

The Online Treatment and Hospital Management System
Design and Implementation

By

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DEDICATION

I dedicate this thesis to one of the most important person in my life that definitely would have been proud of me. Many thanks for becoming me who I am now.

ABSTRACT

Faculty of Architecture and Engineering

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Hospitals here in Albania maintain all of the information in paper forms, which are often lost during their transportation in different departments. Moreover, same information for same patient is copied in different piece of paper forms that result in misunderstand of doctor. Lots of time lost until finding this information.

The online treatment of hospital service is a system, which include a simple, friendly and fast communication between patient and doctor. Every patient does not have to get his/her treatment to the hospital that they are visited but can access their current treatments directly from home. Also, examination such as graphs, blood analysis can be viewed by the patient in this application directly from their home so no need to go again to hospital.

Furthermore, an important feature of this software is the direct online communication between the doctor and patient, which can send messages to each other to see how the treatment is going on. The patient can receive and sent messages to doctor the same way as they are emailing each other but in a very simple way using this application.

ABSTRAKT

Fakulteti I Arkitektures dhe Inxhinjerise

Department: Inxhinjeri Kompjuterike

Udheheqe: Igli Hakrama

Spitalet ne shqiperi i ruajne informacionetne letra, te cilat humbin gjate transportimit ne departamente te ndryshme. Per me teper, I njejti informacion per te njejtin person eshte I kopjuar ne disa letra qe rezulton in keqkuptime gjate ekzaminimit te pacientintit si dhe humbje kohe ne gjetjen e ketij informacioni.

Trajtimi online I pacienteve ne spitale eshtenje system,I cili perfshin nje komunikim te thjesht dhe miqesor midis pacientit dhe doktorit. Cdo pacient nuk duhet domosdoshmerisht ta marri trajtimin e tij ne spitalin ku eshte vizituar por mund ta aksesoj trajtimin e tij direct nga shtepija duke perdor kete aplikacion. Gjithashtu, ekzaminimet si grafit, analizat e gjakut mund te aksesohen nga pacient menjeher nga aplikacioni pa qene e nevojshme ti marri ne spital.

Per te vazhduar me tej, nje tjeter tipar I ketij programi eshte komunikimi online I pacientit me doktorin, te cilet mund te shkembejne mesazhe me njeri tjetrin ne menyre te thjeshtezuar dhe shume me shpejte duke e bere kete program akoma edhe me te dobishem.

ACKNOWLEDGMENTS

Foremost, I would like to express my sincere gratitude to my advisor Prof. Igli Hakrama for the continuous support of my bachelor thesis, for his patience, motivation, enthusiasm, and encouragement. His guidance helped me in all the time of research and writing of this thesis.

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At least but not from their important is my family, I would like to thank them for their support and encouragement in every decision that I have done in my life.

DECLARATION

I hereby, declare that this thesis is my own work and has not been published for another degree at Epoka University or in other institutions. Information that I have used from published work has been acknowledged in the list of references at the end of the thesis in the bibliography.

Andi Cobo

June 2016

Table of Contents

Figure 1 Use Case Diagram	14
Figure 2 Activity Diagram	16
Figure 3 Sequence Diagram (Patient)	17
Figure 4 Collaboration Diagram	18
Figure 5 Class Diagram	19
Figure 6 Component Diagram	20
Figure 7 Database Design	23
Figure 8 Admin panel	24
Figure 9 Create a service.....	25
Figure 10 Patient panel	25
Figure 11 Make appointment	26
Figure 12 Doctor panel	26
Figure 13 Create a treatment.....	27
Figure 14 Receipt.....	28
Figure 15 Specialist panel.....	29
Figure 16 Activity diagram (Admin)	35
Figure 17 Sequence Diagram (Doctor)	36
Figure 18 Entity Relationship Diagram.....	38

CHAPTER 1

INTRODUCTION

Nowadays, technology has changed many aspects of life and people's daily life is becoming indivisible from the network due to the development of Internet. With online hospital treatment system, the process gets much faster and more efficient than traditional way.

Hospitals are the most powerful and important institution in our life so everything should work correctly to have a better service but there are some problems related to the service of hospitals to patients. During an investigation about the hospital service most of the patients weren't satisfied with the service. This occurs because of huge waiting queues, slow service, late notification diagnoses, time wasted of patient. Even though the staff of hospital is qualified is very difficult to hold on all of the patient in time without having one of these problems above. So I study on to find a solution about facilitating the work in hospital as well the job of the workers there and a service which is more efficient for doctors and patients too.

Main problem of hospitals service here in Albania is that most of the work is done manually. All the information and treatments of every patient is stored in handwritten spreadsheets. This will slow down the procedure treatment of the patient causes a huge waiting queue. All these problems will be solved by using this software which can do most of the work automatically.

The data of the patients and doctors will be housed securely and safely online. The administrator will register all the hospital center in Albania and one doctor for each of this center. The due of doctor will be to create and add account for patients using as email the first letter of their name underscore surname example (a_cobo) and the system will generate a random password which will be sent to patient email and can be changed later by the patient.

Doctor will fill in all the information for the patients such as (name, surname, number, email, patient_ID) also the result of analysis and examination to the patient cartel.

Each patient will log in with the standard email (x_surname) and the password that is generated by the system and can be seen in his or her email. When they logged in the home page is showed also another icon which is their profile. When they click my profile it will show their basic information, actual treatment and notes from the doctor. Furthermore, they can view the messages from doctor and can send message to him/her.

When the specialist log in he/she can see all of his/her patients can add notes and new treatment to each of them and also can see messages from them. The doctor can search for a patient by their patient_id number and can also see their previous treatments. Moreover, each doctor has the opportunity to create a new article which can be a research that he/she has done recently and public in the system which can be viewed by everyone who will use this application even though he/she may not be registered.

Nowadays technology cannot be separated from our everyday way of living and it is used to facilitate our life. This system is an urgent need for our society where we live because we face up the problem of hospital service every day and we want to develop something which is effective and has a low cost.

A detailed analyze how this software will be build, implementation, will be explained in detail after, showing up snapshots and diagram of the program.

CHAPTER 2

LITERATURE REVIEW

2.1 Existing systems

Hospitals currently use a manual system for the management and maintenance of critical information. The current system requires numerous paper forms, with data stores spread throughout the hospital management infrastructure. Often information is incomplete or does not follow management standards. Forms are often lost in transit between departments requiring a comprehensive auditing process to ensure that no vital information is lost. Multiple copies of the same information exist in the hospital and may lead to inconsistencies in data in various

2.2 Hospital management system examples in the world

HIMS by Akshar Technosft [1]

(HIMS) Software is a software serving all functional areas of the hospital. Each of the department's work processes are in tandem with the system's business process. It is user friendly software. It can take care of operation; it covers complete cycle from Application, User Registration, Patient Registration, Patient History, Patient Case File, and Doctor along with Prescription writing.

uniwide HIMS by Uniwide Consultancy and services [2]

Web based solution for hospital management. Features include inventory, CRM, and facility management Accounts and Payroll module along with the fully customized pharmacy and

laboratory module. This software will help the hospital administrators, doctors and other staff to keep track of every bit of the activities performed in the various departments of the hospital/clinic and takes care of all functional aspects of all types of healthcare organization.

EHat by OraSys [3]

A Global Healthcare IT Transformation Company that helps healthcare service providers to care patients and manage resources well through the best practices and world class technology. OrcaSys provides an end to end solution to hospitals and clinics to enhance medical, economic and operational results. eHAT range of products comprises of a platform that pulls together patient demographics, medical & clinical records, imaging & PACS, insurance & claims data, management information intelligence etc.

SoftClinic [4]

SoftClinic is world one of the best HMS (Hospital Management System) with all required features to run a practice or hospital smoothly and hassle free. SoftClinic has become preferred choice for respective physicians, clinics, hospital and nursing homes. Currently there are more than a million patients registered on SoftClinic in over 30 countries. Having various integrated modules like pharmacy, laboratory, human resources and financial accounting.

eHospital Systems [5]

eHospital Systems is a comprehensive, integrated information system designed to manage all the aspects of a hospital operation, such as medical, administrative, financial, and legal and the corresponding service processing. Traditional approaches encompass paper-based information processing as well as resident work position and mobile data acquisition and presentation.

