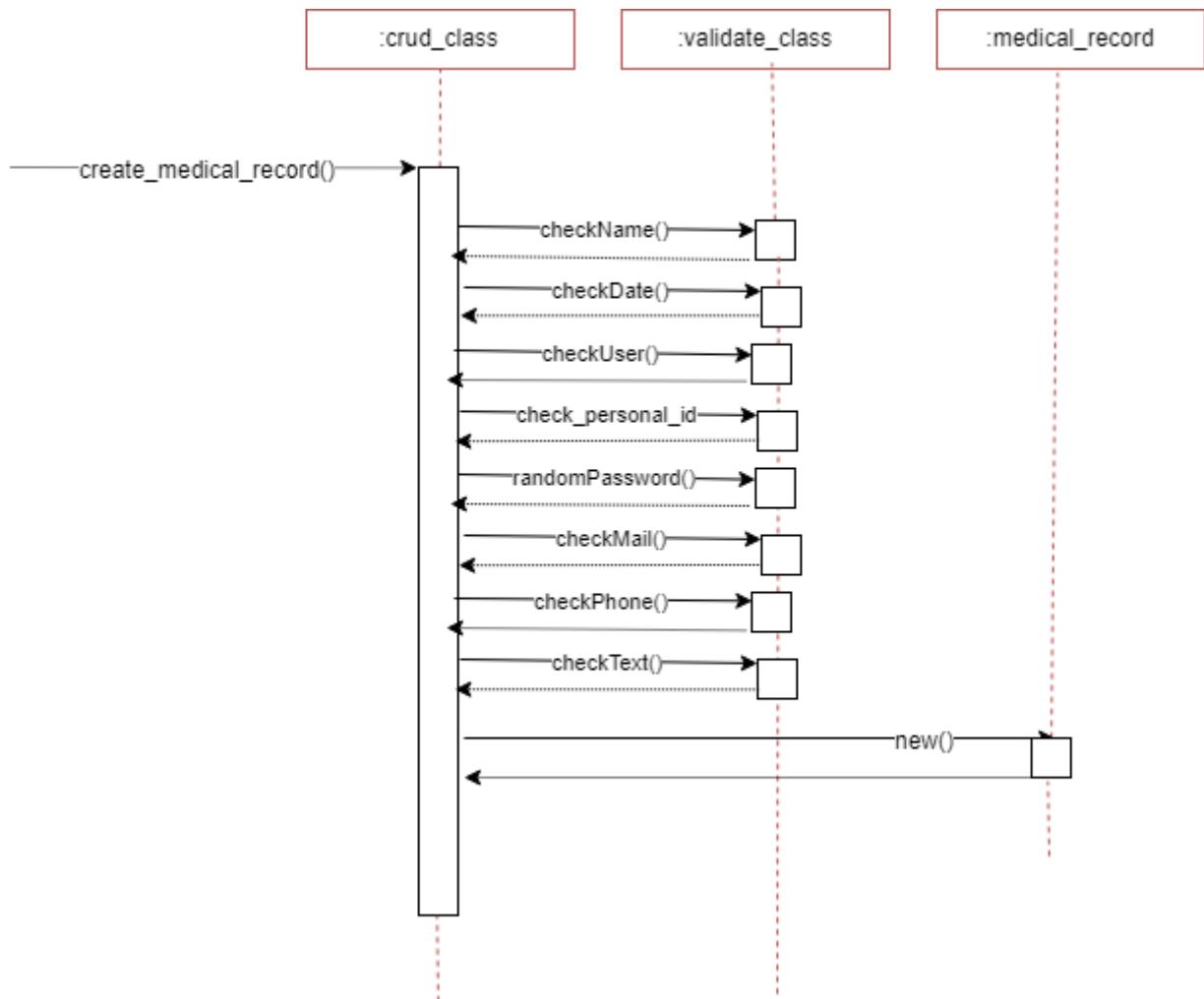


SD_04 – Medical visit

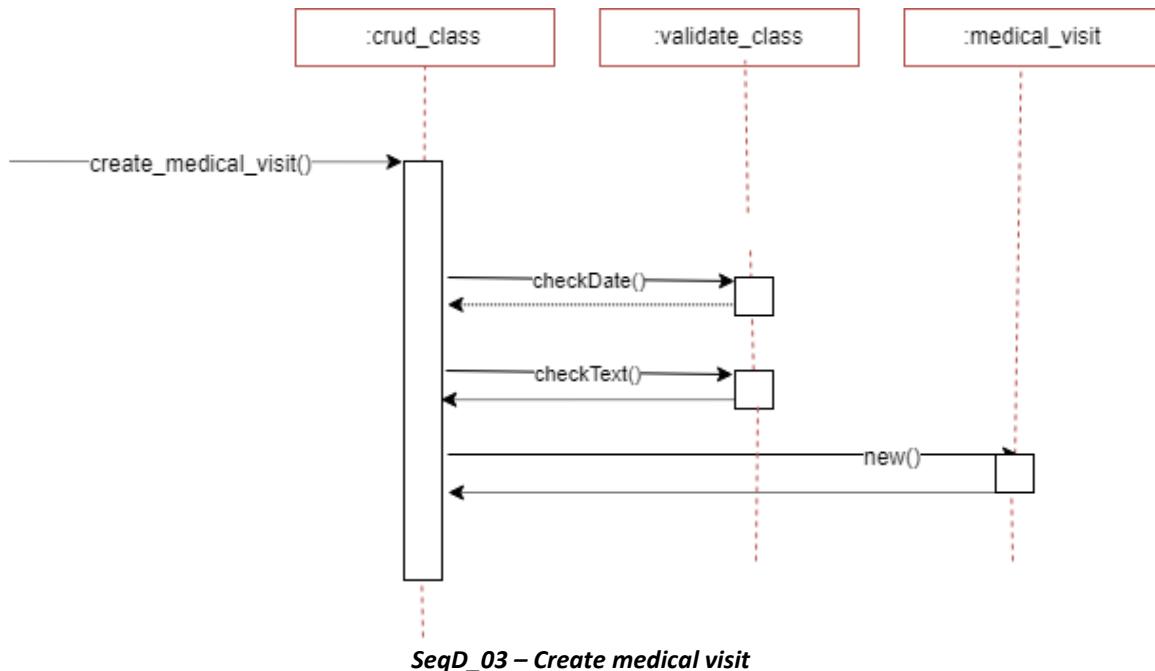
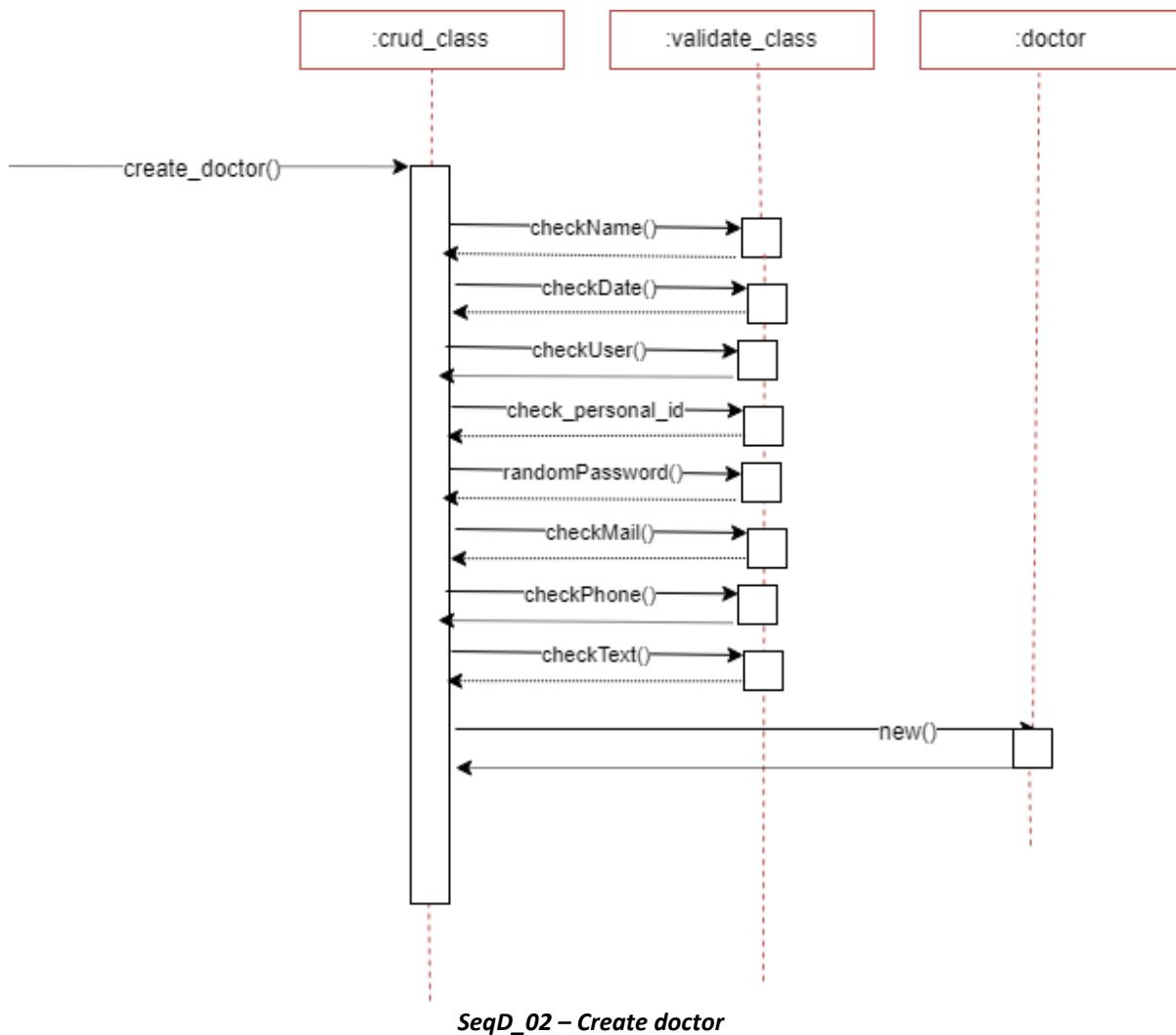


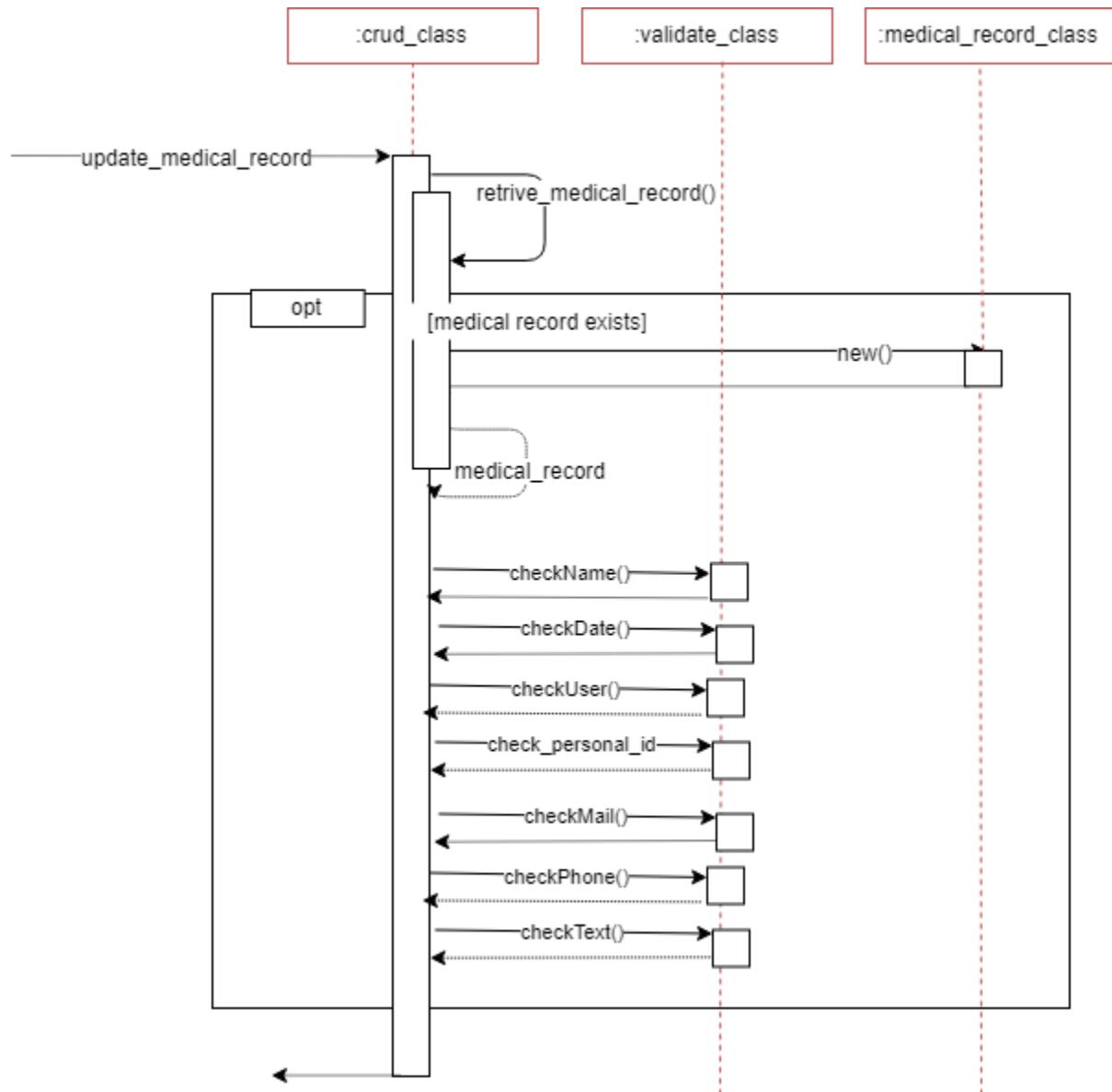
SD_05 – Feedback

4.2.4 Sequence Diagrams

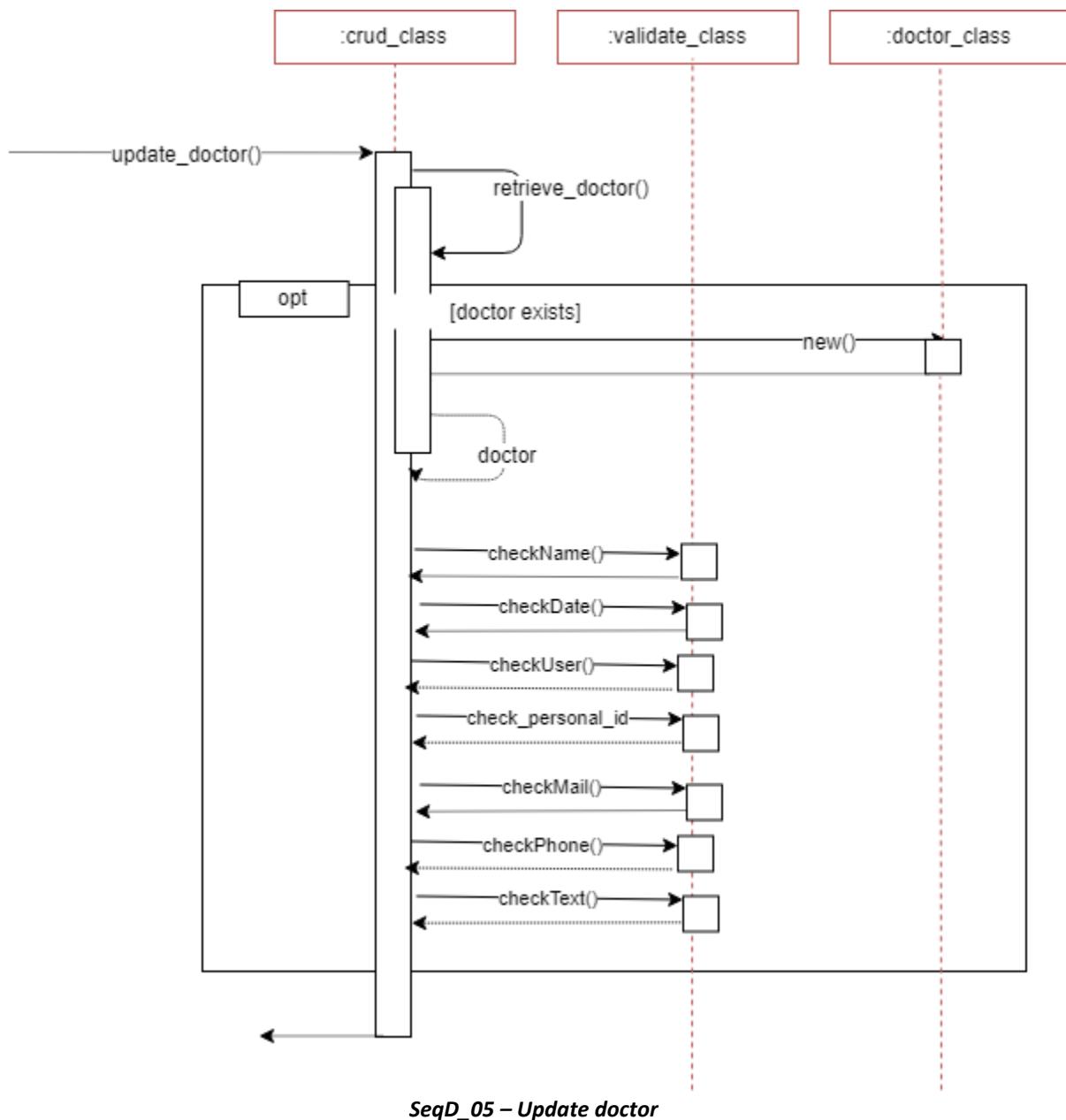


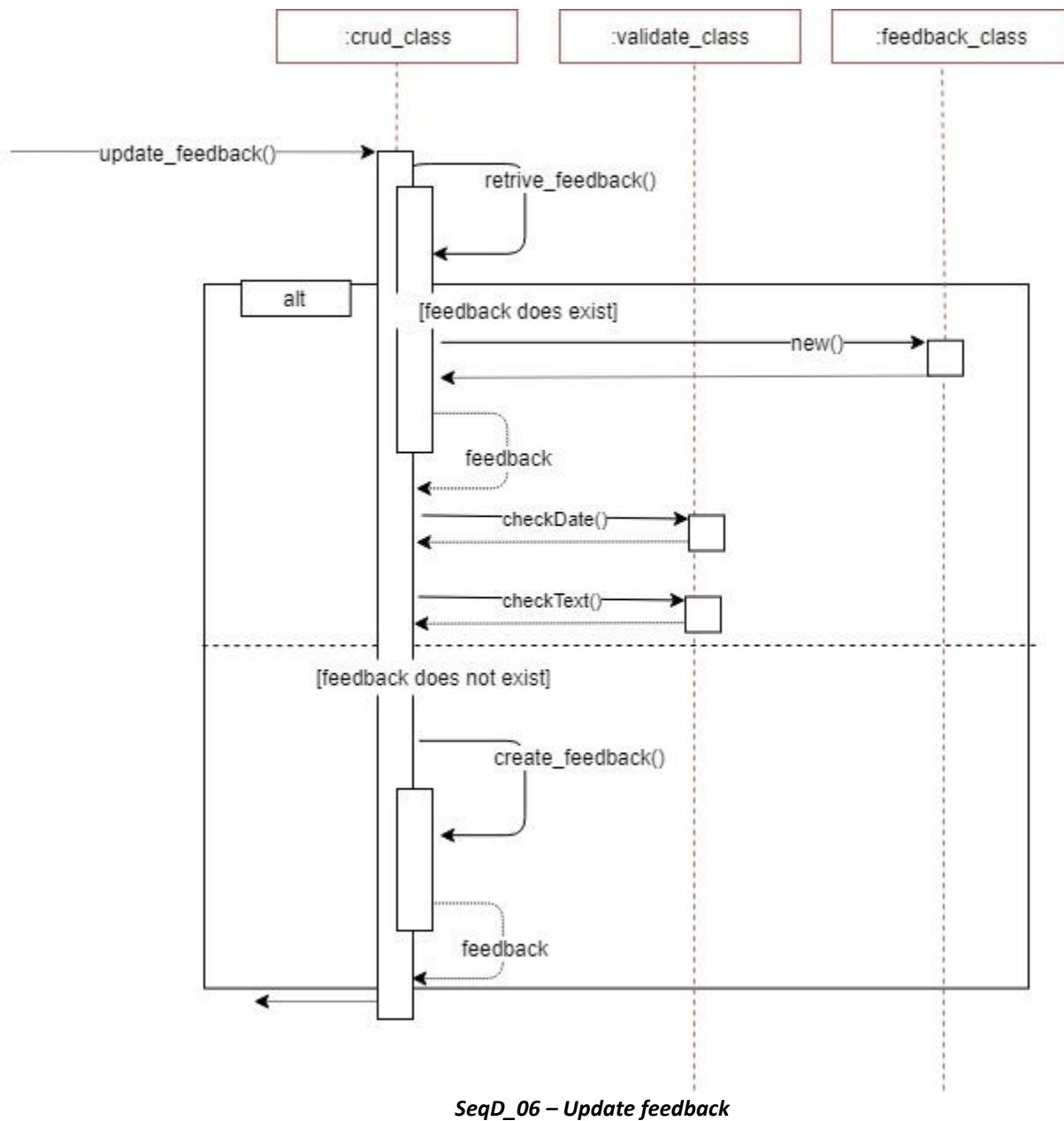
PMS Documentation



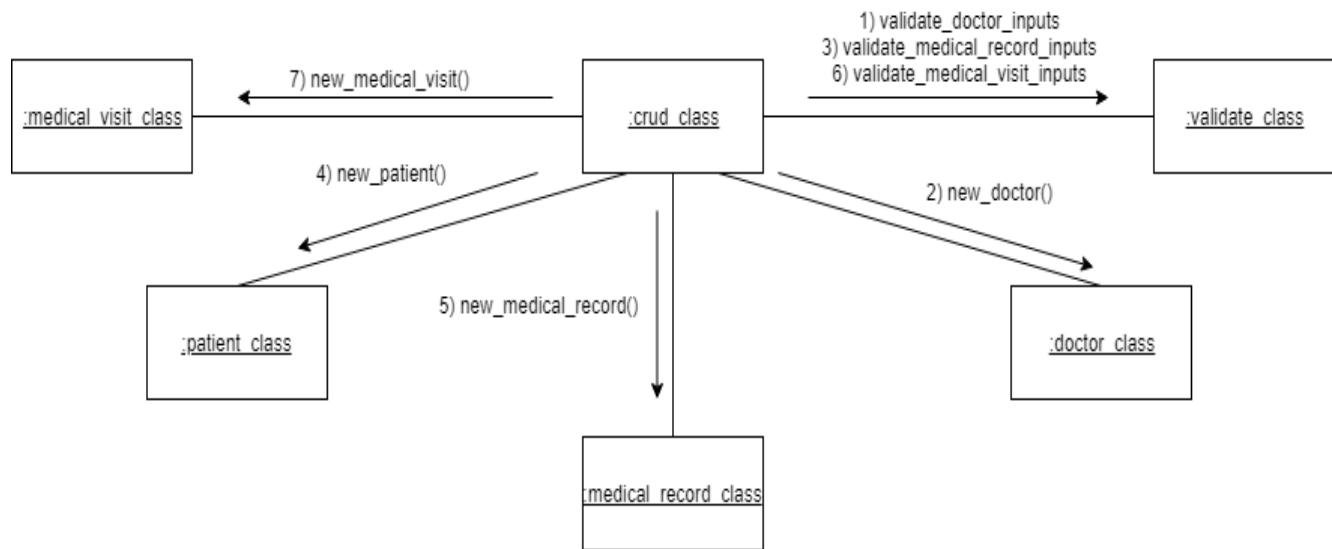


SeqD_04 – Update medical record

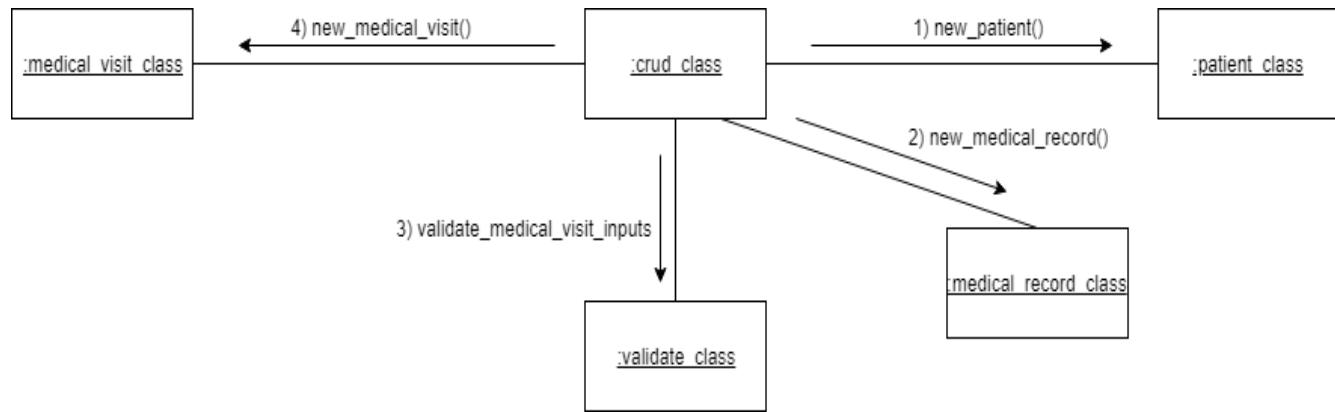




4.2.5 Collaboration Diagrams

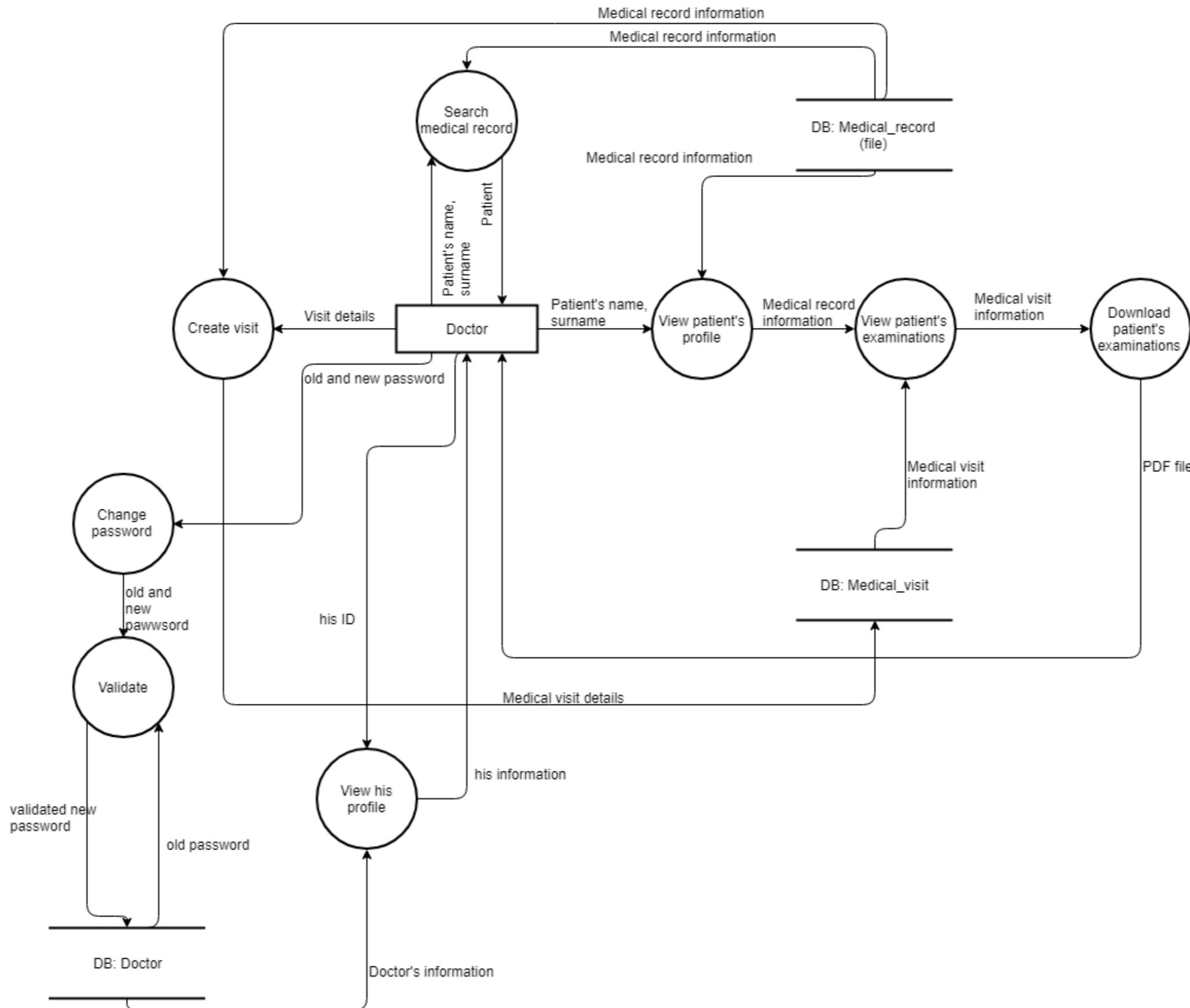


ColD_01 – SeqD_01, SeqD_02, SeqD_03 – Create visit when there does not exist a doctor and a patient

