Hospital Management System

This Project Is The Partial Fulfillment Of The Requirement Of Bachelor Of Science In Technical Education (Bsc.TE 2years), 2021

Student Name

Usman Ahmed Shehu   190032404

Marjia Khartun   190032402

Supervised
By
Mr. Njayou Yousouf
Lecturer
Department of CSE
IUT Dhaka

Department of Technical and Vocational Education (TVE)
Islamic University of Technology (IUT)
Board Bazarr Gaziphur-1704
APRIL, 2022

Approval

This project of "Hospital Management System" with course Title:- Project and thesis, and course Code:- CSE4800, that has been submitted by:- Usman Ahmed Shehu, With student ID: 190032404, and Marjia Khartun, with student ID:190032402, has been Approved as it satisfied the requirement of Academic in respect of some work that is been prescribed for Bachelor of Science. This project work is done under the assistance and guidance of Mr. Yousouf Njayou, The Lecturer Department of Computer Science & Engineering, Islamic university of technology, Dhaka, Bangladesh.

Approved by

_____

Mr. Njayou Yousouf

Lecturer.

Department of Computer Science & Engineering

Islamic university of technology

Date: 20th April, 2022.

Declaration

I here to declare that, this Project of Online Software of Hospital Management System, that I submitted it to one of the Department in (IUT), Department of (CSE) Computer Science and Engineering, Islamic University of Technology, Bangladesh Dhaka, is an original record report work that has been done by me Usman Ahmed Shehu, with the help and support of my Lecturer supervisor Mr. Yousouf Njayou, a Lecturer in the Department of Computer Science And Engineering, Islamic University of Technology, Dhaka Bangladesh.

This Report of Project of Hospital Management System, this work its not submitted to other institution or University for the purpose of award of any programme degree certificate, programme of diploma, National certificate in education, and its not been published in any other University Before. Moreover we also declare that for this project report there is no any copy of this work source code in this particular work.

Signature: …………………..   …………………..

Name: **Usman Ahmed Shehu   Marjia Khartun**

Submission Date:

Acknowledgement

I Usman Ahmed Shehu and Marjia Khatun would have like to appreciate and Thank you to everyone more especially those people that are included in this particular project effort work for your maximum best cooperation and support in this particular project of Hospital Management system to be successful. And i also wish to send my appreciations to all the people that help me, who manage their time in order to help me to successfully complete this project of Hospital management system in an appropriate and efficient manner, thanks for your help.

I would like to offer my special thanks to our project supervisor Mr.Njayou Yousouf , Lecturer, (CSE) Computer Science & Engineering, (IUT) Islamic University of Technology, Bangladesh Dhaka, Thanks for encouraging us, without your help and highly support this project of hospital management system would not be successfully completed. Your guidance helped us in all the time that have been taking to make a completion of this project.

And finally we (Usman and Marjia) would like to appreciate our families members for the supports and help, patience, kindness throughout all our education. Special thanks to our friends who give us their maximum cooperation and advises throughout the course, thanks for your motivation.

Abstract

The use of databases is common in HMS projects where we use to store the information about the administrators, doctors, and patience in the database, and also some object oriented and some networking techniques as well. To deal with the database there are different areas to use and keep the record of information into the database, but on this we are using the software MY SQL which is one among the best, and also its kind of software that provide an easy way to keep our information into the database. In this project we use JAVA to develop the front end of the software which we know its an object oriented programming language and it also has a connectivity to MY SQL Database.

This project of Hospital Management System it usually provides the advantages of streamlined operation, to improve the administration and control of the hospital, and it also supervised the patience care for both genders male and female, it also reduce the cost and enhance the consistency and profitability of the of the hospital. Moreover the hospital management system is flexible, powerful and easy to use. Its provide to developed and deliver the actual real conceivable advantages and benefit to the hospital management.

Hospital Management System its build in appropriate way to meet the actual requirement of any size of Hospital, considering it large or small across the entire globe. And all the necessary features as well as modules are build to marge the requirement you provide. The whole application is web develop based and its created by using the latest technology to make the management of hospital easy for the people. However the database make the application more expandable and user friendly. All the package is totally designed and customized and its also modified to to fit the need and satisfactions of the clients on any situation. It contain all the particular modules such as patient appointment, patient registration, bill payment online, medicine detail, record, enquiry messages, admin, doctor, patients and prescription etc.

Table of Contents

List of Figures

CHAPTER 1:   Introduction

Human being body is a sophisticated and complex structure as it usually comprises different or millions of some different functions in life. Humans have evaluated and understood all of these various intricate functions in part via their investigative research and certain tests. As the process technology got some achievement and progressed, the medicine has become the major integral part of the experiment and research as well. On that gradually department of medical science has become an overall new branch part of science. After conducting all that research throughout so many years, as of today the Health sectors have develop and comprises of a Medical institution with usually include Hospital, Labs, some research and institution for development and medical collages, the health care sector focus at providing the good product and best medical facilities for the people.

1.1 Problems Statements

Considering how the hospitals is been associates with day to day live activities of people in the world and its benefit to their lives on day to day routines, so that's why we decided to work on this project of hospital management system.

The non-system procedure of keeping the record with its called manual method its totally time consuming in your life and also highly risk and errors. So based on that the purpose of this particular project is to provide online management of the hospital to migrates from manual system to online system, for the purpose of some daily life living dealing with the health, with usually include Assigning Doctors, Discharge of Patient, booking Appointment, Admission of new patient, and lastly compute the bills of a patients etc.

We have tried our best to make the hardest and complicated process of manual system into online system of hospital management system with is the very easy to used as simple as possible for the person, by using modular techniques, structured & menu oriented interface as well. We also make an attempt to design system software that will assist users in operating and using the system without trouble, and that will allow for future expansion without much work. Although we cannot guarantee that this task will be completely enthusiastic, the major goal of my exercise is to make the performance of each and every hospital action in a system and computerized manner easier for everyone, rather than using a manual system that takes a long time and is expensive.We confirmed that, this software

package of hospital management system can be used by non-programming personal in order to avoid human handled opportunity and chance of errors.