2.3 Existing project report

I have used some existing paper report and thesis in partial fulfillment of the requirements for implementing my own idea of this software. Some of the paper that I have used to complete my work are:

- Hospital Management System a project report – Bachelor of Technology in Computer Science and Engineering[6]
- Hospital Management Software Development – Haaga Helia University of Applied Science[7]
- Project report on Hospital management System - International School of Informatics & Management[8]

2.4 Advantages of this web-based system

Here will be described the advantages offered by using this hospital software also the customer satisfaction. Written papers are very difficult to maintain because they will be lost also a lot of time is needed. By using the hospital management system these problems can be solved easily and it will have a good satisfaction from the patients too. I have discussed some of the benefits of using this software.

The data for patient are more secure:

The data of every patient will be stored in a database which is very secure. Their information can be viewed and access only by the admin of the software, who can update the treatment. For example the doctor has accessed to update the patient treatment to add notes there while the secretary have the permission only to access patient information and not the treatment cartel.

Can access the data of the patient easy:

The hospital management system will store the data for all the patients in the system so the doctor will access his/her data very easy. These data will include his/her personal information (name, surname, age, birthday) and also the actual treatment. So the doctor can search for his patient information only by one step clicking the search button and his id or username.

This software will reduce the cost:

This automate software will need a reduce staff to provide a better service for the client. No more need for extra offices, printed material or swag.

Reduce manual work:

All data are stored in the system so there is no need to manually write the information for each patient and then print.

Update the audience for the latest news:

Each doctor can upload a research that he/she has done recently in this software which can be read by everyone even though you might not have been registered. This research may include different topics related to our healthcare. For example, it can be what are some reasons that cause a specific illness or how can we prevent a disease.

Patient-Doctor communication:

Another feature of this software is the communication between the doctor and the patient. The doctor can ask the patient performance of the treatment or can reply a message to patient if she/he has any complication.

2.5 Importance of customer satisfaction

Nowadays most of the business give an important part of success according to the high satisfaction of their customers. Customer satisfaction is very important tool to improve your software by becoming closer to the customers and more preferable to use from them. By some researches there some reasons why the customer satisfaction is so important.

- *Build your brand*

Customer which are satisfied by using a product are more likely to buy and use it also spread the impression to everyone.

- *Measure your results*

You can test your product by survey question to the customer and make an analyses about what feature should you remove or add to your software.

- *Update your customers*

- *Keep it personal*

Each unhappy customer is personally contacted in an effort to resolve any problem.

2.6 Connection with my work

It is very important to mention that building such a web application can give benefit even in Albania. By investing on such system we can reach the same services and standards in hospital as the country that used the same software that I mentioned above. The cost of this software will be minimize and the efficiency on hospital will be maximized. Another reason of using this software is the communication between the doctor and the patient in real time. During my research I focused on functional and non functional requirements that a software should have.

Based on my web application 'Albhospital',this software should be online and on work 24/7, every information that are saved on the database should be secured and password of all users in the software(patient, doctor, specialist, admin) will be encrypted. The design that I have used is done in a way that it will be easy to use from different kind of users. About the hardware requirement, Albhospital doesn't need to have sophisticated computer or any special technology to be used but just a computer with normal requirements.

CHAPTER 3

SOFTWARE ANALYSIS AND SYSTEM DESIGN

This part of the documentation consists of the analyses of all the requirements, which are functional, and non-functional the functionality of all 4 modules and the design which represent all the system functions by using diagrams such as: activity diagram, state diagram, class diagram and sequence diagram.

3.1 Requirements

3.1.1 Functional Requirements

There will be four users which can access in this system which are:

1. Administrator
2. Specialist
3. Doctor
4. Patient

3.1.1.1 Administrator module:

The administrator can be logged in to the system with the username admin and a specific password. He has the privilege to create users. Admin can add doctor and specialist accounts and to add services and prices in the database which will be accessed from the doctor. The administrator will add all the information about the doctor and specialist example (name, surname, email, phone number, birthday, a photo of them) including here any PhD or specialization degree. Each hospital will have only one doctor who can add patients. The administrator can also view the doctor account, specialist and patient account too.

In the same way that he creates doctor and specialist accounts he can also delete them if one doctor or specialist leaves the job for any reason.

3.1.1.2 Doctor module:

The doctor can be logged in to the system with the username and password that the administrator has created for them. He has the privilege to create treatment for every patient that is registered in the system. Moreover, the doctor can add the service name for the patient before he recommends him/her to specific specialist. After the treatment is filled the doctor can print a receipt for each of his/her patient. When he clicks the statistics button there will be showed three graphs that give some statistics of the hospital.

3.1.1.3 Specialist module:

The specialist can be logged in the system the same way as doctor using a username and a password that is generated by the administrator and he can change it later. When he logged in it is showed a list of all his/her patients treatment history where he can click each of them and add specific details about the treatment of the patient (symptoms, medicine, instruction). On the bottom right of the page the page the specialist can view all the upcoming appointments. Furthermore, specialist may create an article or a research that he has done recently add the title and the content of the work and everyone that is registered in the system can leave a comment and write his opinion about it.

3.1.1.4 Patient module:

Patients can register on the system by themselves or the doctor can register them in the system and completed all the necessary information.. When the patient is logged in the system he/she can make an appointment by choosing a doctor, his free visiting hours also can leave a note if he wants to write something to doctor. On the right of the page it is showed the upcoming appointments for the patient and also the treatment history with dedicated instruction to it. Patient can read blogs which are published in the system also leave a comment to them. By clicking account setting he/she can change the password by adding a new one.

3.1.2 Non-Functional Requirements

The non-functional requirements add functionality to the product -- it takes some amount of pressing to make a product easy to use, or secure, or interactive. However, the reason that this functionality is part of the product is to give it the desired characteristics. So you might think of the functional requirements as those that do the work, and the nonfunctional requirements as those that give character to the work. They are focused on building up the constrains about the design and implementation of the system. They explain the performance security, reliability and cost characteristics required by the system.

3.1.2.1 Reliability Requirements:

The system should work 24/7, so it means that servers should be online every at any given time. If any problem, occur in the system it should recovery back up in less than 2 minutes. Moreover, the system should handle many operations at the same time and the availability should be 99.99%.

3.1.2.2 Security Requirements:

Security is one of the most important non-functional requirements. Password should be encrypted for security reason. It must contain at least 8 characters. Every input that is entered in the database for example the personal information of a patient should be validate before they will be stored in the database. Backup operations for the system should be every day and the copies of the data should be saved in a very secure location. The input from the users are read by using the POST method in order to be showed in the URL.

3.1.2.3 Efficiency Requirement:

The response from the system to the client for every action that is done should be very fast. Furthermore, this software requires a large amount of memory to hold all of the data which is stored in the system.

3.1.2.4 Usability Requirements:

Every task which is use in this software should be easy and understandable from everyone which will use the application. There should be a help menu which will help the user to navigate easily to the software. After an operation a message should be given if the user enter the data correct or an error message otherwise. Every information should be identified not in a difficult way from the user.

3.1.3 Hardware Requirements:

The most common set of requirements defined by any operating system or software application is the physical computer resources, also known as hardware. A hardware requirements list is often accompanied by a hardware compatibility list (HCL), especially in case of operating systems. An HCL lists tested, compatibility and sometimes incompatible hardware devices for a particular operating system or application. The following sub-sections discuss the various aspects of hardware requirements.

3.1.4 Hardware Requirements for Present Project:

The necessary hardware requirements that are needed to build this software are: a processor Intel dual Core,i3. A RAM 1 Gb and a Hard Disk 80 Gb.

3.1.5 Software Requirements for Present Project:

About the software requirements that this software need is: an operating system: Windows 7/XP, Front End: Html, css, java script, Server Side: Php and Database: MySQL.

3.2 System Design and modeling (UML)

3.2.1 Cases and Scenarios

It is a detailed description of all the actor which are part of this system, interaction of their activities with each other. Furthermore, each scenario will describe step by step activity of a user from the moment that he logged in the system.

Use Case | Patient activities

The patient enters his username and password to login form, and if both the username and password correspond with each other the patient is successfully login in the system and can continue his/her activity. Another case will be if one of the above it is incorrect, so a message in red is showed to the patient that he/she may be entered the username or password incorrect.

After logging in to the system patient can view his personal information and also can change the password. He is able to see the actual treatment and read notes to the treatment from the doctor.

Another option is to send a message to the specialist if his/her treatment has a problem or if something went wrong during this examination. In the same way can wait for a replay message from the specialist.

Furthermore, after logging in to the system patient can view the blog which are published from the specialist and can leave a comment to them.