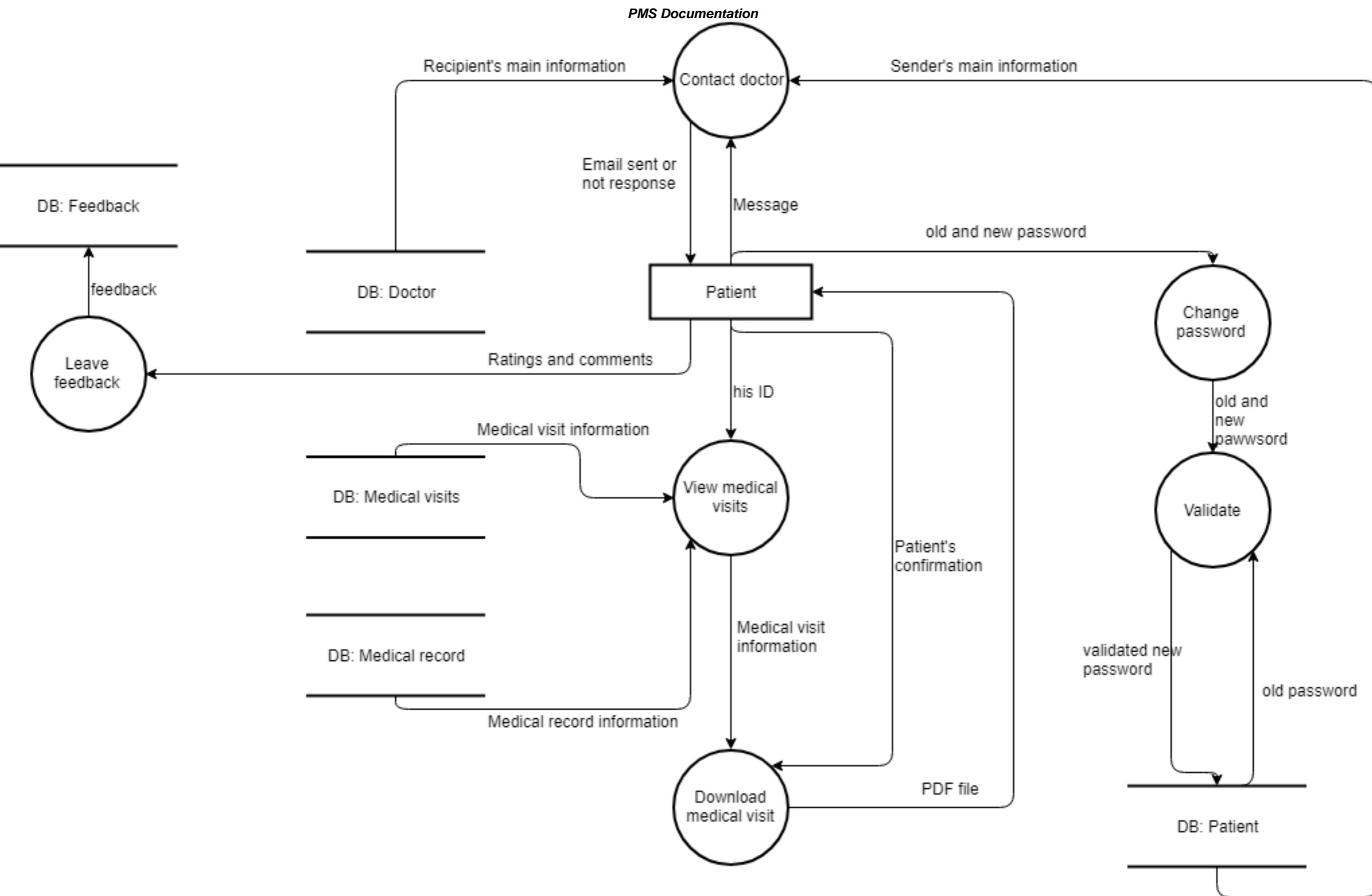


ColD_02 – SeqD_01, SeqD_02, SeqD_03 – Create visit when there exists a patient

4.3 Data Flow Diagrams

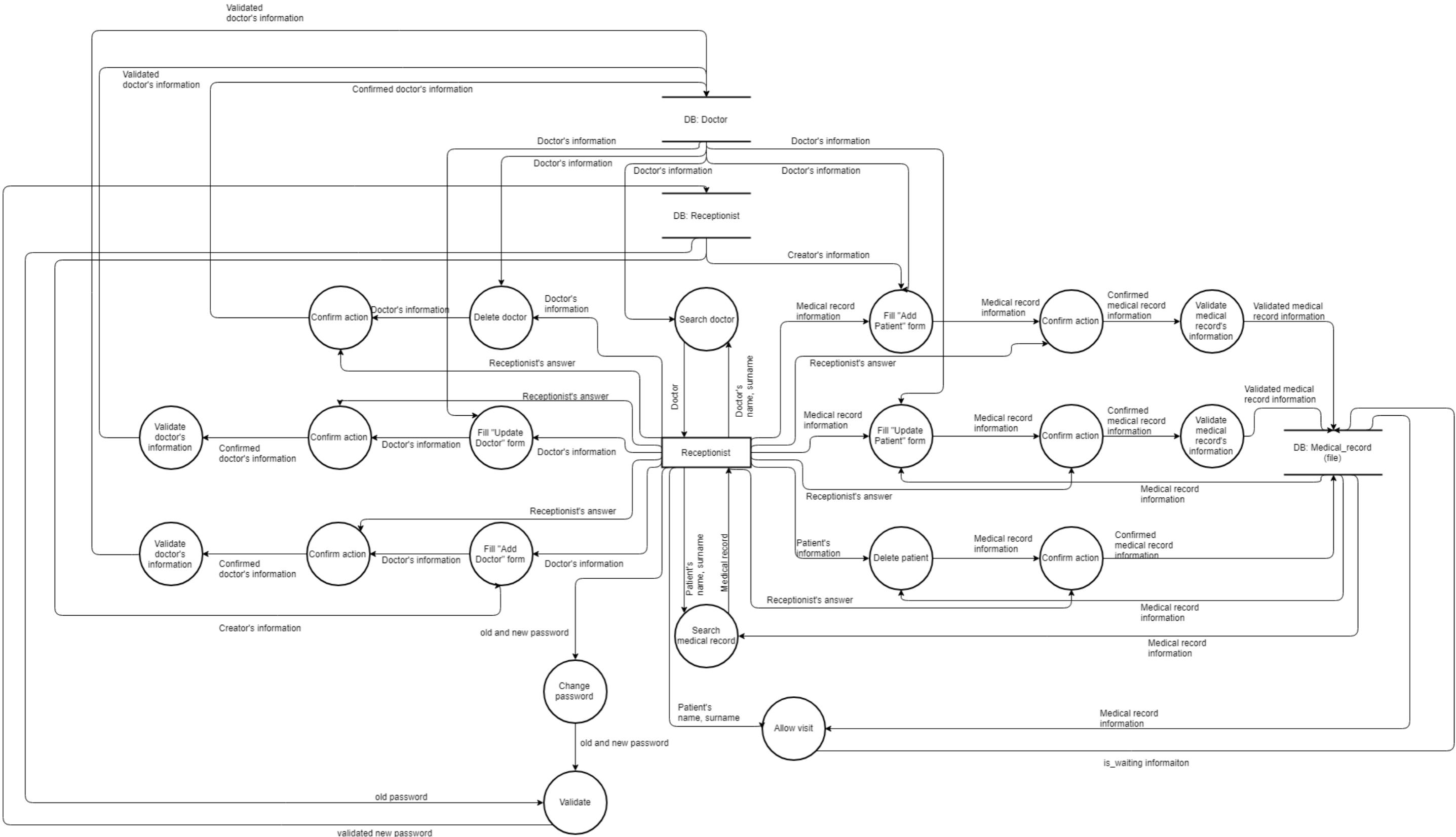


Data Flow Diagram 1 Doctor



Data Flow Diagram 2 Patient

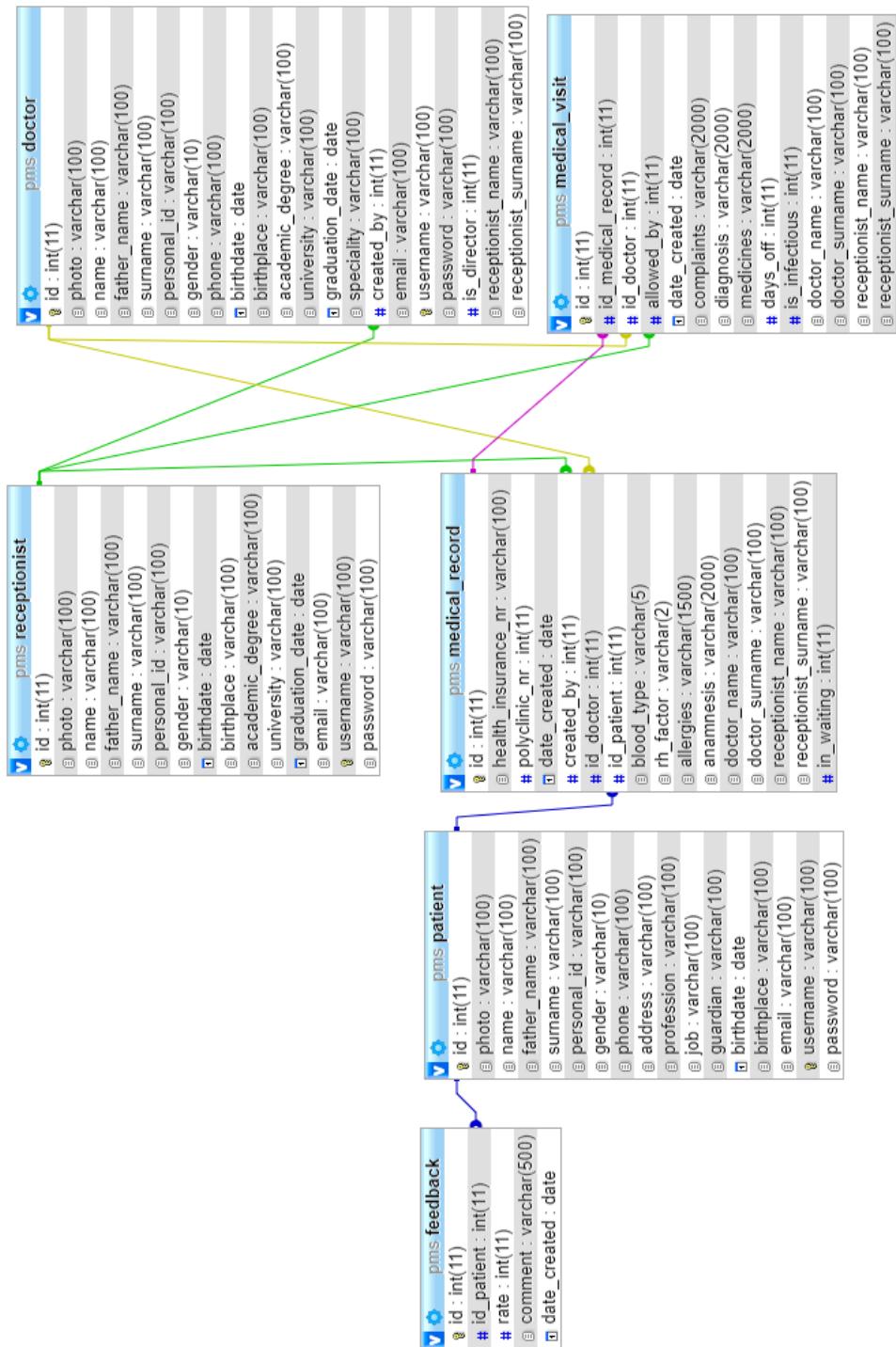
PMS Documentation



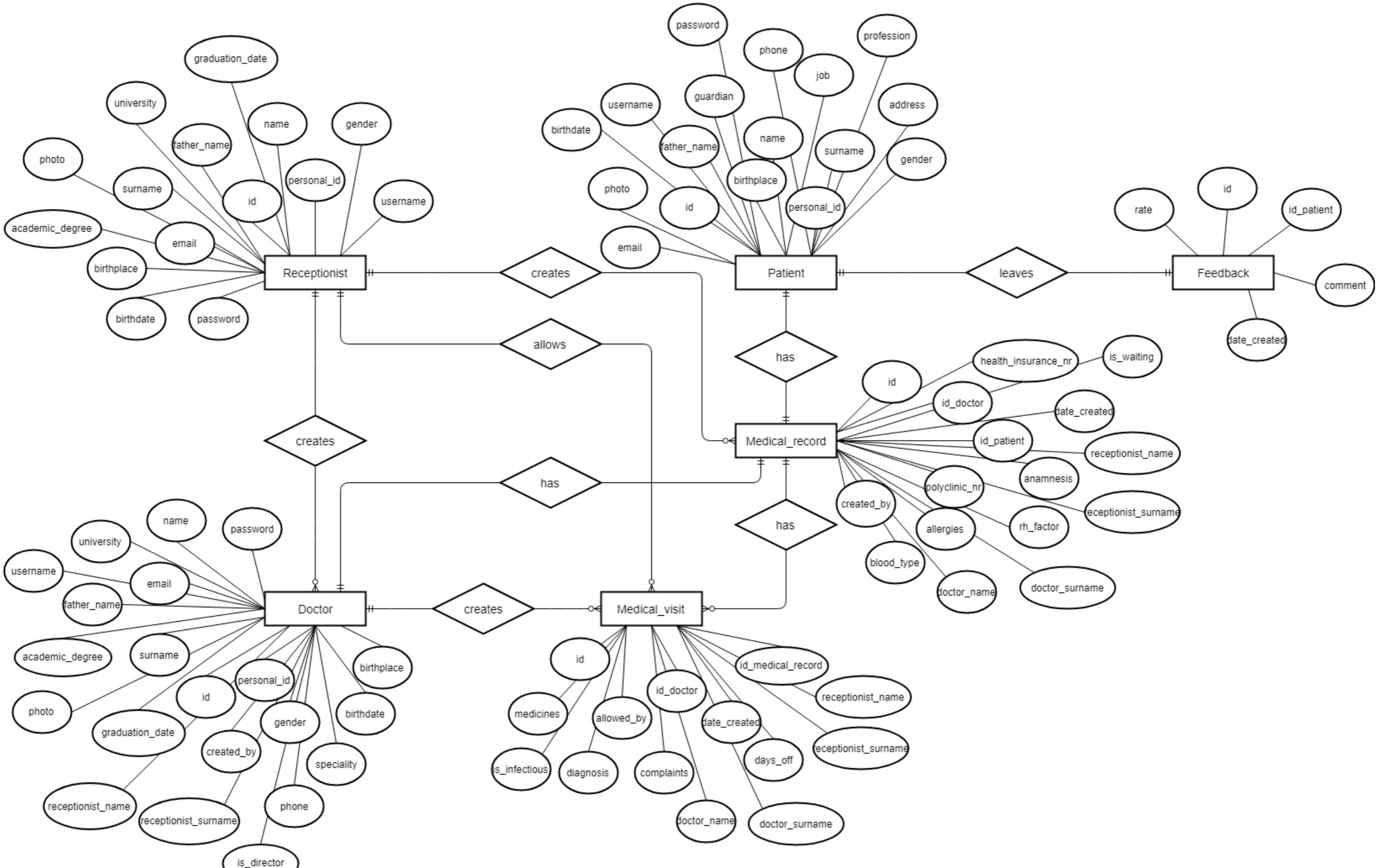
Data Flow Diagram 3 Receptionist

4.4 Entity Relation

4.4.1 Database Schema Design



4.4.2 Entity Relation Diagram



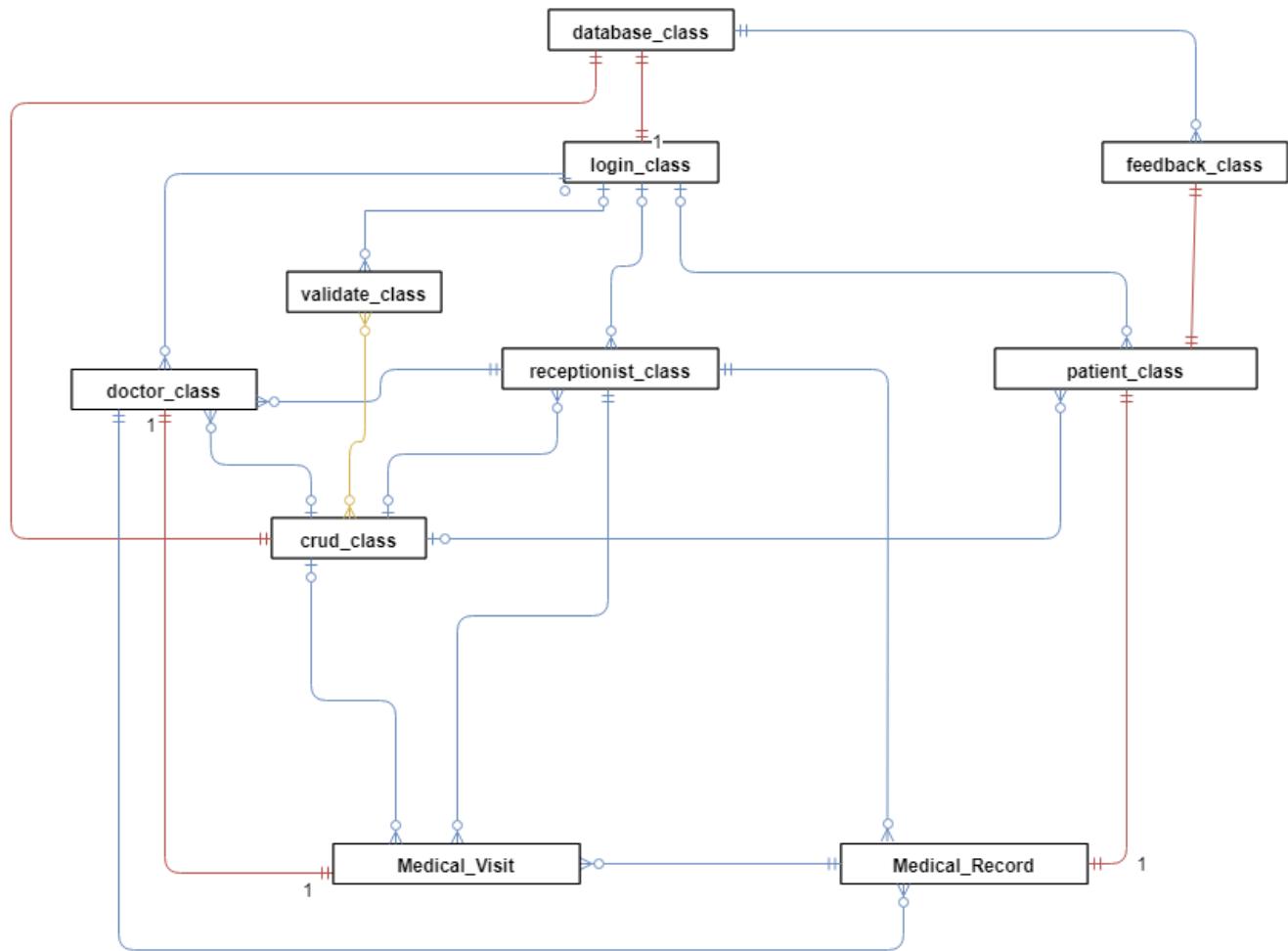
Entity Relation Diagram

4.5 Structural Diagrams

4.5.1 Class Diagram

doctor_class	receptionist_class	Medical_Record	Medical_Visit
+id +photo +name +father_name +surname +personal_id +gender +phone +birthdate +birthplace +academic_degree +university +graduation_date +specialty +created_by +email +username +password +is_director +receptionist_name +receptionist_surname	+id +photo +name +surname +father_name +personal_id +gender +birthdate +birthplace +academic_degree +university +graduation_date +email +username +password	+id +health_insurance_nr +polyclinic_nr +date_created +created_by +id_doctor +id_patient +blood_type +rh_factor +allergies +anamnesis +doctor_name +doctor_surname +receptionist_name +receptionist_surname +in_waiting	+id_medical_record +id_doctor +allowed_by +date_created +complaints +diagnosis +medicines +days_off +is_infectious +doctor_name +doctor_surname +receptionist_name +receptionist_surname
crud_class	validate_class	patient_class	database_class
+con +create_patient +retrieve_patient +update_patient +changePass_patient +create_medical_record +retrieve_medical_record +delete_medical_record +update_medical_record +create_feedback +retrieve_feedback +update_feedback +create_doctor +retrieve_doctor +delete_doctor +update_doctor +changePass_doctor +create_medical_visit +retrieve_receptionist +changePass_receptionist	+checkName +checkGuardian +checkUser +check_personal_id +check_insurance +checkPass +randomPassword +checkMail +checkPhone +checkText +checkDate	+id +photo +name +father_name +surname +personal_id +gender +phone +address +profession +job +guardian +birthdate +birthplace +email +username +password	+download_examinations() +import_medical_record() +create_medical_record() +search_medical_record() +update_medical_record() +connect +disconnect
	login_class		feedback_class
	+login_receptionist +login_doctor +login_patient		+id +id_patient +rate +comment +date_created

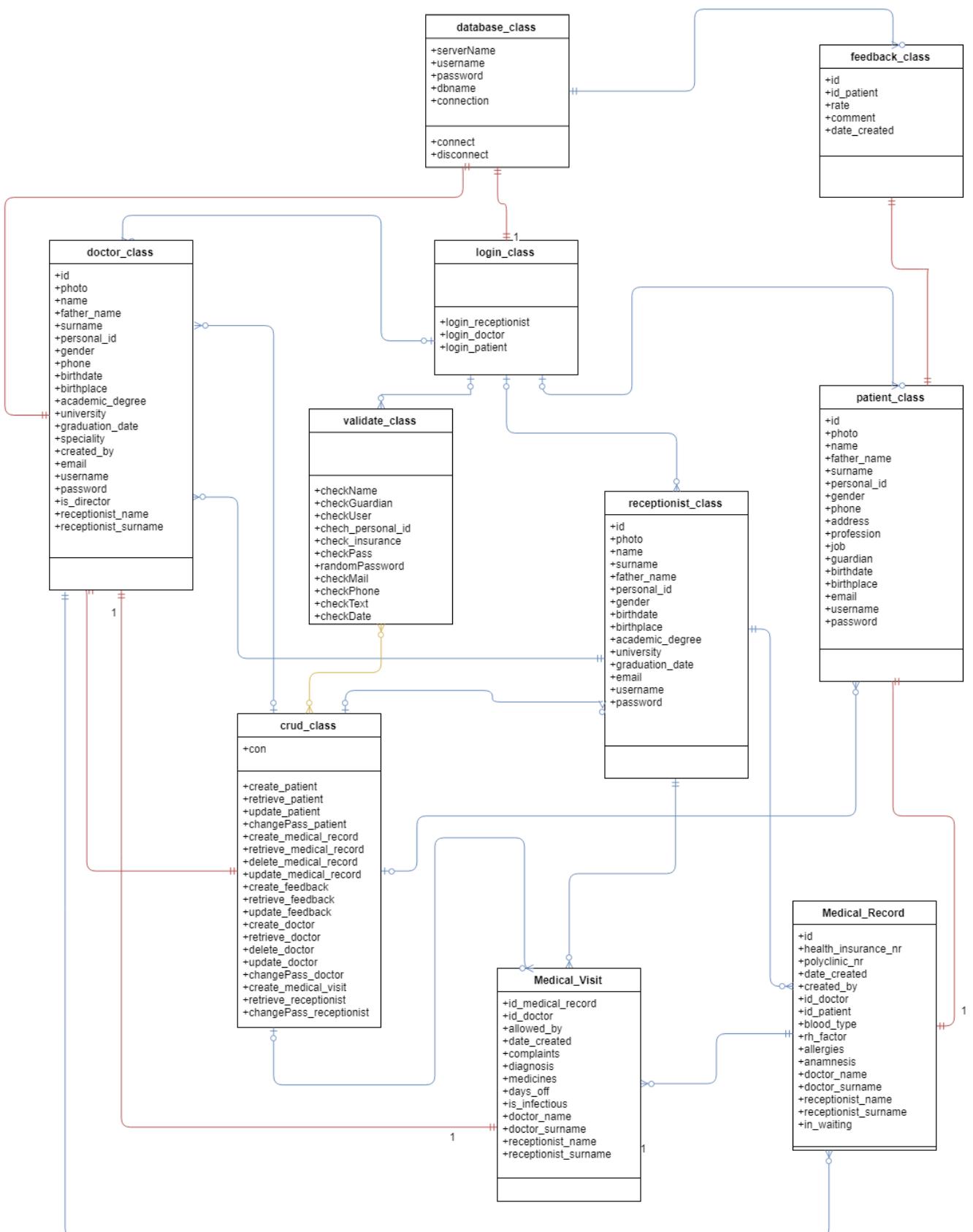
CD_01 – Attributes and methods list for each class