1.2   Objective

Hospital is a place that's part of everyone live, for providing the good medical health facilities to the people that they are suffering on different various ailments in life which happened due to some changes in human health conditions, some emotional trauma stress and due to some increased of work load sometimes. So its very important for the hospitals to look and keep tracks on the daily life activity and record of their patients as well as doctors, the word boys and nurses, and finally other staffs of that hospital that their work is to keep the places of the hospital clean and smoothly running successfully.

To keep track of each and every activity of the hospital on paper including the records of patients and doctors its very cumbersome and risk, error prone in the hospital. As this process of paper work in hospital its time consuming and costly, inefficient way also by considering the continuous increase in population in the world and increasing of number of people that they were visiting hospital. To keep using manual process in that situation its very much risk and highly unreliable. We developed an online system which is names as Hospital Management System software to support the whole activities that's been carried out on paper before in our hospitals.

The reason of developing these software is to provide the paper less work in our hospital up to 95%. Also to reduce the cost of expenses up to at least 50% of money spending on the hospital issue. The system provide an excellent security of our data safety at different level of interaction between the user and the system.

1.3   Scope

The software of Hospital Management System ("HMS"), its user friendly software product. It will be use in any clinic, pathology or dispensary, and in any Hospital in order to get the particular and genuine information from their patients and to store that particular data in to their database for future usages in the hospital or for the patient. But the previous system it's a paper work system and its too risk and slow as well and that system cannot provide the updated list of the hospital patient on the small time space, that's why its costly and time consuming. Based on that our intention on that system is to reduce the time taking on

paper work system and also boost the number of people that could be treated efficiently and accurately.

CHAPTER 2: The Project Management

2.1 Project scheduling and planning

Planning process is usually an element of project management, and it involves the use of specific schedules with attributes such as Gantt charts to plan a project and then report progress throughout the building project.The project's scope has been defined, and the method for accomplishing it has been determined. By following a few various steps, the exact period of some various tasks to follow and complete the various work in the project has been listed, and they have been clustered into a different part of the design structure.Moreover the logical and actual dependencies across the task are defined by using some different activity network diagram that makes the identification of the project critical path accurate.

2.1.1 Methodology

The methodology we have used on this project is Iterative and Incremental development model (IID) for this project development. The development process we have follow its referred to as the approach of Iterative waterfall development. This software development process was devised in contrast to the classic waterfall paradigm, which was designed to handle large projects. After all, we chose the waterfall-model as the process for designing our software system because of its redundant testing procedure.
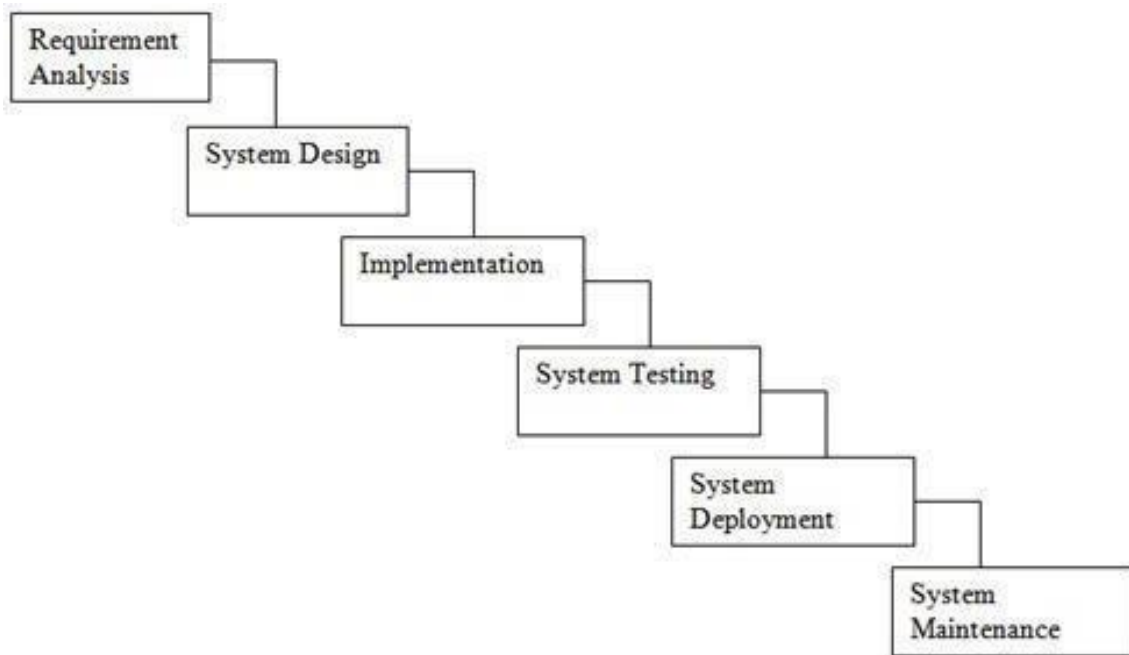
Figure 2. 1: *Waterfall model*

Merits of waterfall:

Its Easy to maintain and manage due to the rigidity of such model.

Its easy and simple to know and understand and use very nicely.

Works well for little project in which the requirement are well understood.

The phases of it are processed and successfully completed once at a time.

2.1.2 Project Plan

We began project design planning after determining that the project was doable. This table depicts the actual way we planned our Hospital management system project.

