HOSPITAL MANAGEMENT SYSTEM

SOFTWARE ENGINEERING PROJECT

Submitted in partial fulfillment of the requirements for the degree of
B.Sc Engg. in CSE

SUPERVISED BY

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HOSPITAL MANAGEMENT SYSTEM

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Declaration of Authorship

We,**Tanvir Hossain Reza, Arifur Rahman Kawser, Shakil Ahmed** declare that this project titled,**"HOSPITAL MANAGEMENT SYSTEM"** and the work presented in it are our own. We confirm that:

- This work was done wholly or mainly while in candidature for a B.Sc Engineering in CSE degree at this University.
- Where any part of this software development project has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated.
- Where we have consulted the published work of others, this is always clearly attributed.
- Where we have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely our own work.
- We have acknowledged all main sources of help.
- Where the thesis is based on work done by ourself jointly with others, We have made clear exactly what was done by others and what we have contributed myself.

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Dedication

Dedicated to our parents for all their love and inspiration.

Abstract

Our main focus is design a unique Hospital Management System that will improve hospital experience for both patients and the hospital authorities. The whole system will run on internet. The system is written in PHP, java script, jQuery, HTML and CSS. Users will have the felicity to log in from any place with internet connection. After that they will be able to various tasks that are designed for them. Users are categorized in three groups :(Management, Patient and Doctor). The primary target is to focus on every user who can get our service and get benefitted. It can be turned into a paid system only for doctors. Where the doctors can get additional cloud storage on payment. A doctor can have different types of patient and the number of patients also vary from doctor to doctor. A doctor can have various number of patients. We can assume that doctors will need different amount of cloud storage. We can allocate a fixed cloud storage for each doctors. They can ask for extra storage according their demand and they will be charged for their demand. We can make various package and assign various cost. The patients will have some allocated space which they can use to keep their information. As the patient only needs storage for only themselves they can use this as a free user. This will make the system useful and more convenient for everyone.

Keeping the goal in mind the system we developed works as a social network where information's are more close and relevant for every user.

This report contains the full details of the system and its functionality in details.

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Approval

This project **"HOSPITAL MANAGEMENT SYSTEM"** .Submitted by **S h a k i l A h m e d , Arifur Rahman Kawser, Tanvir Hossain Reza. ID:17182103010, 17182103012 and 17182103020** Department of Computer Science and Engineering (CSE) , Bangladesh University of Business and Technology (BUBT) under the supervision of **Sudipto Chaki**, Lecturer and, Department of Computer Science and Engineering has been accepted as satisfactory for the partial fulfillment of the requirement for the degree of Bachelor of Science (B.Sc. Engg.) in Computer Science and Engineering and approved as to its style and contents.

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Chapter 1

INTRODUCTION

1.1 Introduction

The project Hospital Management system includes registration of patients, storing their details into the system, and also computerized billing in the pharmacy, and labs. The software has the facility to give a unique id for every patient and stores the details of every patient and the staff automatically. It includes a search facility to know the current status of each room. User can search availability of a doctor and the details of a patient using the id. The Hospital Management System can be entered using a username and password. It is accessible either by an administrator or receptionist. Only they can add data into the database. The data can be retrieved easily. The interface is very user-friendly. The data are well protected for personal use and makes the data processing very fast. Hospital Management System is powerful, flexible, and easy to use and is designed and developed to deliver real conceivable benefits to hospitals. Hospital Management System is designed for multi speciality hospitals, to cover a wide range of hospital administration and management processes. It is an integrated end-to-end Hospital Management System that provides relevant information across the hospital to support effective decision making for patient care, hospital administration and critical financial accounting, in a seamless flow. Hospital Management System is a software product suite designed to improve the quality and management of hospital management in the areas of clinical process analysis and activity-based costing. Hospital Management System enables you to develop your organization and improve its effectiveness and quality of work. Managing the key processes efficiently is critical to the success of the hospital helps you manage your processes.

1.2 Background Analysis

Various management program for management are present out there but there any not too many which provides the patients any functionality. The hospital system has been automated but the benefit is not for all. In such a situation I have figured out that there should be something for the patients. Some simple features for checking appointment, asking for appointment, prescription and test reports can reduce the hassle up to 70-80%. Because those are the sector where we face a lot of trouble and can find a way out. So this will allow us something that we were waiting for so long. The world is moving to internet so this is the right time to think about this. I have checked some hospital management system on internet and some local programs that the hospital stuffs are using near me. They are also very well designed and have rich features too but nothing for the patients to be happy about is there. If we compare the benefits and the satisfaction form every point of view then we cannot conclude things beneficial for all. If a system does not provide help for every user group then it cannot be perfect system. We came out a long way with maximizing benefit for all. Still there are a lot of things that can be added but at this point this is the most we can expect.

1.3 Motivation

We do not usually visit hospitals unless we need to but this visit does not always gives us good experience. We face various problems there. There are automated hospital management system but they do not provide any functionality for us.

Even the doctors do not have access to their patient's data while they are at home. It will be great for the patients to have an application that will keep them close to their personal data like: prescriptions, test reports and other important materials. Patients will be able to browse through all the doctors available and ask for appointment for their desired doctor. A doctor will also experience the similar benefits. This will reduce a lot of paper works and make things easy for everyone associated with it. I have some personal experience visiting the hospital and I also have gathered experience from other people by asking them and observing them for some time. People experience their worst nightmare while they need to visit the hospital. No body visits the hospital unless it is extremely necessary. People get mad but they do not have anything to do then. This gave me the perfect motivation to build something for them and offer them some help at their most needed time. I am confident that this product can and will help them.

1.4 MODULES

A database is an integrated collection of data, usually so large that it has to be stored on secondary storage devices such as disks or tapes. This data can be maintained as a collection of operating system files, or stored in a DBMS (database management system). A Database Management System (DBMS) is computer software designed for the purpose of managing databases based on a variety of data models.[2] A DBMS is a complex set of software programs that controls the organization, storage, management, and retrieval of data in a database. DBMS are categorized according to their data structures or types, sometime DBMS is also known as Database Manager. It is a set of pre written programs that are used to store, update and retrieve a Database. When a DBMS is used, information systems can be changed much more easily as the organization's information requirements change. New categories of data can be added to the database without disruption to the existing system. Organizations may use one kind of DBMS for daily transaction processing and then move the detail onto another computer that uses another DBMS better suited for random inquiries and analysis.[3]

Admin module

- manage department of hospitals, user, doctor, nurse, pharmacist, laboratorist accounts.
- watch transaction reports of patient payment
- watch appointment of doctors
- Enhanced data integrity
- Bed ,ward, cabin status
- watch blood bank report
- watch medicine status of hospital stock
- watch operation report
- watch birth report
- watch diagnosis report
- watch death report

Patient Module

- View appointment list and status with doctors

- View prescription details
- View medication from doctor
- View doctor list
- View blood bank status
- View operation history
- View admit history. like bed, ward icu etc
- Manage own profile

Doctor Module

- Manage patient. account opening and updating
- Create, manage appointment with patient
- Create prescription for patient
- Provide medication for patients
- Issue for operation of patients and creates operation report
- Manage own profile

Pharmacist module

- Maintain medicine
- Keep records of hospitals stock medicines and status
- Manage medicine categories
- Watch prescription of patient
- Provide medication to prescriptions

1.5 Conclusion

Since patients are entering details of the patients electronically in the" Hospital Management System", data will be secured. Using this website we can retrieve patient's history with a single click. Thus processing information will be faster. It guarantees accurate maintenance of Patient details. It easily reduces the book keeping task and thus reduces the human effort and increases accuracy speed.

Chapter 2

Requirement Specification

2.1 Introduction

To be used efficiently, all computer software needs certain hardware components or the other software resources to be present on a computer. These pre-requisites are known as(computer) system requirements and are often used as a guideline as opposed to an absolute rule. Most software defines two sets of system requirements: minimum and recommended. With increasing demand for higher processing power and resources in newer versions of software, system requirements tend to increase over time. Industry analysts suggest that this trend plays a biggerpart in driving upgrades to existing computer systems than technological advancements.

2.2 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.

HARDWARE REQUIREMENTS FOR PRESENT PROJECT:

PROCESSOR :Intel dual Core ,i3

RAM :1 GB

HARD DISK :80 GB

2.3 Software Requirements:

Software Requirements deal with defining software resource requirements and pre-requisites that need to be installed on a computer to provide optimal functioning of an application. These requirements or pre-requisites are generally not included in the software installation package and need to be installed separately before the software is installed.

SOFTWARE REQUIREMENTS FOR PRESENT PROJECT:

OPERATING SYSTEM :Windows 7/ XP/8

FRONT END :Html,css,java script.

SERVER SIDE SCRIPT :Php

DATABASE : Mysql

Chapter 3

Analysis

3.1 Introduction

Analysis is the phase that bridges the gap between problem domain and the existing system in a manageable way. This phase focuses on the solution domain, i.e. "how to implement?"It is the phase where the SRS document is converted into a format that can be implemented and decides how the system will operate.In this phase, the complex activity of system development is divided into several smaller sub-activities, which coordinate with each other to achieve the main objective of system development.
Architectural design is also known as high level design that focuses on the design of system architecture. It describes the structure and behavior of the system. It defines the structure and relationship between various modules of system development process.