1

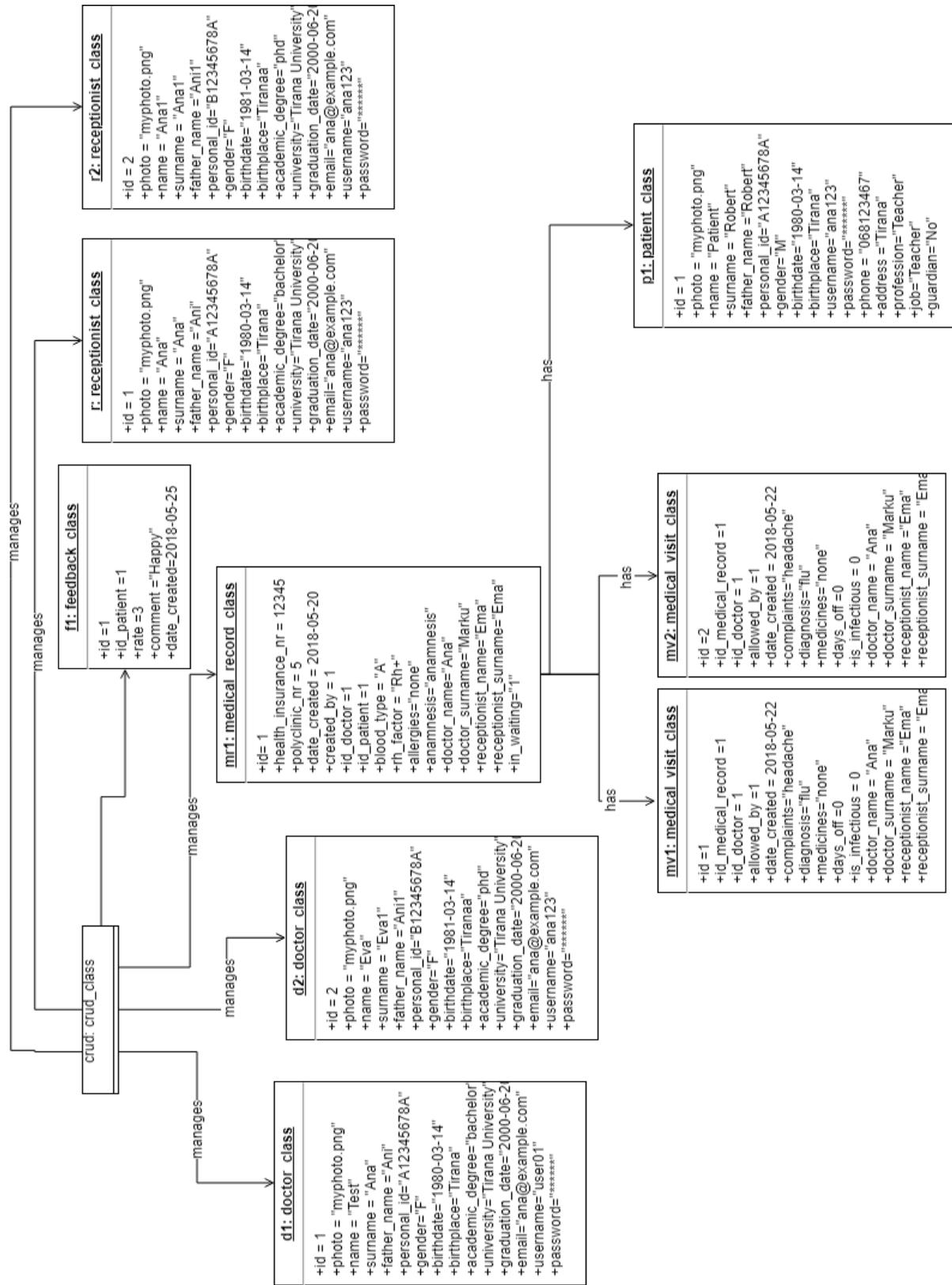
CD_02 – Relation between classes

PMS Documentation



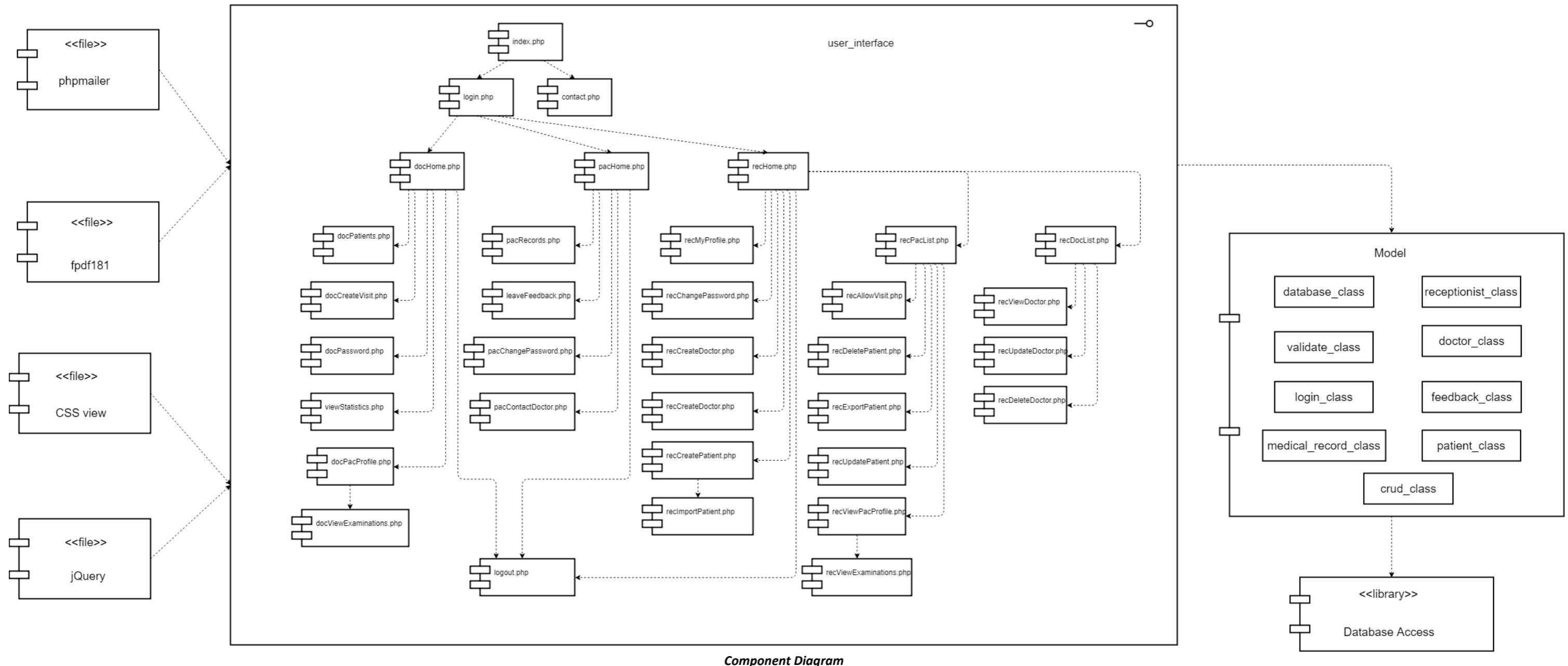
CD_03 – Complete class diagram

4.5.2 Object Diagrams

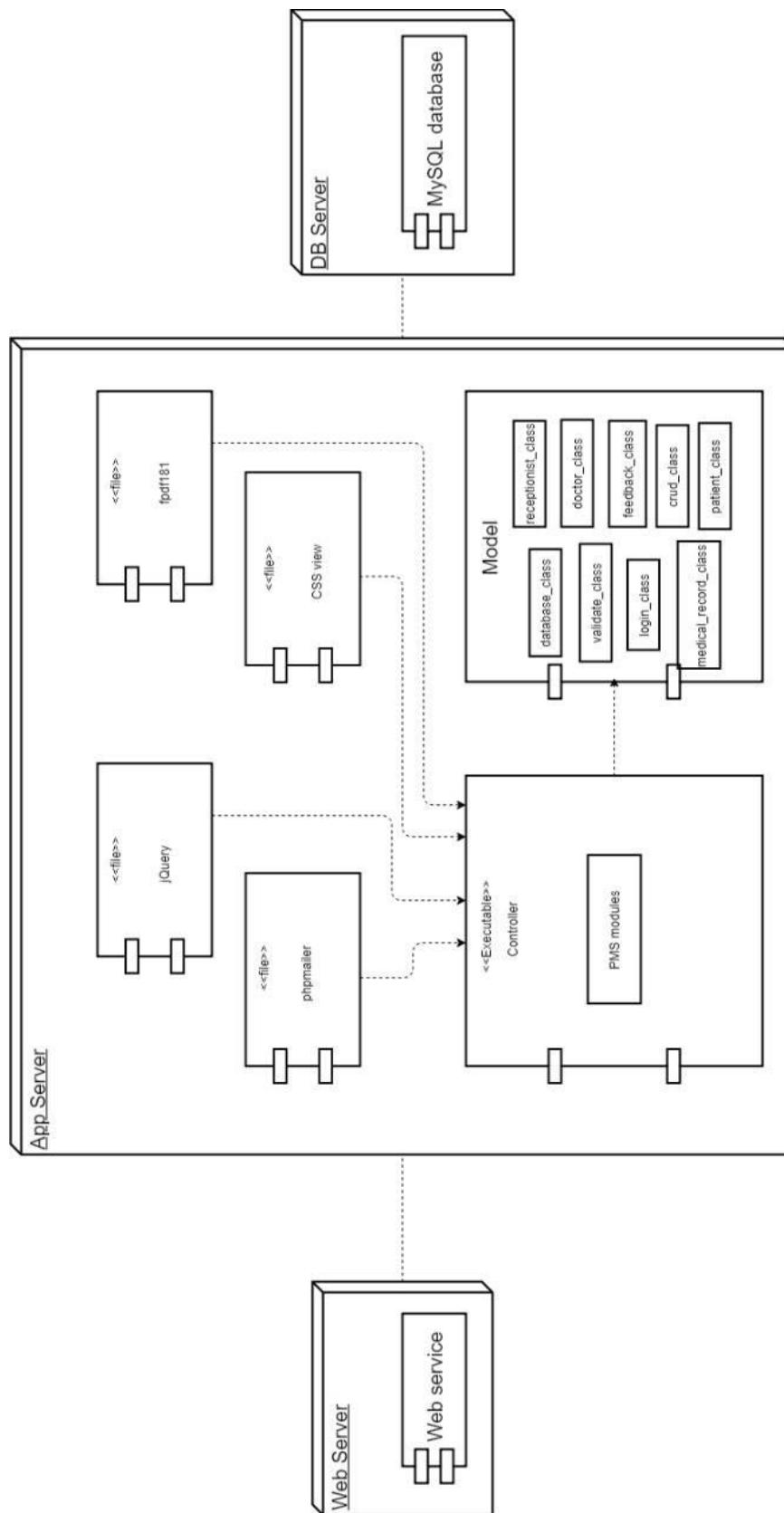


OD_01 – Complete object diagram

4.5.3 Component Diagrams



4.5.4 Deployment Diagram



DD_01 – Deployment diagram

5. Implementation Technology

PMS is a dynamic Web Application. For the creation of this software, we have combined Client Side Scripting and Server Side Scripting. The communication between the client and the server will take place via HTTP protocol.

For the Client Side Scripting we have used the following technologies:

- HTML 5 (HyperText Markup Language)
- CSS 3 (Cascading Style Sheets)
- JavaScript
- Ajax (Asynchronous JavaScript and XML)
- jQuery (JavaScript Framework Library)

For the user interface (UI) we have used an open source template, designed with Bootstrap, to make the software intuitive and more easy and attractive for the user. We have made the necessary changes to this template in order to make it similar with what we had planned before (Sketches and Detailed Design).

For the Server Side Scripting, we have used PHP. This allows the users to interact with the software and with each other. We have used the OOP approach (Object Oriented Programming). We have used classes for each system user, actor: doctor class, receptionist Class, patient Class.

We have used a CRUD class, which contains all the functions needed to modify: patients, receptionists, doctors, medical records, medical visits and feedback.

We have also used a validation class, which contains all the necessary functions for validation text, passwords, email etc.

To administrate MySQL over the web, phpMyAdmin has been used. The database that we have created for this Web Application can be found in the Epoka University Server:

<http://stud-proj.epoka.edu.al/phpmyadmin/>

In the same server, you can also find the entire project (Web Application) under a personal account:

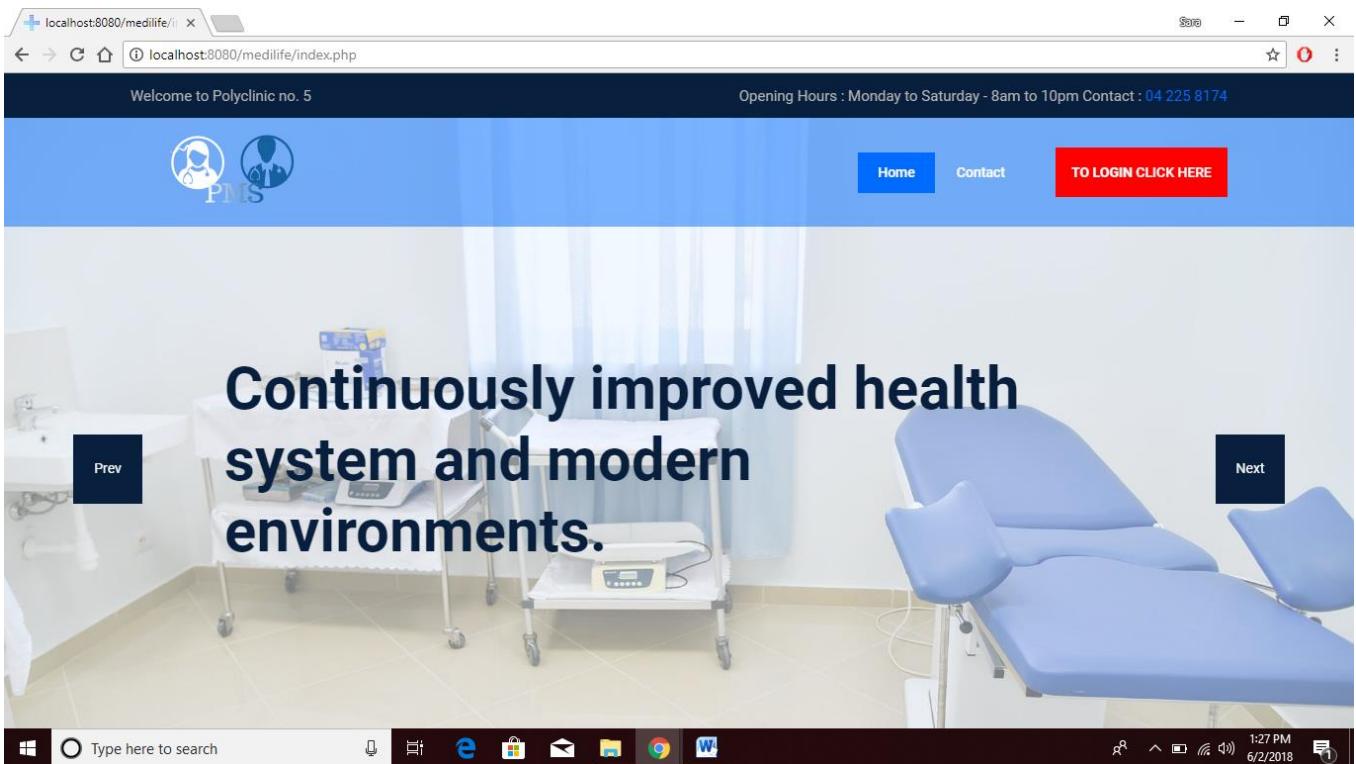
<http://stud-proj.epoka.edu.al/~sqirko15/>

This project is also published in github, where you can find the step by step procedure of the creation of this project (diagrams, designs, requirements, meeting reports, personal logs, etc.):

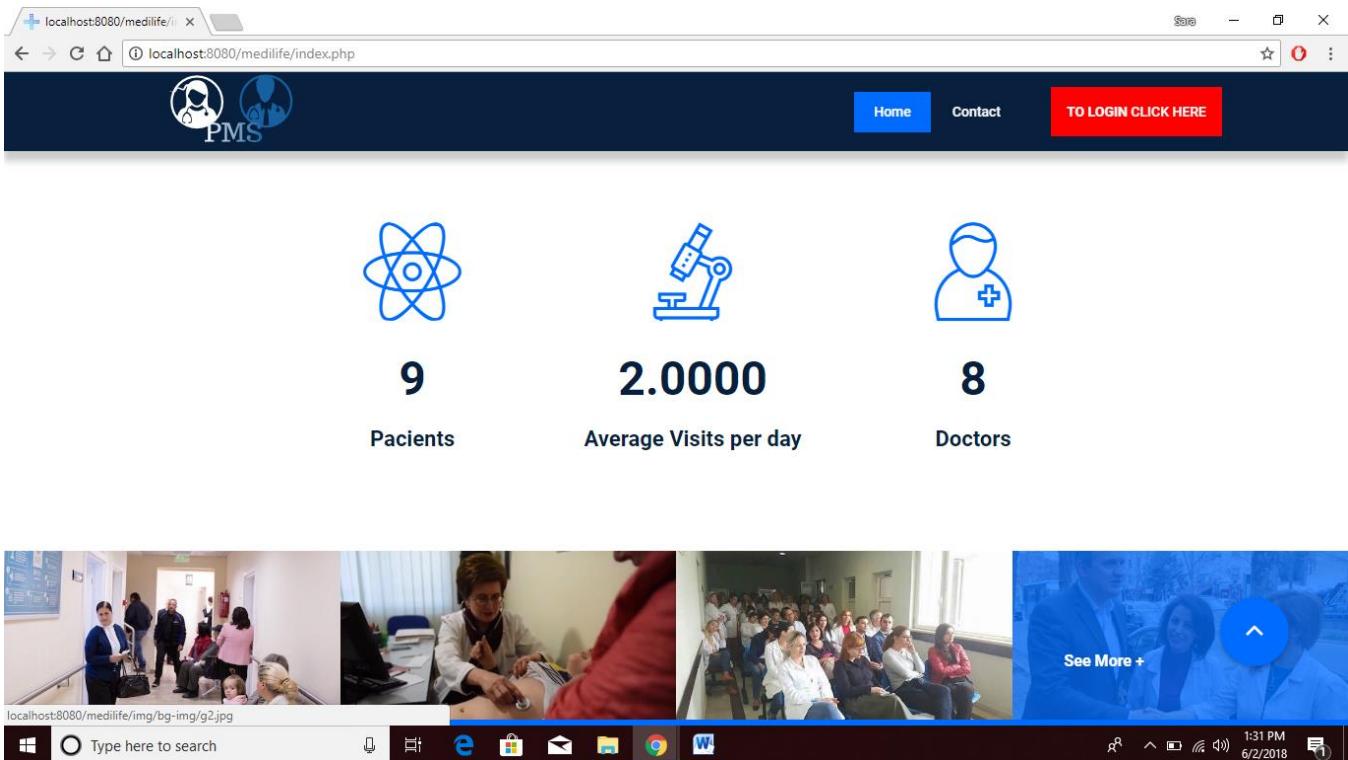
<https://github.com/sqirko15/PMS/>

In the following print screens, you can see the implemented product.

PMS Documentation



PS_01 – Home page



PS_02 – Home page (continue)

PMS Documentation

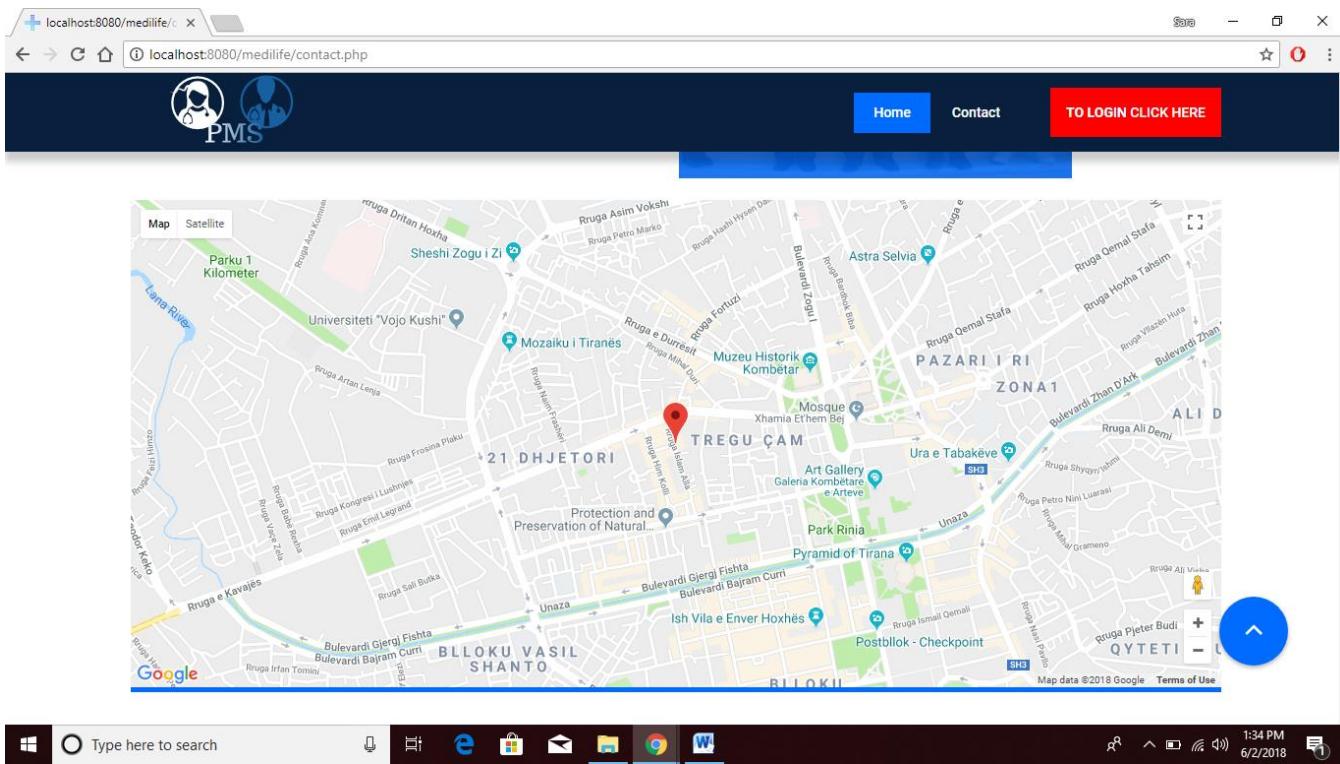
The screenshot shows a web browser window for localhost:8080/medilife/index.php. The header features a logo with a doctor icon and the letters 'PMS'. Navigation links include 'Home' (highlighted in blue), 'Contact', and a red button 'TO LOGIN CLICK HERE'. Below the header is a horizontal banner with four images: a group of people in a meeting room, two women in lab coats, a hallway with people, and a medical consultation. The main content area has a blue background with a white stethoscope icon on the left. Text on the right provides contact information: 'Tirane, Albania', 'Email: medicalcenter18@gmail.com', 'Tel: 04 225 8174', and 'Address: Islam Alla street, 50m from street entrance'. A large '112' is displayed below the address. The Windows taskbar at the bottom shows various icons and the date/time: 6/2/2018, 1:32 PM.

PS_03 – Home page (continue)

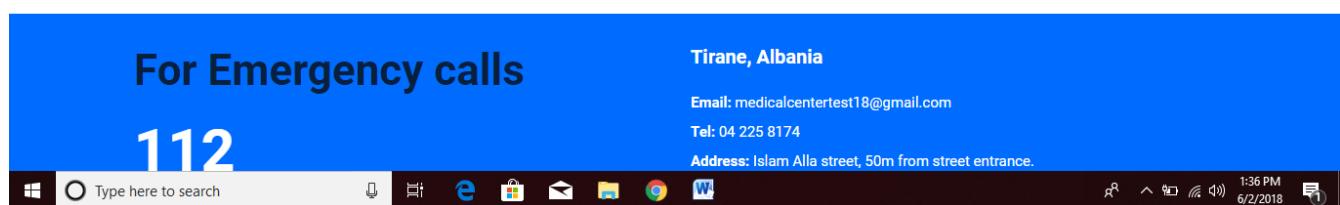
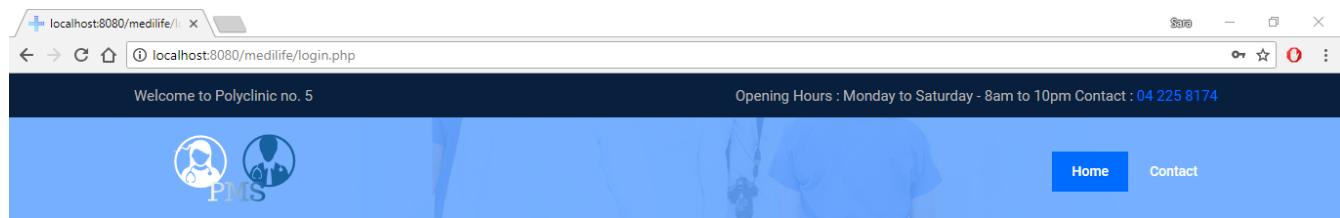
The screenshot shows a web browser window for localhost:8080/medilife/contact.php. The header includes the 'PMS' logo and navigation links for 'Home', 'Contact', and 'TO LOGIN CLICK HERE'. The main content area displays contact details: 'Address: Islam Alla street, 50m from street entrance.', 'Tel: 04 225 8174', 'Email: medicalcenter18@gmail.com', and a link to 'Ministria e shendetise'. To the right is a blue banner with a stethoscope icon and the text 'For Emergency calls 112'. At the bottom is a map showing the location of the clinic on 'Islam Alla street' near 'Universiteti "Vojo Kushi"'. The Windows taskbar at the bottom shows the date/time: 6/2/2018, 1:33 PM.

PS_04 – Contact page

PMS Documentation



PS_05 – Contact page (continue)



PS_06 – Login page

PMS Documentation

The screenshot shows a web browser window for 'localhost:8080/medilife/'. The title bar says 'localhost:8080/medilife/login.php'. The main content area has a dark blue header with the text 'Welcome to Polyclinic no. 5' and 'Opening Hours : Monday to Saturday - 8am to 10pm Contact : 04 225 8174'. Below the header is a logo with two stylized figures and the letters 'PMS'. A central modal window titled 'Log In as Patient' contains fields for 'Username' (placeholder 'Enter your username') and 'Password' (placeholder 'Enter your password'). It also includes a 'reCAPTCHA' checkbox labeled 'I'm not a robot' and a link to 'Privacy - Terms'. At the bottom of the modal are 'Login' and 'Close' buttons. To the left of the modal, there's a button labeled 'Login as Patient' with a clipboard icon. To the right, there's a button labeled 'Receptionist' with a clipboard icon. The background of the page features a large blue banner with the text 'For Emergency calls 112' and contact information: 'Tirane, Albania', 'Email: medicalcenteratest18@gmail.com', 'Tel: 04 225 8174', and 'Address: Islam Alla street, 50m from street entrance'. The bottom of the screen shows a Windows taskbar with various icons and the date/time '1:37 PM 6/2/2018'.

PS_07 – Login form

The screenshot shows a web browser window for 'localhost:8080/medilife/pacHome.php'. The title bar says 'localhost:8080/medilife/pacHome.php'. The main content area has a dark blue header with the text 'Welcome Patient Sara Qirko' and a 'Menu' dropdown. Below the header is a logo with two stylized figures and the letters 'PMS'. On the left side of the page is a large portrait photo of a young woman with long brown hair, smiling, wearing a blue top. To the right of the photo is a section titled 'Medical Record Information' containing the following details:

- Health Insurance Number: 12345678
- Blood Type: O
- Rh_factor: Rh+
- Allergies: None
- Anamnesis: This is the anamnesis of Sara Qirko.
- Family's doctor: Luan Xhelili
- Created By: Ema Idrizi
- Date of medical record's creation: 2018-06-02

The bottom of the screen shows a Windows taskbar with various icons and the date/time '2:45 PM 6/2/2018'.

PS_08 – Patient's profile

PMS Documentation

The screenshot shows a web application interface for a Patient Management System (PMS). At the top, there is a header bar with the URL "localhost:8080/medilife/pacRecords.php". The header also features a logo with two stylized figures and the text "PMS". To the right of the logo, it says "Welcome Patient Sara Qirko" and "Menu". Below the header is a large white content area. In the center, it displays "Examination Visit 1". Underneath this, there is a list of details: Date Created: 2018-06-02, Family's doctor: Luan Xhelili, Complaints: Headache, Diagnosis: Flu, Medicines: Paracetamol, Days off: 0, and Is this an infectious disease: No. At the bottom of this list is a blue "Download" button. On the left side of the content area, there is a "Prev" button, and on the right side, there is a "Next" button. A small horizontal progress bar is visible at the bottom of the content area.



PS_09 – Patient's medical visits

The screenshot shows a web browser displaying a PDF file titled "Sara_Qirko.pdf". The URL in the address bar is "localhost:8080/medilife/Receipts/Sara_Qirko.pdf". The PDF document itself is a medical visit summary from "Polyclinic Nr.5". It includes patient information: visit_id: 34, Date: 2018-06-02, Patient: Sara Jorgo Qirko, Personal Nr: J45678123K, Health Insurance Nr: 12345678, Blood Type: O, Rh factor: Rh+, Allergies: None. It also lists the medical visit details: Doctor: Luan Xhelili, Patient's complaints: Headache, Diagnosis: Flu, Medicines: Paracetamol, Days off: 0, and Is this disease infectious? Yes. There is a field for Doctor's signature with a blank line. The PDF is displayed within a white frame on a dark background. At the bottom of the frame, there is a thin horizontal line.



PS_10 – Patient's downloaded visit

PMS Documentation

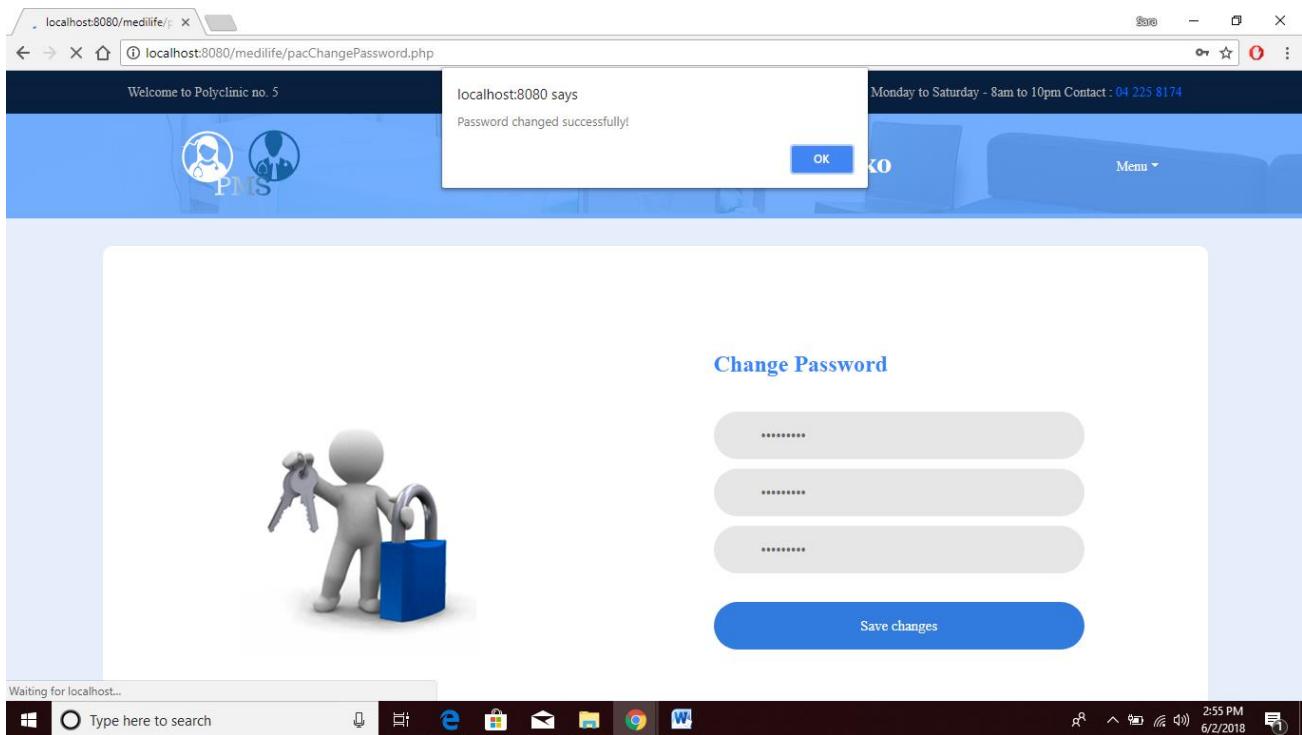
A screenshot of a web browser window. The address bar shows the URL `localhost:8080/medilife/pacChangePassword.php`. The main content area displays a message box from the server: "localhost:8080 says Are you sure you want to change the password?". Below this, there is a "Change Password" form with three input fields represented by grey boxes with dots and a "Save changes" button. On the left side of the page, there is a sidebar with the header "Welcome to Polyclinic no. 5" and a logo featuring a person icon and the letters "PMS". The bottom of the screen shows a Windows taskbar with various icons and the system tray indicating the date and time as 6/2/2018 at 2:54 PM.