Table 2. 1 *Project Plan*

	Task_Name	Task Duration	Start date	Finish date
2	Project initiation	31Days	19/07/2021	01/09/2021
3	Project Design	23 Days	24/08/2021	12/09/2021
4	Coding implement	109 Days	13/09/2021	10/02/2022
5	Testing	20 Days	11/02/2022	10/03/2022

2.1.3 Schedule Representation

Considering the process and scheduling the tasks in the project is an important activity in the project planning. It includes the taking decision on which particular task would take place and when to take up, in order to the project to be successfully completed we use this scheduling process to schedule our activities of our project.
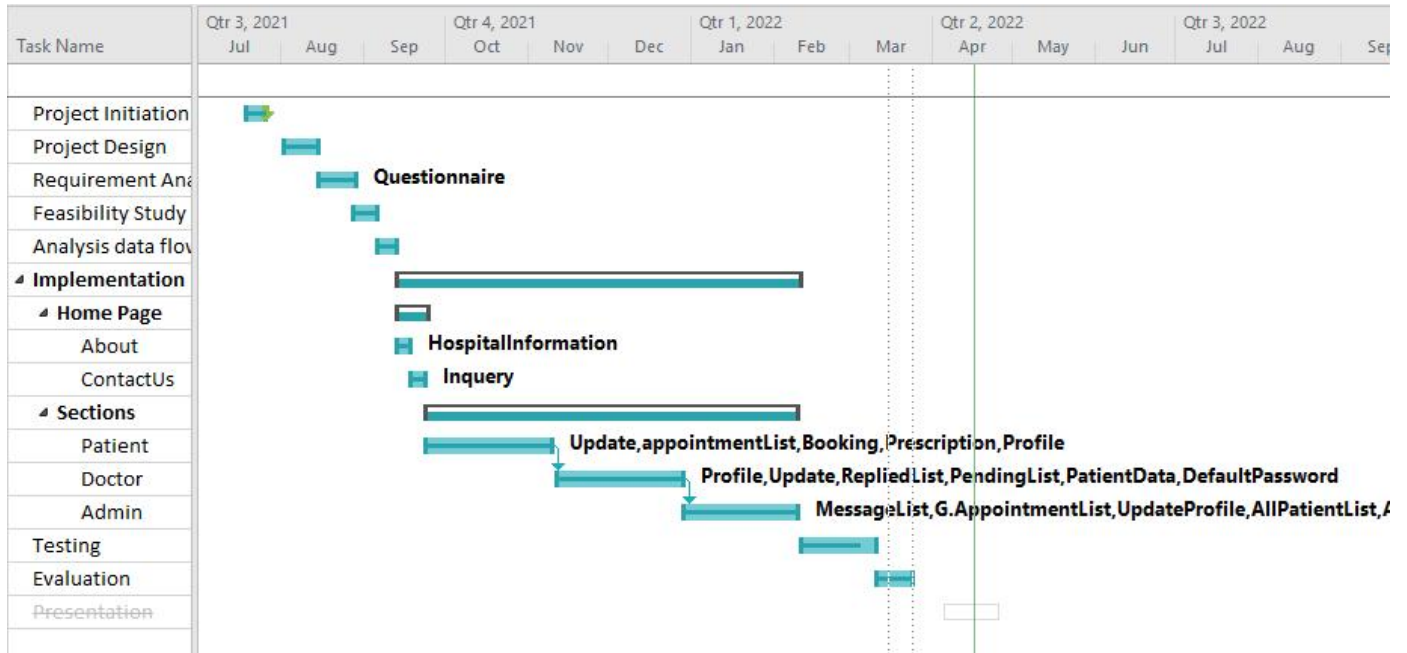
Fig. 2.3: Gantt chart

2.2 Risk Management

The proactive approach of a software risk management for minimizing the potential as well as uncertainty loss associated with the particular project, there are some different categories of risks Customer-related issues, process conditions, innovation, impact analysis, process, timeline, runtime environment, workforce dimensions and experienced, methods, and tools for risk management in a specific project were all addressed.

We could take a starting step to avoiding them as it is when possible and also controlling when necessary.

The risk are categorized into different group as we can see:

I. Technical Risk

II. Business Risk

III. Project Risk

IV. Predictable Risk

V. Known Risk

VI. Unpredictable

CHAPTER 3: SYSTEM ANALYSIS

3.1 Background Study

System analysis is the division or separation of a work substance into some part for study and their detail examination and implementation.

Things to consider before designing any system, we have to be sure that the way application is operate and the nature of the work are clearly understood. The study conducted and the investigation during the phase of analysis is highly based on the feasibility study. The top level of analysis is started during the feasibility study.The analysis is shown as a part of the software development life cycle, but this is not the case. The analysis process normally begins with the system's initialization and continues until it is ready for servicing. After that the system has been successfully developed, the analysis continues to play an important part in the major periodic system maintenance. The key reason for the project's failure is a lack of understanding of the system. While the absence of planning for system analysis is one of the key causes of insufficient understanding.

3.2 system Software attributes

3.2.1 the Reliability -: The system is a dependable product that can deliver fast and accurate output from its specific procedure.

The Availability -: The system may be available for them to utilize and to assist them in carrying out their operational tasks in a more efficient manner.

The Security -: This software will be built in a way that is both appropriate and manageable.

3.3 Scope of working

This software of hospital management system can be use in any clinic, hospital, pathology lab or dispensary. The clinic or hospital can use this software to get some particular information about the patient and they can stored the patient data for future used. The hospital they were using paper based system to carry out all the works. The paper work are

too slow and it cannot provide the list of updates of patient information in a reasonable time. The purpose o our system is too reduce the time spend and to also increase the number of patients in the hospital or clinic that are been treated in an appropriate way and within minimum time frame.

3.4 Feasibility study

3.4.1. the Technical feasibility -: it is concern with the software and component

specification that would make the user satisfaction and successful the requirement of the

user. The system technical need may include the following.

Facility to produce the result in a time

1. The capacity to execute a specific amount of transactions at a specific seep.
2. The response time under the certain conditions.
   the ability to process a certain number of transactions at a given time