3.2 Feasibility Analysis

Whatever we think need not be feasible. It is wise to think about the feasibility of any problem we undertake. Feasibility is the study of impact, which happens in the organization by the development of a system. The impact can be either positive or negative. When the positives nominate the negatives, then the system is considered feasible. Here the feasibility study can be performed in two ways such as technical feasibility and Economical Feasibility.[15]

3.2.1 Technical Feasibility

We can strongly say that it is technically feasible, since there will not be much difficulty in getting required resources for the development and maintaining the system as well. All the

resources needed for the development of the software as well as the maintenance of the same is available in the organization here we are utilizing the resources which are available already.[15]

3.2.2 Economical Feasibility

Development of this application is highly economically feasible. The organization needed not spend much money for the development of the system already available. The only thing is to be done is making an environment for the development with an effective supervision. If we are doing so, we can attain the maximum usability of the corresponding resources. Even after the development, the organization will not be in condition to invest more in the organization. Therefore, the system is economically feasible.

3.3 Process Model

We have used Agile Process Model for our Hospital Management Project.The meaning of Agile is swift or versatile."Agile process model" refers to a software development approach based on iterative development. Agile methods break tasks into smaller iterations, or parts do not directly involve long term planning. The project scope and requirements are laid down at the beginning of the development process. Plans regarding the number of iterations, the duration and the scope of each iteration are clearly defined in advance.

3.3.1 Phases of Agile Model

Following are the phases in the Agile model are as follows:

3.3.1.1 Requirements gathering

In this phase, you must define the requirements. You should explain business opportunities and plan the time and effort needed to build the project. Based on this information, you can evaluate technical and economic feasibility.

3.3.1.2 Design the requirements

When you have identified the project, work with stakeholders to define requirements. You can use the user flow diagram or the high-level UML diagram to show the work of new features and show how it will apply to your existing system.

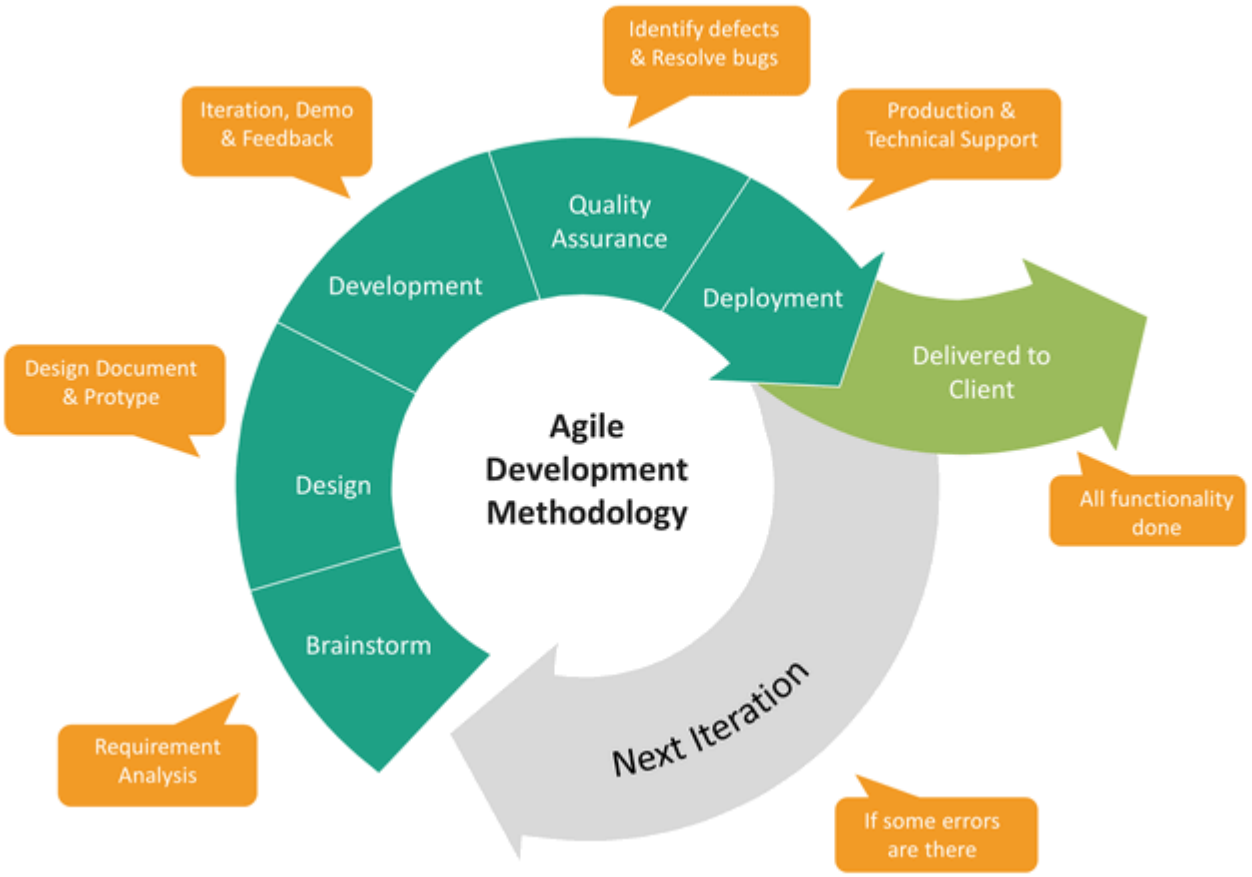


FIGURE 3.1: Agile Model

3.3.1.3 Construction/ iteration

When the team defines the requirements, the work begins. Designers and developers start working on their project, which aims to deploy a working product. The product will undergo various stages of improvement, so it includes simple, minimal functionality.

3.3.1.4 Testing

In this phase, the Quality Assurance team examines the product's performance and looks for the bug.

3.3.1.5 Deployment

In this phase, the team issues a product for the user's work environment.

3.3.1.6 Feedback

After releasing the product, the last step is feedback. In this, the team receives feedback about the product and works through the feedback.

3.4 Front End Design Specification

3.4.1 HTML

HTML or Hypertext Markup Language is the standard markup language used to create web pages. HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets (like ¡html¿). HTML tags most commonly come in pairs like ¡h1¿ and ¡/h1¿, although some tags represent empty elements and so are unpaired, for example ¡img¿. The first tag in a pair is the start tag, and the second tag is the end tag (they are also called opening tags and closing tags). Though not always necessary, it is best practice to append a slash to tags which are not paired with a closing tag. The purpose of a web browser is to read HTML documents and compose them into visible or audible web pages. The browser does not display the HTML tags, but uses the tags to interpret the content of the page. HTML describes the structure of a website semantically along with cues for presentation, making it a markup language rather than a programming language. HTML elements form the building blocks of all websites. HTML allows images and objects to be embedded and can be used to create interactive forms. It provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. It can embed scripts written in languages such as JavaScript which affect the behavior of HTML web pages.

3.4.2 Cascading Style Sheets (CSS):

It is a style sheet language used for describing the look and formatting of a document written in a markup language. While most often used to style web pages and interfaces written in HTML and XHTML, the language can be applied to any kind of XML document, including plain XML, SVG and XUL. CSS is a cornerstone specification of the web and almost all web pages use CSS style sheets to describe their presentation. CSS is designed primarily to enable the separation of document content from document presentation, including elements such as the layout, colors, and fonts.[1] This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple pages to share formatting, and reduce complexity and repetition in the structural content . CSS can also allow the same markup page to be presented in different styles for different rendering methods, such as on-screen, in print, by voice (when read out by a speech-based browser or screen reader) and on Braille-based,

tactile devices. It can also be used to allow the web page to display differently depending on the screen size or device on which it is being viewed. While the author of a document typically links that document to a CSS file, readers can use a different style sheet, perhaps one on their own computer, to override the one the author has specified. However if the author or the reader did not link the document to a specific style sheet the default style of the browser will be applied.

3.5 Back End Design Specification

3.5.1 MySQL

MySQL is developed, distributed, and supported by Oracle Corporation. MySQL is a database system used on the web it runs on a server. MySQL is ideal for both small and large applications. It is very fast, reliable, and easy to use. It supports standard SQL. MySQL can be compiled on a number of platforms. The data in MySQL is stored in tables. A table is a collection of related data, and it consists of columns and rows. Databases are useful when storing information categorically.

FEATURES OF MySQL:

- Internals and portability:
- Written in C and C++.
- Tested with a broad range of different compilers.
- Works on many different platforms.
- Tested with Purify (a commercial memory leakage detector) as well as with Val grind, a GPL tool.
- Uses multi-layered server design with independent modules.

  Security:

- A privilege and password system that is very flexible and secure, and that enables host-based verification.
- Password security by encryption of all password traffic when you connect to a server. Scalability and Limits:
- Support for large databases. We use MySQL Server with databases that contain 50 million records. We also know of users who use MySQL Server with 200,000 tables and about 5,000,000,000 rows.