PS_11 – Change Password

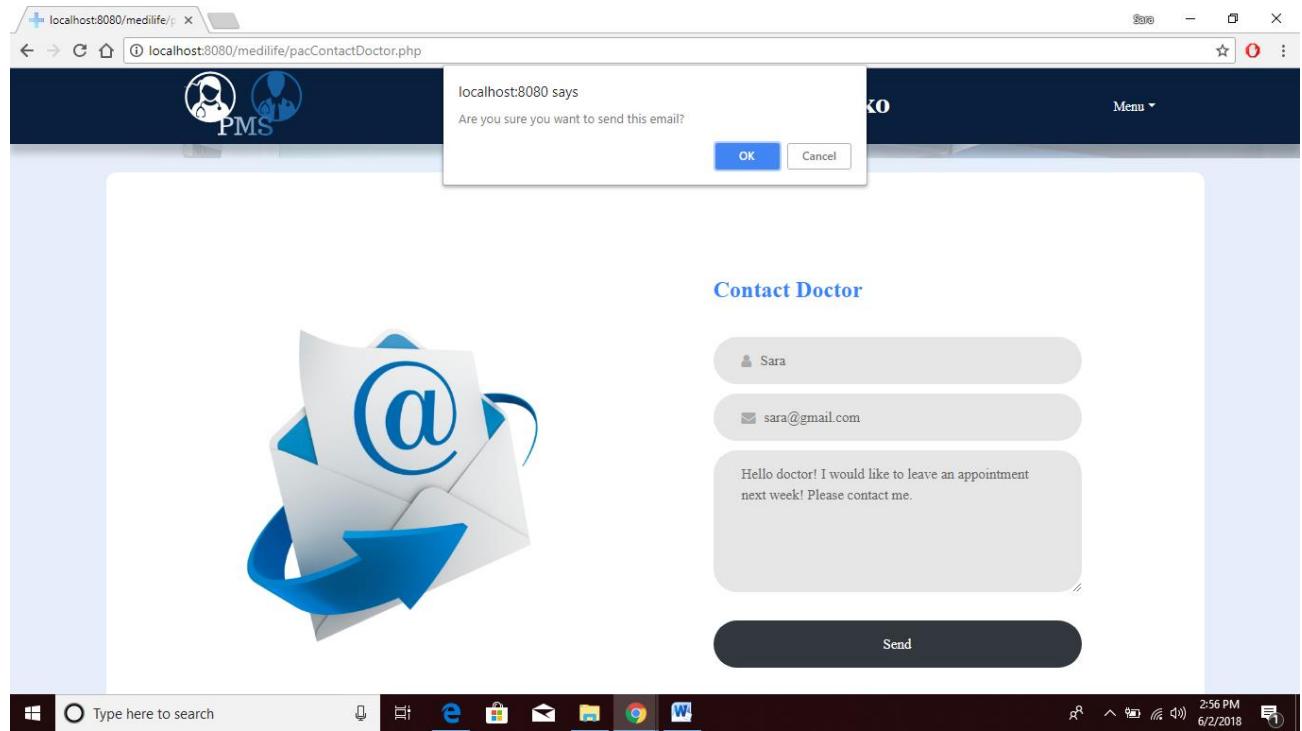
A screenshot of a web browser window. The address bar shows the URL `localhost:8080/medilife/pacChangePassword.php`. The main content area displays a "Change Password" form with three input fields. The first field has an error message: "Current password is invalid!". The second field has an error message: "Password must contain only 8 to 16 characters, at least one digit, at least one upper case letter and at least one lower case letter!". The third field has an error message: "Passwords do not match!". Below the input fields is a "Save changes" button. On the left side of the page, there is a sidebar with the header "Welcome Patient Sara Qirko" and a logo featuring a person icon and the letters "PMS". The bottom of the screen shows a Windows taskbar with various icons and the system tray indicating the date and time as 6/2/2018 at 2:52 PM.

PS_12 – Change Password (incorrect validation)

PMS Documentation

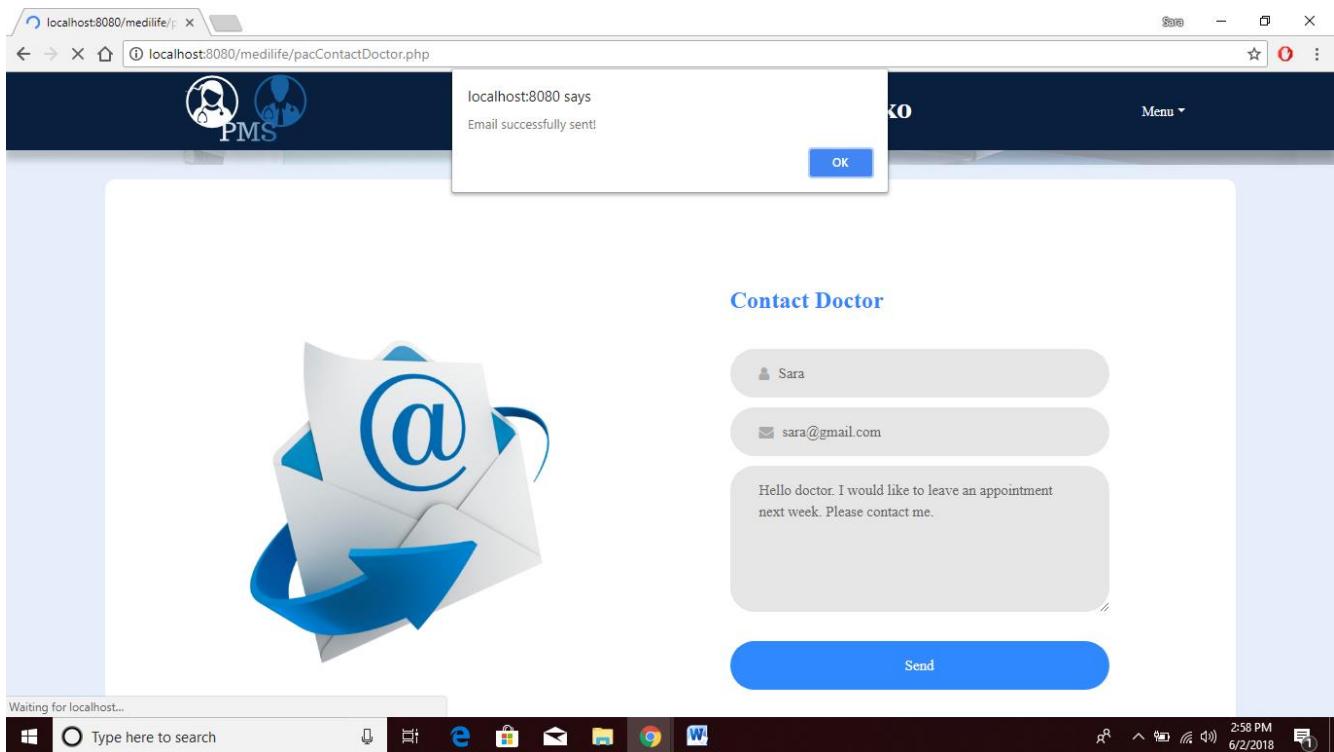


PS_13 – Change Password (correct validation)

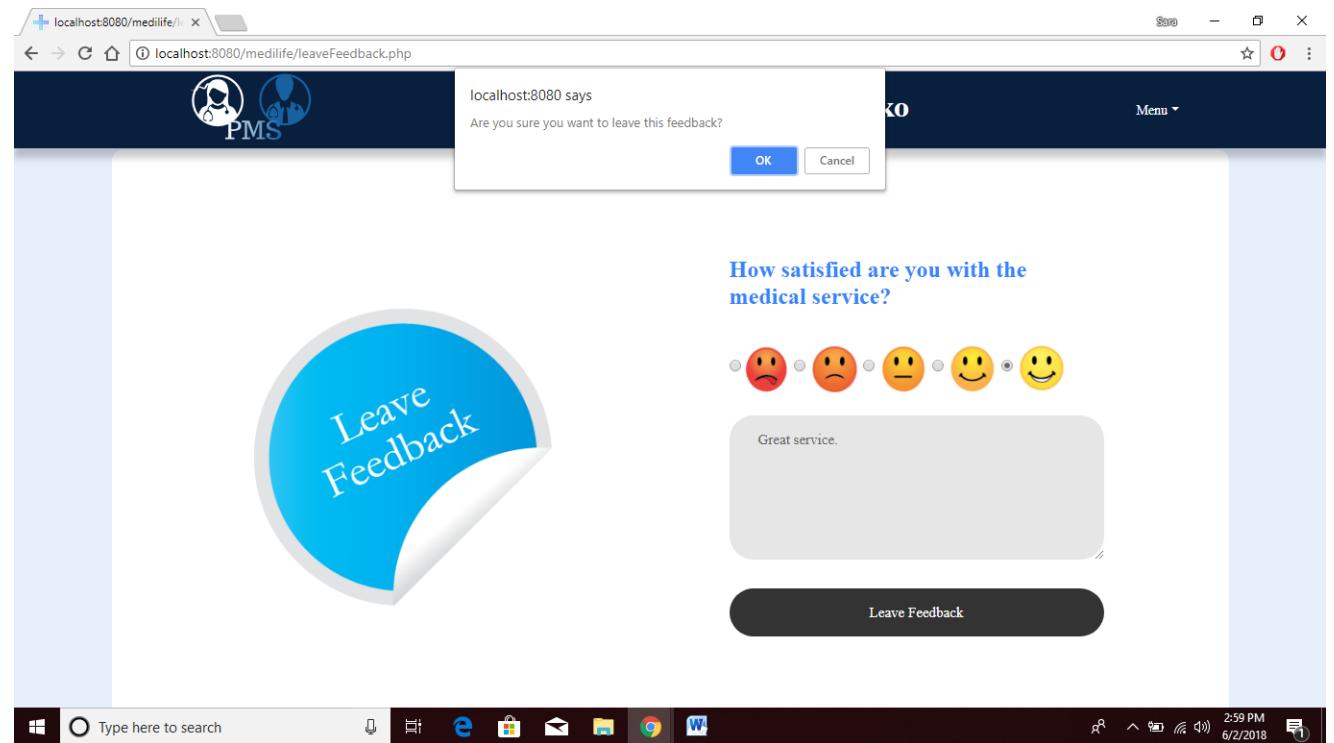


PS_14 – Contact doctor

PMS Documentation

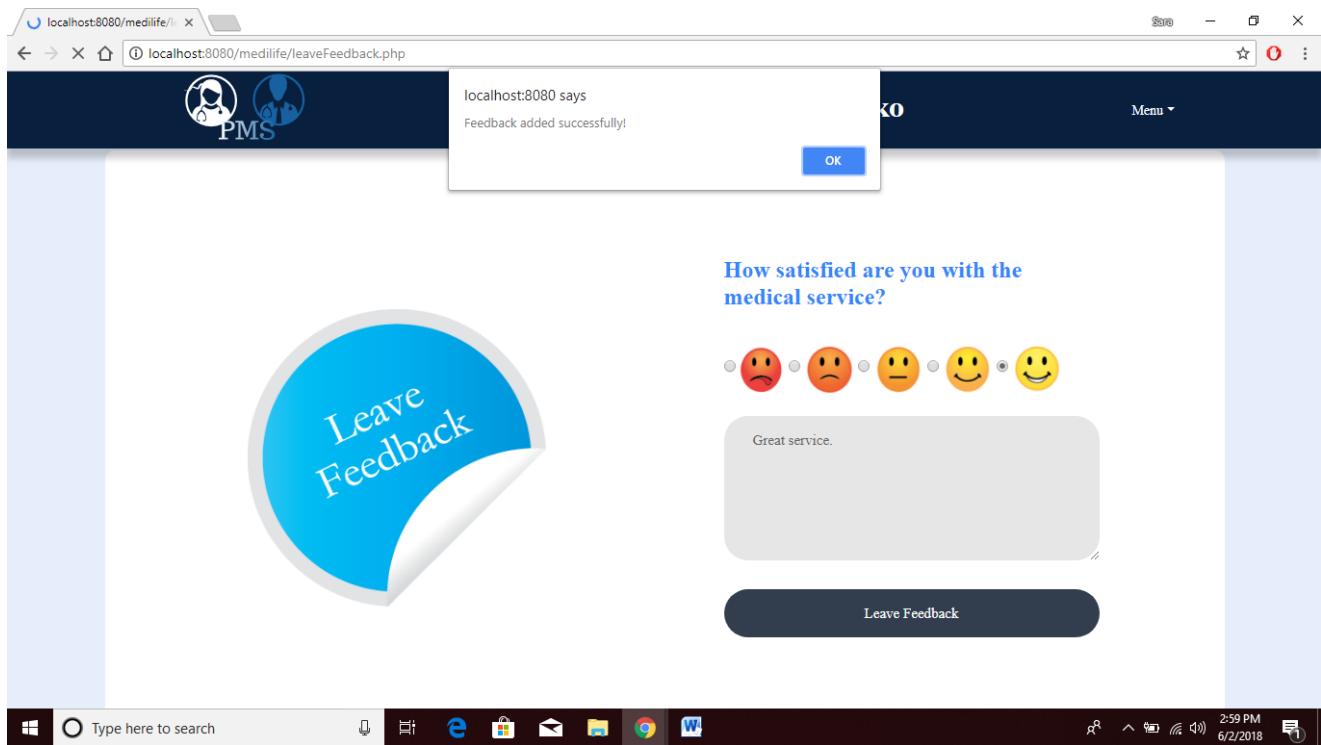


PS_15 – Email sent successfully



PS_16 – Leave feedback

PMS Documentation



PS_17 – Feedback added successfully

A screenshot of a web browser window titled "localhost:8080/medilife/docHome.php". The header displays "Welcome Doctor Luan Xhelili". The left sidebar shows "Personal Information" with fields for Name (Luan), Father's name (Sokol), Surname (Xhelili), Personal ID (J34567812K), Gender (M), Phone (0692209120), Birthdate (1957-01-22), and Birthplace (Vlore). The right side shows a "Waiting list" table:

ID	First name	Father's name	Last name	Birthdate	Personal no.	Action
1	Sara	Jorgo	Qirko	1996-12-12	J45678123K	Visit profile Create Visit

The Windows taskbar at the bottom shows various icons and the date/time: 3:02 PM 6/2/2018.

PS_18 – Doctor's profile

PMS Documentation

The screenshot shows a web browser window for 'localhost:8080/medilife/docViewPacProfile.php'. The title bar says 'localhost:8080/medilife/docViewPacProfile.php'. The page header features a logo with a doctor and a patient icon, followed by 'Welcome Doctor Luan Xhelili' and a 'Menu' button. On the left, there's a photo of a young woman with long brown hair, smiling, wearing a blue t-shirt, with her arms crossed. Below the photo is the heading 'Personal Information'. To the right, under 'Medical Record Information', are several fields: 'Health Insurance Number: 12345678', 'Blood Type: O', 'Rh_factor: Rh+', 'Allergies: None', 'Anamnesis: This is the anamnesis of Sara Qirko.', 'Family's doctor: Luan Xhelili', 'Created By: Ema Idrizi', and 'Date of medical record's creation: 2018-06-02'. A blue button at the bottom right of this section says 'View Examinations'. The taskbar at the bottom shows various application icons.

PS_19 – Doctor views patient's profile

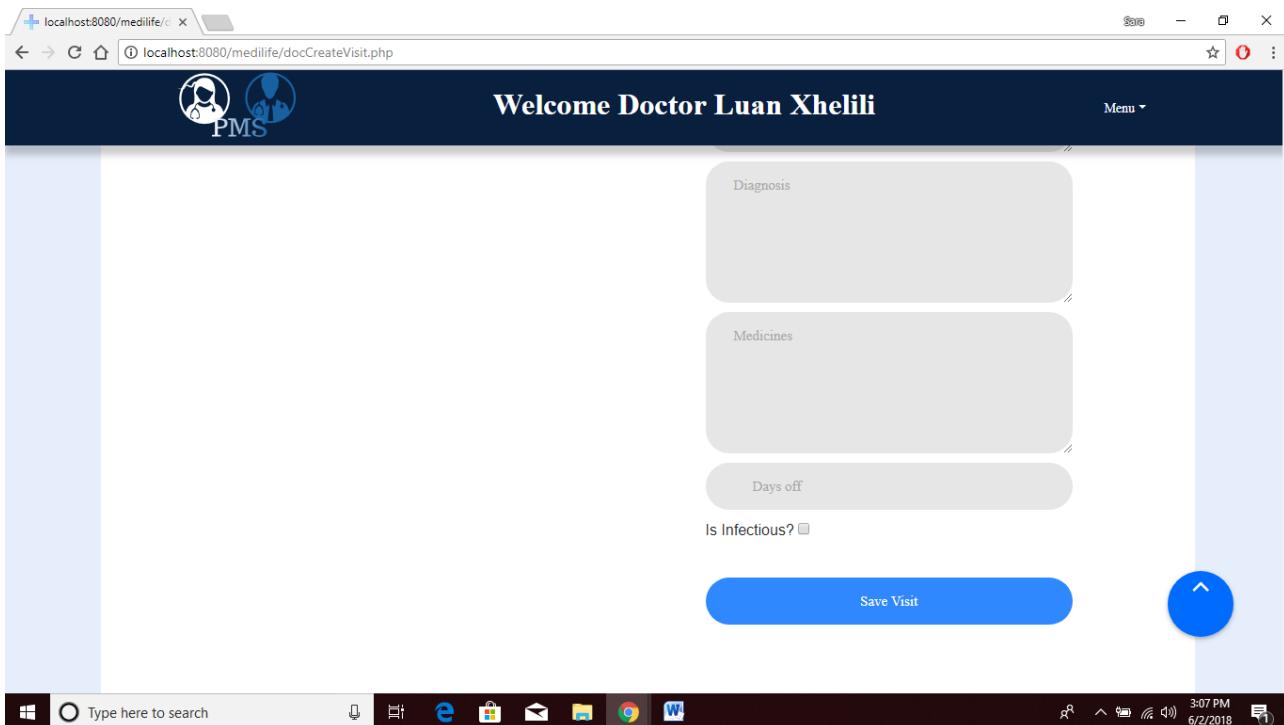
The screenshot shows a web browser window for 'localhost:8080/medilife/docViewExaminations.php'. The title bar says 'localhost:8080/medilife/docViewExaminations.php'. The page header features a logo with a doctor and a patient icon, followed by 'Welcome Doctor Luan Xhelili' and a 'Menu' button. In the center, it displays 'Examination Visit 1' with the following details: Date Created: 2018-06-02, Family's doctor: Luan Xhelili, Complaints: Headache, Diagnosis: Flu, Medicines: Paracetamol, Days off: 0, Is this an infectious disease: No. Below this is a blue 'Download' button. On the left is a dark 'Prev' button, and on the right is a dark 'Next' button. The taskbar at the bottom shows various application icons.

**PS_20 – Doctor views patient's examinations
(Download creates a PDF file same as the previous one)**

PMS Documentation



PS_21 – Doctor creates visit



PS_22 – Doctor creates visit (continue)

(When saving visit, a PDF file is created with the same format as the previous one, and that patient is removed from the 'Waiting to be visited' list)

PMS Documentation

Welcome to Polyclinic no. 5

Opening Hours : Monday to Saturday - 8am to 10pm Contact : 04 225 8174

Welcome Doctor Luan Xhelili

Menu ▾

Personal Information

Name: Luan

Father's name: Sokol

Surname: Xhelili

Personal ID: J34567812K

Waiting list

ID	First name	Father's name	Last name	Birthdate	Personal no.	Action
There are no patients waiting to be visited!						

Type here to search

3:09 PM 6/2/2018

PS_23 – No one is waiting to be visited

Welcome Doctor Luan Xhelili

Patients' list

Search a name..

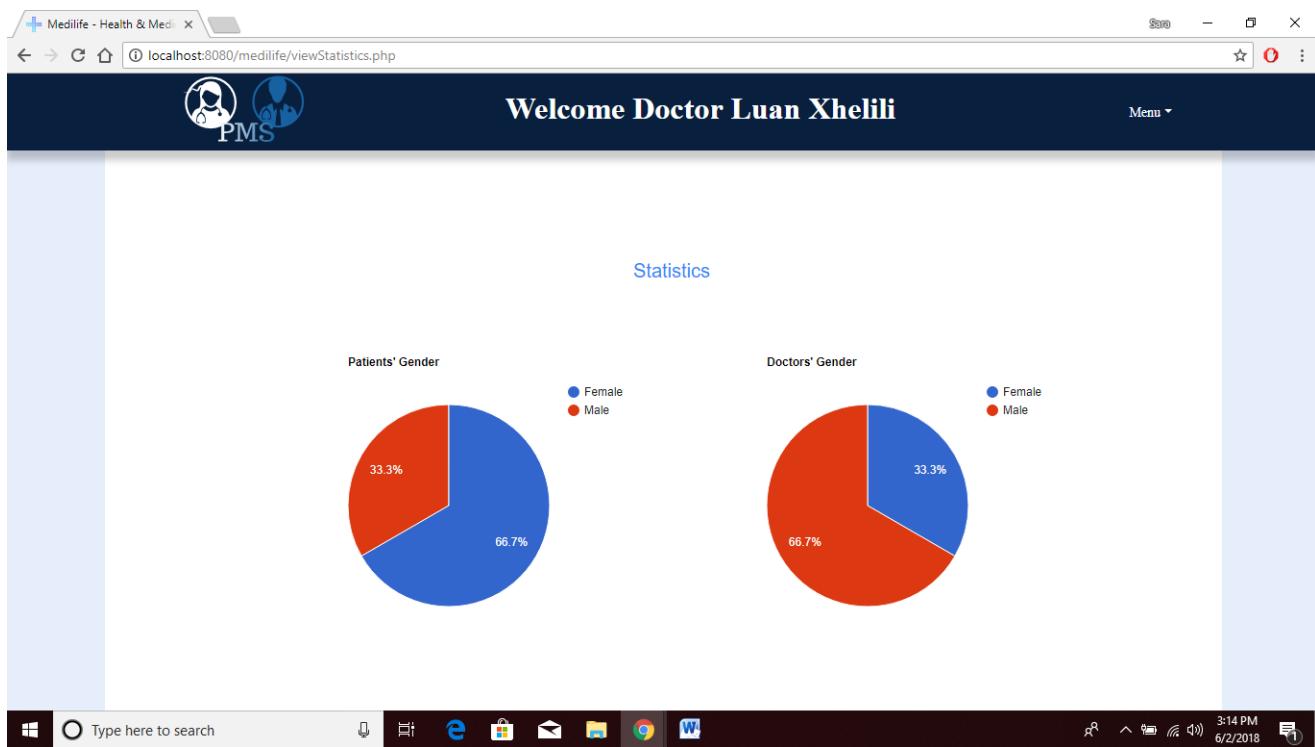
ID	Full name	Birthdate	Personal no.	Action
1	Sara Jorgo Qirko	1996-12-12	J45678123K	Visit profile
2	Ilir Robert Alia	1956-07-01	J13467852K	Visit profile

Type here to search

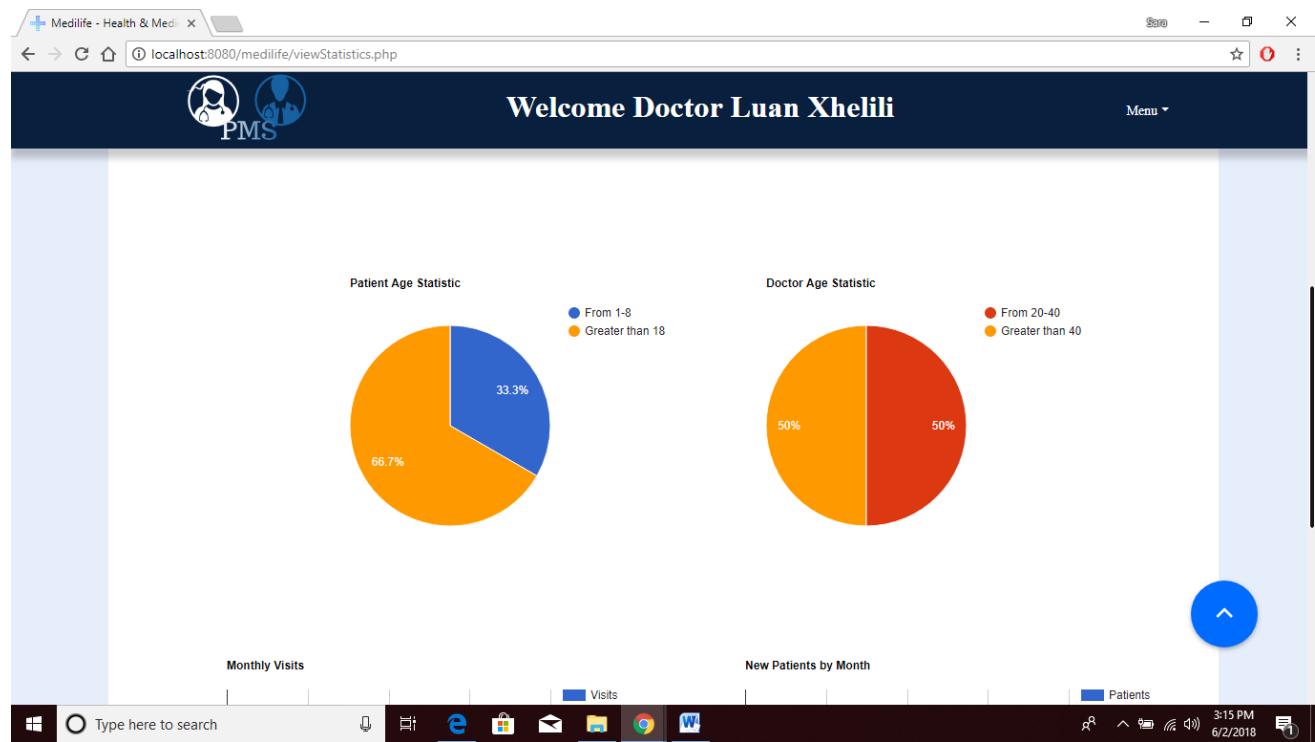
3:11 PM 6/2/2018

PS_24 – Doctor's patients list

PMS Documentation

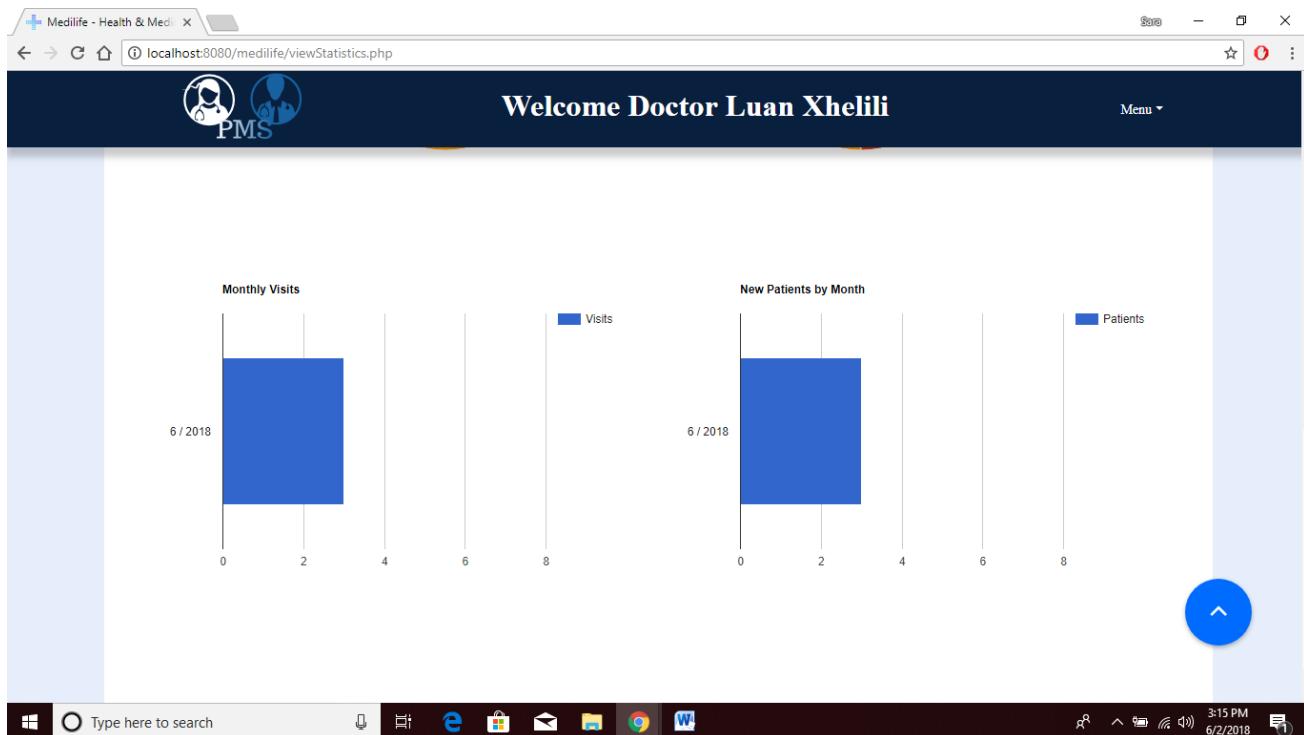


PS_25 – Statistics

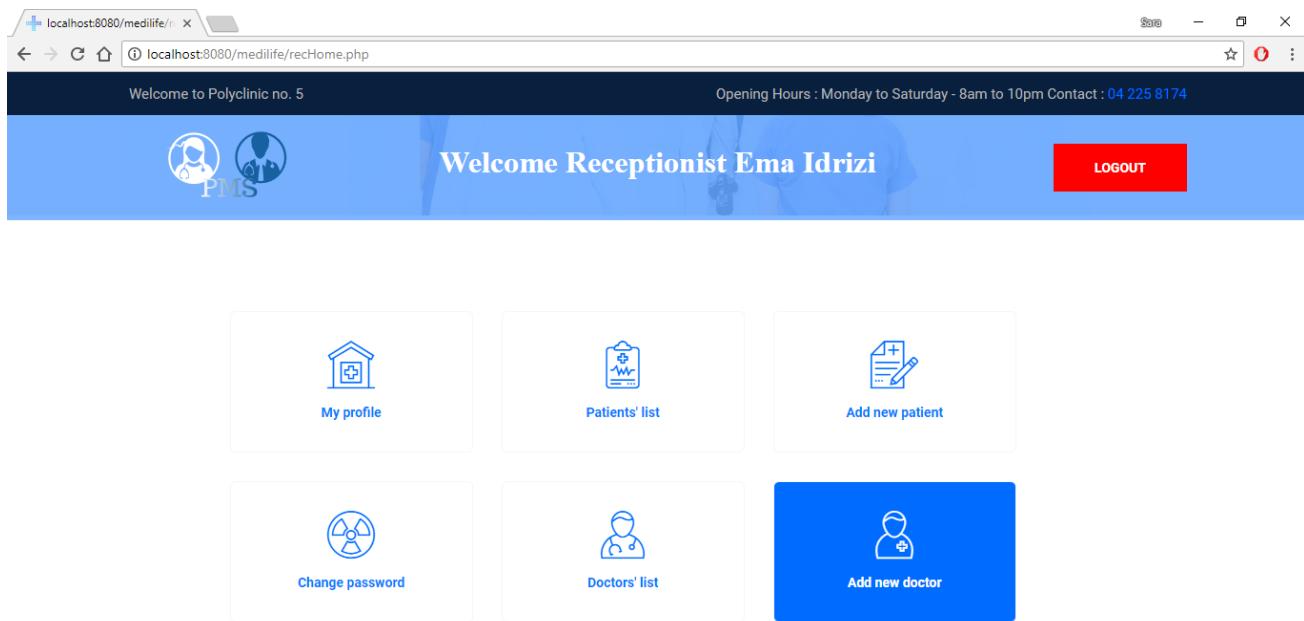


PS_26 – Statistics (continue)

PMS Documentation



PS_27 – Statistics (continue)



PS_28 – Receptionist's home page

PMS Documentation

The screenshot shows a web browser window for 'localhost:8080/medilife/recMyProfile.php'. The title bar says 'localhost:8080/medilife/...'. The page header includes a logo with two stylized figures, the text 'Welcome Receptionist Ema Idrizi', a 'Home' link, and a red 'LOGOUT' button. The main content area is titled 'Personal Information' and contains a placeholder profile picture (a grey silhouette of a head). To the right, there is a list of personal details:

Name:	Ema
Surname:	Idrizi
Birthdate:	1975-10-10
Birthplace:	
Gender:	F
Father's name:	Elton
Personal number:	B12345678X
Academic Degree:	Phd
University:	Universiteti UFO
Graduation Date:	2001-07-02

At the bottom of the browser window, the taskbar shows the Windows Start button, a search bar with 'Type here to search', and several pinned icons.