3.4.2 Operational feasibility-: this is related to political aspect and human organization.

1. What organizational structures are distributed?

2. What new skills will be require?

3. What changes will be brought with the system?

3.4.3 Economic feasibility-: is the most effective technique for making the evaluation of

the effective proposed system. It is more frequently known as the system benefit/cost and

compare them all.
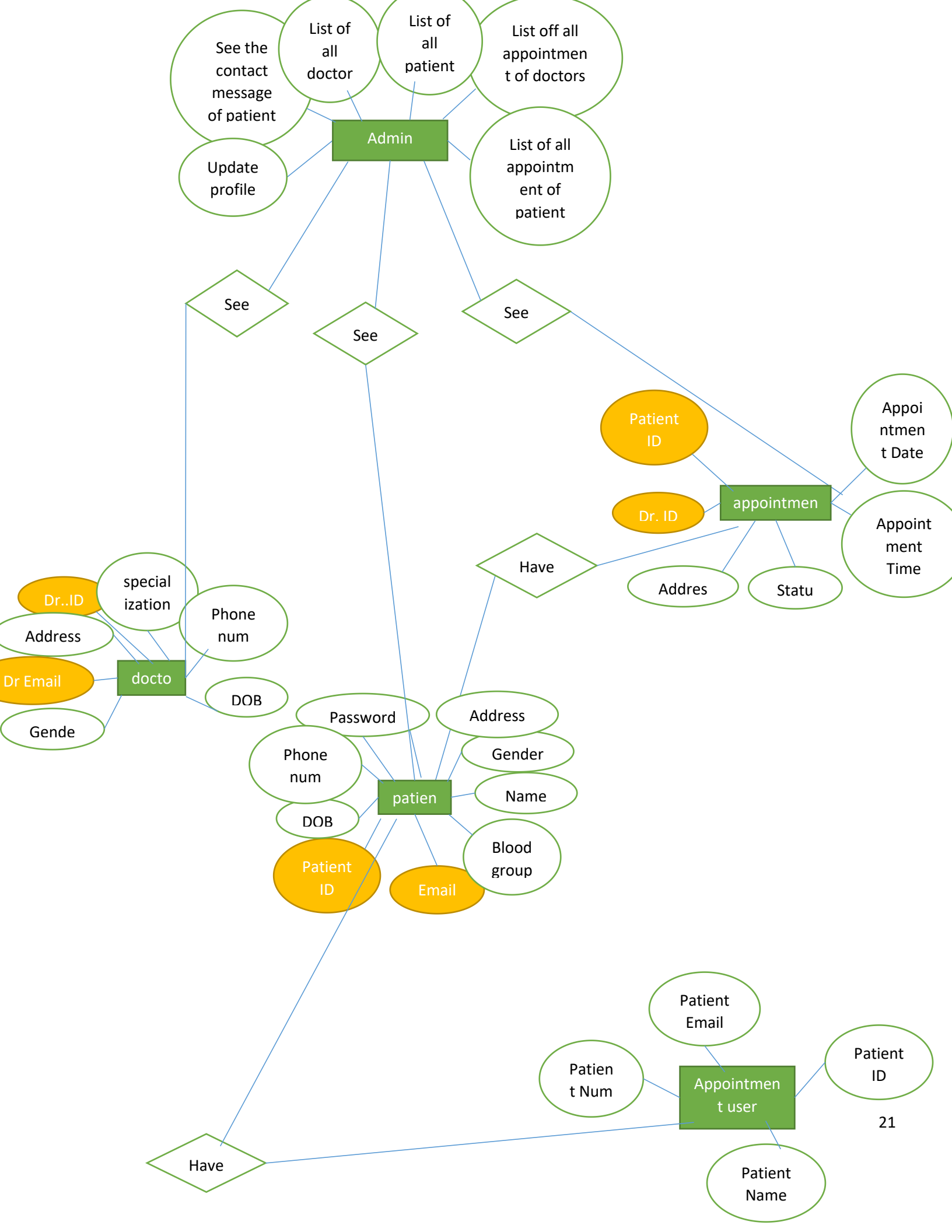
CHAPTER 4: DESIGN SYSTEM

4.1 Database Design

Database it is define as a process of making and producing a detail record or data of a system database. The data model consist of all the need physical and logical design and parameters of physical design needed to make a design in a particular data definition language, and then it can be use to create a database.

Database can be use to make a description of many different part of an overall design database system. It may be thought as the logical design of a particular database structure that is used to keep and store the data. He database can also be apply to the general process of designing, not only the database structure, but the queries and forms used as a part of the general overall application database within the management system database.

4.2 The E-R Diagram of Hospital Management System

An entity-relationship diagram (ERD) is a representation of data that is abstract and conceptual. Entity-relationship modeling is a database modeling technique that uses a top-down approach to create a form of conceptual schema or semantic data model of a system, usually a relational database.

Admin

- See the contact message of patient
- List of all doctor
- List of all patient
- List off all appointment of doctors
- List of all appointment of patient
- Update profile

See · **See** · **See**

appointmen
- Patient ID
- Dr. ID
- Appointment Date
- Appointment Time
- Addres
- Statu

Have

docto
- Dr..ID
- specialization
- Phone num
- Address
- Dr Email
- DOB
- Gende

patien
- Password
- Address
- Phone num
- Gender
- Name
- DOB
- Blood group
- Patient ID
- Email

Appointment user
- Patient Email
- Patient Num
- Patient ID
- Patient Name

Have

21

4.3 The Database schema of Hospital Management System

The logical representation of a database is represented by a database schema, which is a skeleton structure. It describes how data is organized and how relations are linked across them. It lays down all of the limitations that will be applied to the data.A database schema can be broadly classified into two types.

Physical Database Schema: This concerned with data storage in physical form, such like files, index, and so on. It explains how the data in a supplementary storage location will be saved.

The logical database schema: All the logic constraints that could be added to the data saved are defined here. This file contains the definitions for tables, displays, and validation rules.

List of the table:

1. Admin table
2. Contact_Us
3. Patients table
4. Appointment_users
5. Patient_Data
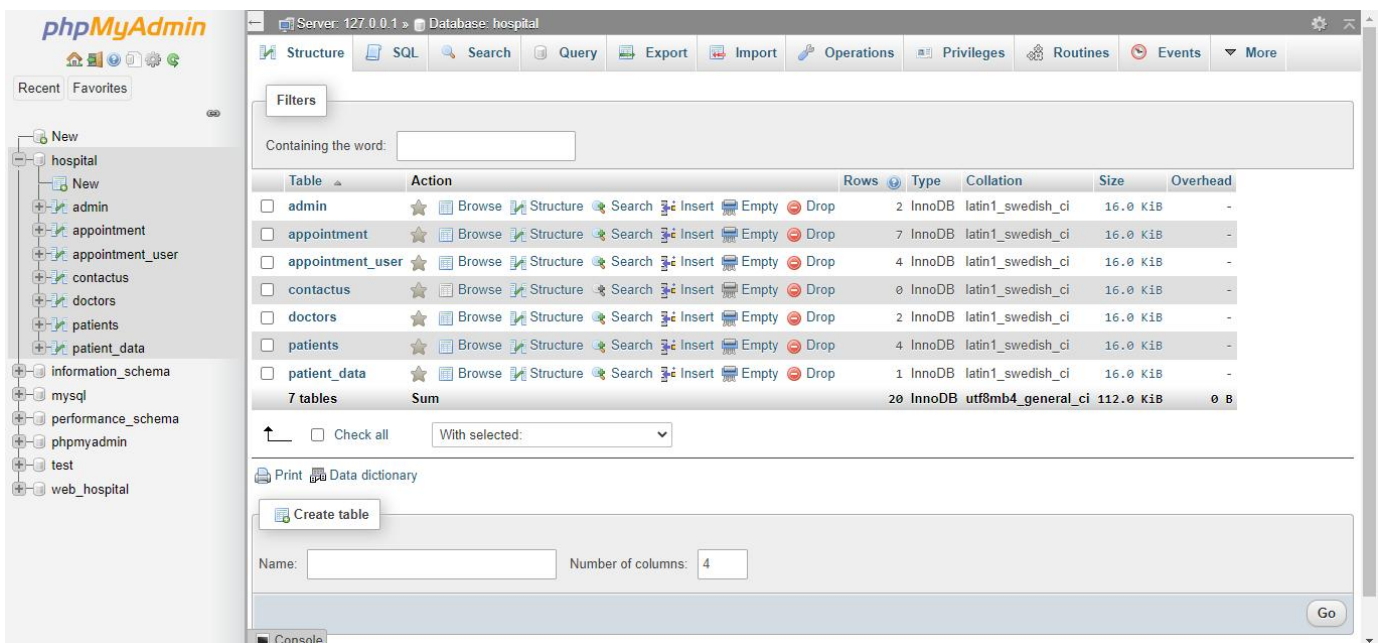6. Appointment
7. Doctors.

Fig.4.3: Database schema of Online HMS

4.4 The Data Flow Diagram of Hospital Management System

The context diagram is the most abstract information flow model of a system. A single bubble represents the entire system.Data flows between the environment and related entities, as well as the many external sources with which the choosing, are all depicted. Because it illustrates the framework in which the system will run, the name context diagram is suitable. exterior entities (users) who will interaction between the system and the information they will generates
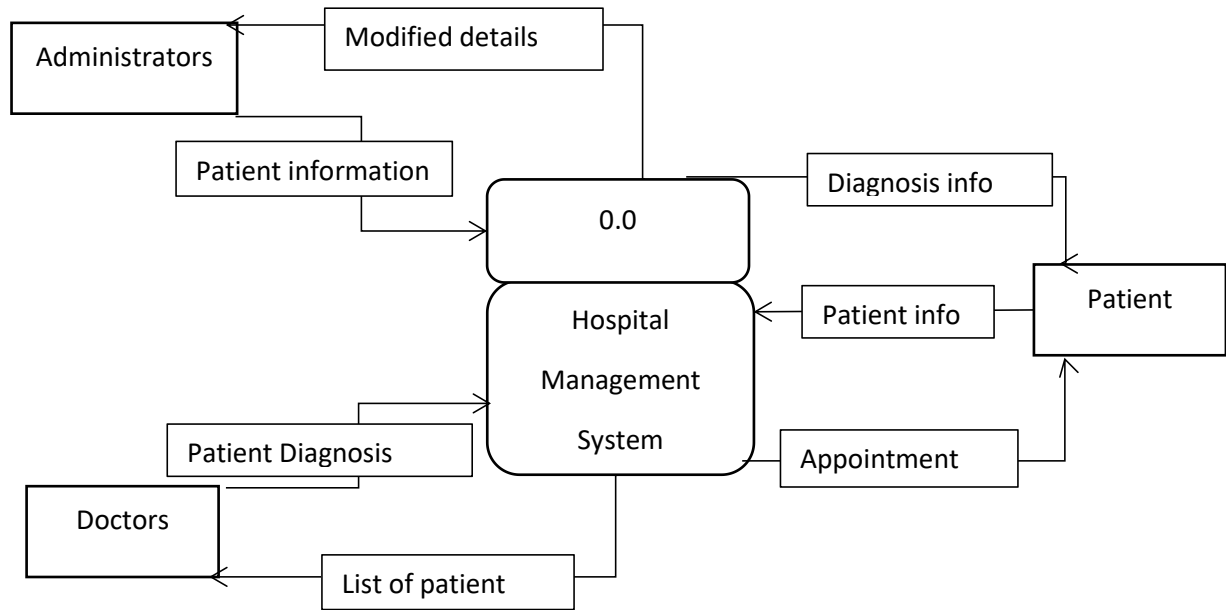