- Support for up to 64 indexes per table (32 before MySQL 4.1.2). Each index may consist of 1 to 16 columns or parts of columns. The maximum index width is 767 bytes for InnoDB tables, or 1000 for MyISAM; before MySQL 4.1.2, the limit is 500 bytes. An index may use a prefix of a column for CHAR, VARCHAR, BLOB, or TEXT column types

3.5.2 Connectivity

Clients can connect to MySQL Server using several protocols:

- Clients can connect using TCP/IP sockets on any platform.
- On Windows systems in the NT family (NT, 2000, XP, 2003, or Vista), clients can connect using named pipes if the server is started with the –enable-named-pipe option. In MySQL 4.1 and higher, Windows servers also support shared-memory connections if started with the –shared-memory option. Clients can connect through shared memory by using the –protocol=memory option.
- On UNIX systems, clients can connect using Unix domain socket files.

LOCALIZATION:

- The server can provide error messages to clients in many languages.
- All data is saved in the chosen character set.

CLIENTS AND TOOLS:

- MySQL includes several client and utility programs. These include both command-line programs such as mysqldump and mysqladmin, and graphical programs such as MySQL Workbench.
- MySQL Server has built-in support for SQL statements to check, optimize, and repair tables. These statements are available from the command line through the mysqlcheck client. MySQL also includes myisamchk, a very fast command-line utility for performing these operations on MyISAM tables.
- MySQL programs can be invoked with the –help or -? option to obtain online assistance.

WHY TO USE MySQL:

- Leading open source RDBMS

- Ease of use – No frills
- Fast
- Robust
- Security
- Multiple OS support
- Free
- Technical support
- Support large database– up to 50 million rows, file size limit up to 8 Million TB

3.5.3 JavaScript

JavaScript is the scripting language of the Web. All modern HTML pages are using JavaScript. A scripting language is a lightweight programming language.JavaScript code can be inserted into any HTML page, and it can be executed by all types of web browsers. JavaScript is easy to learn.

WHY TO USE JAVASCRIPT:

JavaScript is one of the 3 languages all web developers must learn:

- HTML to define the content of web pages
- CSS to specify the layout of web pages
- JavaScript to specify the behavior of web pages

Example

x = document.getElementById(”demo”); //Find the HTML element with id=”demo” x.innerHTML = ”Hello JavaScript”; //Change the content of the HTML element document.getElementById() is one of the most commonly used HTML DOM methods.

OTHER USES OF JAVASCRIPT:

- Delete HTML elements
- Create new HTML elements
- Copy HTML elements

- In HTML, JavaScript is a sequence of statements that can be executed by the web browser.

JAVASCRIPT STATEMENTS:

- JavaScript statements are ”commands” to the browser.
- The purpose of the statements is to tell the browser what to do.
- This JavaScript statement tells the browser to write ”Hello Dolly” inside an HTML element with id=”demo”:

  Semicolon;
- Semicolon separates JavaScript statements.
- Normally you add a semicolon at the end of each executable statement.
- Using semicolons also makes it possible to write many statements on one line.

JAVASCRIPT CODE:

- JavaScript code (or just JavaScript) is a sequence of JavaScript statements.
- Each statement is executed by the browser in the sequence they are written.
- This example will manipulate two HTML elements:

  Example
- document.getElementById(”demo”).innerHTML=”Hello Dolly”; document.getElementById(”myDIV”).inn
  are you?”;

JAVASCRIPT PROPERTIES:

- Properties are the values associated with a JavaScript object.
- A JavaScript object is a collection of unordered properties.
- Properties can usually be changed, added, and deleted, but some are read only.

3.5.4 PHP

WHAT IS PHP?

- PHP is an acronym for "PHP Hypertext Preprocessor"
- PHP is a widely-used, open source scripting language
- PHP scripts are executed on the server
- PHP costs nothing, it is free to download and use

WHAT IS PHP FILE?

- PHP files can contain text, HTML, CSS, JavaScript, and PHP code
- PHP code are executed on the server, and the result is returned to the browser as plain HTML
- PHP files have extension ".php"

WHAT CAN PHP DO?

- PHP can generate dynamic page content
- PHP can create, open, read, write, delete, and close files on the server
- PHP can collect form data
- PHP can send and receive cookies
- PHP can add, delete, modify data in your database
- PHP can restrict users to access some pages on your website
- PHP can encrypt data With PHP you are not limited to output HTML. You can output images, PDF files, and even Flash movies. You can also output any text, such as XHTML and XML.

WHY PHP?

- PHP runs on various platforms (Windows, Linux, Unix, Mac OS X, etc.)
- PHP is compatible with almost all servers used today (Apache, IIS, etc.)
- PHP supports a wide range of databases
- PHP is free. Download it from the official PHP resource: www.php.net

Chapter 4

Software Requirements Specification (SRS)

4.1 Introduction

4.1.1 Purpose

If the SRS is written well it will serve the following purposes. SRS is the agreement document between the client and the Software developer.

Feedback to the Customer- This software requirement specification assures the project management stakeholders and client that the development team has really understood the business requirements documentation properly. This also provides confidence that the team will develop the functionality which has been detailed.

Breaking the Requirements Down- This document is documented in such a way that it breaks the deliverables into smaller components which makes the participants in this project to understand what is to be done clearly. The information is organized in such a way that all the developers within the team will not only understand the boundaries within which we need to work, but also what functionality needs to be developed and in what order. Understanding what order the functionality will be developed in means that we, the developers will have the "big picture" view of the development. This gives us an opportunity to plan ahead which saves both project time and cost.

Facilitating other Documentation- The SRS forms the basis for a load of other important documents such as the Software Design Specification.

Product Validation- It basically helps in validating with the client that the product which is being delivered, meets what they asked for. Which means that the product we have output is Equal to the standards of the documentation in the SRS which the client satisfied and agreed on. Characteristics of a Software Requirement Specification

4.1.1.1 Accuracy

We will ensure the accuracy of the software and the data entered to the database

4.1.1.2 Clarity

This SRS will be clearly stating what the user wants in the software.

4.1.1.3 Completeness

The software requirement specification contains all the requirements stated in the business requirements documentation that the user specified.

4.1.1.4 Consistency

The document is consistent from beginning till the end. It helps the readers understand the requirements well.

4.1.1.5 Prioritizations of Requirements

The requirements will be full filled according to the order of priority and preference.

4.1.1.6 Verifiability

At the end of the project, the user/client will be able to verify that all that all the agreed deliverables have in fact been produced and meet the project management requirements specified.

4.1.1.7 Modifiability

The SRS can be modified when the development team and user feel the need.

4.1.1.8 Traceability

Each requirement stated in the SRS is uniquely associated to a source such as a use case or interaction document etc.

4.1.2 Document Conventions

The document is prepared using Microsoft Word 2010 and has used the font type 'Times New Roman'. The fixed font size that has been used to type this document is 12pt with 1.5 line spacing. It has used the bold property to set the headings of the document. All pages except the cover page are numbered, the numbers appear on the lower right-hand corner of the page. Every image and data table are numbered and referred to the in the main text Use case scenario is written according to Alistair Cockburn's template. Standard IEEE template is the template used to organize the appearance of the document and its flow.

4.1.3 Intended Audience and Reading Suggestions

The intended audience of this document would be the client and specific employees like Manager and Receptionist, consultants and System Operators of the St Joseph Hospital, and project team, supervisor with the objective to refer and analyze the information. The SRS document can be used in any case regarding the requirements of the project and the solutions that have been taken. The document would final provide a clear idea about the system that is building.

4.1.4 Product Scope

Currently Wennapuwa St Joseph hospital is using a manual system to handle the hospital process. When patients arrive, they make an appointment at the reception to consult a Doctor. These are being recorded in a file. Then again, the patients diagnosed symptoms related disease details, ward details and other necessary details are being recorded and those files are being stored in special locations. Calculation of bills and inventory are done manually. As the current system is a file based one, management of the hospital has to put much effort on securing the files. They can be easily damaged by fire, insects and natural disasters. Also could be misplaced by losing data and information. Limited storage space of the files is another issue that they currently face when the management is manually done. There occurs an issue with the organization of data information and schedules and running the process methodically which leads to the manual system malfunctioning. If we want to check a previous record of a patient or other detail. Management will be in a great problem. It's a tough and time taking process to search for a record in a file. Keeping files takes much time and waste much precious man

hours. The tendency of making mistakes is high when functioning manually. It is hard to relay on the accuracy of calculations done manually too. It is more obvious for problems to arise. We plan to overcome the above mentioned problems through a standalone application, to manage the major functions of the Hospital System. The hospital management system we are going to implement will be covering all basic processes done in the hospital. It would handle Employee and Salary management, Patient and "Zumba exercise" management, Theatre and ward Management, Laboratory management, Transport Management, Pharmacy Management, OPD management and emergency management. In OPD unit, with the OPD and Consultation Management system, the manual doctors channeling details entering process has automated.So, the staff does not need to spend time on writing appointment records and updating them in files. And the number issuing process becomes easier and efficient. And keeping the track of patients and medical prescription details allow them to review the details whenever needed. Implementing the Employee Salary Management system we record Attendance, shifting of employees, their holidays and consulting doctors' schedules. And the system performs calculations of EPF/ETP and OT hours, Shares of consulting doctors and do the payroll part. This is more efficient and more reliable and accurate as the system avoids incorrect data inputs whenever they are occurred. The proposed system for Mini-theatre Ward Management records details of surgeons, in- patients who are assigned for Wards, different ward details and surgery details. The pharmaceuticals used within the theatre are managed as well. Food menus for the patients according to their diseases based on wards is systemized too. All are digitalized in a systematic way. So, the details of surgeons, patients and surgeries are well organized and can be easily accessed whenever needed. Surgery reports, Ward progress reports, In-ward patient progress details are generated and history can be tracked too. The Vehicle Transport Management system handles all the data on ambulance transport. It manages the time slots of ambulances, driver's and employee details of transport section and provides bill generating facility. And reliable time slot management provides the facility of checking the availability of the ambulances whenever required, and decide about a possible time they can fulfill a request.