PS_29 – Receptionist's profile

The screenshot shows a web browser window for 'localhost:8080/medilife/recPacList.php'. The title bar says 'localhost:8080/medilife/...'. The page header includes a logo with two stylized figures, the text 'Welcome Receptionist Ema Idrizi', a 'Home' link, and a red 'LOGOUT' button. The main content area is titled 'Patients' list' and features a search bar with 'Search a name...'. Below it is a table with the following data:

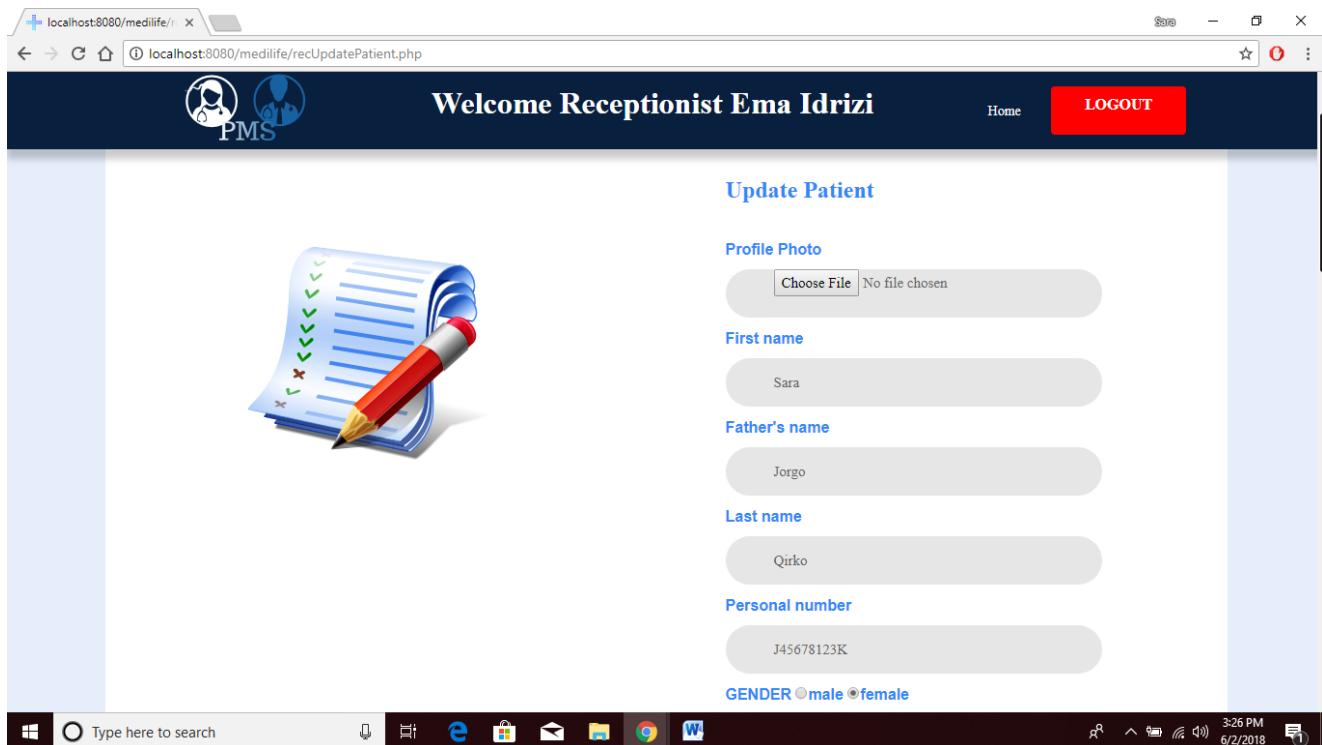
ID	Full name	Birthdate	Personal no.	Action
1	Sara Jorgo Qirko	1996-12-12	J45678123K	Visit profile Update Allow visit Export Delete
2	Klea Miri Doka	2011-07-22	J67812345K	Visit profile Update Allow visit Export Delete
3	Ilir Robert Alia	1956-07-01	J13467852K	Visit profile Update Allow visit Export Delete

At the bottom of the browser window, the taskbar shows the Windows Start button, a search bar with 'Type here to search', and several pinned icons.

PS_30 – Polyclinic's patients list

(Visit profile is the same as before. From there you can view the visits and download them.)

PMS Documentation



Welcome Receptionist Ema Idrizi [Logout](#)

Update Patient

Profile Photo
 Choose File No file chosen

First name
Sara

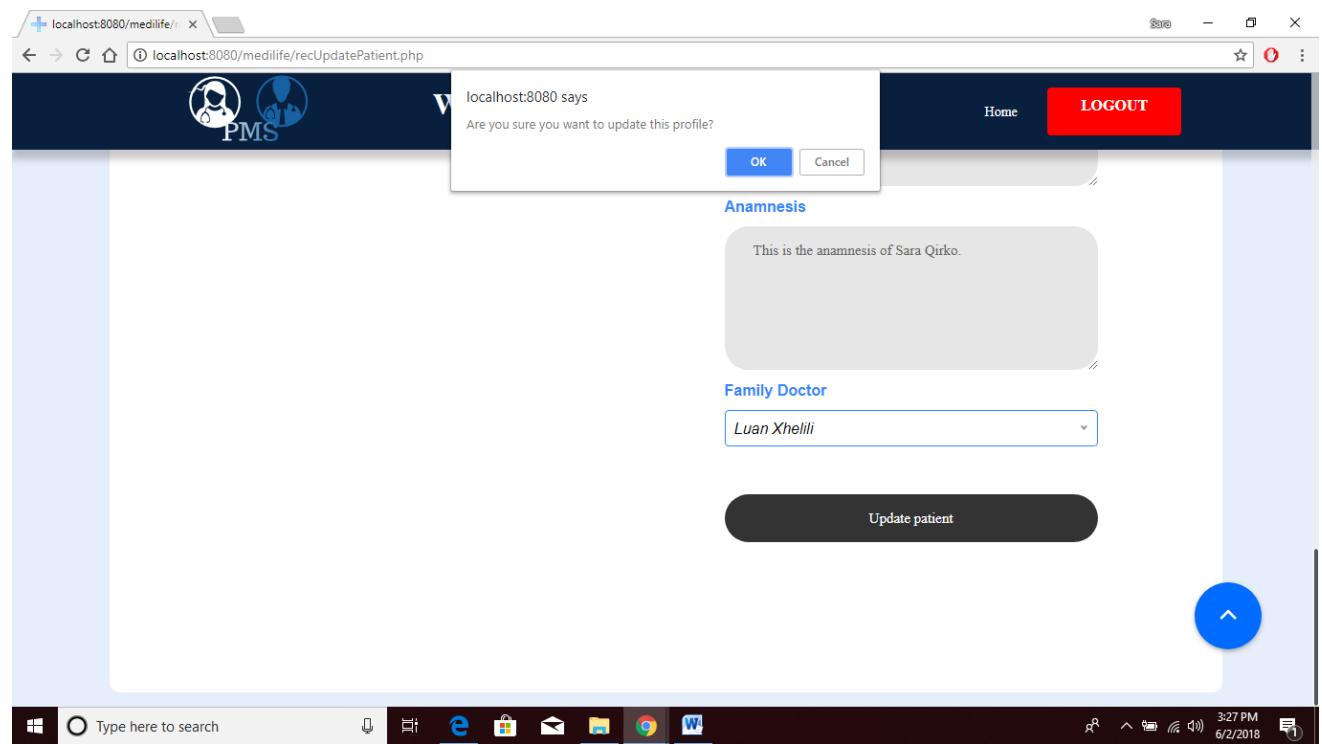
Father's name
Jorgo

Last name
Qirko

Personal number
J45678123K

GENDER male female

PS_31 – Update patient form



localhost:8080 says
Are you sure you want to update this profile?

Anamnesis
This is the anamnesis of Sara Qirko.

Family Doctor
Luan Xhelili

PS_32 – Update confirmation

PMS Documentation

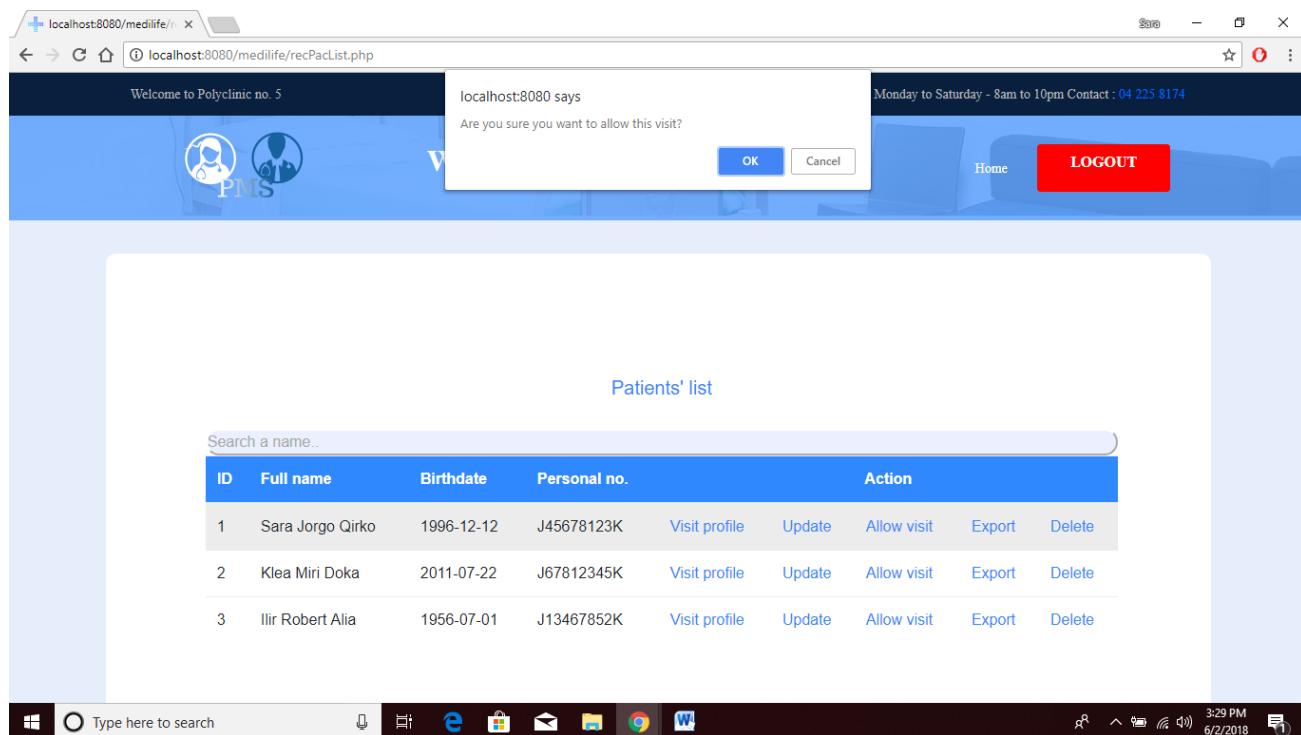
The screenshot shows a web browser window for 'localhost:8080/medilife/recUpdatePatient.php'. The title bar says 'localhost:8080/medilife/r' and the address bar says 'localhost:8080/medilife/recUpdatePatient.php'. The page header includes 'Welcome to Polyclinic no. 5', 'Opening Hours : Monday to Saturday - 8am to 10pm Contact : 04 225 8174', and a logo with two stylized figures. The main content area displays 'Welcome Receptionist Ema Idrizi' and a 'LOGOUT' button. Below this, a section titled 'Update Patient' contains a form. The 'First name' field has 'Sara1' entered, which is highlighted in red with the error message 'Name should start with uppercase letter and must contain only letters!'. The 'Father's name' field has 'Jorgo' entered. The browser taskbar at the bottom shows various pinned icons and the date/time '6/2/2018 3:27 PM'.

PS_33 – Update patient (incorrect validation)

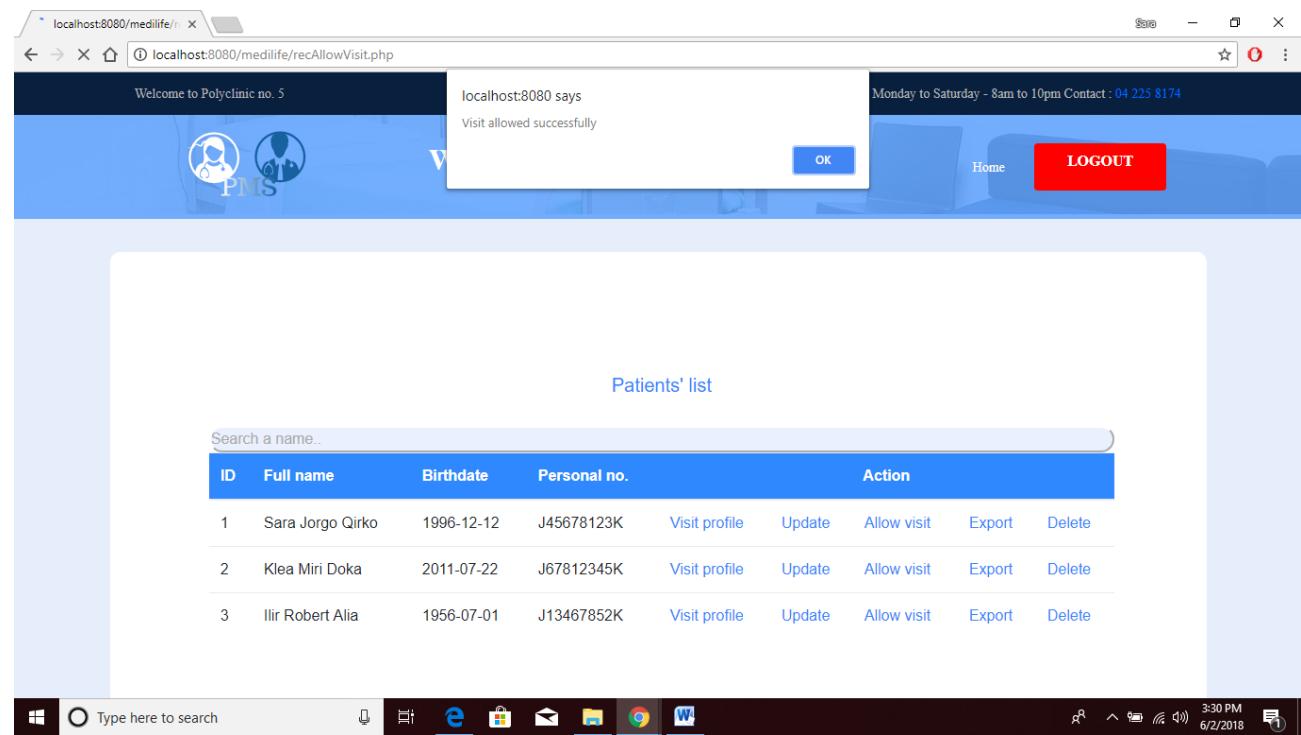
The screenshot shows a web browser window for 'localhost:8080/medilife/recUpdatePatient.php'. The title bar says 'localhost:8080/medilife/r' and the address bar says 'localhost:8080/medilife/recUpdatePatient.php'. The page header includes 'Welcome to Polyclinic no. 5', 'Opening Hours : Monday to Saturday - 8am to 10pm Contact : 04 225 8174', and a logo with two stylized figures. A modal dialog box is centered on the screen, displaying 'localhost:8080 says Medical record updated successfully!' with an 'OK' button. The background page shows sections for 'Anamnesis' (containing 'This is the anamnesis of Sara Qirko.') and 'Family Doctor' (containing 'Luan Xhelili'). A large blue 'Update patient' button is visible at the bottom. The browser taskbar at the bottom shows various pinned icons and the date/time '6/2/2018 3:28 PM'.

PS_34 – Update patient (correct validation)

PMS Documentation

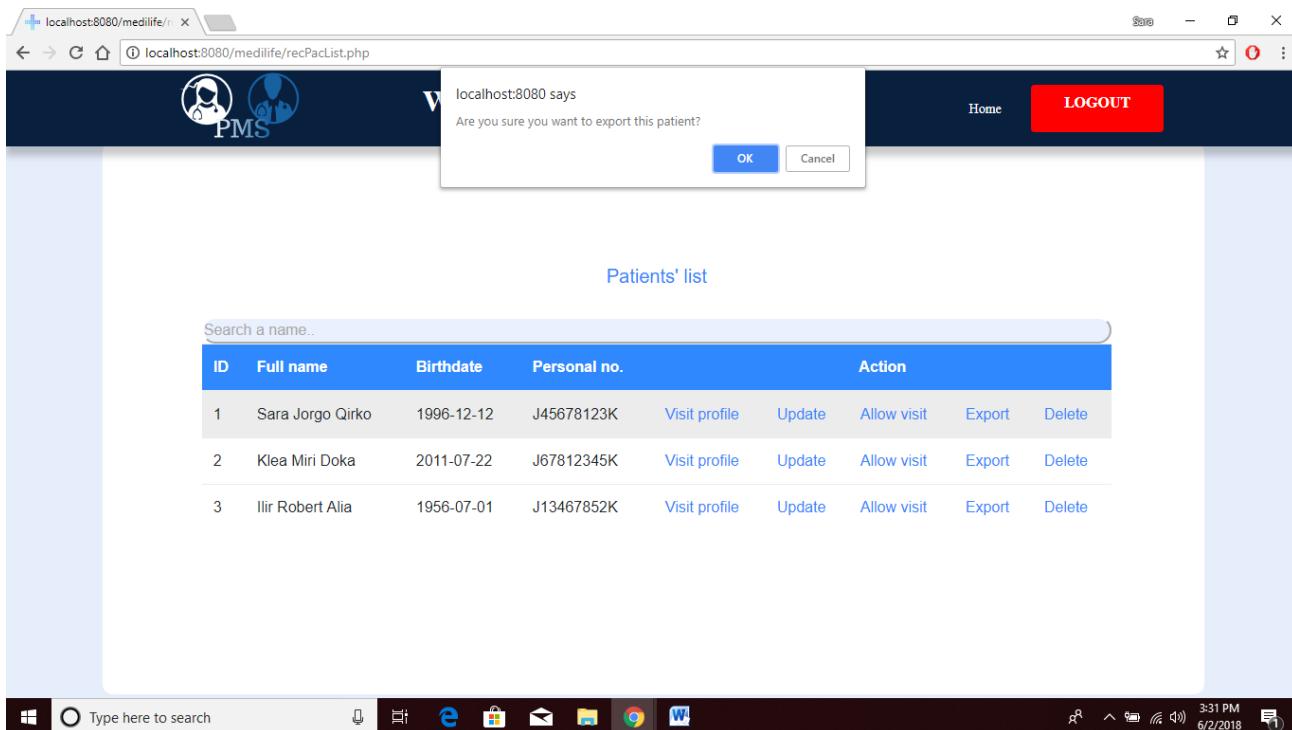


PS_35 – Allow visit confirmation



PS_36 – Visit allowed successfully

PMS Documentation



PS_37 – Export patient confirmation

A screenshot of a Windows File Explorer window showing a file named "Sara_Qirko_medical_record.xml" in the "Downloads" folder. The file is an XML document containing patient information. The XML code is as follows:

```

<?xml version="1.0"?>
- <medical_record>
  <id>55</id>
  <health_insurance_nr>12345678</health_insurance_nr>
  <polyclinic_nr>5</polyclinic_nr>
  <date_created>2018-06-02</date_created>
  <created_by>1</created_by>
  <doctor>46</doctor>
  <id_patient>110</id_patient>
  <blood_type>O</blood_type>
  <rh_factor>Rh+</rh_factor>
  <allergies>None</allergies>
  <anamnesis>This is the anamnesis of Sara Qirko.</anamnesis>
  <doctor_name>Luan</doctor_name>
  <doctor_surname>Xheili</doctor_surname>
  <receptionist_name>Ema</receptionist_name>
  <receptionist_surname>Idrizi</receptionist_surname>
  <n_waiting>0</n_waiting>
- <patient>
  <id>110</id>
  <photo>1527942657.jpg</photo>
  <name>Sara</name>
  <father_name>Jorgo</father_name>
  <surname>Qirko</surname>
  <personal_id>J45678123K</personal_id>
  <gender>F</gender>
  <phone>0692209120</phone>
  <address>Rr.Irfan Tomini</address>
  <profession>Engineer</profession>
  <job>None</job>
  <guardian>none</guardian>
  <birthdate>1996-12-12</birthdate>
  <birthplace>Cjrokaster</birthplace>
  <email>sara@gmail.com</email>
  <username>sara123</username>
  <password>$2y$10$qhNGpcQFqaPbAr/xrV.n9uD1cfoOmZzQ/8wo8bwL15Z4dIDHCnbbu</password>
</patient>
- <visits>

```

PS_38 – XML file format when confirming export

PMS Documentation

localhost800 says
Are you sure you want to delete this patient?

OK Cancel

Patients' list

ID	Full name	Birthdate	Personal no.	Action
1	Sara Jorgo Qirko	1996-12-12	J45678123K	Visit profile Update Allow visit Export Delete
2	Klea Miri Doka	2011-07-22	J67812345K	Visit profile Update Allow visit Export Delete
3	Ilir Robert Alia	1956-07-01	J13467852K	Visit profile Update Allow visit Export Delete

PS_39 – Delete patient confirmation
(When confirmed, that patient is removed from the list)

Welcome to Polyclinic no. 5

Opening Hours : Monday to Saturday - 8am to 10pm Contact : 04 225 8174

Welcome Receptionist Ema Idrizi

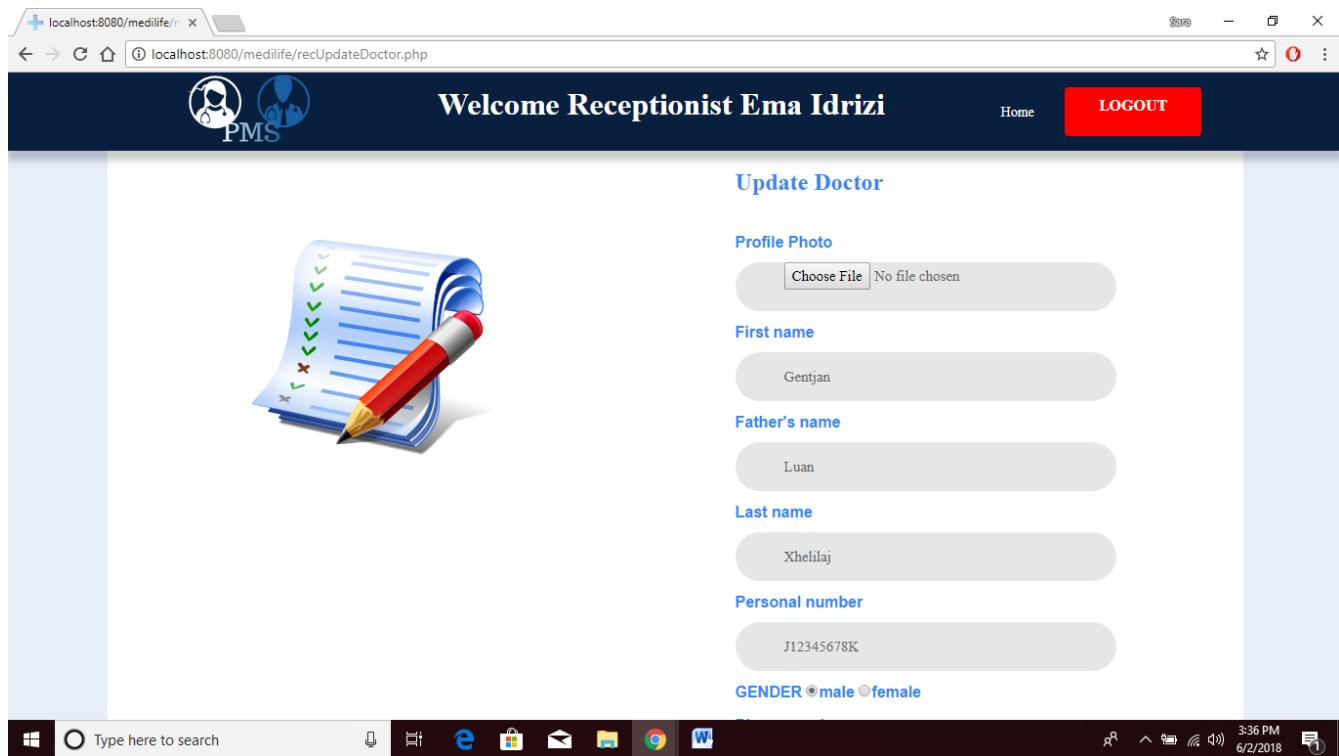
Logout

Doctors' list

ID	Full name	Birthdate	Personal no.	Action
1	Gentjan Luan Xhelilaj	1983-07-01	J12345678K	Visit profile Update Delete
2	Majlinda Altin Baka	1988-02-09	J23456789K	Visit profile Update Delete
3	Luan Sokol Xhelili	1957-01-22	J34567812K	Visit profile Update Delete

PS_40 – Polyclinic's doctors list
(Visit profile is the same as before.)

PMS Documentation



Welcome Receptionist Ema Idrizi

Home **LOGOUT**

Update Doctor

Profile Photo No file chosen

First name

Father's name

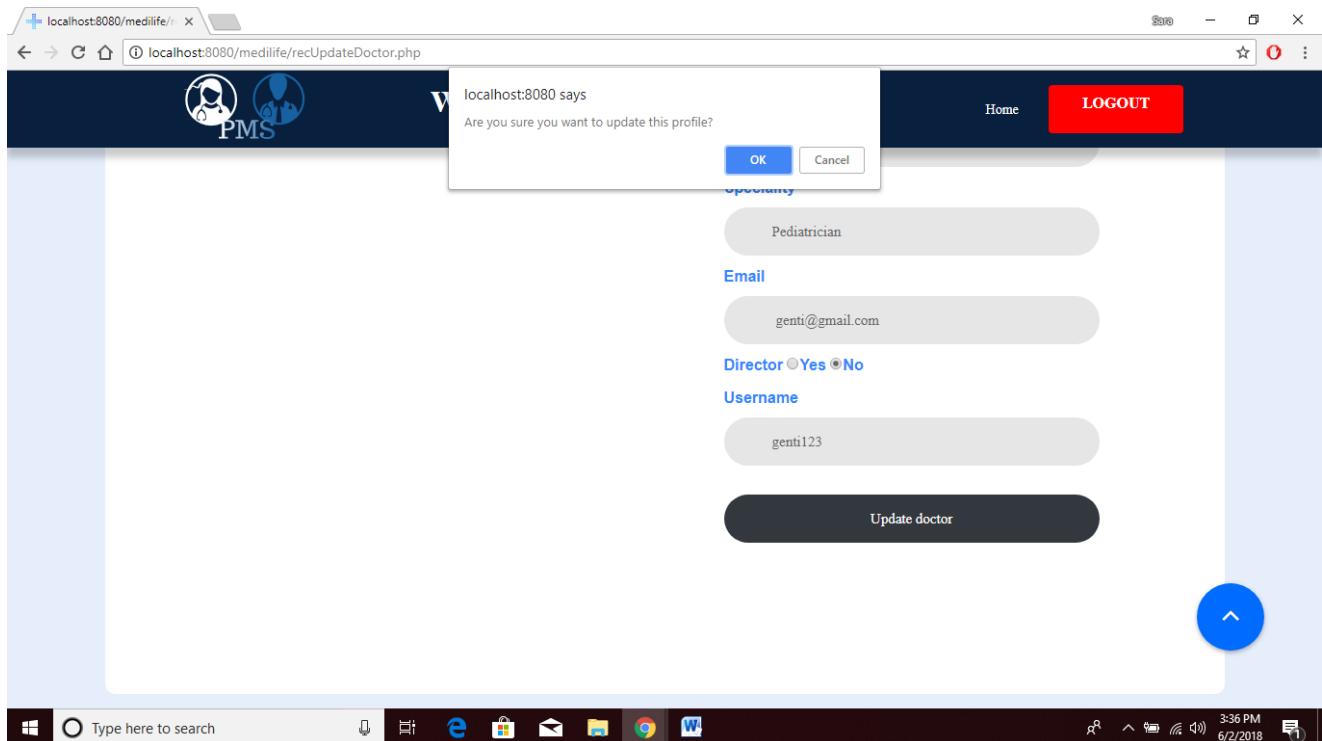
Last name

Personal number

GENDER male female

Type here to search 3:36 PM 6/2/2018

PS_41 – Update doctor form



localhost:8080 says
Are you sure you want to update this profile?