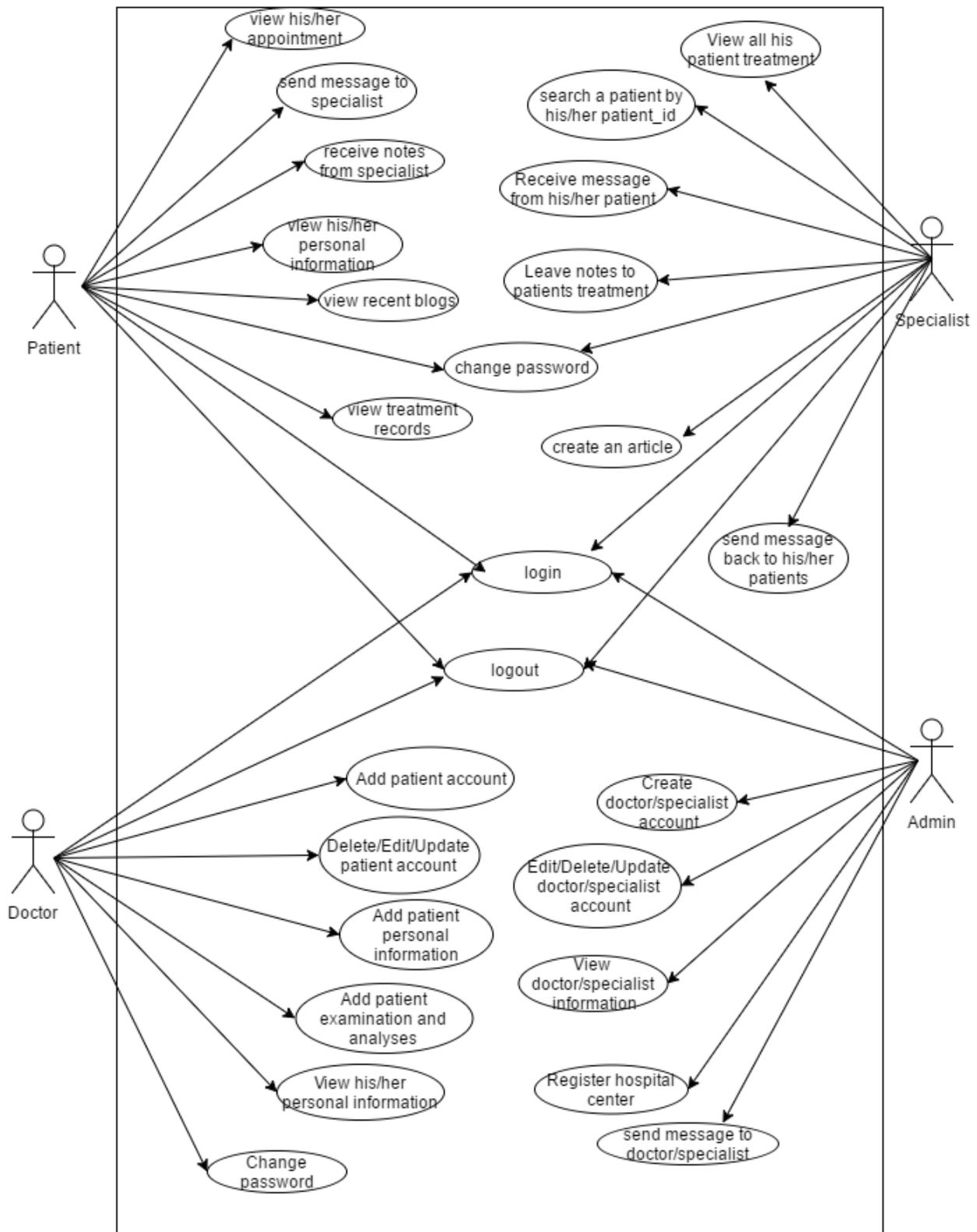


Figure 1 (Use Case Diagram)

3.2.2 Activity Diagram

The activity Diagram in the next page shows the activity of the administrator in the system. When the administrator login in the system there are two possibilities. The administrator can create the doctor account or the specialist account. If the administrator choose to add a doctor account he fills in all the information about doctor (name, surname, username, password, birthday, specialization, email, phone). If he fills its correctly the administrator can edit, update or delete them later. The same activity is occurred when administrator select to add a spacialist account.

Administrator can click the button 'Change Password' where he can input the new password. If the password is entered incorrect he repeat the same activity else the password is changed successfully.

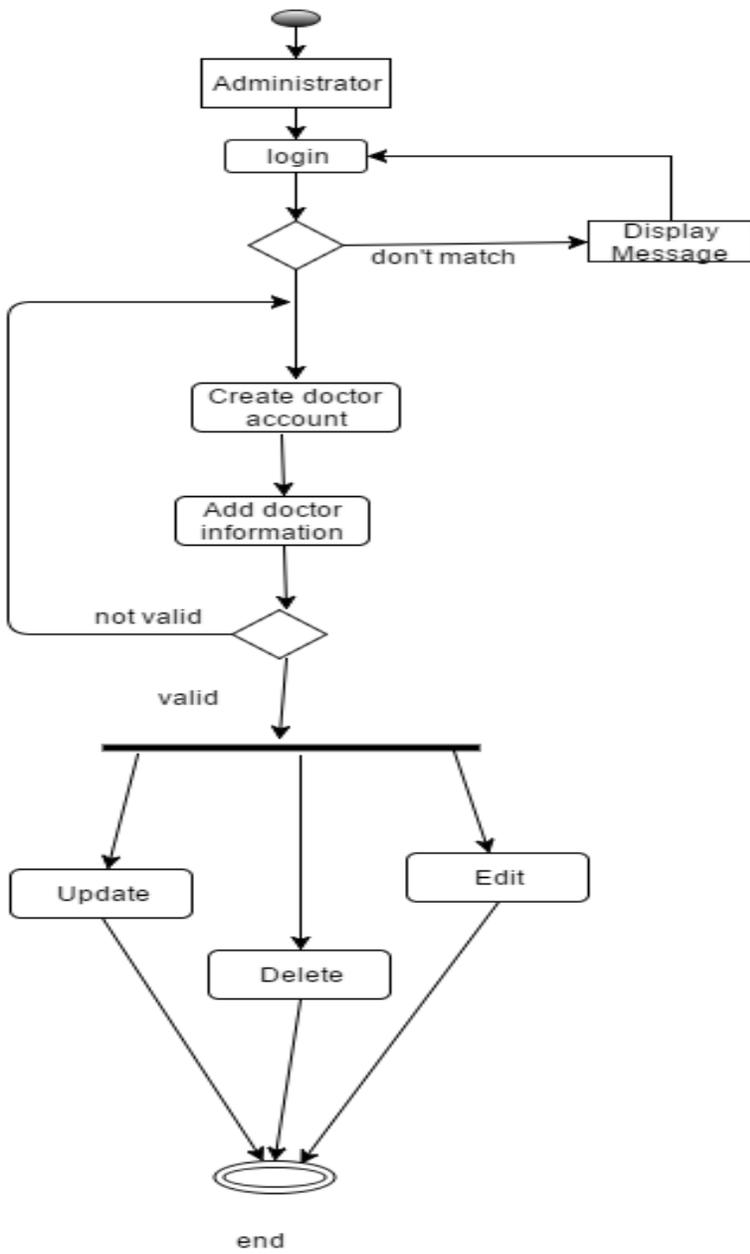


Figure 2 (ActivityDiagram(Admin))

3.2.3 Sequence Diagram

This sequence diagram shows the performance of every task from the patient and the doctor in the system how the objects interact with each other by using the methods that are shown below in the diagram. Doctor create an account for patient and wait for confirmation from system. Then, patient login if its an unsuccessful authentication he enters again the username and password. When the patient login, he can view the treatment and notes that doctor has left for him or can read blogs. Also, the patient can send a message to specialist and wait for a reply from him.