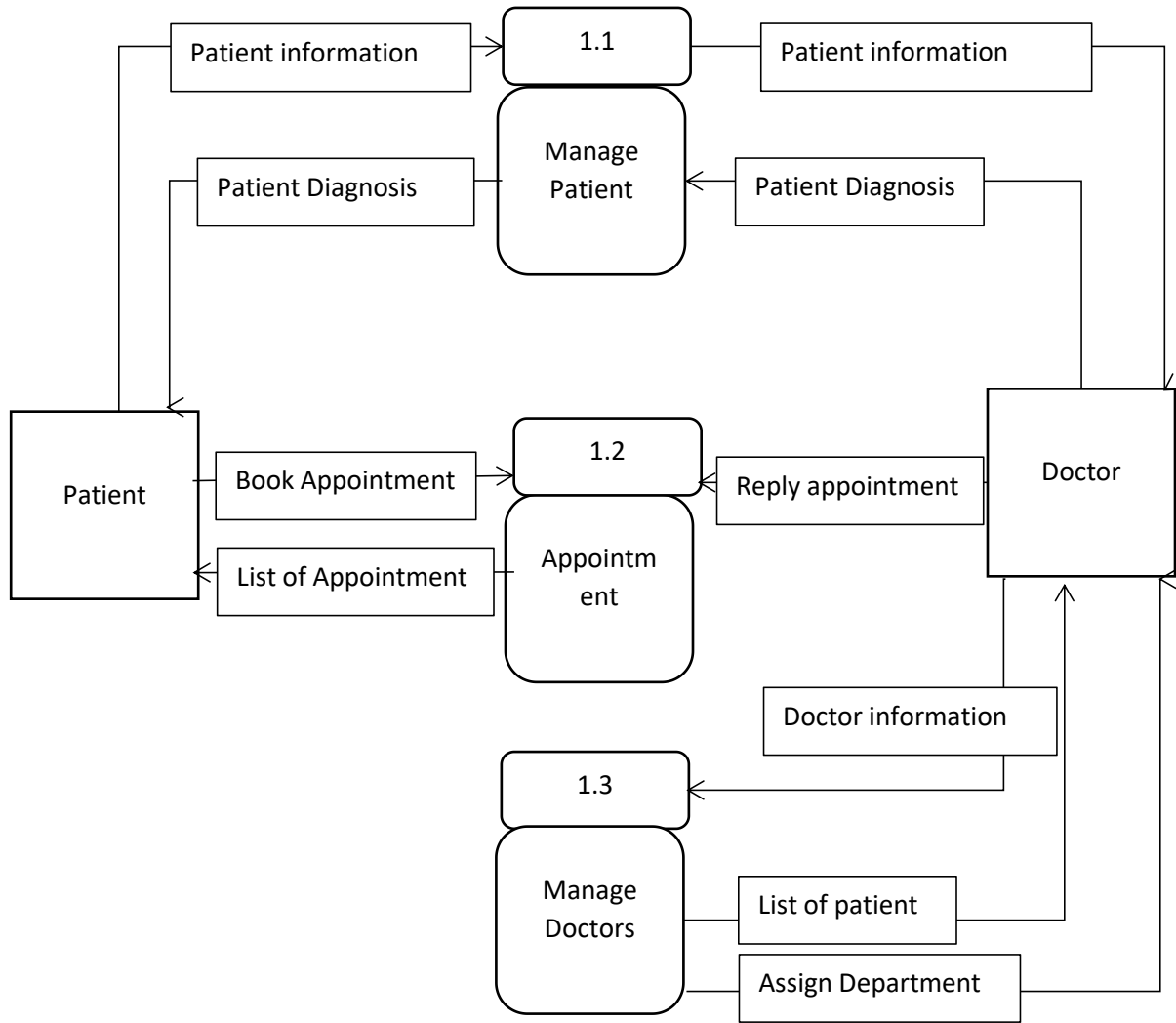**Fig. 4.4:** Data flow diagram level 0 of Hospital management system

Fig. 4.4: Data flow diagram level 1 of Hospital management system

4.5 User Interface
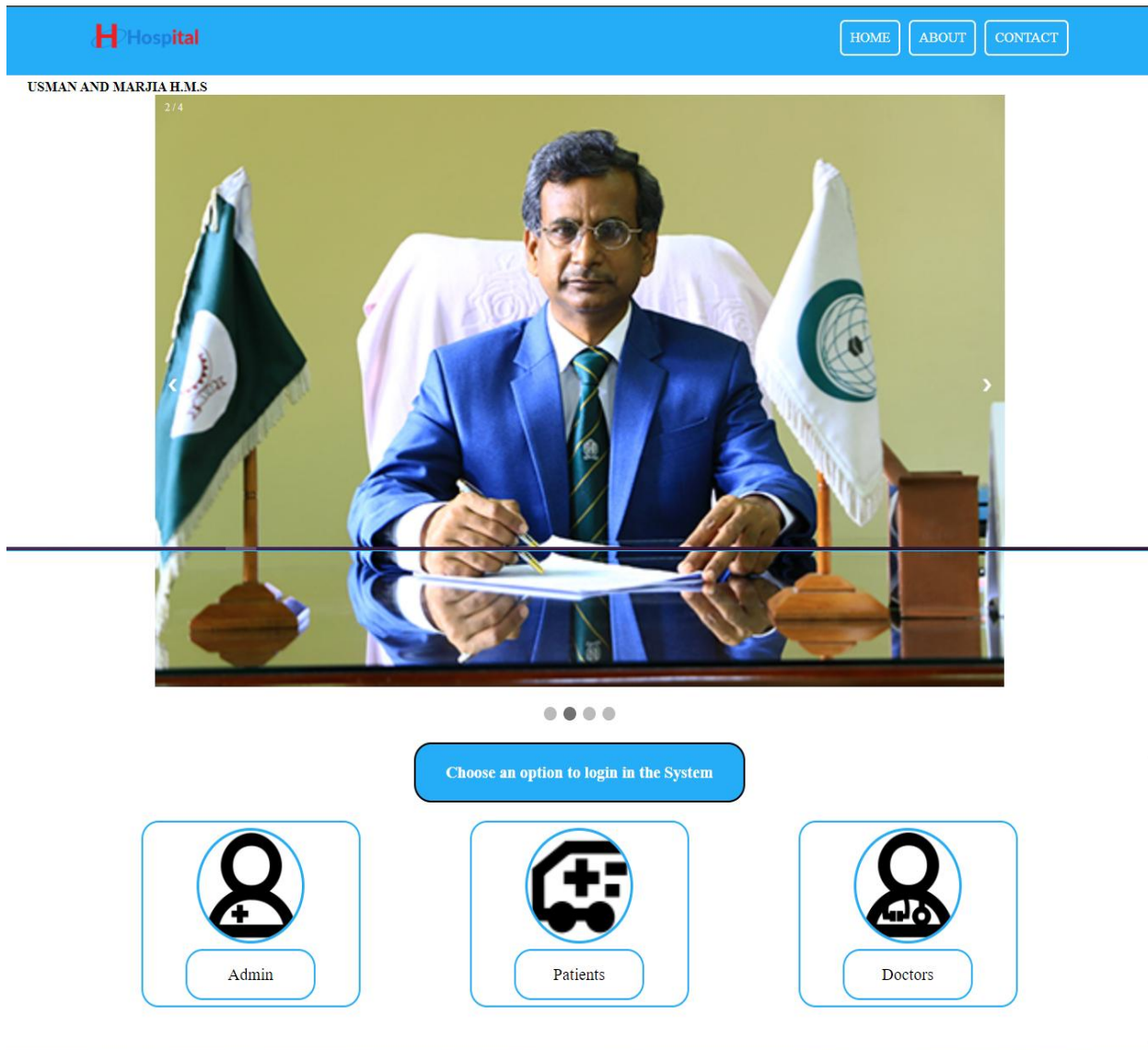
4.5.1 The Home Page

User: All Users

Fig. 4.4: Home page

Flow:

1. Any user can browsers this page.

4.5.2 login page for Admin
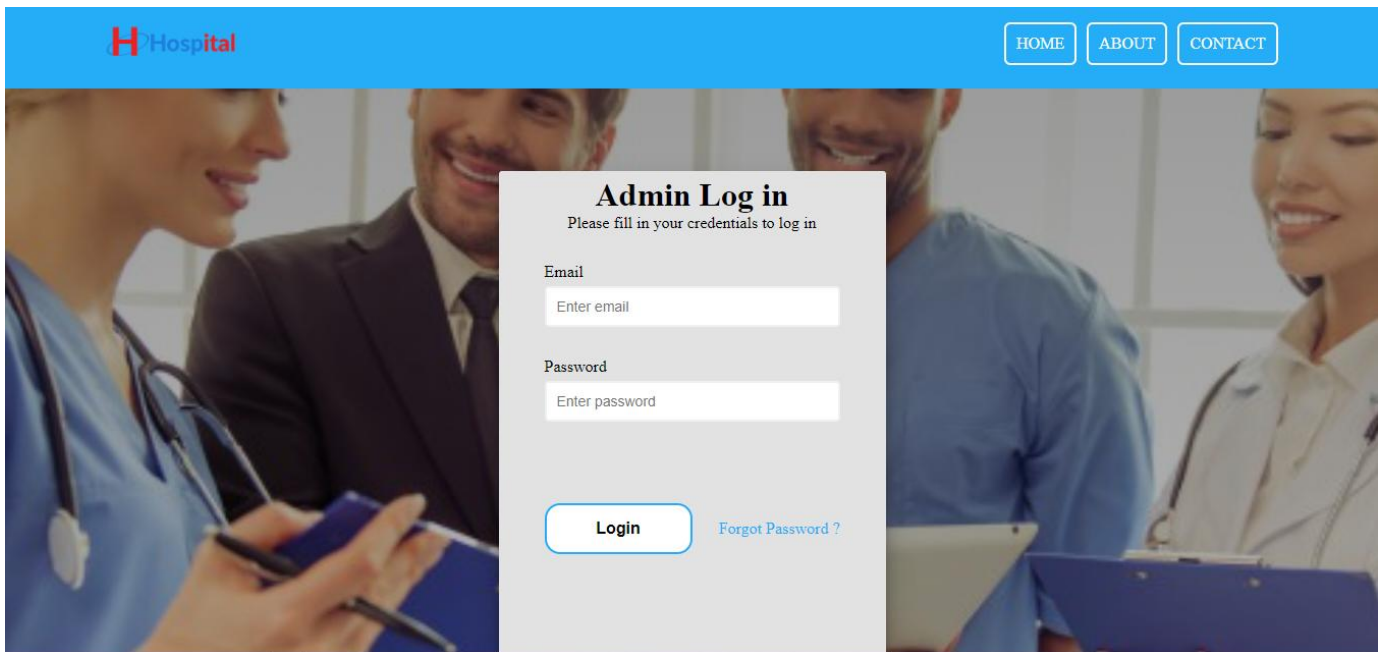
User: Admin users

Fig. 4.4: Admin Login page

Flow :

1. Only user Admin can be able to Sign in this particular page.
2. Users Admin can be able to see all the patient appointments and the all system users.

4.5.3 details page for Admin user

User: Admin users
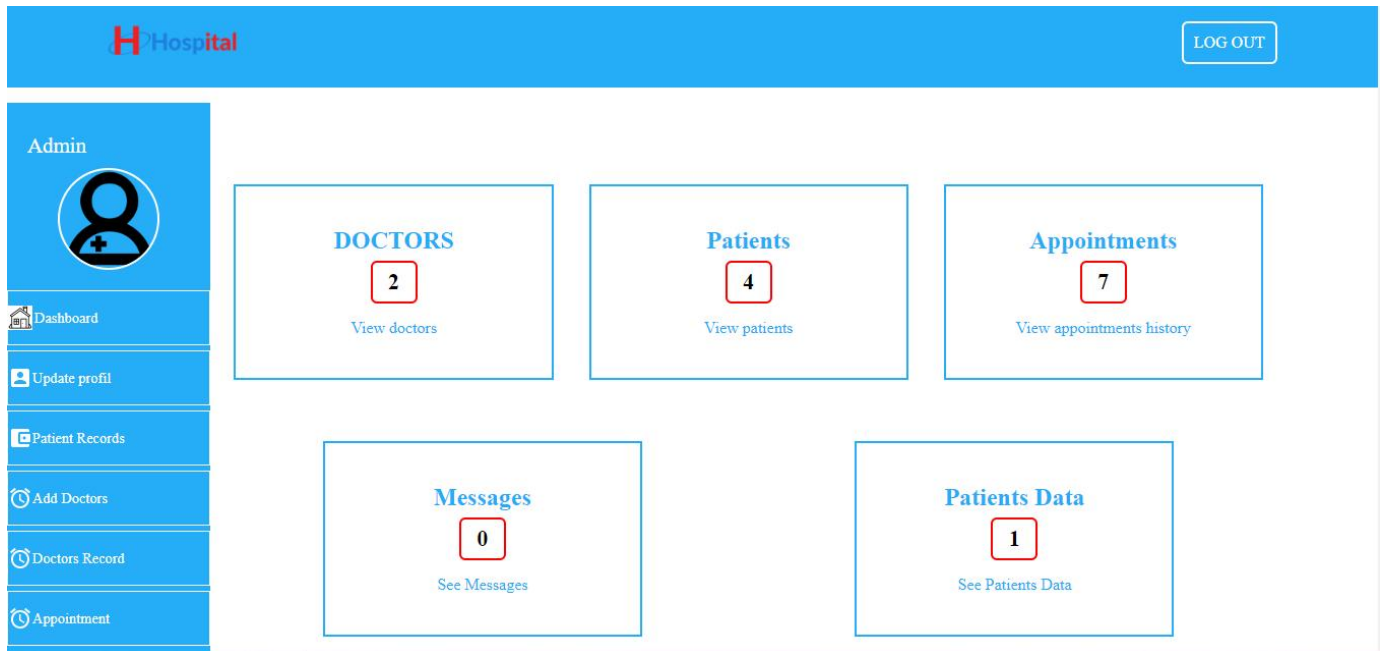
Output: detail page Admin