OK Cancel

Specialty

Email

Director Yes No

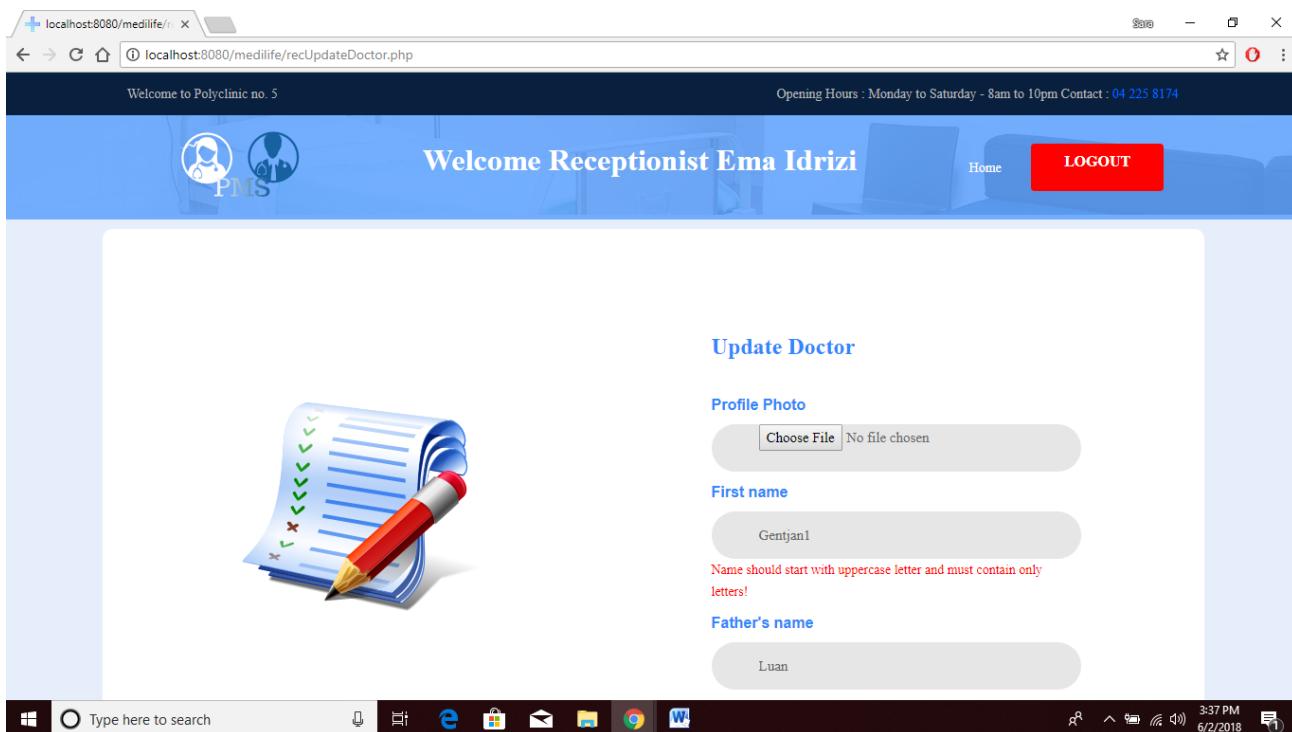
Username

Update doctor

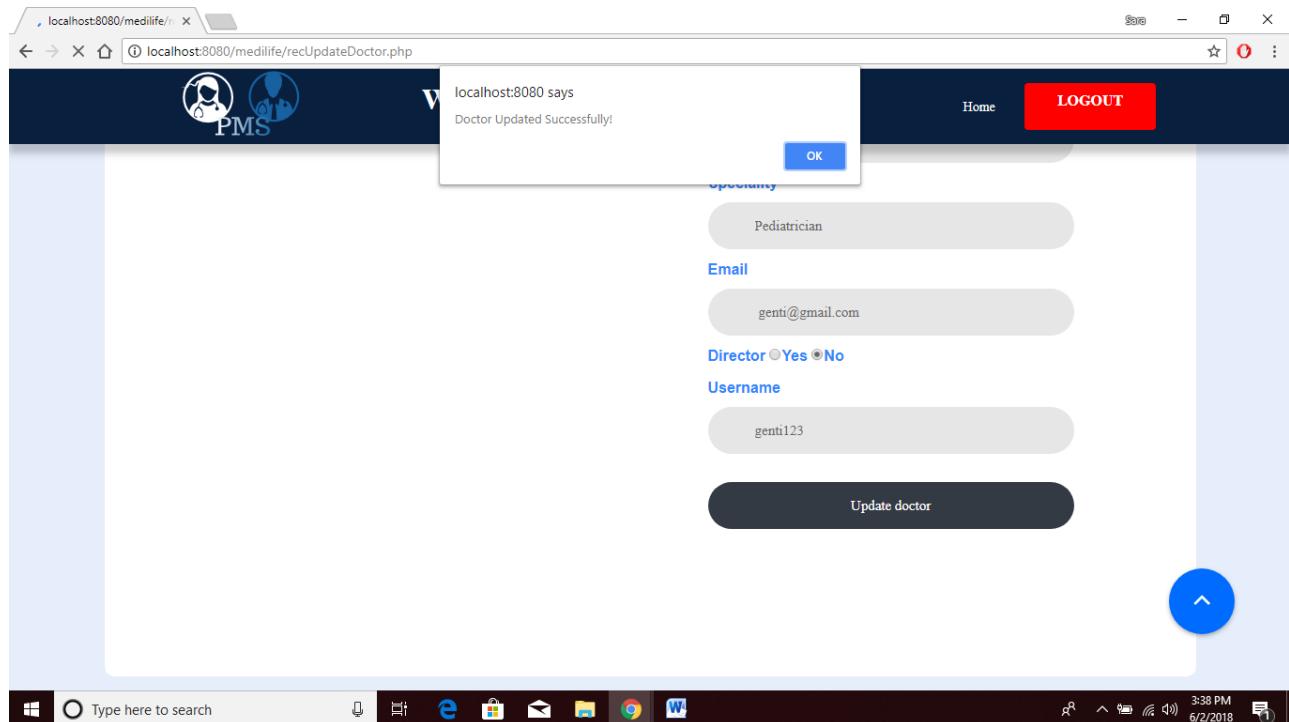
Type here to search 3:36 PM 6/2/2018

PS_42 – Update doctor confirmation

PMS Documentation



PS_43 – Update doctor (incorrect validation)



PS_44 – Update doctor (correct validation)

PMS Documentation

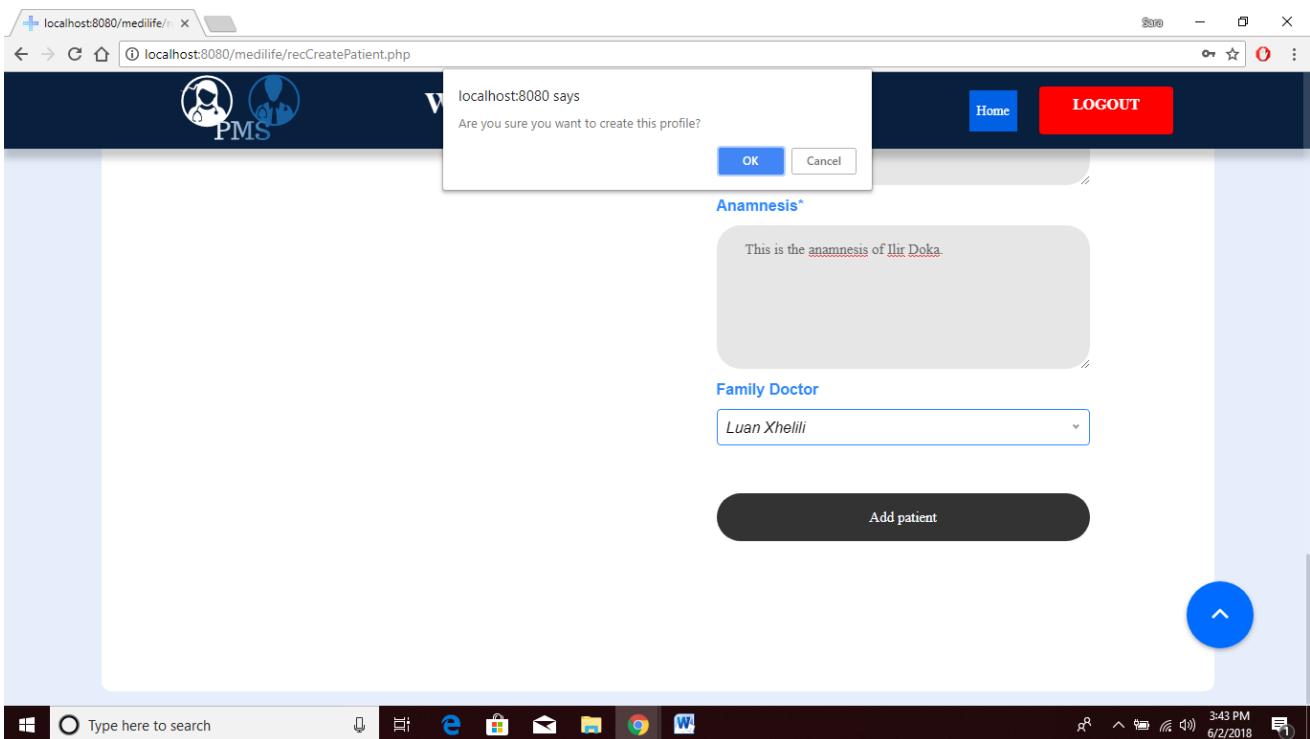
A screenshot of a web browser window titled "localhost:8080/recDocList.php". The page header includes "Welcome to Polyclinic no. 5", "localhost:8080 says", "Monday to Saturday - 8am to 10pm Contact : 04 225 8174", and "LOGOUT". A central modal dialog box asks "Are you sure you want to delete this patient?" with "OK" and "Cancel" buttons. Below the dialog, the text "Doctors' list" is visible, along with a search bar and a table listing three doctors with columns for ID, Full name, Birthdate, Personal no., and Action (Visit profile, Update, Delete).

PS_45 – Delete doctor confirmation
(When confirmed, that doctor is removed from the list)

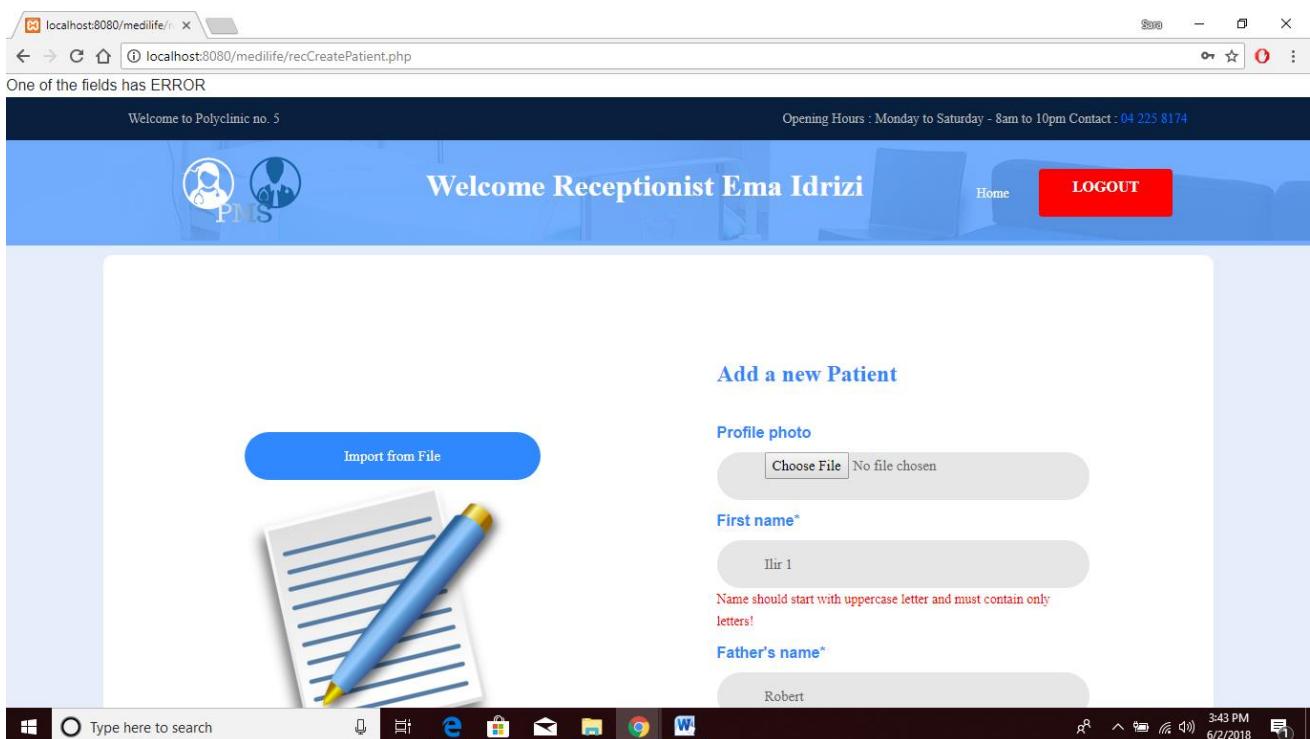
A screenshot of a web browser window titled "localhost:8080/recCreatePatient.php". The page header includes "Welcome Receptionist Ema Idrizi", "Home", and "LOGOUT". The main content is titled "Add a new Patient" and contains fields for "Profile photo" (with a "Choose File" button), "First name*", "Father's name*", "Surname*", "Personal number*", and "Last name". To the left of the form is an icon of a pen writing on a lined notebook. The bottom of the screen shows a Windows taskbar with various pinned icons.

PS_46 – Add new patient form

PMS Documentation

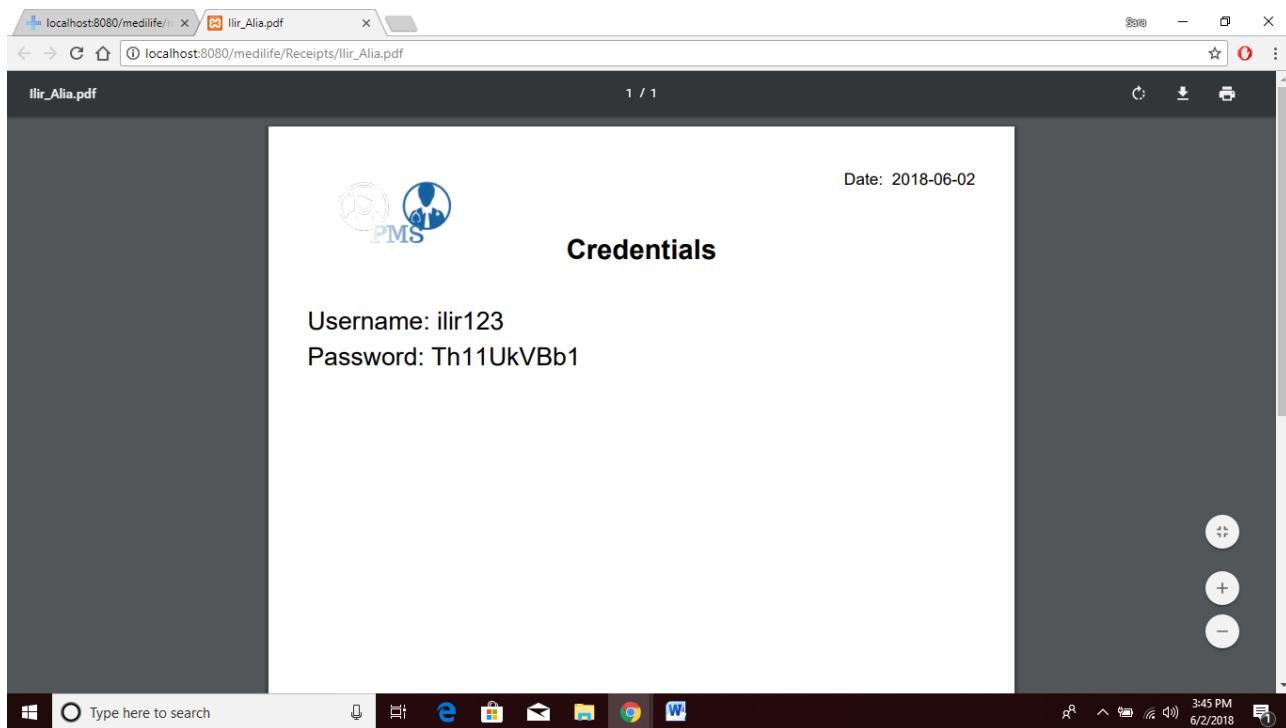


PS_47 – Add new patient (confirmation)



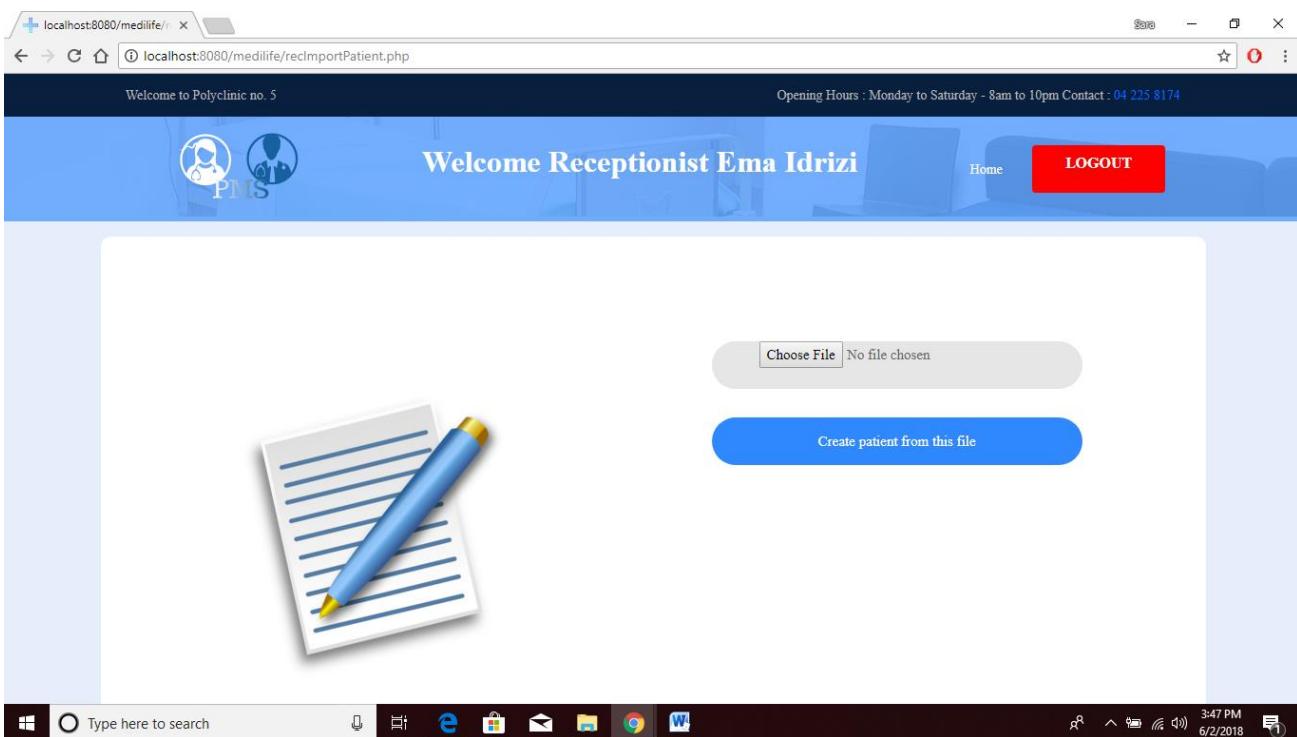
PS_48 – Add new patient (incorrect validation)

PMS Documentation



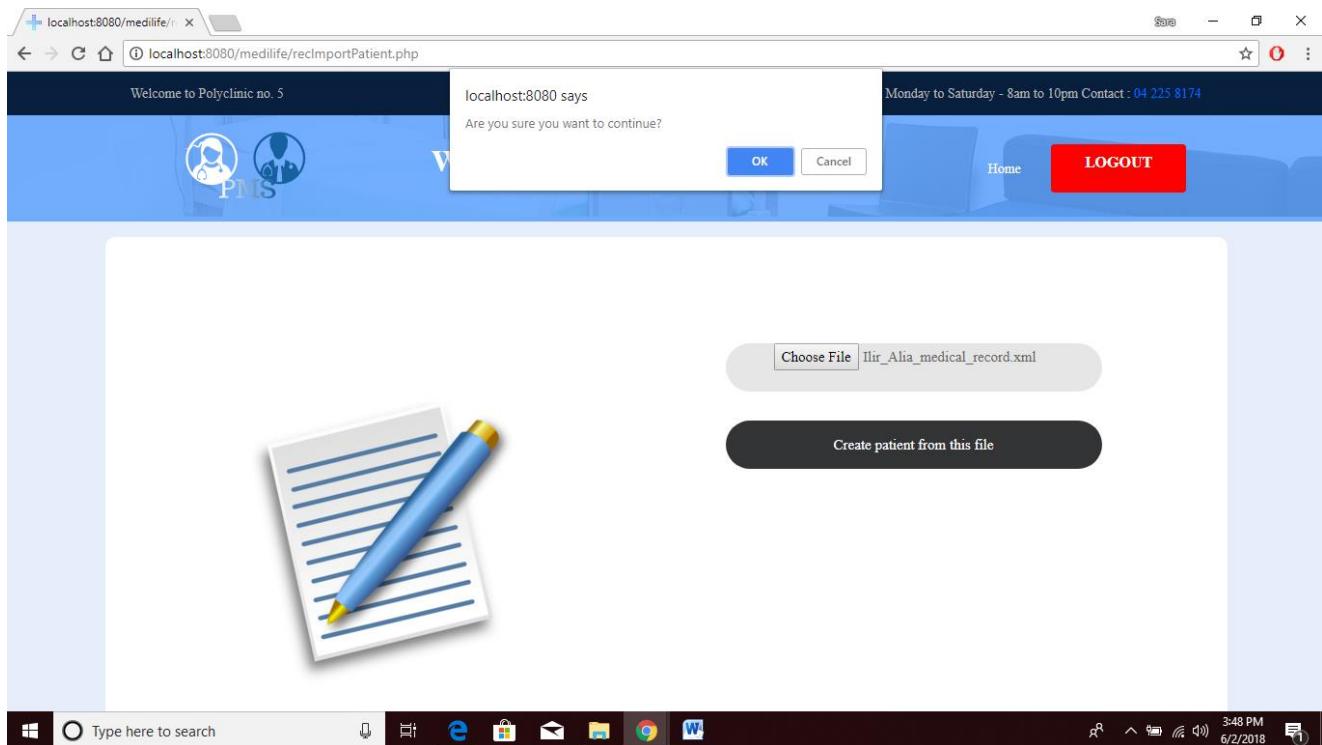
PS_49 – Add new patient (correct validation)

(a PDF file with username and password is created in order for the receptionist to print and give it to the user)

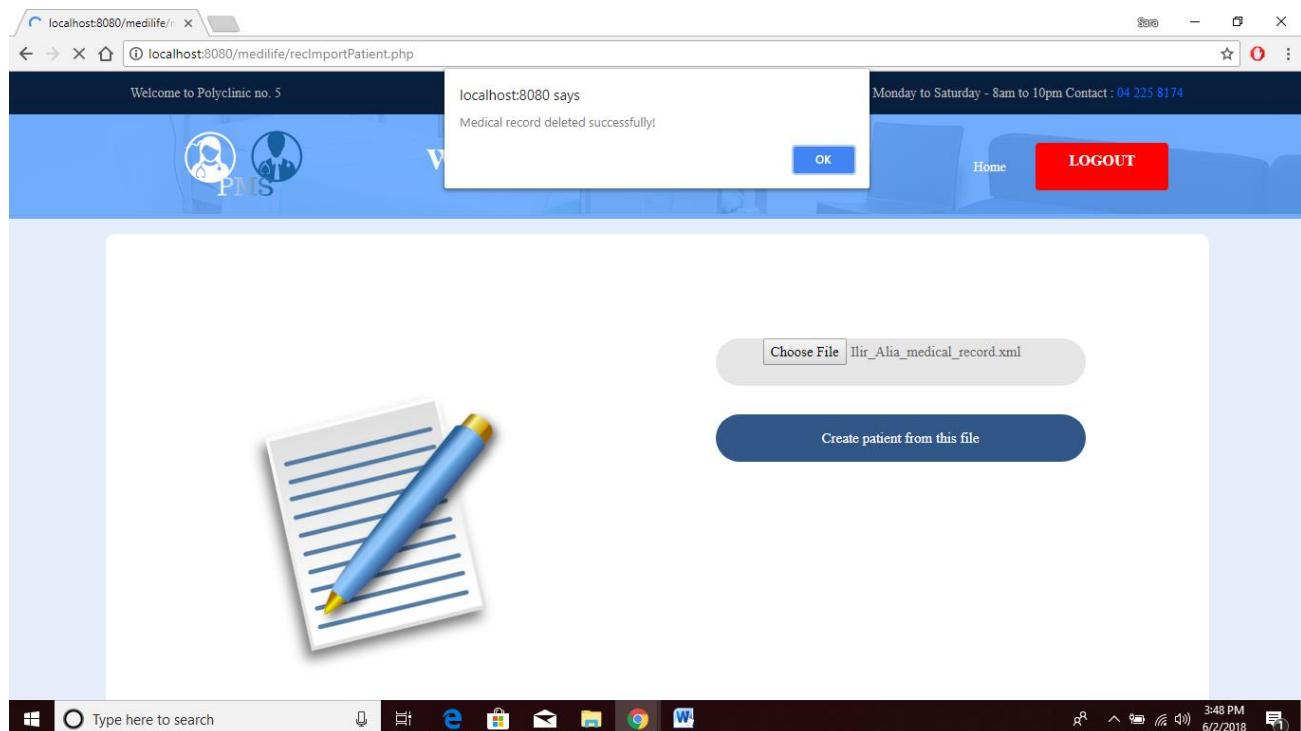


PS_50 – Add new patient from existing file (import)

PMS Documentation



PS_51 – Add new patient from existing file (confirmation)



PS_52 – Patient imported successfully

PMS Documentation

Welcome Receptionist Ema Idrizi

LOGOUT

Add a new Doctor

Profile photo

Choose File No file chosen

First name*

Father's name*

Last name*

Personal number*

Gender male female

Birth date 01/06/1991

Speciality* Radiology

Email* dhurata@gmail.com

Director* No Yes

Username* dhurata123

Password *****

Add doctor

Type here to search

3:49 PM 6/2/2018

PS_53 – Add new doctor form

localhost:8080 says
Are you sure you want to create this profile?

OK Cancel

01/06/1991

Speciality* Radiology

Email* dhurata@gmail.com

Director* No Yes

Username* dhurata123

Password *****

Add doctor

Type here to search

3:52 PM 6/2/2018

PS_54 – Add new doctor (confirmation)

PMS Documentation

Welcome to Polyclinic no. 5
Opening Hours : Monday to Saturday - 8am to 10pm Contact : 04 225 8174

Welcome Receptionist Ema Idrizi [Logout](#)

Add a new Doctor

Profile photo Choose File No file chosen

First name* Dhurata

Name should start with uppercase letter and must contain only letters!

Father's name* Hysni

PS_55 – Add new doctor (incorrect validation)

localhost:8080 says
Doctor inserted successfully!