The current process of "Zumba" exercise details managing does not support for any individual progress analyzing. The Exercise "Zumba" Management provides a detailed progress report of each individual and allows the management or their customer to take decisions on exercise plans. The system developing for Emergency Treatment Equipment Management automate the current processes of patient registering and propose a better way to keep records of equipment and medicines related to the emergency treatment unit in a computer-based file system. The proposed system provides a simple interface to gather quick information of the patient and record them. So that in a case of special request by an external party, details of the patient history can be accessed and viewed. The Pharmacy Stock Management system is responsible for proper management of drug stocks, pop ups the notifications of expiry dates of stock items. This system allows the client to keep track of medicine stocks, notify the personals when the stock

is running out of items and help the manager to reduce stock levels and eliminate stock waste. The Lab Management System records sample collection details, keep track of lab resources and participate in lab reports conclusion generating. This increases the accuracy of report generating process and save a lot of time in manual handling of report details and improve the efficiency and the productivity of the organization. Our goal is to make a client satisfied system by full filling the client requirements and improving the current manual system with client needs which are not even particularly mentioned but what we have suggested by analyzing and got approved by the client to improve the standard of the system and of the management of the hospital to its utmost. The scope of the SRS is basically for everyone involved to understand and have an idea about how and what is going to happen in the system. Using ER, User Case diagrams and GUI's which are in a form where everyone can understand. How the interfaces finally appear. To have an idea about the new employees that the client might have to get employed when the system is implemented.

4.2 Overall Description

4.2.1 Product Perspective

St. Joseph's Medical Centre follows manual procedures to keep track of its day to day activities. When scenarios such as patient information handling, employee handling, stock handling, financial analysis and report generation is taken into consideration there exists many issues with regard to efficiency, security, accuracy and reliability. Due to improperly managed details medical center faces quite a lot of difficulties in accessing past data as well as managing present data. The manual file systems which are being used at present require storage facilities which is also another overhead. The fully functional automated hospital management system which will be developed through this project will eliminate the disadvantages caused by the manual system by improving the reliability, efficiency and performance. The usage of a database to store patient, employee, stock details etc. will accommodate easy access, retrieval, search and manipulation of data. The access limitations provided through access privilege levels will enhance the security of the system. The system will facilitate concurrent access and convenient management of activities of the medical center.

4.2.2 Product Features

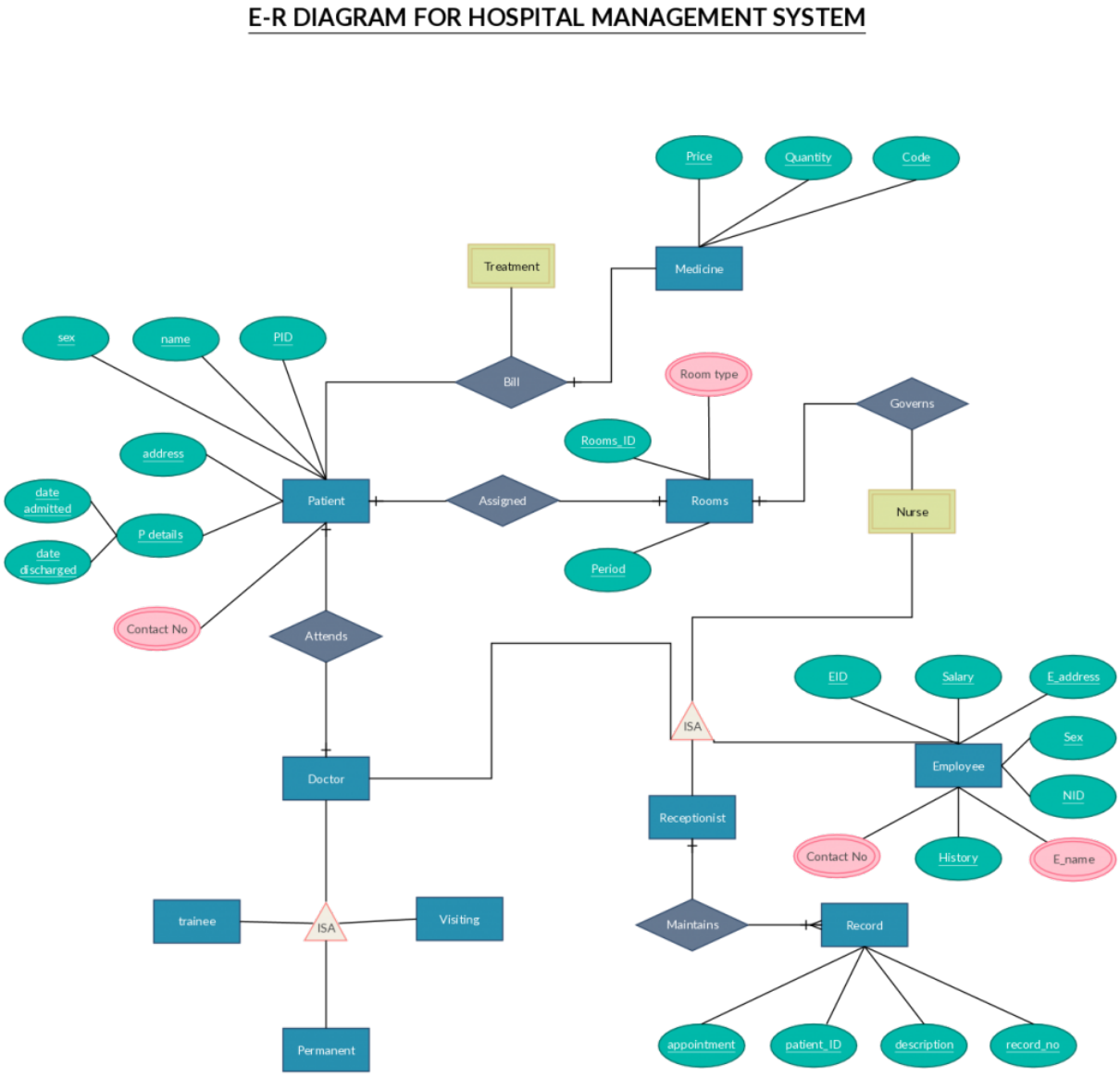


FIGURE 4.1: ER Diagram of Hospital Management System

4.2.3 User Classes and Characteristics

Admin: Admin has the full access to the system which means he is able to manage any activity with regard to the system. He is the highest privileged user who can access to the system.

Key functions:

✓Manage employees, patients and equipment

✓Allocate resources

✓Administer the charges

✓Generate reports

✓Manage ambulances

✓Manage doctors

✓Manage salaries

Employee:

Interacts with the systems most often to supply service to customers

Key functions:

✓Keep track of patient details

✓Keep tract of test details

✓Make ambulance reservations

✓Keep track of progress of patients

✓Maintain bill details

✓Manage inventory

4.2.4 Design and Implementation Constraints

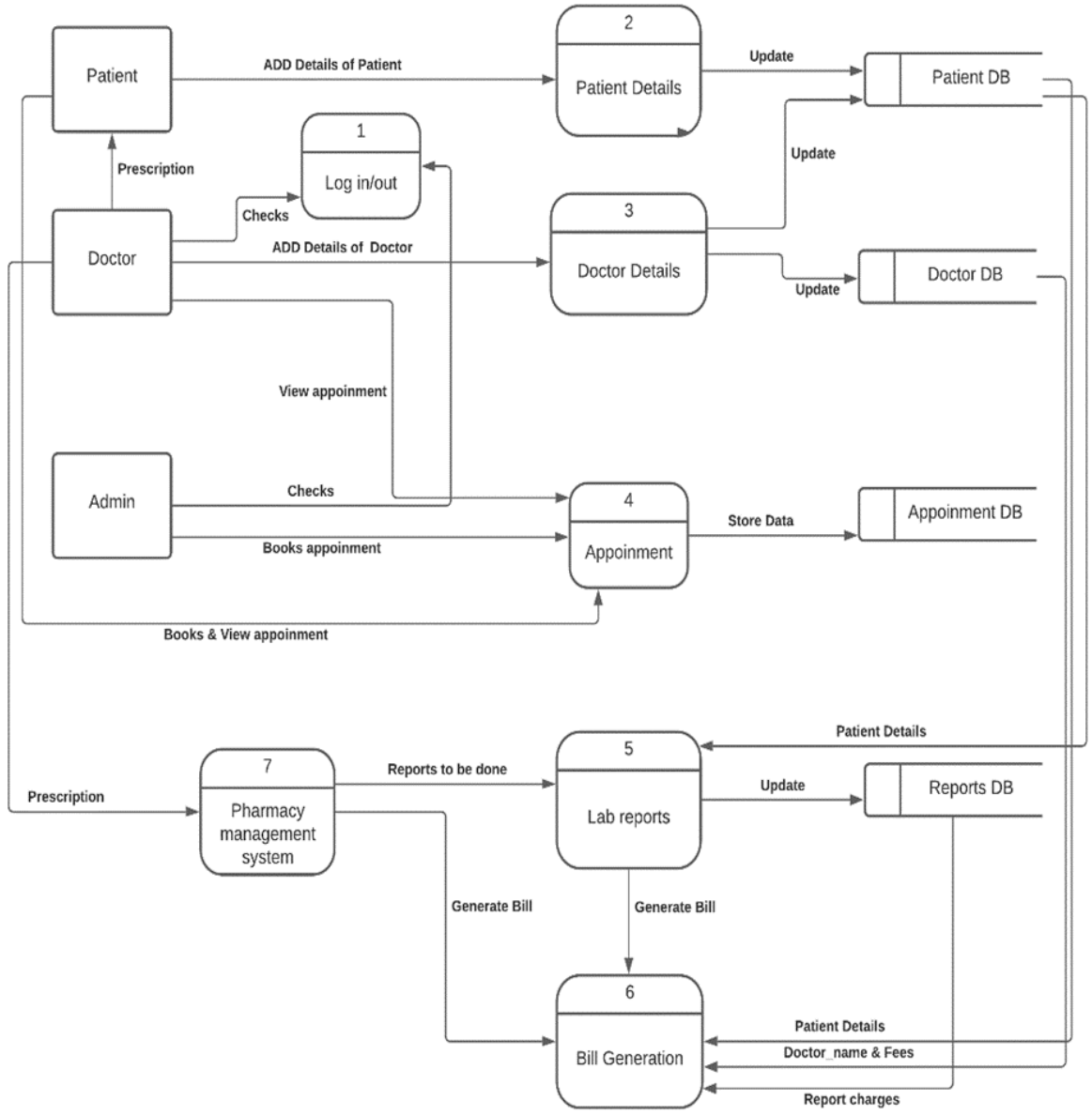


FIGURE 4.2: Level 1 DFD for Hospital Management System

4.2.5 Communications Interfaces

This project supports all types of web browsers. We will develop the website for both desktop and mobile user interface. So, people can browse the website using both mobile phone, desktop and other devices that have feature to browse website

4.3 System Features

The system will allow access only to authorized users with specific roles (Administrator, Operator). Depending upon the user's role, he/she will be able to access only specific modules of the system. A summary of the major functions that the software will perform: A login facility for enabling only authorized access to the system. When a patient is admitted, the front-desk staff checks to see if the patient is already registered with the hospital. If he is, his/her Name is entered into the computer. Otherwise a new Patient ID is given to this patient.

4.4 Other Nonfunctional Requirements

4.4.1 Performance Requirements

✓Response time-The system will give responses within 1 second after checking the patient information and other information.

✓Capacity-The system must support 1000 people at a time

✓User interface- User interface screen will response within 5 seconds.

✓Conformity –The system must conform to the Microsoft accessibility

4.4.2 Safety Requirements

If there is extensive damage to a wide portion of the database due to catastrophic failure, such as a disk crash, the recovery method restores a past copy of the database that was backed up to archival storage and reconstructs a more current state by reapplying or redoing the operations of committed transactions from the backed up log, up to the time of failure.

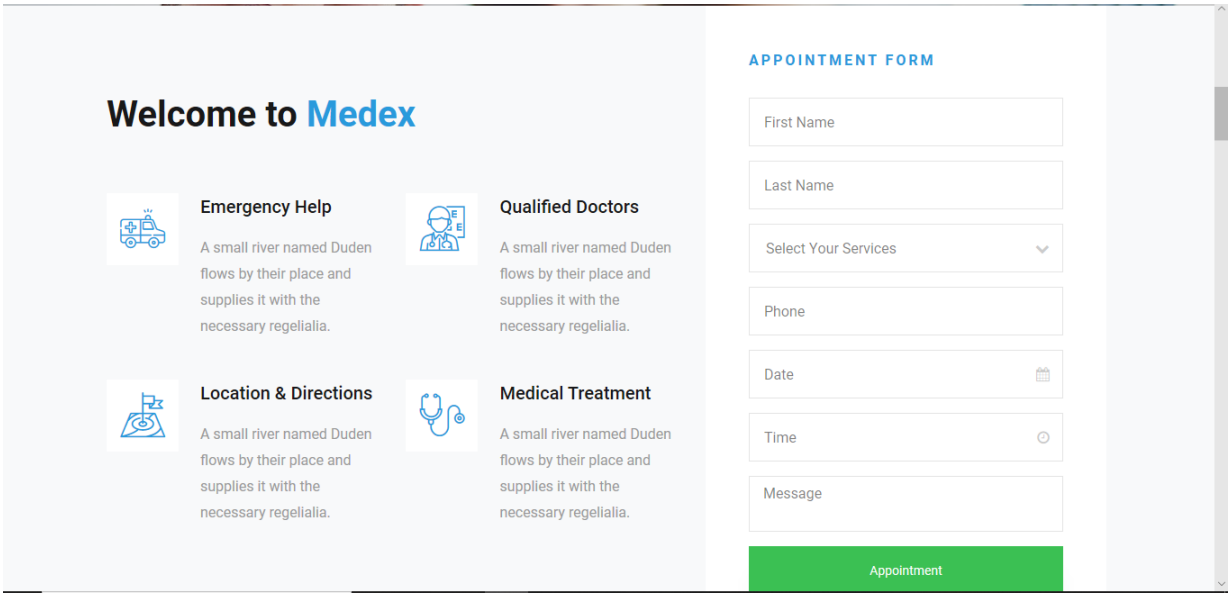
4.4.3 Security Requirements

All the administrative and data entry operators have unique logins so system can understand who is login in to system right now no intruders allowed except system administrative nobody cannot change record and valuable data.