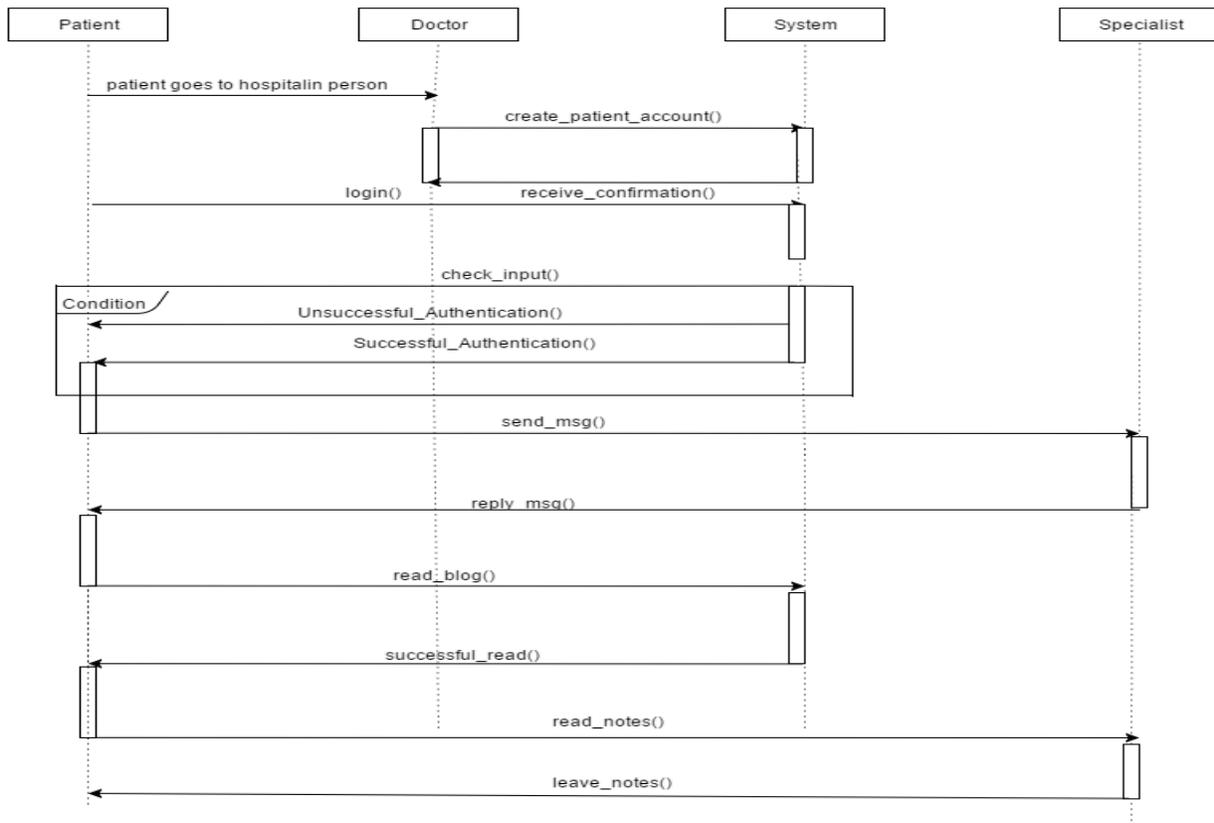


Figure 3 (Sequence Diagram (Patient))

3.2.4 Collaboration Diagram

The following collaboration diagram shows the collaboration between the users in the system and the objects which are: Admin, Specialist, Doctor , Patient, Blog, Notes, Treatment and Message.

The functions required in this collaboration Diagram are: submit_register_form(), send_for_confirmation(), new_register_request(), success(), create_treatment(), send_msg(), read_blog(), read_notes(), read_treatment(), leave_comment(), create_blog().

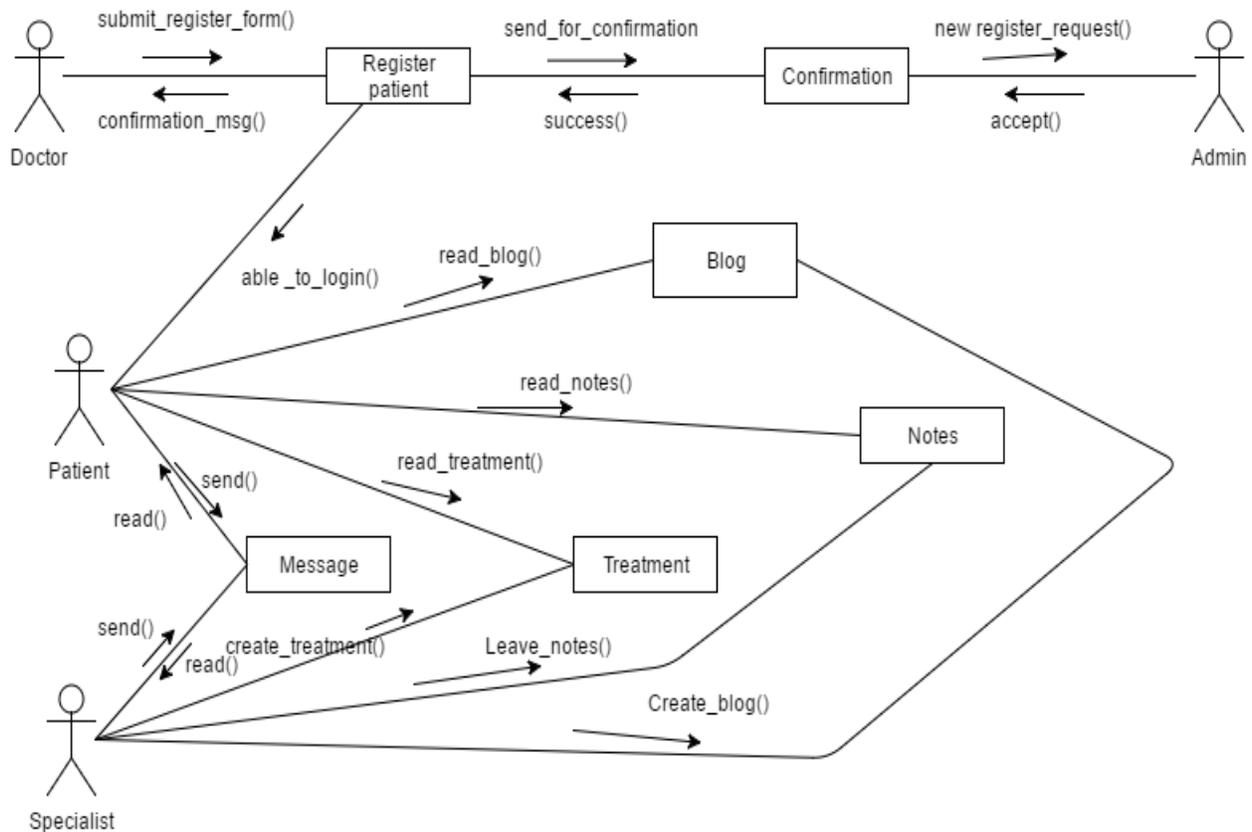


Figure 4 (Collaboration Diagram)

3.2.5 Class Diagram

The class diagram represents all the table that are used in the database and the relation between table with each other. Here is shown the diagram with all the tables which are Specialist, Patient, Administrator, BlogPost, Doctor, Treatment Note. Also each of these classes have the attribute and the methods which are used from them.