OK

dhurata@gmail.com

Director* No Yes

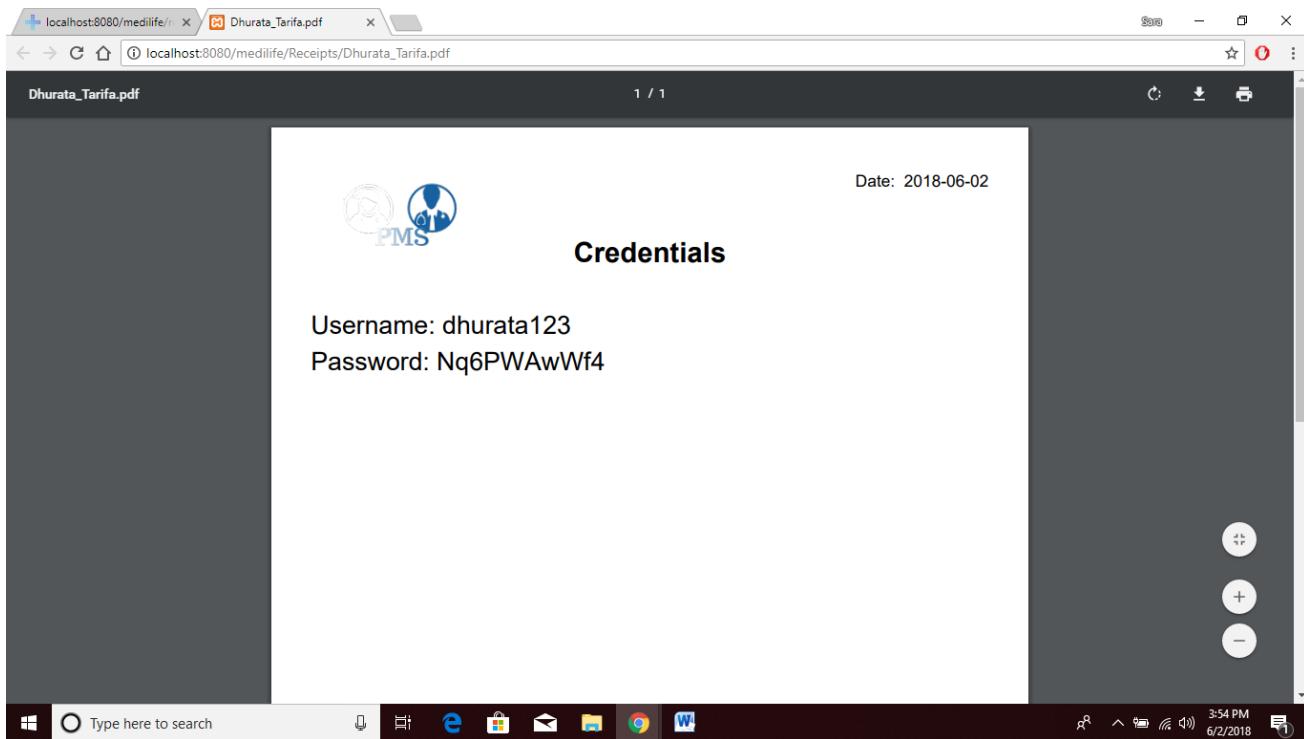
Username* dhurata123

Password *****

Add doctor

PS_56 – Add new doctor (correct validation)

PMS Documentation



PS_57 – Add new doctor (correct validation)
(a PDF file with username and password is created in order for the receptionist to print and give it to the user)

6. Project Planning

Project Name: PMS (Polyclinic Management System)

Members: Ariola Lami, Ilvana Dollaroviq, Kejda Balla, Sara Qirko

Real start and end days: 13.03.2018 – 04.06.2018

Estimated start and end days: 13.03.2018 – 13.08.2018

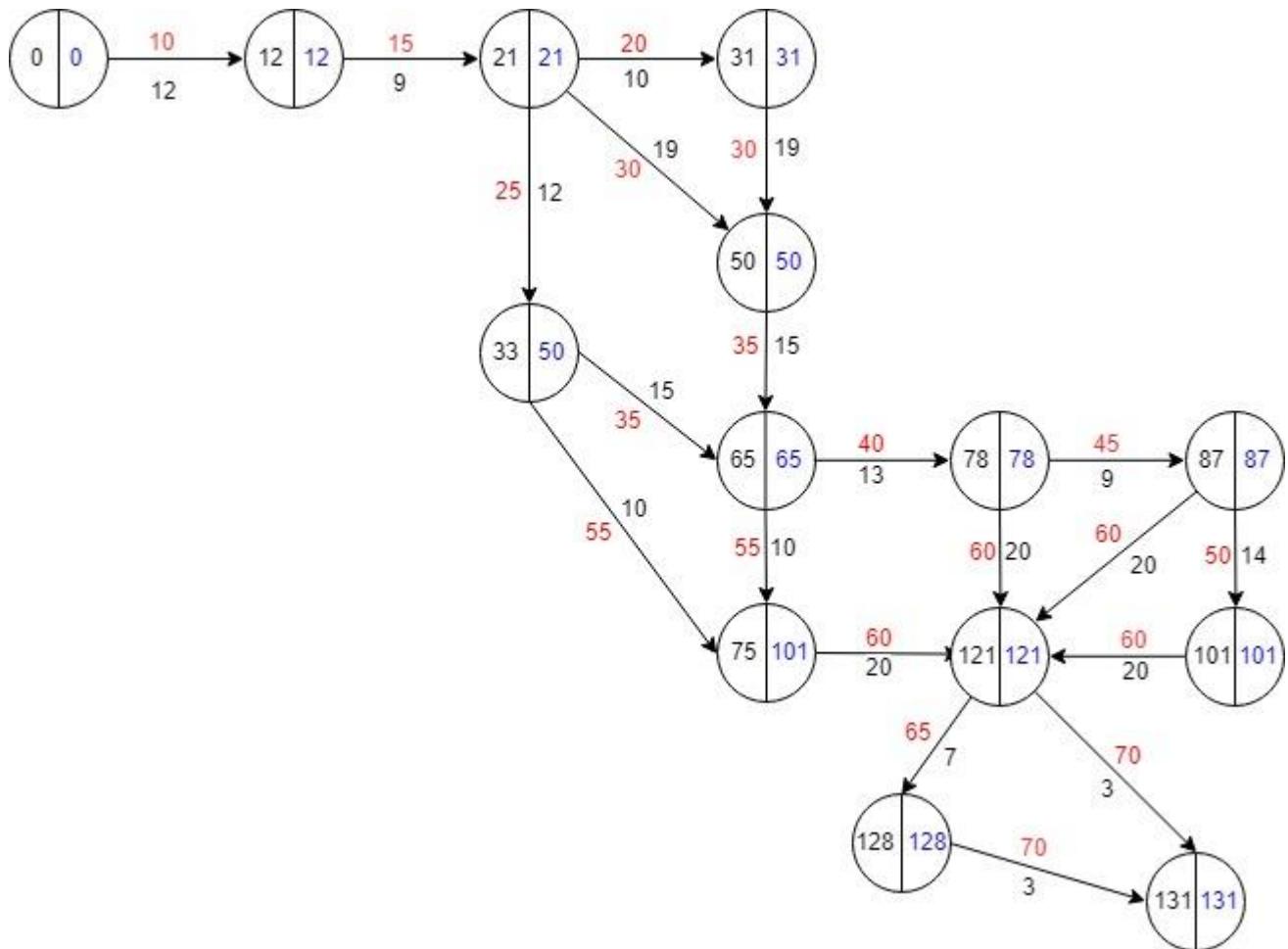
Real total days: 83 days

Estimated total days: 153 days

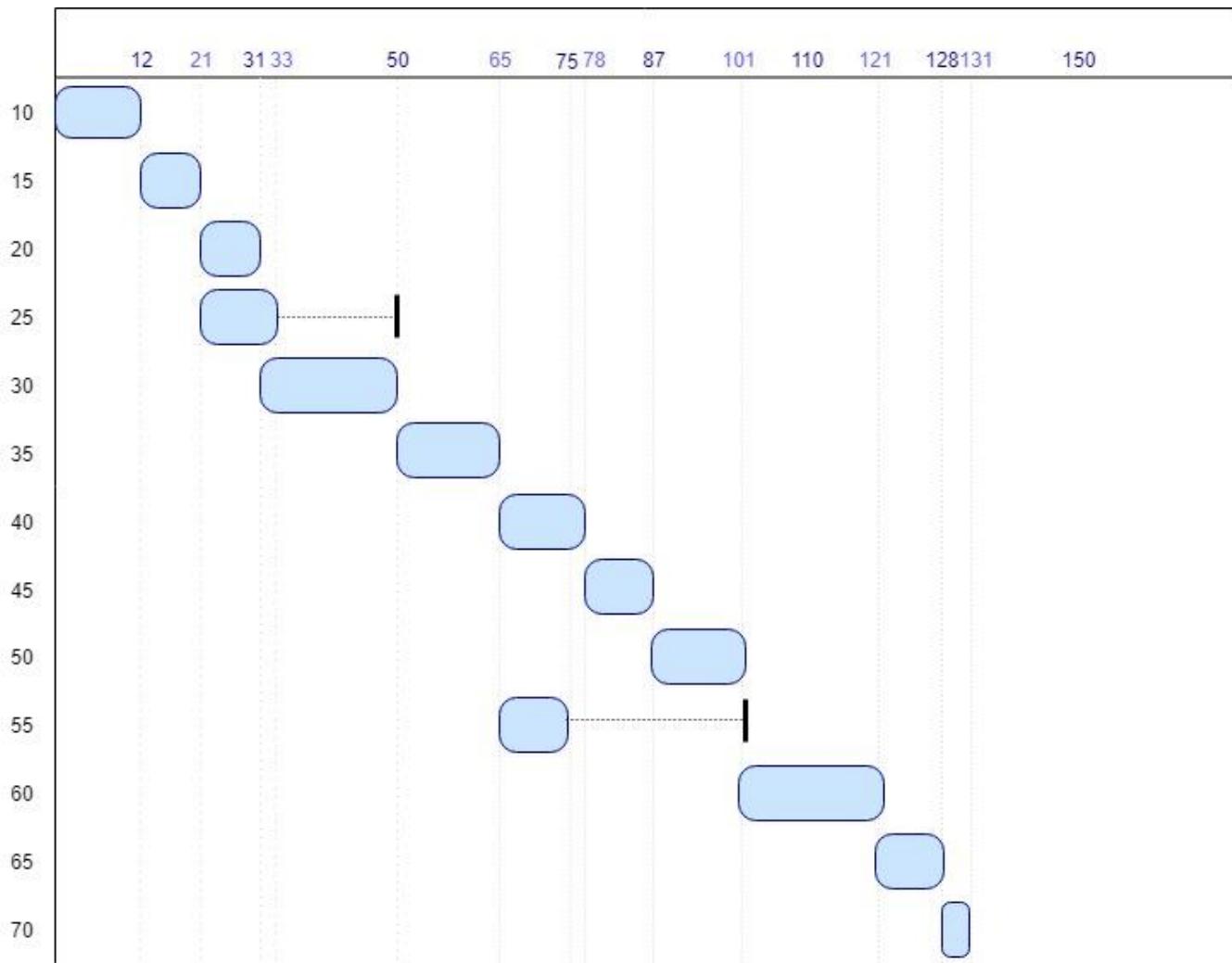
Network Analysis:

Nr	Activity	Duration (Days)	Dependencies
10	Proposed topic for project	12	-
15	Feasibility Study	9	10
20	Project Description	10	15
25	Sketch Designs	12	15
30	Requirements (Functional, Non-functional, Domain)	19	15, 20
35	User scenarios Use cases	15	25, 30
40	Activity Diagram State Diagrams Data Flow Diagram Entity Relation Diagram	13	35
45	Sequence Diagrams Collaboration Diagrams	9	40
50	Class Diagram Object Diagram Component Diagram Deployment Diagram	14	45
55	Detailed Design	10	25, 35
60	Programming	20	40, 45, 50, 55
65	Testing	7	60
70	Installation	3	60,65

Networks:



Stage Plan (Gantt Charts):



7. Appendix

7.1 Appendix A - Definitions, Acronyms and Abbreviations.

AD_## - Activity Diagram followed by a number

CD – Class Diagram

CoD – Component Diagram

CoID_## – Collaboration Diagram followed by a number

DD – Deployment Diagram

DFD_## - Data Flow Diagram followed by a number

ERD – Entity Relation Diagram

FR_## - Functional Requirement followed by a number

OD – Object Diagram

PDF – Portable Document Format

PMS – Polyclinic Management System

PS – Print Screens

SD_## - State Diagram followed by a number

SeqD_## - Sequence Diagram followed by a number

UC_## - Use Case followed by a number

UI – User Interface

US_## - User Scenario followed by a number

XML – Extensible Markup Language

7.2 Appendix B - References

<http://www.shendetesia.gov.al/>

https://arsimi.gov.al/files/userfiles/mdh/Ligji_per_mbrotjen_e_te_dhenave_personale_9887_date_10_03_2008_i_ndryshuar.pdf

http://www.shendetesia.gov.al/files/userfiles/Baza_Ligjore/sistemi_i_referimit/Untitled.FR11.pdf

<https://colorlib.com/wp/free-html5-contact-form-templates/>

<http://getbootstrap.com/>

https://www.w3schools.com/howto/howto_js_filter_table.asp

<https://colorlib.com/wp/template/medilife/>

7.3 Appendix C - File Format



REPUBLIKA E SHQIPERISE
MINISTRIA E SHENDETESISE



INSTITUTI I SIGURIMEVE
TE KUJDESIT SHENDETESOR

KARTELA PERSONALE NR. _____

Qendra Shendetesore _____

Ambulanca _____

Mjeku i Pergjithshem dhe i Familjes _____

Reaksion nga: _____ _____ _____	Dt. e hapjes se Karteles _____ Kodi i pacientit _____ Nr. i sigurimit shendetesor _____ Kategoria e popullates _____ Grupi i invaliditetit _____ Nr. Dok. Identifikimi _____
--	---

GJENERALITETET

Emri _____ / Atesia _____ / Mbiemri _____

Datelinja: Data _____, Muaji _____, Viti _____. Nr. Tel. _____

Adresa e plote e vendbanimi _____

Profesioni _____, Detyra _____

Qendra e punes _____

Ne ngarkim te nje tjetri kur nuk punon

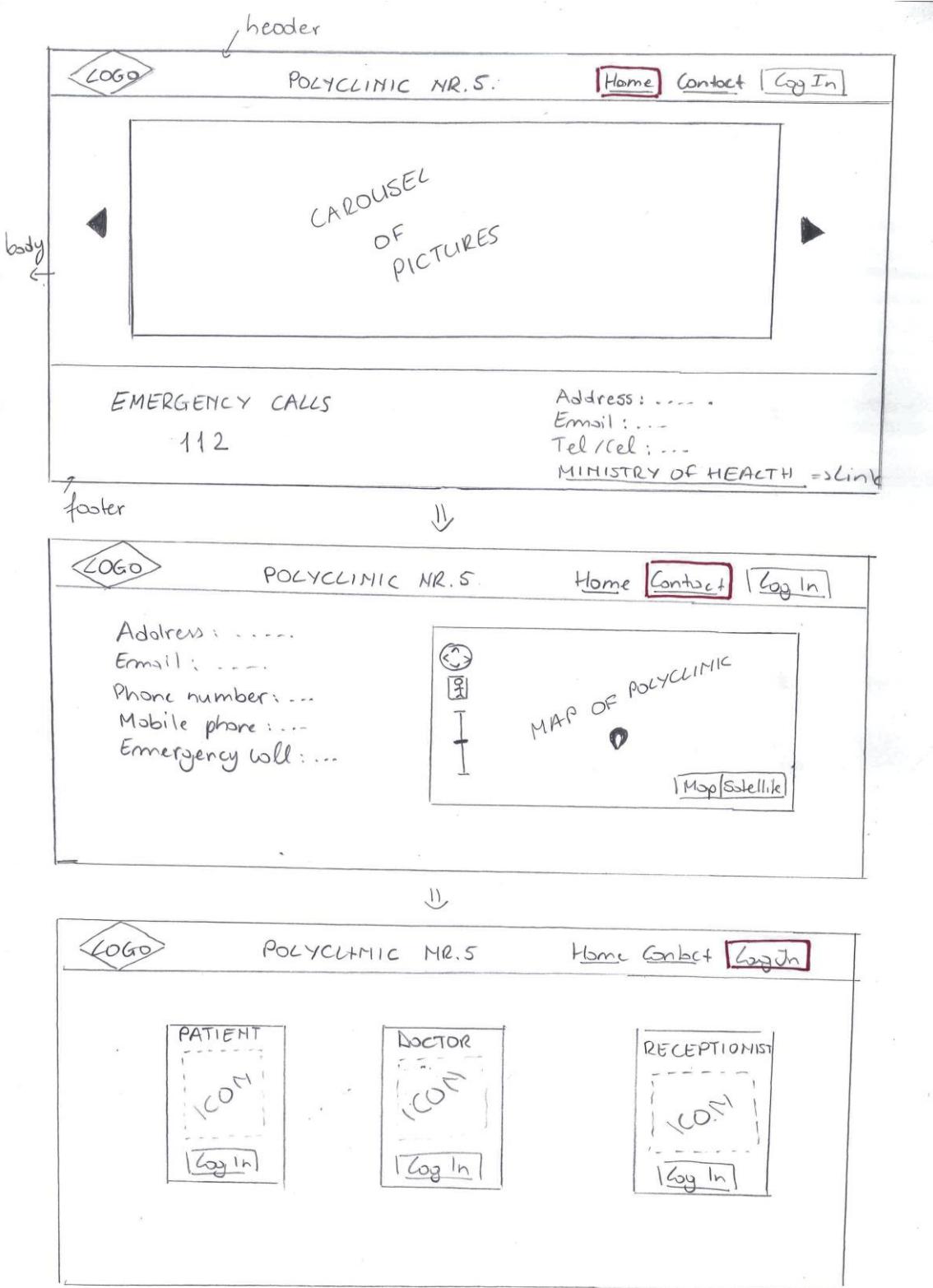
Figure 1 - File Format Page 1

ANAMNEZA E JETËS

Figure 2 - File Format Page 2

Figure 3 - File Format Page 3

7.4 Appendix D - Sketches



Sketch 1. Main page

USERNAME: []

PASSWORD: []

reCaptcha

I am not a robot!

[Log in]

→ Log in form

Sketch 2. Login form

PATIENT: NAME SURNAME

LOGO

PERSONAL INFORMATION

PROFILE PICTURE

NAME: ...
SURNAME: ...
FATHER'S NAME: ...
BIRTHDATE: ...
BIRTHPLACE: ...
PROFESSION: ...
JOB: ...
ADDRESS: ...

MEDICAL RECORD

BLOOD TYPE: ...
RH FACTOR: ...
ALLERGIES: ...
FAMILY'S DOCTOR:
ANAMNESIS:

MY PROFILE

- 1 RECORDS
- 2 CHANGE PASSWORD
- 3 CONTACT DOCTOR
- 4 LEAVE FEEDBACK
- 5 LOG OUT

Sketch 3. Patient's profile

①

The sketch depicts a patient record form with the following layout:

- PATIENT : NAME SURNAME**: Located at the top center.
- EXAMINATION VISIT # MR**: Below the patient name.
- DATE: ___ / ___ / ___**: Input field for the date.
- DOCTOR: _____**: Input field for the doctor's name.
- COMPLAINTS:** A large input area with several short horizontal lines.
- DIAGNOSIS:** A large input area with several short horizontal lines.
- MEDICINES:** A large input area with several short horizontal lines.
- DAYS OFF: ___**: Input field for days off.
- IS INFECTIOUS?**: A question followed by two checkboxes: Yes and No.
- Download**: A button labeled with a circled number ②.
- prev**: Navigation icon on the left side.
- next**: Navigation icon on the right side.

Sketch 4. Patient's records

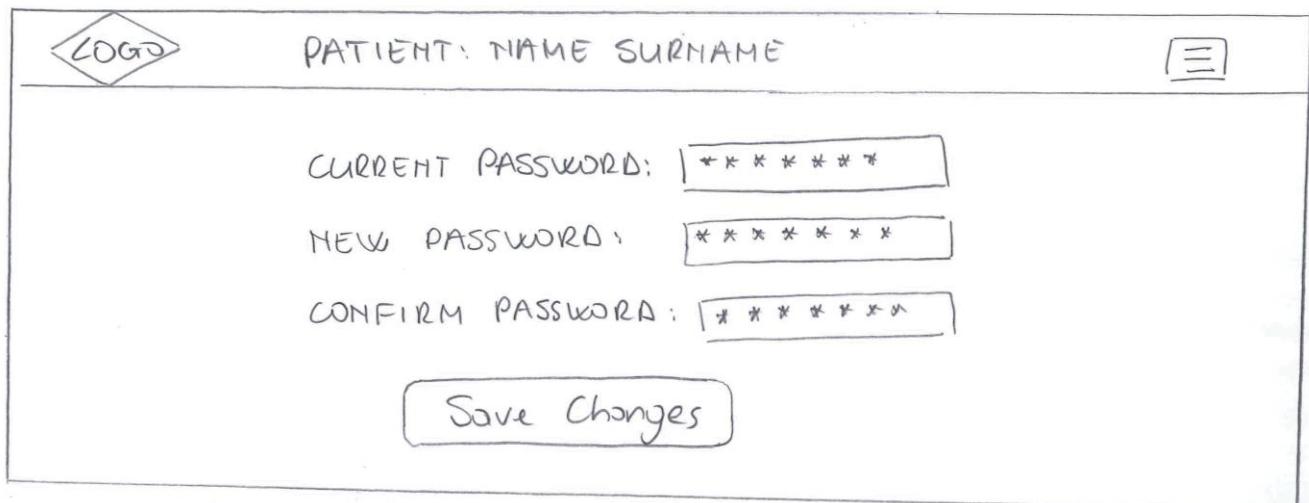
(2)

PDF FORMAT

	visit_id: 123456 Date: - / - /
<u>MEDICAL VISIT</u>	
<u>PATIENT'S INFORMATION:</u>	
PATIENT: -----	
PERSONAL NR: -----	
HEALTH INSURANCE NR: -----	
BLOOD TYPE: -----	
RH FACTOR: -----	
ALLERGIES: -----	
<u>MEDICAL VISIT:</u>	
DOCTOR: -----	
<u>PATIENT'S COMPLAINTS:</u>	
[Large empty box for complaints]	
<u>DIAGNOSIS:</u>	
[Large empty box for diagnosis]	
<u>MEDICINES:</u>	
[Large empty box for medicines]	
DAYS OFF: -----	
IS INFECTIOUS: -----	
DOCTOR'S SIGNATURE:	
[Signature line]	

Sketch 5. PDF format of medical visit

(3)

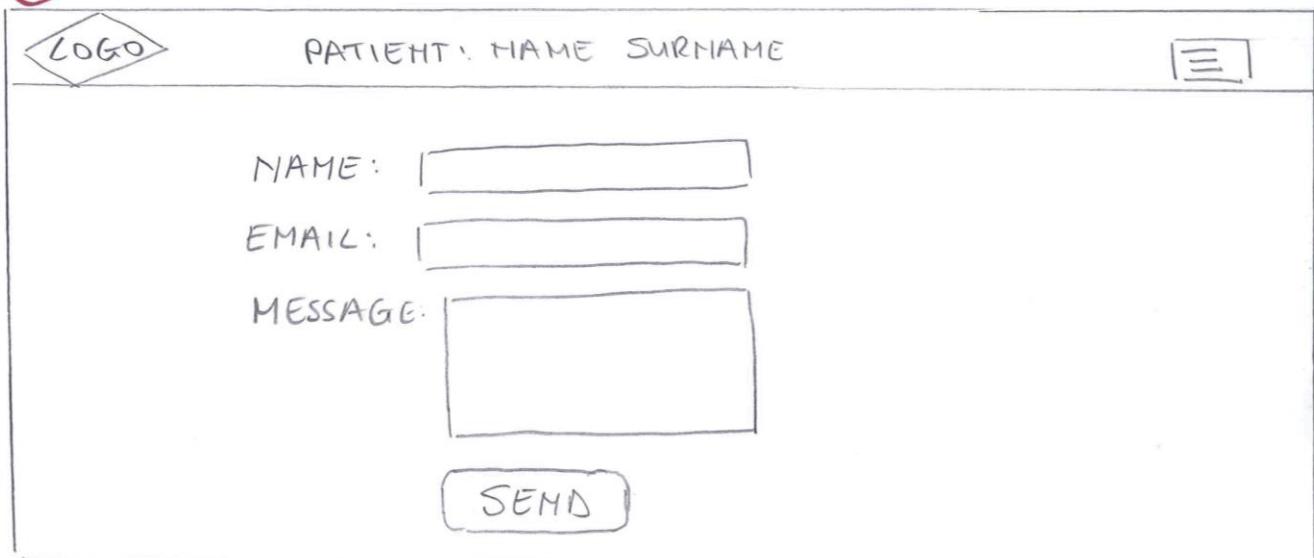


A hand-drawn sketch of a user interface for changing a password. At the top left is a logo placeholder. In the center, it says "PATIENT: NAME SURNAME". At the top right is a menu icon. Below this, there are three input fields: "CURRENT PASSWORD" containing "*****", "NEW PASSWORD" containing "*****", and "CONFIRM PASSWORD" containing "*****". At the bottom is a button labeled "Save Changes".

! The same design will be used for "Change password" menu
for doctor and receptionist.

Sketch 6. Change Password

(4)



A hand-drawn sketch of a patient contact form. At the top left is a logo placeholder. In the center, it says "PATIENT: NAME SURNAME". At the top right is a menu icon. Below this, there are three input fields: "NAME" with an empty box, "EMAIL" with an empty box, and "MESSAGE" with a large empty box. At the bottom is a button labeled "SEND".

Sketch 7. Patient contacts doctor

(5)

	PATIENT: NAME SURNAME	
<p>How satisfied are you with the service :</p> <p>○ ☹ ○ ☹ ○ ☹ ○ ☺ ○ ☺</p> <p>Comments:</p> <div style="border: 1px solid black; height: 100px; width: 100%;"></div> <p>Leave Feedback</p>		

Sketch 8. Patient leaves feedback

	DOCTOR: NAME SURNAME																	
<p><u>PERSONAL INFORMATION</u></p> <p>PROFILE PICTURE</p> <p>NAME: ... SURNAME: ... PERSONAL ID: ... SPECIALITY:</p>	<p><u>WAITING LIST</u></p> <p>(Search...)</p> <table border="1"> <thead> <tr> <th>ID</th> <th>NAME</th> <th>SURNAME</th> <th>PERSONAL ID</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>SARA</td> <td>DIRKO</td> <td>02011521</td> </tr> <tr> <td>2.</td> <td>KEJDA</td> <td>BALLA</td> <td>02011528</td> </tr> <tr> <td>3.</td> <td>..</td> <td>..</td> <td>.. ..</td> </tr> </tbody> </table>	ID	NAME	SURNAME	PERSONAL ID	1.	SARA	DIRKO	02011521	2.	KEJDA	BALLA	02011528	3.	<p>HOME</p> <p>MY PATIENTS </p> <p>CHANGE PASSWORD</p> <p>*STATISTICS </p> <p>LOG OUT</p> <p>Visit profile  A</p> <p>Create visit  6</p>
ID	NAME	SURNAME	PERSONAL ID															
1.	SARA	DIRKO	02011521															
2.	KEJDA	BALLA	02011528															
3.															

- (A) Visit profile will take us to a page with design similar to "My profile" menu of PATIENT actor (described before). From this page you can view the examinations of that specific patient, similar to "Records" menu of PATIENT Doctor. You can also download a specific visit and a PDF file will be created, similar to PDF format described before.

Sketch 9. Doctor's profile

(6)

NAME: KEJDA
SURNAME: BALLA

COMPLAINTS:

write here...

DIAGNOSIS:

write here ...

MEDICINES:

write here ...

DAYS OFF: [dropdown arrow]

IS INFECTIOUS; Yes No

(Create) * also creates a PDF

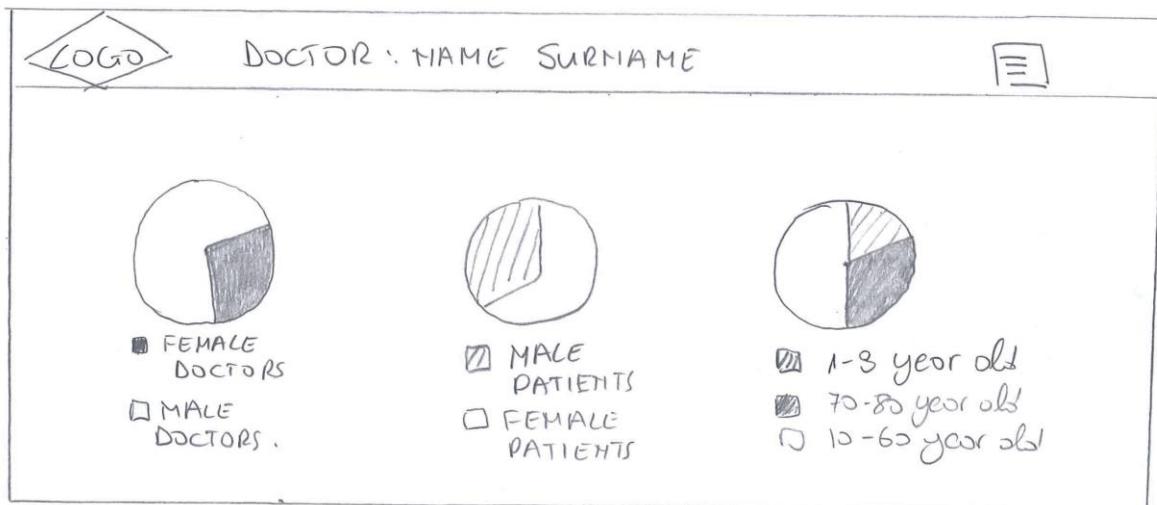
Sketch 10. Doctor creates visit

(7)

ID	NAME	SURNAME	FATHER'S NAME	BIRTHDATE	ACTION
1	SARA	QIRKO	JORGO	12/12/1996	(View Profile) → A
2					
3					
4					

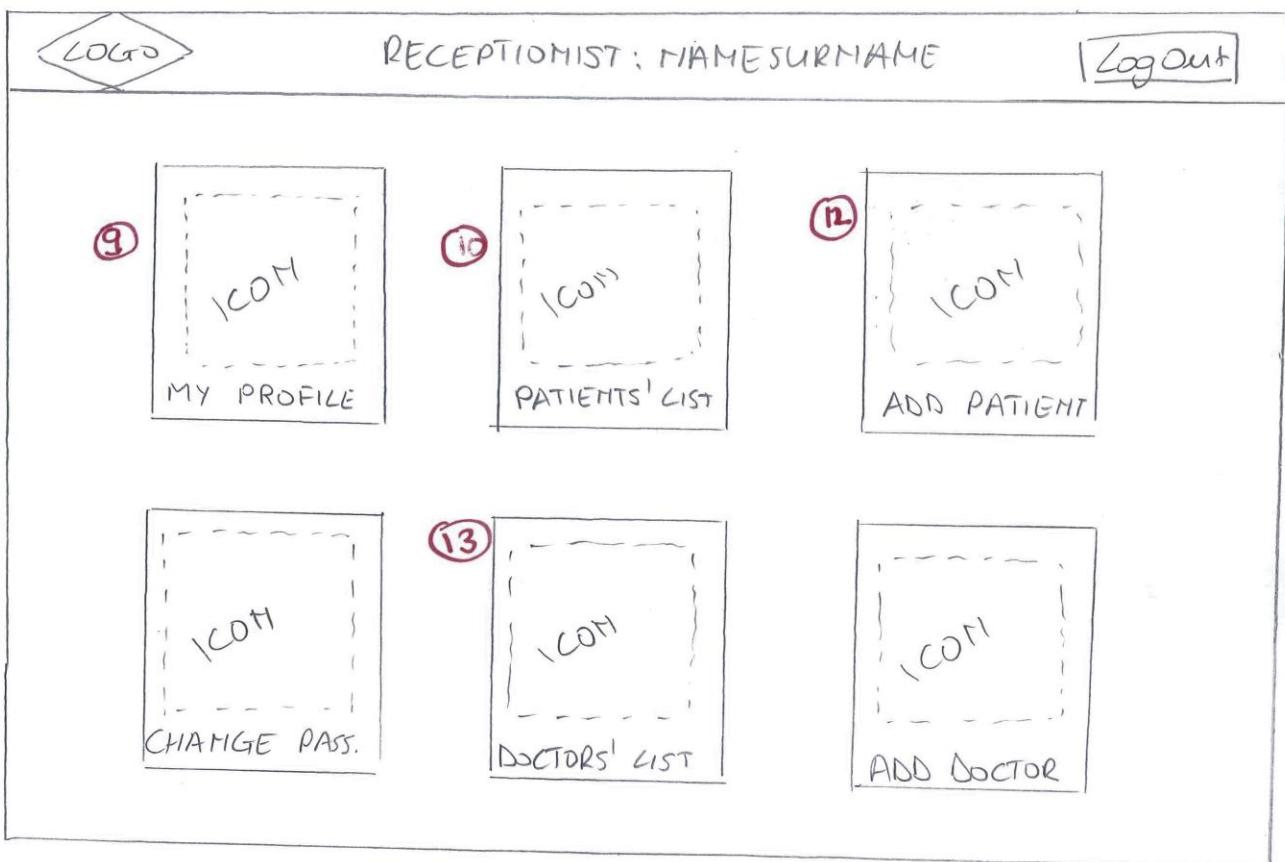
Sketch 11. Doctor's patients

(8)



* Statistics page is shown only to the doctor who is the director of the polyclinic.