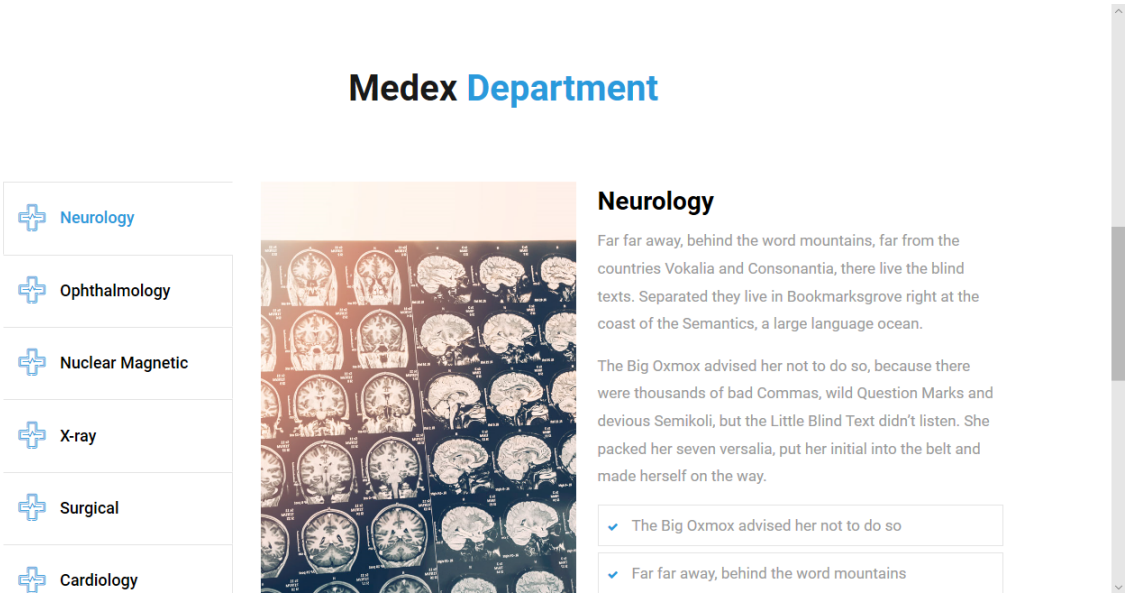
Chapter 5

Sample Screenshots

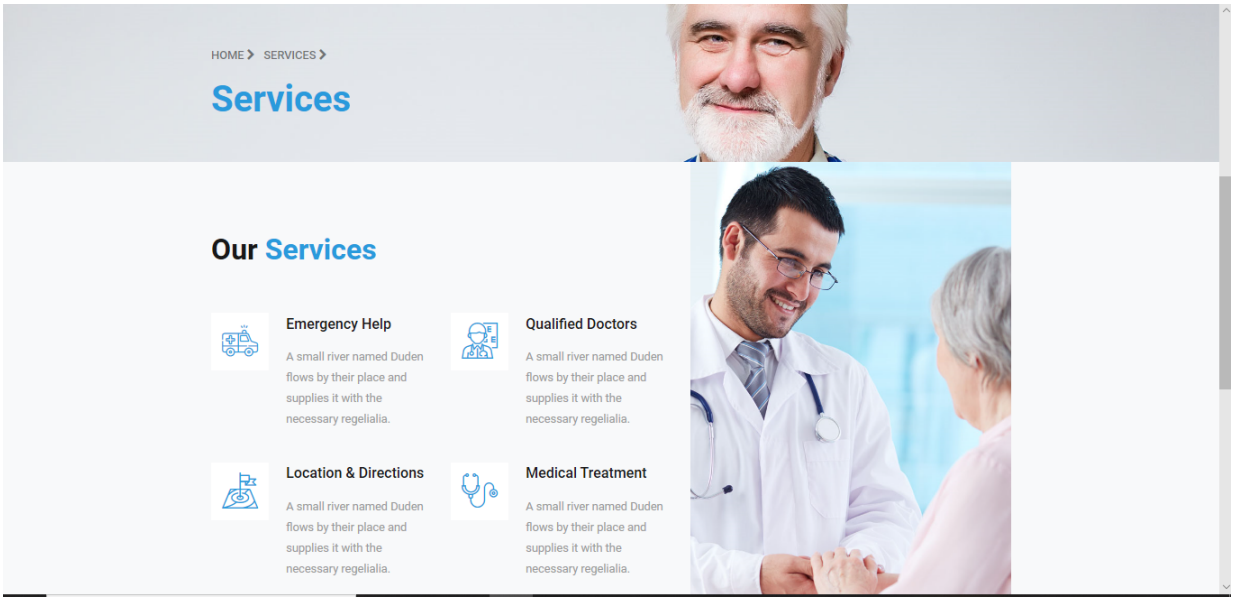
5.1 Index



5.2 Department

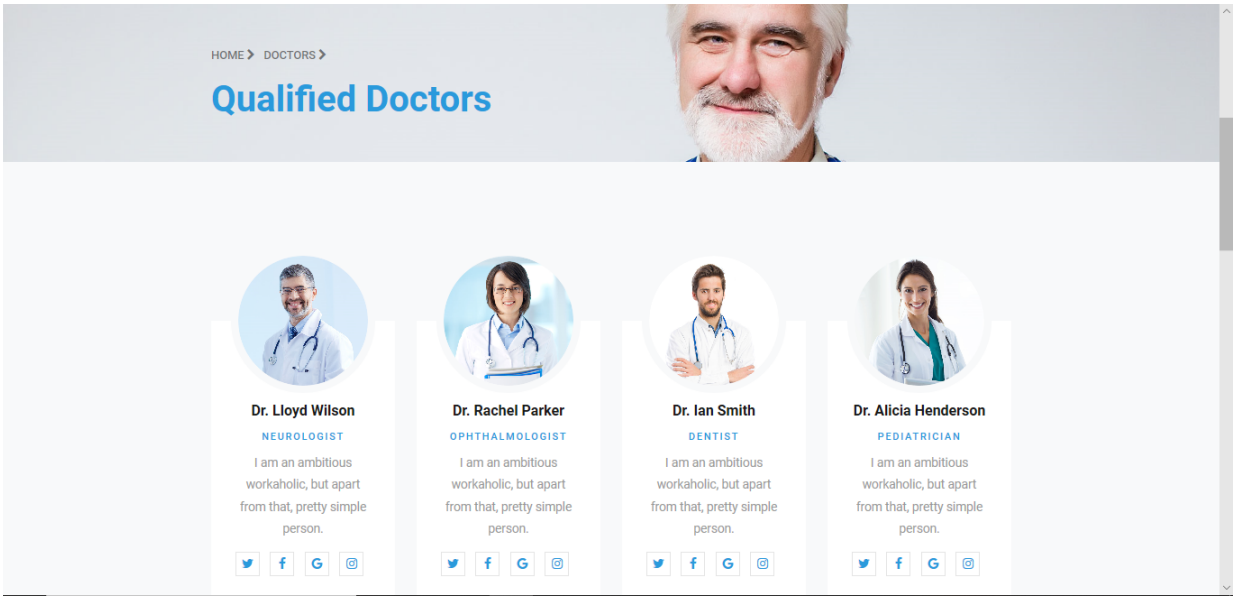


5.3 Services

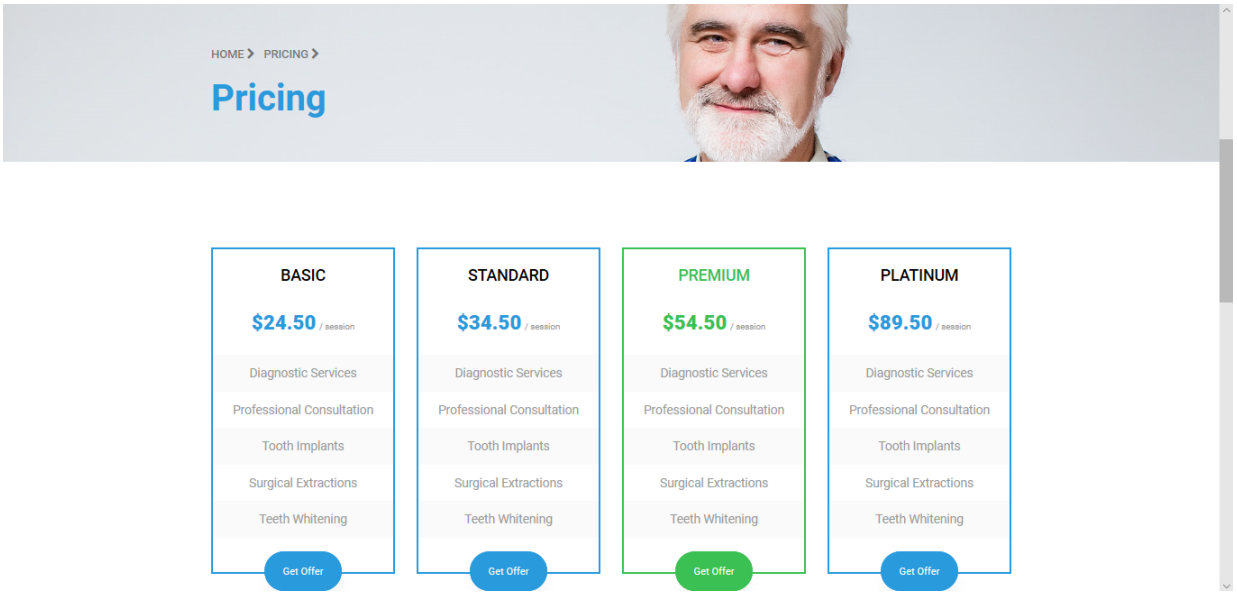


5.4 Galary

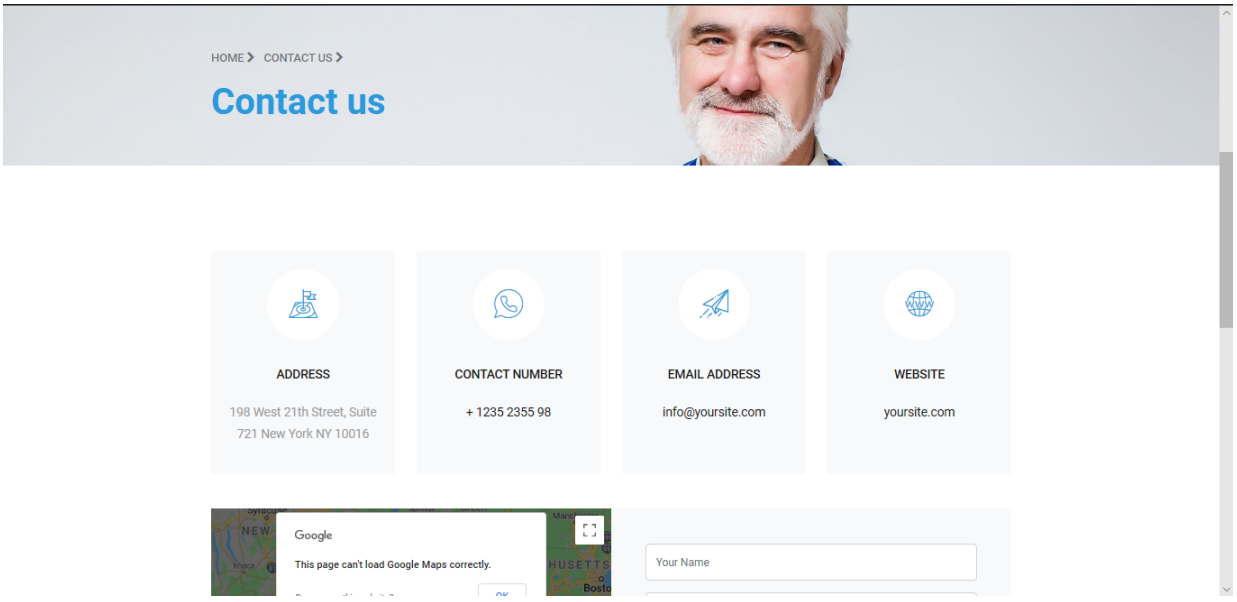
5.5 Doctors



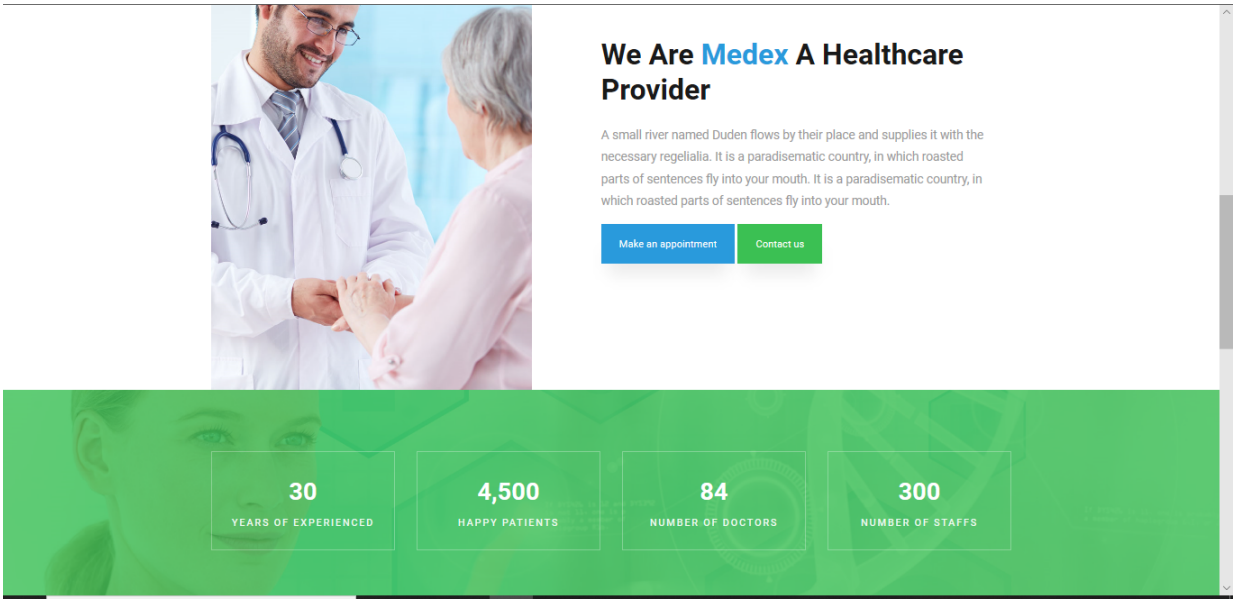
5.6 Pricing



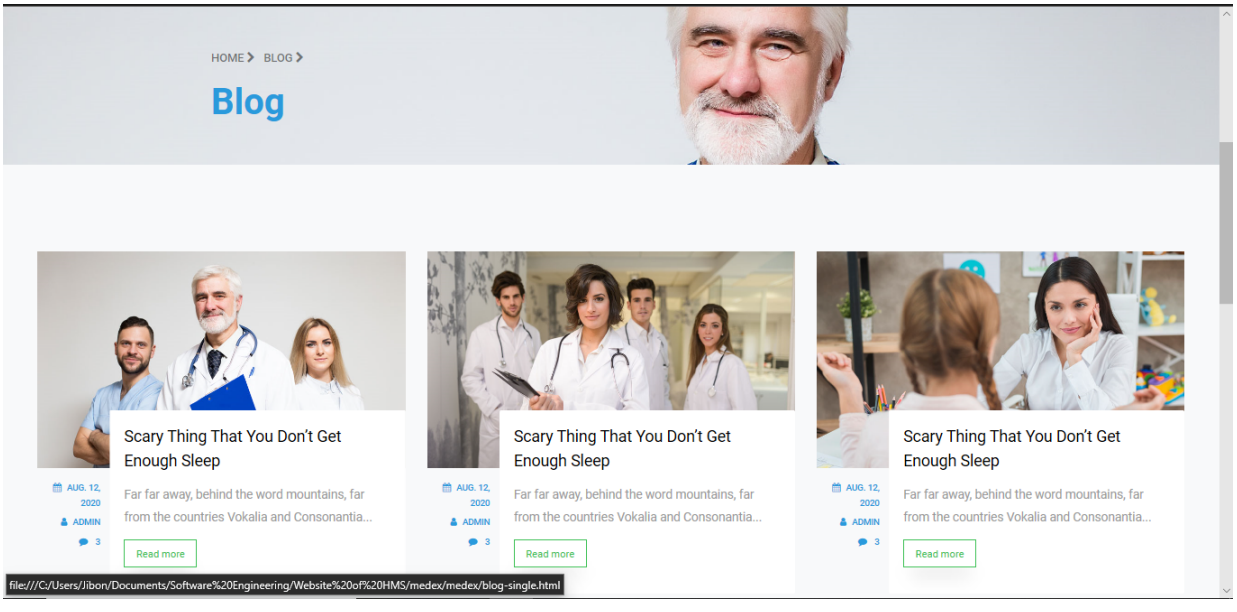
5.7 Contacts



5.8 About



5.9 Blog



Chapter 6

Conclusion

6.1 Project Overview

6.1.1 Benefit for Doctors

- They will be able to check appointment any time and work accordingly.
- They will have long history of their patients.
- Will not be dependent on patient for any information after the first visit.
- Reduce paper work and working time.

The doctor patient relationship that we know is going to change dramatically with this simple step. People will not be able to chat with a doctor as they can with their friends with many web applications and platforms but the distance between the will certainly come much shorter. While the medical ethics will be very important factor. The doctor–patient relationship is central to the practice of healthcare and is essential for the delivery of high-quality health care in the diagnosis and treatment of disease. The doctor–patient relationship forms one of the foundations of contemporary medical ethics. Most universities teach students from the beginning, even before they set foot in hospitals, to maintain a professional rapport with patients, uphold patients' dignity, and respect their privacy.

6.1.2 Benefit for Patient

- No waiting no queue.
- Will be able to perform activities from home.
- Can check their details, prescriptions and test reports any time.

6.1.3 Importance

A patient must have confidence in the competence of their physician and must feel that they can confide in him or her. For most physicians, the establishment of good rapport with a patient is important. Some medical specialties, such as psychiatry and family medicine, emphasize the physician–patient relationship more than others, such as pathology or radiology.

The quality of the patient–physician relationship is important to both parties. The better the relationship in terms of mutual respect, knowledge, trust, shared values and perspectives about disease and life, and time available, the better will be the amount and quality of information about the patient's disease transferred in both directions, enhancing accuracy of diagnosis and increasing the patient's knowledge about the disease. Where such a