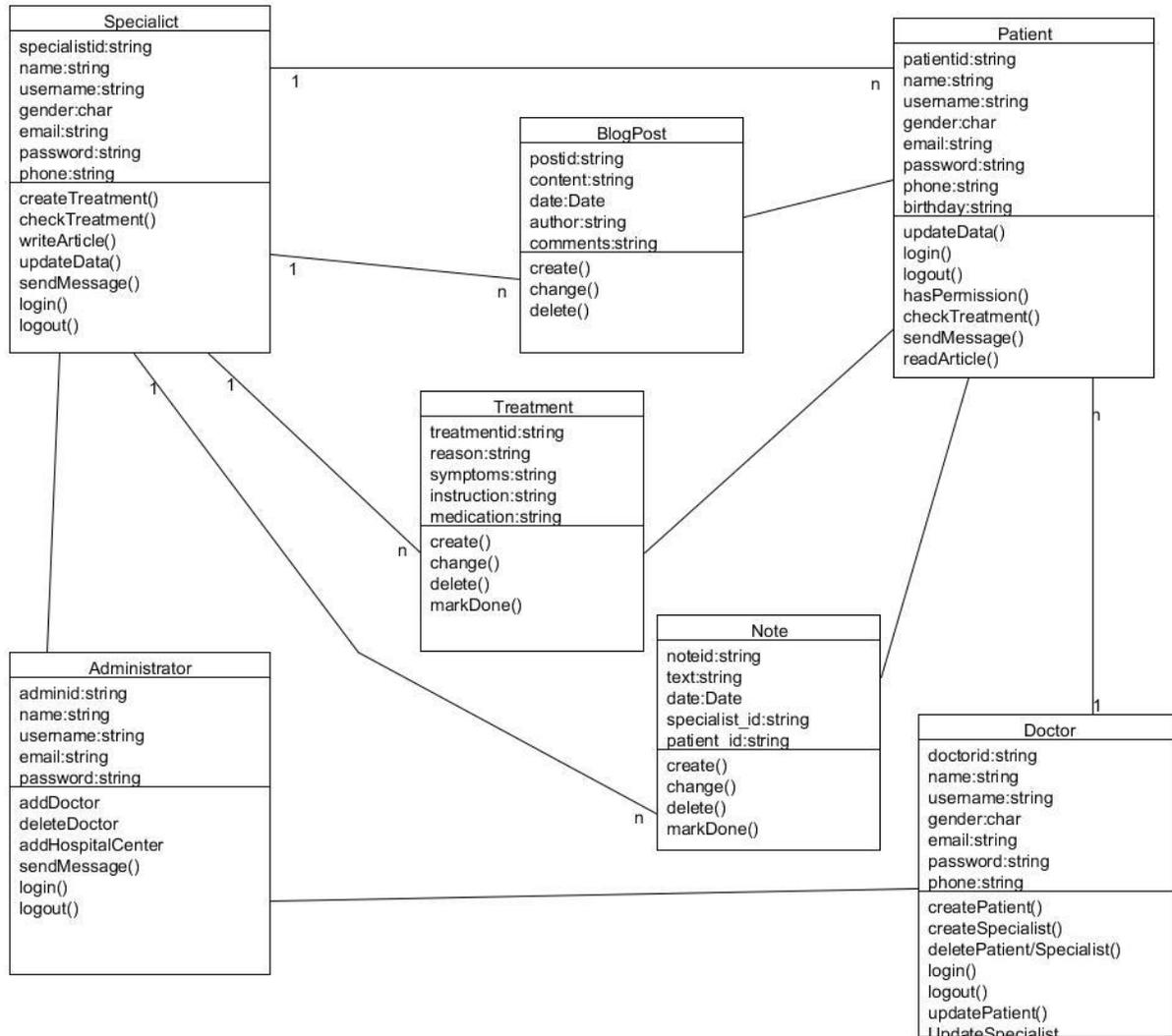


Figure 5 (Class Diagram)

3.2.6 Component Diagram

Component diagrams are necessary when the systems are complex in order to illustrate the structure of these systems more easily. It shows the relationship and connection of some components and how these connections form larger ones or the entire system.

In this diagram below is showed the interfaces which are linked to some other functional components of the system by coordinating also with the database component.

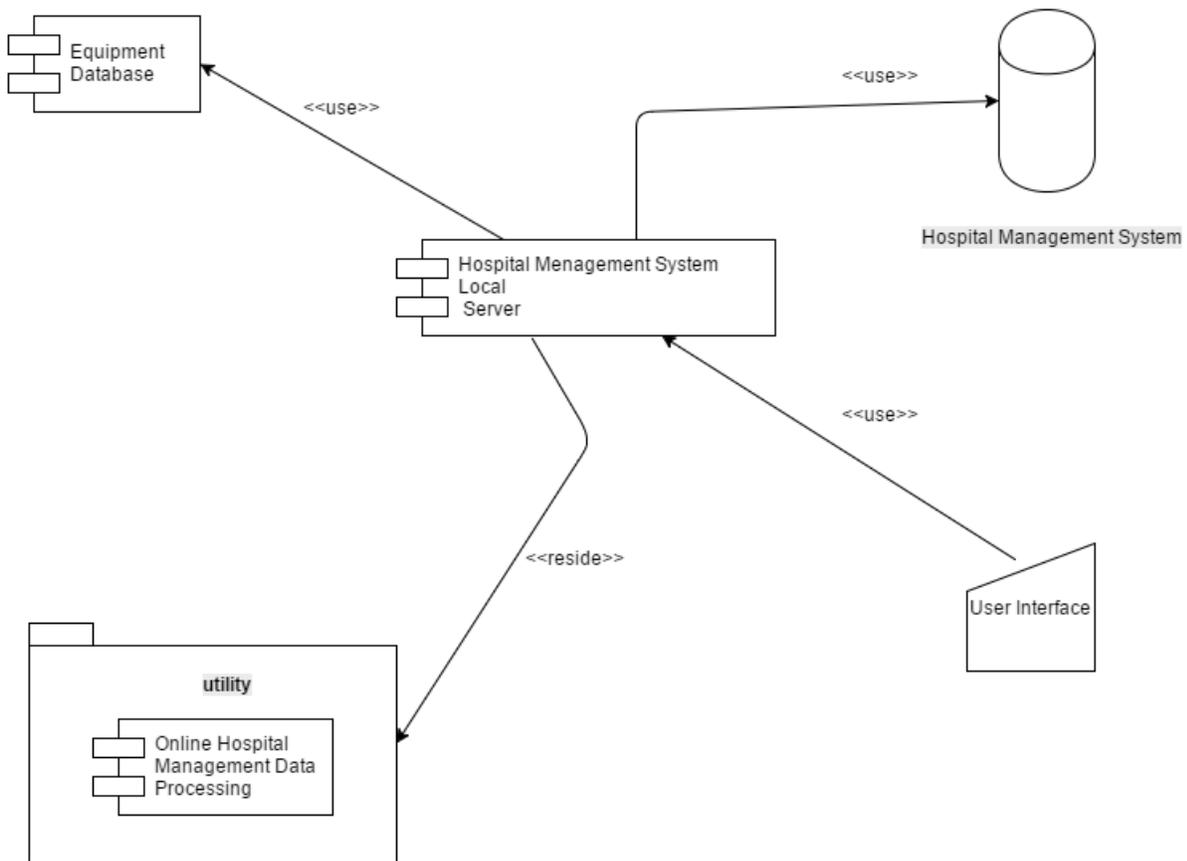


Figure 6 (Component Diagram)

CHAPTER 4

IMPLEMENTATION

As we have mention from the previous chapter every diagram explain in detail the activity of every user that will use the software while in this part I am focused on the code of the web application, how the implementation is done and the interface of the software. It will be showed some parts of the code from the software how it is built, what technology I have used to complete this project and some snapshots from the software will a short description.

4.1 Technology used

Since this software is a web application I have used different technology to build this software to make it more attractive and easy to use for users.

4.1.1 Hypertext Markup Language

To build the interface of the system I have used HTML. Every class in the folder view is built using HTML which make possible the visual view of the software.

4.1.2 Hypertext Preprocessor

For the functionality of the system I have used PHP which is a open source language. It is used inside HTML in order to link the interface with the specific function that is required. Without using PHP none of the function of the software will not be possible to work.

4.1.3 Cascade Style Sheet

CSS is a style sheet language which is used to format the interface of the website and to make it more attractive for the user.

4.1.4 JavaScript

JavaScript is a scripting language which is used to create dynamic function. It is usually used for the confirmation windows or even in the index page of the project to make the website more intractable.

4.1.5 MySQL

MySQL is a database, which used to stored and manage the data and the treatment of the patient in this software. It is very easy to be accessed in every browser and flexibility to changes.

4.1.6 Bootstrap

Bootstrap is the most popular HTML, CSS, and JavaScript framework for developing responsive, mobile-first web sites.

Bootstrap is completely free to download and use.

4.2 Database

During implementation of the project, we constantly checked the diagrams and requirements specifications in order to make the best match and meet best the customer's need. We always tried to implement what we had previously specified for the project, with very little changes in the patient's needs and requirements.

Coding is done using object-oriented PHP and is complemented with some other frontend techniques. More explained in the section below.

The database platform used for this system is MySql.

One of the main table is the "appointment" table. This table saves the information about the patient which are necessary for doctor create a treatment for that patient. In this table is also saved the time and the date that are used to declare when the appointment is done. The primary key is *id* which is a unique number of each appointment.

Another important table is the "users" tables which save all the information about users which are login in the system (doctor, patient, specialist). The primary key is *id* which is a unique number of each user.

Posts is another table which is included in the database . The attributes which are included in this table are: title, dateposted, content, user and the primary key is *id* which is the unique number of each post.