Sketch 12. Statistics



Sketch 13. Receptionist's home

PMS Documentation

(9)

	RECEPTIONIST : NAME SURNAME	<u>Home</u> <u>Logout</u>
<div style="border: 1px solid black; padding: 10px;"> <p>PERSONAL INFORMATION</p> <ul style="list-style-type: none"> Name: _____ Surname: _____ Birthdate: _____ Birthplace: _____ Gender: _____ </div>		
<div style="border: 1px solid black; padding: 10px;"> <p>PROFILE PICTURE</p> </div>		

Sketch 14. Receptionist's profile

(10)

	RECEPTIONIST : NAME SURNAME	<u>Home</u> <u>Logout</u>																				
<p>PATIENTS' LIST</p> <div style="border: 1px solid black; width: 100px; margin-bottom: 5px;"></div> <p>Search...</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>ID</th> <th>Name</th> <th>Surname</th> <th>Action</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Sors.</td> <td>Qirko</td> <td> A (View Profile) B (Update) C (Allow visit) D (Export) E (Delete) </td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td></td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td></td> </tr> <tr> <td>.</td> <td>.</td> <td>.</td> <td></td> </tr> </tbody> </table>			ID	Name	Surname	Action	1.	Sors.	Qirko	A (View Profile) B (Update) C (Allow visit) D (Export) E (Delete)	
ID	Name	Surname	Action																			
1.	Sors.	Qirko	A (View Profile) B (Update) C (Allow visit) D (Export) E (Delete)																			
.	.	.																				
.	.	.																				
.	.	.																				

- (A) Visit profile will take us to a page with design similar to "My Profile" menu of PATIENT odr. (described before)
From this page you can view examinations of that specific patient, similar to records menu of PATIENT odr.
You can also download a specific visit and a PDF file will be created, similar to PDF format described before.
- (B) Allow visit - allow the patient's family doctor to create a new record on the patient's file. A pop up window to confirm this action will be shown.
- (C) Delete - a pop up window will be shown to confirm action
- (D) Export - an XML file will be created with patient's information

Sketch 15. Receptionist views patients

(11)

RECEPTIONIST: NAME SURNAME

Home Logout

UPDATE PATIENT

NAME: []

SURNAME: []

ADDRESS: []

EMAIL: []

JOB: []

PHONE: []

⋮

(Save changes)

- At the beginning, all fields will be filled with existing information which can be changed.

Sketch 16. Receptionist updates patient

(12)

RECEPTIONIST: NAME SURNAME

Home Logout

ADD NEW PATIENT

NAME: []

SURNAME: []

ADDRESS: []

EMAIL: []

JOB: []

⋮

(ADD PATIENT)

(IMPORT) → E

- The same idea will be used for "Add new doctor" section. The only difference is that there should be some other fields for doctor information and a doctor cannot be imported.

E Import - will open a window to choose an XML file and its information will be added to database.

Sketch 17. Receptionist adds patient

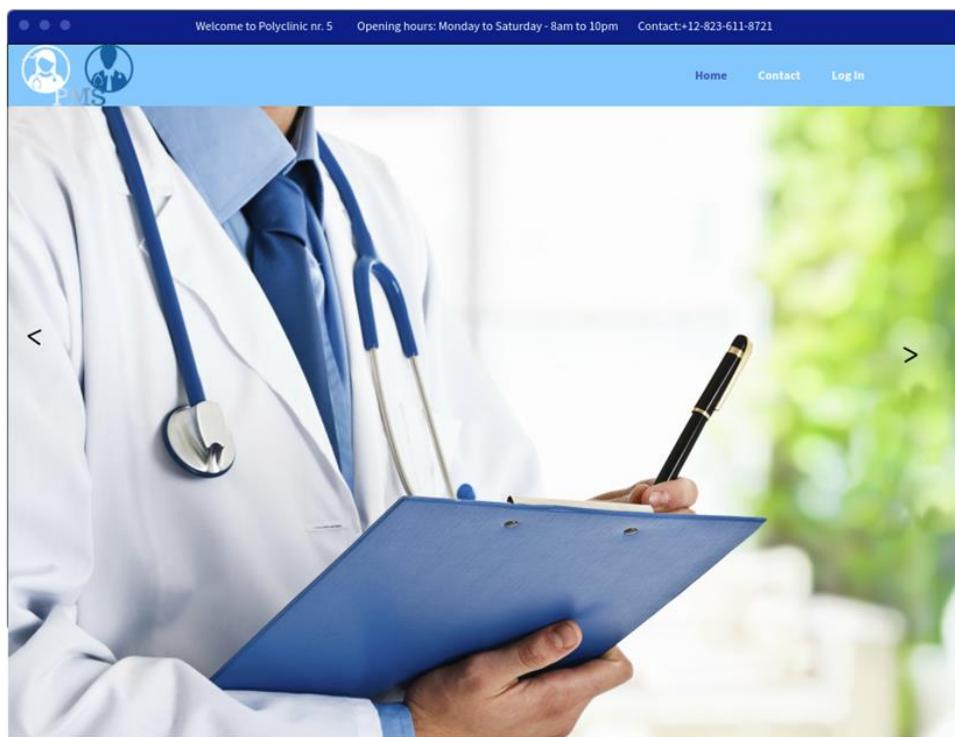
(13)

	RECEPTIONIST: NAME SURNAME			Home Logout
<u>DOCTORS' LIST</u>				
<input type="text" value="Search..."/>				
ID	NAME	SURNAME	ACTION	
1	SARA	QIRKO	(View profile)	(Update) (Delete)
:	:	:	:	

- (E) View profile will take us to a page with design similar to "Home" menu of DOCTOR actor. (described before)
- (C) Delete - a pop up window will be shown to confirm action.
- (F) Update - similar to "update patient's profile" described at (11). The only difference is that the fields that should be filled for patient and doctor are different.

Sketch 18. Receptionist views doctor

7.5 Appendix E - Detailed Designs

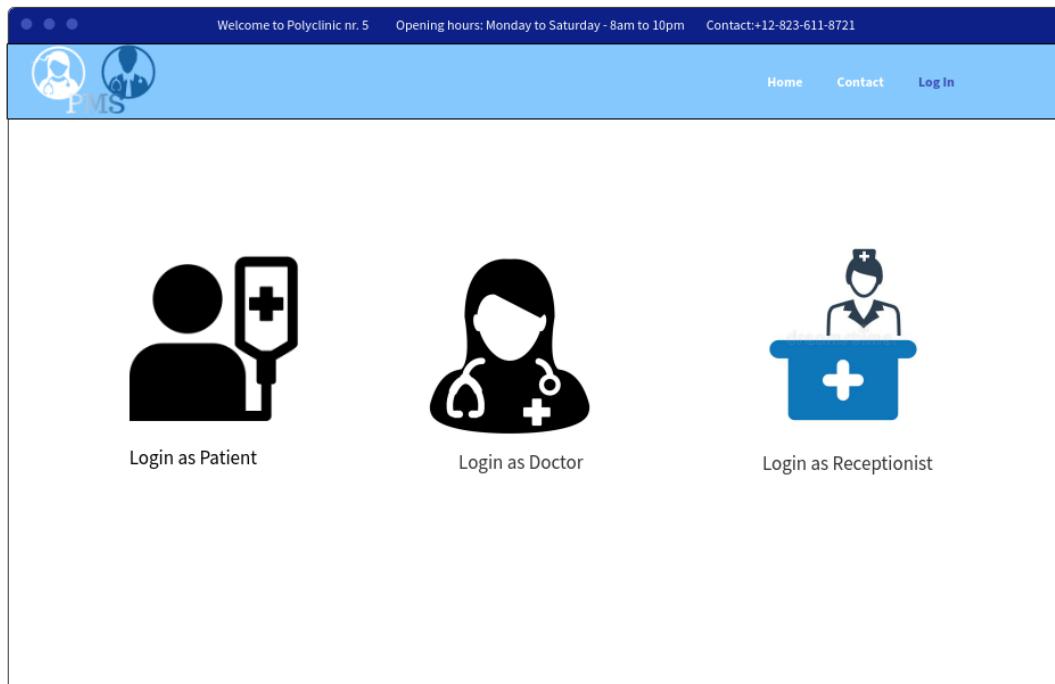


Detailed Design 1 Home Page

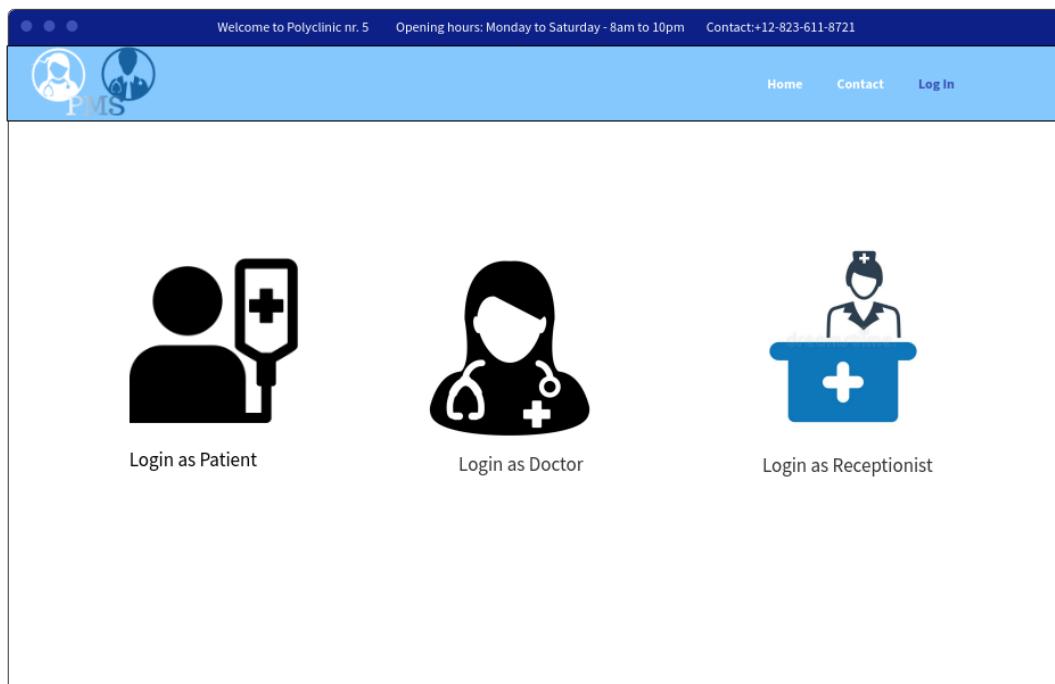
A screenshot of a web browser showing the contact page of the medical clinic. The header is identical to the home page. The main content area contains three contact details: "Address: Islam Alla street, 50m from street entrance.", "Tel: 04 225 8174", and "Email: medicalcenterertest18@gmail.com". To the right of these details is a placeholder for a "Full Banner Ad - 468x60". Below the contact information is a map of the surrounding area, showing various landmarks and streets. The map is centered on the location of the medical center.

Detailed Design 2 Contact Page

PMS Documentation



Detailed Design 3 Log-in Page



Detailed Design 4 Log-in Form

PMS Documentation

Welcome to Polyclinic nr. 5 Opening hours: Monday to Saturday - 8am to 10pm Contact:+12-823-611-8721

Welcome Doctor Ana Marku

Menu ▾

- HOME
- MY PATIENTS
- CHANGE PASSWORD
- LOG OUT

Personal Information

Name: Ana
Fathers Name: Zamir
Surname: Marku
Personal ID: A12345678Z
Gender: F
Phone: 0678542356
Birthdate: 1970-03-01
Birthplace: Tirana
Academic Degree: phd
University: Universiteti i Mjekesise Tirane
Graduation date: 1992-07-10
Specialty: Mjek i pergjithshem
Email: ana123@gmail.com
Username: ana123

Waiting List

ID	First Name	Father's Nam..	Last Name	Birthdate	Personal No.	Action
1	Robert	Andrea	Storms	1992/06/17	E12345678D	View Profile Create Visit
2	Stephan	Denis	Popp	2000/12/09	D12345678D	View Profile Create Visit
3	Ilvana	Gazmend	Dollarovic	1997/06/28	D12345678D	View Profile Create Visit

Detailed Design 5 Doctors' Home Page

Welcome to Polyclinic nr. 5 Opening hours: Monday to Saturday - 8am to 10pm Contact:+12-823-611-8721

Welcome Doctor Ana Marku

Menu ▾

- HOME
- MY PATIENTS
- CHANGE PASSWORD
- LOG OUT

Medical Record Information

Health Insurance Number: 324134123
Blood Type: A+
Rh_factor: R-
Allergies: none
Anamnesis: none
Family's doctor: Ana Marku
Created by: Ema Idrizi
Date of medical record's creation: 2018-05-01

Personal Information

Name: Robert
Surname: Storms
Birthdate: 1992-06-17
Birthplace: Tirana
Gender: M
Fathers Name: Andrea
Personal Number: E12345678D
Address: Tirane
Phone: 0678356945
Profession: Architect
Job: Businessman
Guardian:
E-mail: robert123@gmail.com

View Examinations

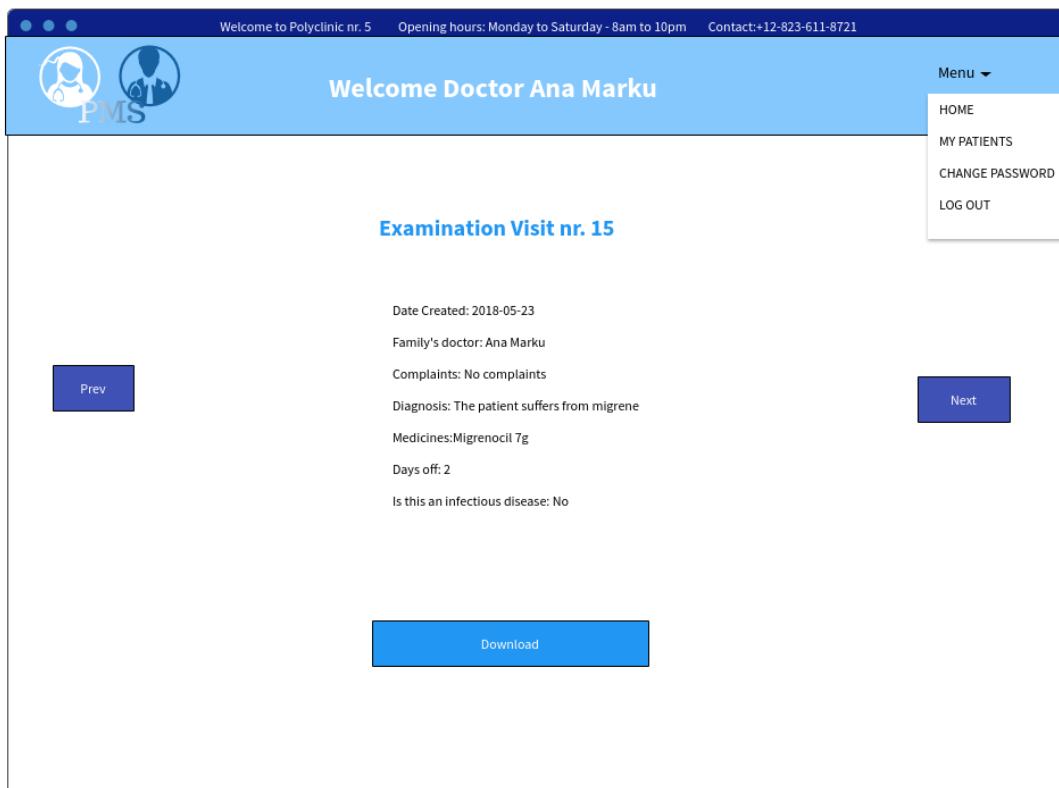
Detailed Design 6 Patients' Profile Page

The page in detailed design 6 is opened when the “View Profile” button from the “Waiting List” table in doctors’ home page is clicked. The same design model will be used when we click the button “View

PMS Documentation

Profile" located in "My Patients" page, for the "Home" page when the user is logged in as a patient and "My Profile" page when the user is logged in as a receptionist only without including medical record information.

The same idea will be used when you click "Visit Profile" on "Patients' List" and on "Doctors' List" page when the user is logged in as a receptionist.



Detailed Design 7 View Examinations of the Patients Profile Page

The page in detailed design 7 is opened when the "View Examinations" button from the "Patients' profile" page. The same idea will be used when you click "My records" from Menu when the user is logged in as a patient.

PMS Documentation

Welcome to Polyclinic nr. 5 Opening hours: Monday to Saturday - 8am to 10pm Contact:+12-823-611-8721

Welcome Doctor Ana Marku

Menu ▾

HOME
MY PATIENTS
CHANGE PASSWORD
LOG OUT

Create Visit

Name: Robert
Father's Name: Andrea
Surname: Storms
Gender: M
Birthday: 1992-06-17
Doctor's Name: Ana
Doctor's Surname: Marku
Birthplace: Tirane

Complaints

Diagnosis

Medicines

Days off:

Is infectious?

Save Visit

Detailed Design 8 Create Visit

The page in detailed design 8 is opened when the Create Visit button from the 'Waiting List' table in doctors' home page is clicked.

Welcome to Polyclinic nr. 5 Opening hours: Monday to Saturday - 8am to 10pm Contact:+12-823-611-8721

Welcome Doctor Ana Marku

Menu ▾

HOME
MY PATIENTS
CHANGE PASSWORD
LOG OUT

First Name

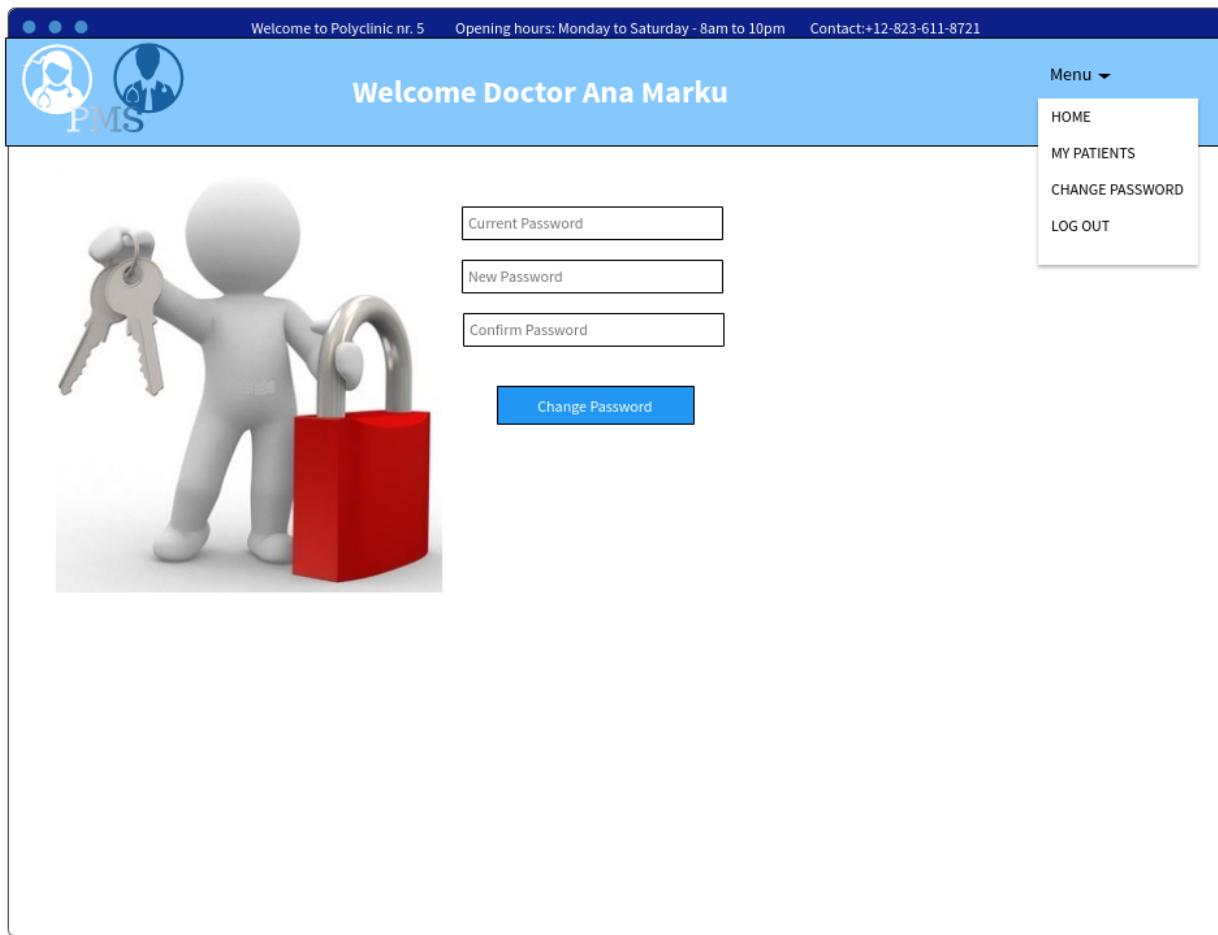
Last Name

ID	First Name	Last Name	View Profile
1	Mark	Otto Inc	View Patient
2	Jacob	Thornton	View Patient
3	Larry	Bird	View Patient
4	Jake	Hemingway	View Patient
5	Tim	Burton	View Patient
6	Jake	Lembert	View Patient

Detailed Design 9 My Patients

PMS Documentation

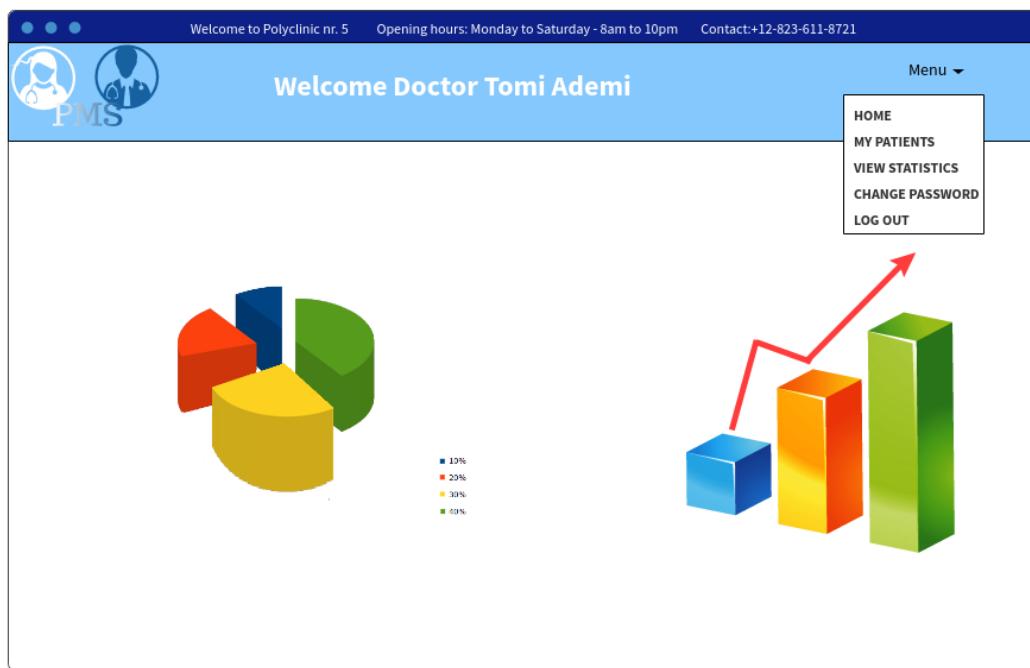
The page in detailed design 9 is shown when “My Patients” from “Menu” is clicked. The same idea will be used when you click “Patients’ List” from “Home” when the user is logged in as a receptionist. The only difference will be that this page will have 4 more buttons: “Update”, “Allow Visit”, “Export” and “Delete”. Also, it will be used when you click “Doctors’ List” from “Home” when the user is logged in as a receptionist. The only difference will be that this page will have 2 more buttons: “Update” and “Delete”.



Detailed Design 10 Change Password

The page in detailed design 10 is shown when “Change Password” from ‘Menu’ is clicked. The same idea will be used for all users when you click “Change Password” when the user is logged in.

PMS Documentation



Detailed Design 11 View Statistics

The page in detailed design 11 is shown when “View Statistics” from the “Menu” is clicked. Only the director has this option.

The screenshot shows the PMS application interface. At the top, there is a header bar with the text "Welcome to Polyclinic nr. 5", "Opening hours: Monday to Saturday - 8am to 10pm", and "Contact: +12-823-611-8721". Below the header is a logo with two stylized figures and the acronym "PMS". The main title "Welcome Patient Robert Storms" is displayed. On the right side, there is a "Menu" button with a dropdown menu containing links: "HOME", "MY PATIENTS", "VIEW STATISTICS", "CHANGE PASSWORD", and "LOG OUT". In the center of the page, there is a message icon (envelope with dashed lines) and a form for sending a message. The form includes input fields for "Name" (Robert), "Phone" (1), and "Message", and a "Send" button.

Detailed Design 12 Contact Doctor

The page in detailed design 12 is shown when “Contact Doctor” is clicked from the “Menu” when the user is logged in as a patient.

PMS Documentation

Welcome to Polyclinic nr. 5 Opening hours: Monday to Saturday - 8am to 10pm Contact:+12-823-611-8721

Welcome Patient Robert Storms

Menu ▾

How satisfied are u with the medical service?

FEEDBACK

Comment

Leave Feedback

Detailed Design 13 Leave Feedback

The page in detailed design 13 is shown when “Leave feedback” is clicked from the “Menu” when the user is logged in as a patient.

Welcome to Polyclinic nr. 5 Opening hours: Monday to Saturday - 8am to 10pm Contact:+12-823-611-8721

Welcome Receptionist Ema Idrizi

Menu ▾

My profile

Patients' list

Add new patient

Change password

Doctors' list

Add new doctor

Detailed Design 14 Receptionist Home Page

PMS Documentation

Welcome to Polyclinic nr. 5 Opening hours: Monday to Saturday - 8am to 10pm Contact: +12-823-611-8721

Welcome Receptionist Ema Idrizi

Menu ▾

Update Patient

Profile photo

No file chosen

First name*

Sara

Father's name*

Jorgo

Surname*

Qirko

Personal number*

A00459239478B

Gender* Male Female

Birthdate*

29/05/1995

Birthplace*

Gjirokaster

Phone number*

0675563456

Address*

Meraja 23/1

Profession*

Architect

Job*

Lecturer

Guardian's name and surname(if no type 'none')*

none

Email*

squirko15@gmail.com

Username*

squirko

Password*

Health insurance*

123556

Date created*

08/08/2010

Blood type* A B AB O

Allergies*

None

Anamnesis*

None

Ana Marku

Update Patient

Detailed Design 15 Update Patient

The page in detailed design 15 is shown when “Update Patient” button in “My Patients” table is clicked. Similar to this page is “Update Doctor” page. Only some fields are different.

PMS Documentation

The screenshot shows a software application window titled "Welcome Receptionist Ema Idrizi". At the top left is the PMS logo. The top right has a "Menu" button. The main title "Welcome Receptionist Ema Idrizi" is centered above the form. The form itself is titled "Add a new Patient". It includes a large blue icon of a clipboard with a pencil on the left. On the right, there are numerous input fields and dropdown menus:

- Profile photo:** A file input field labeled "Choose File" with "No file chosen".
- First name***: An input field.
- Father's name***: An input field.
- Surname***: An input field.
- Personal number***: An input field.
- Gender***: Radio buttons for "Male" and "Female", with "Female" selected.
- Birthdate***: A date input field.
- Birthplace***: An input field.
- Phone number***: An input field.
- Address***: An input field.
- Profession***: An input field.
- Job***: An input field.
- Guardian's name and surname(if no type 'none')***: An input field.
- Email***: An input field.
- Username***: An input field.
- Password***: An input field.
- Health insurance***: An input field.
- Date created***: A date input field.
- Blood type***: Radio buttons for "A", "B", "AB", and "O", with "O" selected.
- Allergies***: An input field.
- Anamnesis***: An input field.
- Select Doctor**: A dropdown menu.
- Add Patient**: A blue button at the bottom.

Detailed Design 16 Add new Patient

The page in detailed design 14 is shown when “Add New Patient” button in “My Patients” table is clicked. Similar to this page is “Add New Doctor” page. Only some fields are different.