relationship is poor the physician's ability to make a full assessment is compromised and the patient is more likely to distrust the diagnosis and proposed treatment, causing decreased compliance to actually follow the medical advice. In these circumstances and also in cases where there is genuine divergence of medical opinions, a second opinion from another physician may be sought or the patient may choose to go to another physician. Additionally, the benefits of any placebo effect are also based upon the patient's subjective assessment (conscious or unconscious) of the physician's credibility.

In addition, a Canadian physician known as Sir William Osler strongly influenced the behavior of how a doctor should act during bedside with his or her patients. Osler was known as one of the "Big Four" professors at the time that the Johns Hopkins Hospital was first founded. At the Johns Hopkins Hospital, Osler had invented the clinical teaching system where he had taught medical students how to act during bedside or how to tend to the care of the patients in different departments of the hospital.

6.1.4 Aspects of relationship

The following aspects of the doctor–patient relationship are the subject of commentary and discussion.

6.1.5 Informed consent

The default medical practice for showing respect to patients is for the doctor to be truthful in informing the patient of their health and to be direct in asking for the patient's consent before giving treatment. Historically in many cultures there has been a shift from paternalism, the view that the "doctor always knows best," to the idea that patients must have a choice in the provision of their care and be given the right to provide informed consent to medical procedures. There can be issues with how to handle informed consent in a doctor–patient relationship; for

instance, with patients who do not want to know the truth about their condition. Furthermore, there are ethical concerns regarding the use of placebo.

6.1.6 Shared decision making

Health advocacy messages such as this one encourage patients to talk with their doctors about their healthcare. Shared decision making is the idea that as a patient gives informed consent to treatment, that person also is given an opportunity to choose among the treatment options according to their own treatment goals and wishes. A practice which is an alternative to this is for the doctor to make a person's health decisions without considering that person's treatment goals or having that person's input into the decision-making process.