The other tables which are included in the database hospital are: treatments, user_session, groups, comments and prices

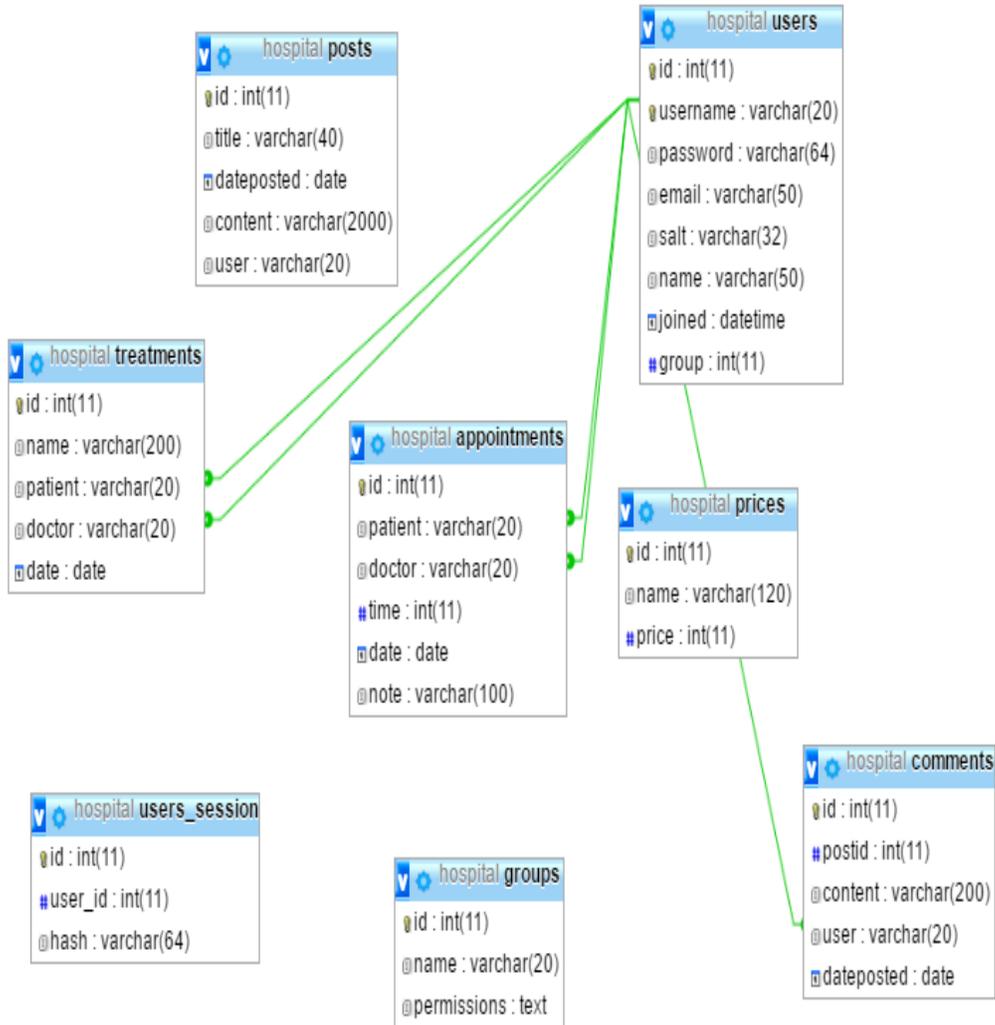


Figure7 (Database Design)

4.3 Website Snapshots

4.3.1 Admin panel

Welcome back, Admin Andi

This is the list of all users in the system

Users		
Ilir Piranja	doctor	joined 2016-05-29 17:24:13
Andi Cobo	patient	joined 2016-05-31 21:09:47
Andi	admin	joined 2016-06-14 10:38:59

CREATE USER

Fill in the fields to create a new user in the system

Create user

CREATE NEW SERVICE

Add service and price

Add

Figure 8 (Admin panel)

In the admin panel, the admin can view all the users. He can also add new users of any type in the system. The administrator can add any kind of service and also the specific price for that kind of treatment.

CREATE AN SERVICE

Service name

Price

Submit

Figure 9 (Create a service)

Additionally the admin can add a new type of service with its price in the system which will used later from the doctor to add a treatment

. 4.3.2 Patient panel

Welcome back, Andi Cobo

This is your account area. Here, you can see your treatment history and upcoming appointments.

Treatment history

Dental Implant by doctor Iikja	2016-05-31
Panoramic X-Ray by doctor Iikja	2016-06-12
Periodical oral evaluation by doctor Iikja	2016-06-15

New treatments that you receive will be listed here.

APPOINTMENT

Choose date and time and set the appointment.

Make an Appointment

UPCOMING APPOINTMENTS

Figure 10 (Patient panel)

This is when a patient login the system it is showed a list of treatments history. Each treatment has the name and the doctor who will serve this patient.

Create a new appointment

Choose the doctor and date/time.

Choose doctor

Open time spots will appear here.

Extra note

APPOINTMENT

Choose date and time and set the appointment.

Make an Appointment

UPCOMING APPOINTMENTS

Submit

Figure 11 (Make appointment)

When you are logged in you can click on button make an appointment and this page will be showed to you. You can choose a doctor and a list of free dates. You can pick one of them and leave a note to doctor. After you have finished the appointment you have to clicked the button submit and the doctor will be announced about your appointment.

4.3.3 Doctor panel

Welcome back, doctor Tea Llupa

This is the list of all treatments in the system

Treatments	
Dental Implant by doctor Ilikja for patient cobo	2016-05-31
Panoramic X-Ray by doctor Ilikja for patient cobo	2016-06-12
Periodical oral evaluation by doctor Ilikja for patient cobo	2016-06-15

REGISTER NEW TREATMENT

Fill in the fields to create a new treatment

Create treatment

Print Receipt for the Treatment just Added.

Print Receipt

View Some Statistics of the hospital

Statistics

Figure 12 (Doctor panel)

This is the doctor panel. The receptionist can see all the treatments for all users and doctors. When an appointment is done, he manually adds the treatment details as per doctor's instructions.

CREATE A TREATMENT

Service name

Patient

Doctor

Submit

Figure 13 (Create a treatment)

This is the panel where doctor can add a treatment as mentioned above.

Ms/Mr cobo ,

We are preparing this receipt as a proof that you have taken examinations by our hospital.

Below we are listing all the information that is also associated with you as a patient registered in our system.

Payment of the particular treatment is shown below. Please be aware that this copy serves only for informational details, and is mainly known and accepted only by our institution.

****This document serves by no means as Proof of Illness to take Job Days off, or any similar issue.*

Date: 2016-06-16
Treatment: Panoramic X-Ray
Examined by doctor: likja
Treatment Price: 100
Additional Comments:

Patient Name:

Specialist:

Figure 14 (Receipt)

After adding a treatment doctor can click the button print receipt the receipt is created as a proof that you have taken examinations by our hospital. The receipt contain the treatment examination, name of the doctor and price. The doctor can download as pdf this document or directly print it.

4.3.4 Specialist panel

Welcome back, Specialist Ilir Piranja

These are the latest treatments that you gave.

Treatment history

Dental Implant to patient cobocreate	2016-05-31
Panoramic X-Ray to patient cobocreate	2016-06-12
Periodical oral evaluation to patient cobocreate	2016-06-15
Panoramic X-Ray to patient cobocreate	2016-06-16

New treatments that you give will be listed here.

ARTICLES

Publish a new article

Create new article

UPCOMING APPOINTMENTS

2016-06-17 14:00 - 15:00

Figure 15 (Specialist panel)

When the doctor logs in he can view the past treatments he gave to the patients.. He / she can also see the upcoming appointments. The doctor can create a new article and post it in the blog.

CREATE AN ARTICLE

Title

Content

Post it

Figure 16 (Create an article)

This is the panel where the doctor can create a new panel with the title and content and post it in the blog.

CHAPTER 5

CONCLUSION AND FUTURE WORK

As result, this web application will be very useful for both the patients and doctors too. By implementing such software in Albania our citizens will have it more easy to communicate directly with the doctor and get their treatment in very fast and easy way.

Nowadays, technology has changed many aspects of life and people's daily life is becoming indivisible from the network due to the development of Internet. With online hospital management system, the process gets much faster and more efficient than traditional way. No need to record all the data of the patient in papers, which can be lost, and are not secured.

Moreover, another facility is that by using this software the service in hospital due to patient will be more efficient and also faster. So, patient do not have to wait in long queue to get his/her service in hospital as happens here in Albania but can access his treatment from home.

By investing on such system in Albania Hospital, our country can reach European services and there will be no different between an Albania citizens and European citizens. Every patient will have the ability to receive the same services and in a very fast and effective way as a citizen in another country.

Related to the future work there are so many things, which have to be improved. Everyone is conscious that beside the patient treatment is the lack of the medicines and also free rooms for patients and so many other problems, which will be implemented in the system.

There should be some investment on training the staff of the hospital at using software functionalities, security and maintenance of the system.

After all the functionalities of the software have been finished implemented, an android version will be developed in order to be more practical for patient and to access even faster.

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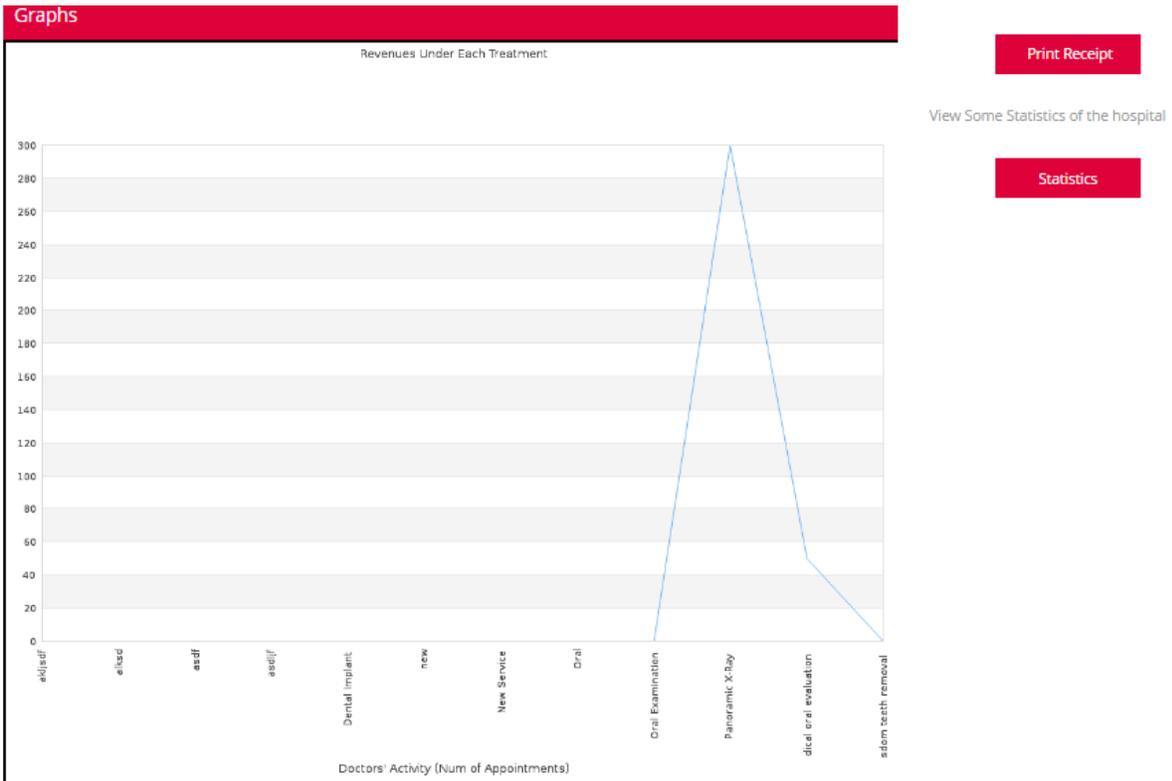
APPENDIXES

Appendix A:

This is the list of all treatments in the system.

This section gives some statistics of the hospital.

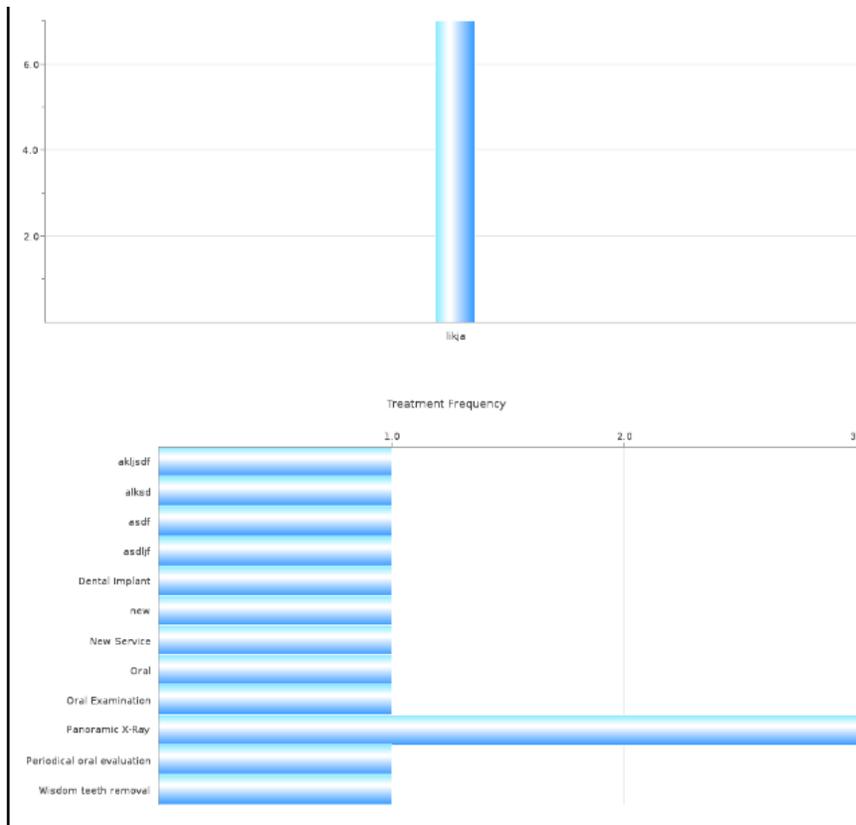
Revenues Under Each Treatment



First graph depicts the revenues the hospital achieved for each treatment. Revenues are computed by querying the price of each treatment, and counting the frequency of each treatment in the database.

Appendix B:

Treatment frequency



The second graph, shows the activity of each doctor at an instant of time. That means, the number of appointments each doctor has at that particular moment.

The final graph serves as a nice way of displaying which treatment is more common in the hospital. It might be a necessary statistic in order to make further studies on where the hospital needs to invest more.

Appendix C:

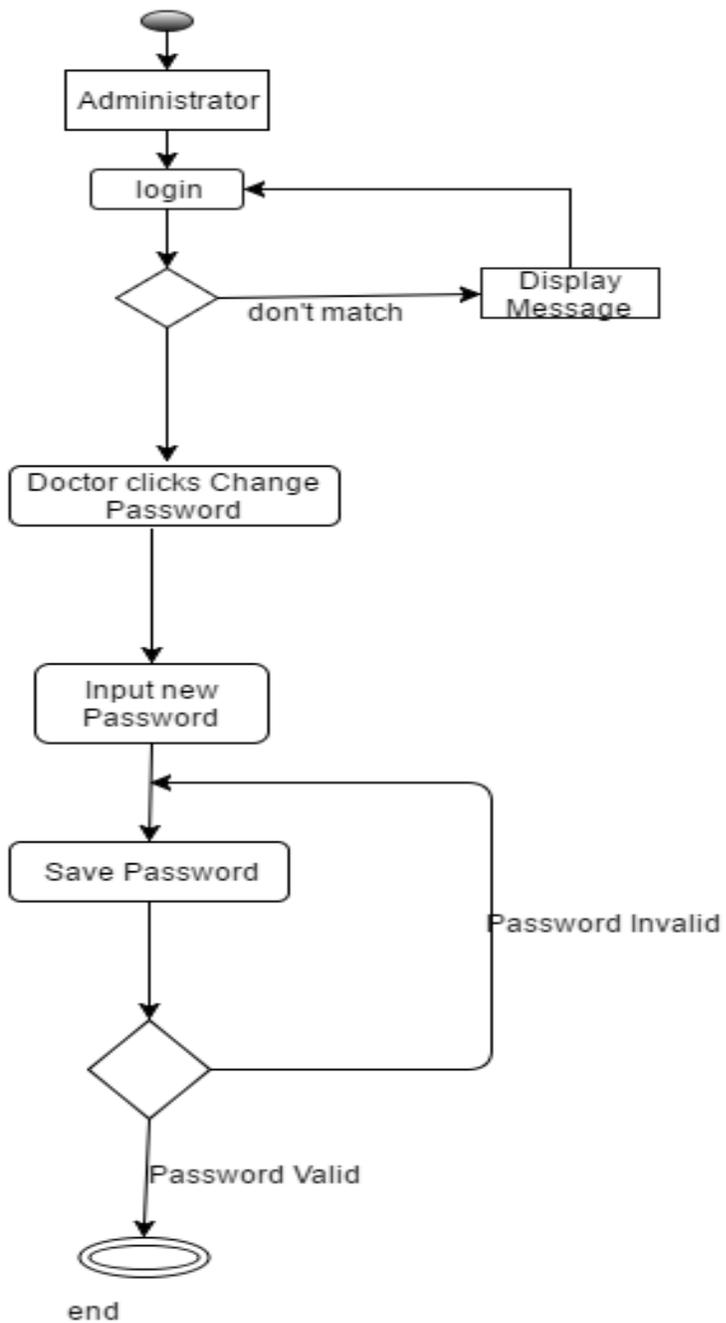


Figure 16 (Activity Diagram(Admin))