The spectrum of a physician's inclusion of a patient into treatment decisions is well represented in Ulrich Beck's World at Risk. At one end of this spectrum is Beck's Negotiated Approach to risk communication, in which the communicator maintains an open dialogue with the patient and settles on a compromise on which both patient and physician agree. A majority of physicians employ a variation of this communication model to some degree, as it is only with this technique that a doctor can maintain the open cooperation of his or her patient. At the opposite end of this spectrum is the Technocratic Approach to risk communication, in which the physician exerts authoritarian control over the patient's treatment and pushes the patient to accept the treatment plan with which they are presented. This communication model places the physician in a position of omniscience and omnipotence over the patient and leaves little room for patient contribution to a treatment plan.

6.1.7 Physician superiority

The physician may be viewed as superior to the patient simply because the physician has the knowledge and credentials and is most often the one that is on home ground.

A physician should at least be aware of these disparities in order to establish a good rapport and optimize communication with the patient. It may be further beneficial for the doctor–patient relationship to have a form of shared care with patient empowerment to take a major degree of responsibility for her or his care.

6.1.8 Benefiting or pleasing

A dilemma may arise in situations where determining the most efficient treatment, or encountering avoidance of treatment, creates a disagreement between the physician and the patient, for any number of reasons. In such cases, the physician needs strategies for presenting unfavorable

treatment options or unwelcome information in a way that minimizes strain on the doctor–patient relationship while benefiting the patient's overall physical health and best interests.

6.1.9 Formal or casual

There may be differences in opinion between the doctors and patient in how formal or casual the doctor–patient relationship should be.

For instance, according to a Scottish study, patients want to be addressed by their first name more often than is currently the case. In this study, most of the patients either liked (223) or did not mind (175) being called by their first names. Only 77 disliked it, most of whom were aged over 65. On the other hand, most patients don't want to call the doctor by his or her first name.

Some familiarity with the doctor generally makes it easier for patients to talk about intimate issues such as sexual subjects, but for some patients, a very high degree of familiarity may make the patient reluctant to reveal such intimate issues.

6.1.10 Transitional care

Transitions of patients between health care practitioners may decrease the quality of care in the time it takes to reestablish proper doctor–patient relationships. Generally, the doctor–patient relationship is facilitated by continuity of care in regard to attending personnel.

6.1.11 Other people present

An example of where other people present in a doctor–patient encounter may influence their communication is one or more parents present at a minor's visit to a doctor. These may provide psychological support for the patient, but in some cases it may compromise the doctor–patient confidentiality and inhibit the patient from disclosing uncomfortable or intimate subjects.

When visiting a health provider about sexual issues, having both partners of a couple present is often necessary, and is typically a good thing, but may also prevent the disclosure of certain subjects, and, according to one report, increases the stress level.

6.2 Future Recommendations

- Modify as a web application targeting all doctors.
- A doctor will get 250mb initial space.

- They have to pay for additional cloud storage tosave details of their patients (Example: Prescriptions, Test Reports).
- A mobile application to make things easy and bring them closer.

Cloud implementation is a hard work but the benefit of it cannot be measured. We used to say that everything is moving towards internet. The time has ended for such statement. I believe that we have moved to internet completely. Every major application has something to do with cloud and there are even special versions targeted only for cloud. Every new development has some part directly related to cloud. Cloud is nothing new for us and we have already started to enjoy the fruits of cloud. Clouds can hold major data for our future use and it does not matter which device you are on right now. We did really become very device oriented and the loss of devices would mean a lot of thing for people. Now the picture is completely different. We have adapted to the new machine world where our devices are just mean of our work and clouds provide them the much needed portability.

The introduction of cloud to medical section has already become very popular in many developed countries but we are still behind on this like thousands of other sections. This will bring a new era for our medical services. We have a very different set of people in our country. Our computer knowledge is not enough. We still have a strong group of people who are very good with computers. These day are meant to change and the change will come with our hands. While the whole world is enjoying the benefits of the computer world we cannot simply sit back.

Smart phones have become a part of our lives. They provide us thousands of assistive features and we have gladly become depended on this device. Smartphones are powered by many applications. Which are generally downloaded by users and some default applications preloaded by the company of that smartphone. An application that helps people to carry and check their complete medical record will give people more power. They will be able to check everything on the go while their ability to change or modify any data to make things up to date will always be there.

We're entering a new world of patient-centric healthcare, one in which patients can be better informed, collect endless data related to their condition, and more fully participate in medical decision making. Patients are now receiving full access to their digital personal medical records which helps in medical patient education about their condition. As a result of these changes, it's natural that patients will also want to use medical algorithms which until now had only been used by medical professionals. In any event, it will be almost impossible to exclude them from access.

6.2.1 Benefits to Patients Using Medical Algorithms

There are potential benefits for the patient. Algorithms that collect tractable data can be valuable and are already being used for patients enrolled in clinical trials. When capturing data it is important that it be organized and used and not just simply collected as busy work. A program that analyzes and finds trends in the data is more valuable to clinicians and patients than volumes of raw data.

Algorithms can help to inform patients so that they can make better decisions and give informed consent. They can get a trusted second opinion in seconds or find out why they need to be treated. Algorithms can also give patients a higher level of comfort as they take charge of their own healthcare. Armed with more knowledge, they may also gain a sense of control that will help them better cope with illness.

6.2.2 Risks to Patients Using Medical Algorithms

On the other hand, there are risks involved with patients using medical algorithms. The patient may select an inappropriate algorithm or become fixated on an incorrect diagnosis. The patient may not have access to all of the data needed to reach a decision or the patient may misunderstand terminology. The patient may not realize that a result is absurd since he or she may not have a point of reference based on experience. The patient may overestimate the risk and suffer unnecessary distress. Some might even become suicidal.

Probably the greatest risk will be for the patient who decides to diagnose and treat herself/himself. As the old adage goes: "A person who treats himself has a fool for a physician." Diagnosis and treatment may be delayed or the wrong treatment given, which can have serious consequences. Just because you can do something doesn't mean that you should.

One unknown is how healthcare reform may affect access to healthcare. Many small hospitals may shut down as healthcare economics change. Access to qualified specialists may be restricted. Medical algorithms might be the only evidence-based medical resources that some people will have access to, especially in rural areas.

Patients should collaborate with their personal clinicians to select algorithms that are appropriate to their condition. The clinician can explain to the patient why the algorithm is useful and how the results are used. In turn, the patient has someone to discuss results with, answer questions, and interpret findings.

6.3 Limitations

Due to certain limitations all the user signup process will be done by the managements. Signup from home will be available soon. Users will be restricted from creating multiple user accounts. This can be done by taking their phone number while registering. The number will be verified after that so it becomes clear that whether that number belongs to him or not. Failing to verify the number will result in failed registration. This will help reducing unwanted pressure on the database and server.

There will be strict restriction for people while they sign up. They must provide their national identification number. This will make sure a person does not make any unusual accounts. Every national Identification number will be checked manually and then those accounts will be activated. Multiple accounts are not possible at all. Even for doctors they will not be able to sign up as patients. This will also help to create a database for people with their complete disease history and also their family records.

Family history of diseases and sickness are very important but it is not always available for the doctor. When something like this will be available for the doctors they are going to love it. The value of data is appreciated by everyone from every work sector. They are making our lives easier every day.

Another important aspect is the privacy of people. People wants to have privacy and this idea is respected worldwide. Our privacy is also considered as a very fundamental human right. The availability of data does not mean that everyone will be able to see other people's data. Only registered physicians will be able to check certain data under strict conditions. If the conditions are not met then they will not be allowed to check the data on any user.

There is a plan for premium user with some charges. This feature will enable priority service and other extraordinary services like live webcam sessions with desired doctors at emergency. People will find this very beneficial at the end of the day.

6.4 Conclusion

This was an excellent project to work on and I have learned a lot of things to complete this project. A lot of new idea and several problems that may happen to a system like this is quite clear for me now. I am not going to claim that this program offers you 100% functionality. It has mind blowing features but while working I have figured out how we can make this more beneficial for us. I have enjoyed this project and I want to keep working on it to give it a better shape. I believe that I can do make this different in a way that people will love the final output. Our creativity makes us different from every other species on this planet. We build tools and

machines to make our lives easy and more comfortable. This has begun at a very early age and since then we have never stopped to build or design new things. Due to this creativity our planet has become very something totally different than our ancestors experienced. AI – artificial intelligence is an old concept but our current approach has taken it to a different height. We have been able to build things that has changed the entire thinking process of human civilization. Medical technology has also improved along with other sectors of science. Once people used to die of different diseases but we have overcome those by our advancement in various sectors. We are now able to perform surgery that people could not even think about a decade ago. Automation in medical sector is still quite new but the question is for how long this will remain new. Researches are advancing to perform diagnosis and prescribe medicine for people without a doctor. Of course there are doctors for supervisions. We are building intelligent tools to take things at a new height. This project is a tiny step towards the vast possibilities that science and computers can make to the medical sector. We have different approaches towards new things. Some people jump towards new things while others just sit back. This has been the case for human and it will continue. But new tools are coming every now and then. Science will keep on its journey and so will our human society. I am very proud to be a part of this work and very hopeful that someday this will be the reality of your hospital experience.

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