Appendix D:

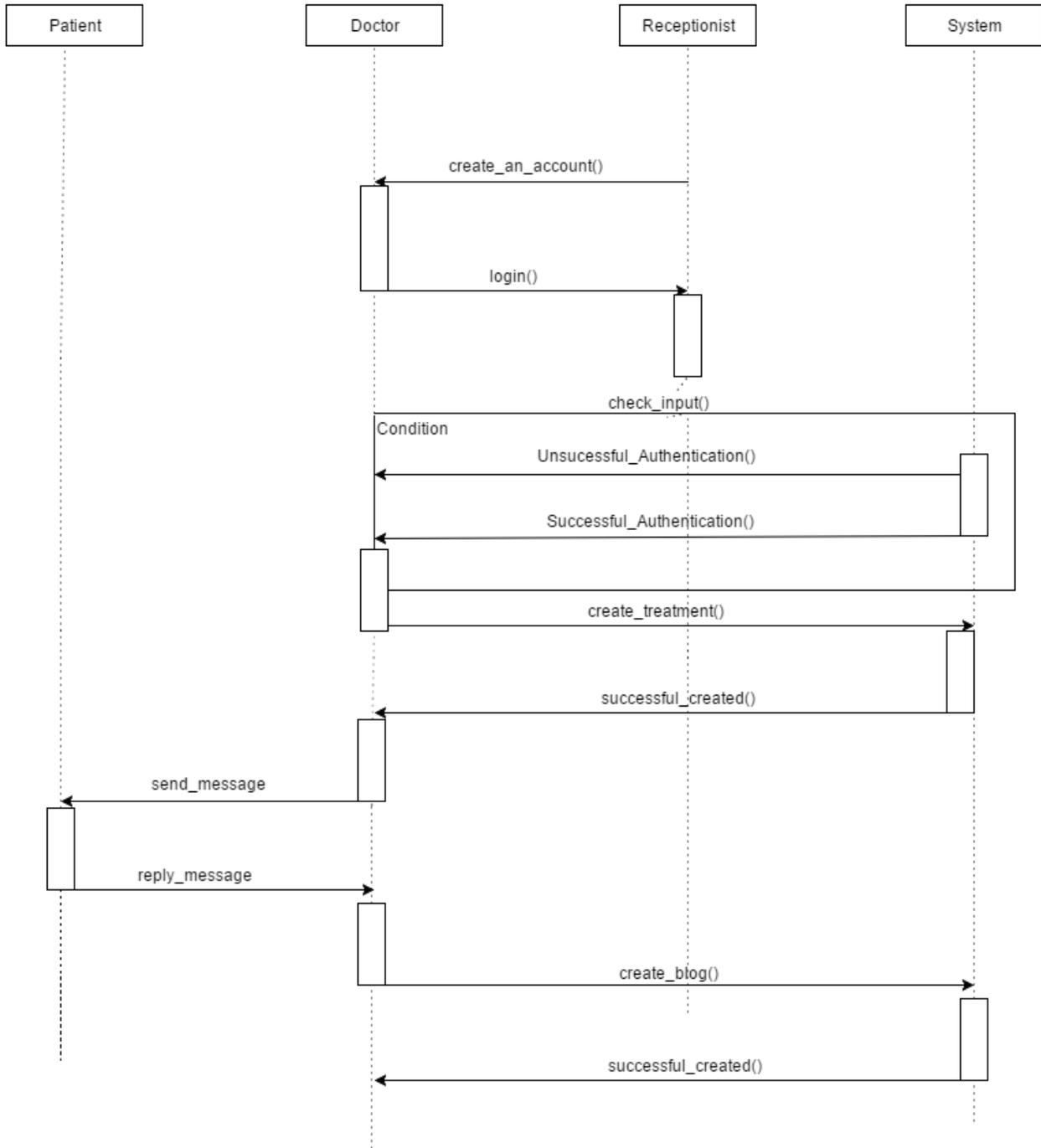


Figure 17 (Sequence Diagram (Doctor))

Appendix E:

Entity Relationship Diagram

An entity-relationship diagram (ERD) is a data modeling technique that graphically illustrates an information system's entities and the relationships between those entities. In this ERD there are 8 tables in the database which is called(online_hospital_db). The tables which are included are: Patient, Specialist, Doctor, Admin, Analyses, Comment, blog Post and treatment.

All the tables are written inside of rectangle shapes while the attributes are represented by oval shapes. The diamond shapes represent the relationships between different tables.

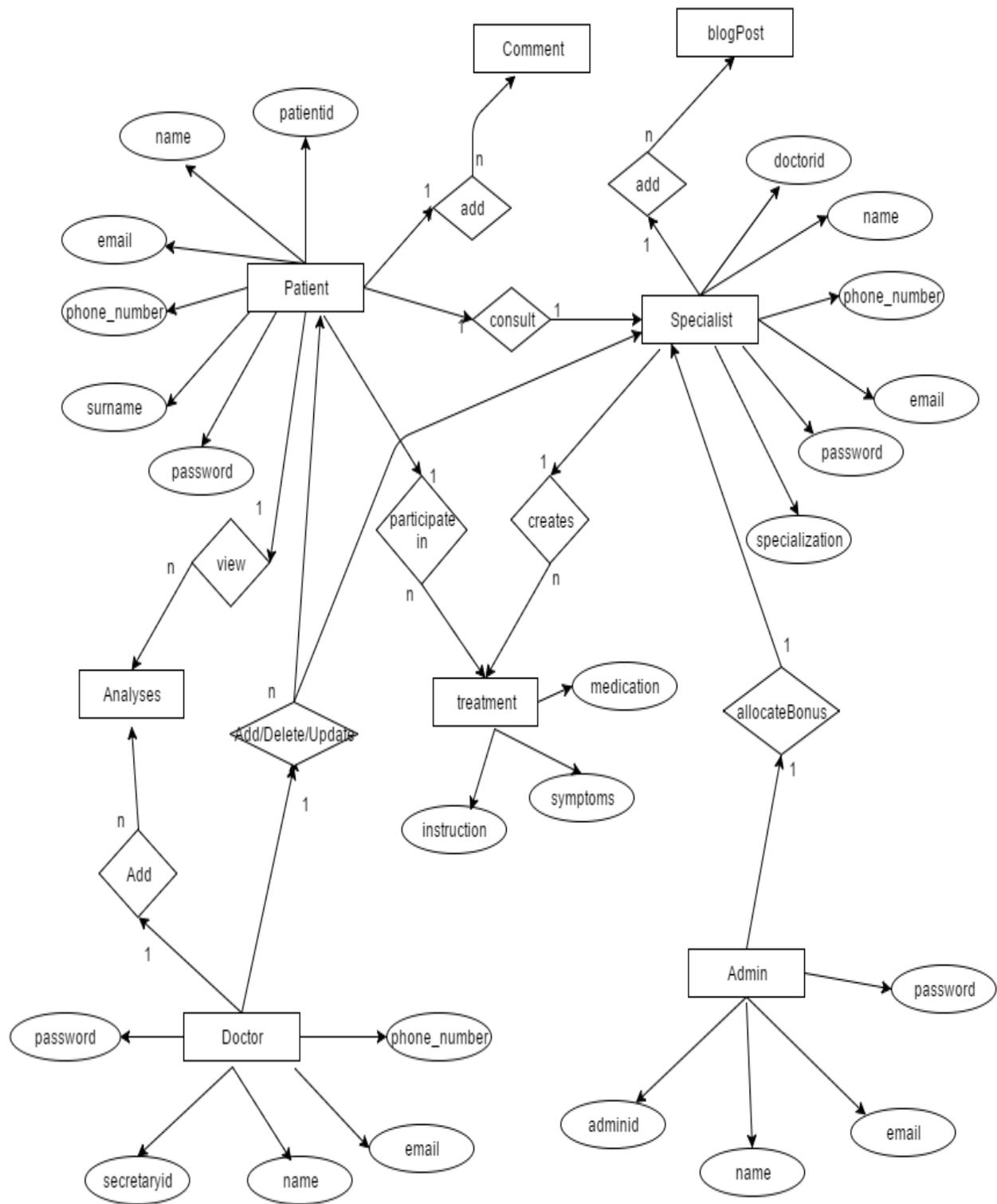


Figure 18 (Entity Relationship Diagram(ERD))