Fig. 4.4: Admin details page

Flow:

1. The Admin user can be able to sign this particular page.
2. The user Admin can be able to view all the module in here

4.5.4 The Appointment History page

User : The Admin users

Output: The Appointment History

Patient ID	Patient Name	Email	Phone	Doctor ID	Specialization	App Date	App Time	Status
Usma-6499	Usman	usmanahmed2273@gmail.com	344444444		Dermatologists	2021-08-30	22:02	PENDING
ahma-9931	ahmad	Ahmadfari@gmail.com	00098455677689		Allergists	2021-09-11	11:01	PENDING
ahma-9931	ahmad	Ahmadfari@gmail.com	00098455677689	Ther-2822	Thermodologist	2021-09-11	11:11	ACCEPTED
ahma-9931	ahmad	Ahmadfari@gmail.com	00098455677689	Ther-2822	Thermodologist	2021-11-20	15:43	ACCEPTED
Marj-2222	Marjia	marjia@gmail.com	01639482357	Ther-2822	Thermodologist	2021-11-21	12:31	ACCEPTED
ahma-9931	ahmad	Ahmadfari@gmail.com	00098455677689		Dental	2021-11-22	21:24	PENDING
ahma-9931	ahmad	Ahmadfari@gmail.com	00098455677689	Ther-2822	Thermodologist	2021-11-22	21:32	ACCEPTED

Fig. 4.6: Verified user profile page

Flow:

1. The Admin user can be able to view this particular page.
2. The Admin user can be able to view all the appointment list history.
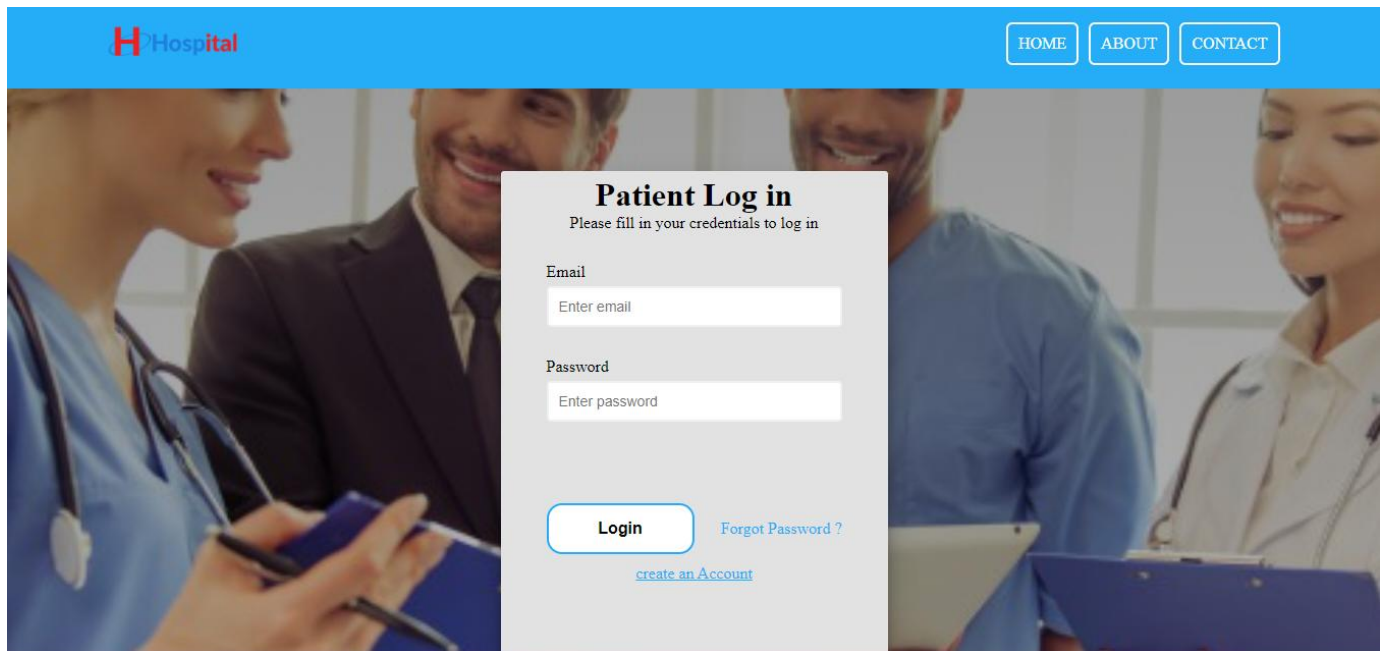
4.5.5 login page for User (Patient)

User : User patient

Input: User email and

Password Output: User

profile page.

Flow:

   (1) the User Logs in with email and his/her password.

Alternate Flow:

   (1) If the patient mail is not correct then it is asked to login in it again.
   (2) If the password is not correct then the patient is been asked to re-enter again.

4.5.6 create page for User account

User : User patient.

Input: User patient name, email address, user password and confirm user password.

Output: open a new user and show user profile page.

PATIENT REGISTRATION

First Name

Last Name

Permanent Address

Email

Enter email

Password

Enter password

Flo
w:
   (1) The Password must to be more than (8) eight cheater.
   (2) Password and confirm password must be same

Alternate Flow:

   (1) If the required fields are not completed, an alert appears.
(2)If the password becomes less than 8, or if the password and confirm password do not equal, an alert is sent.

4.5.7 Details page for User
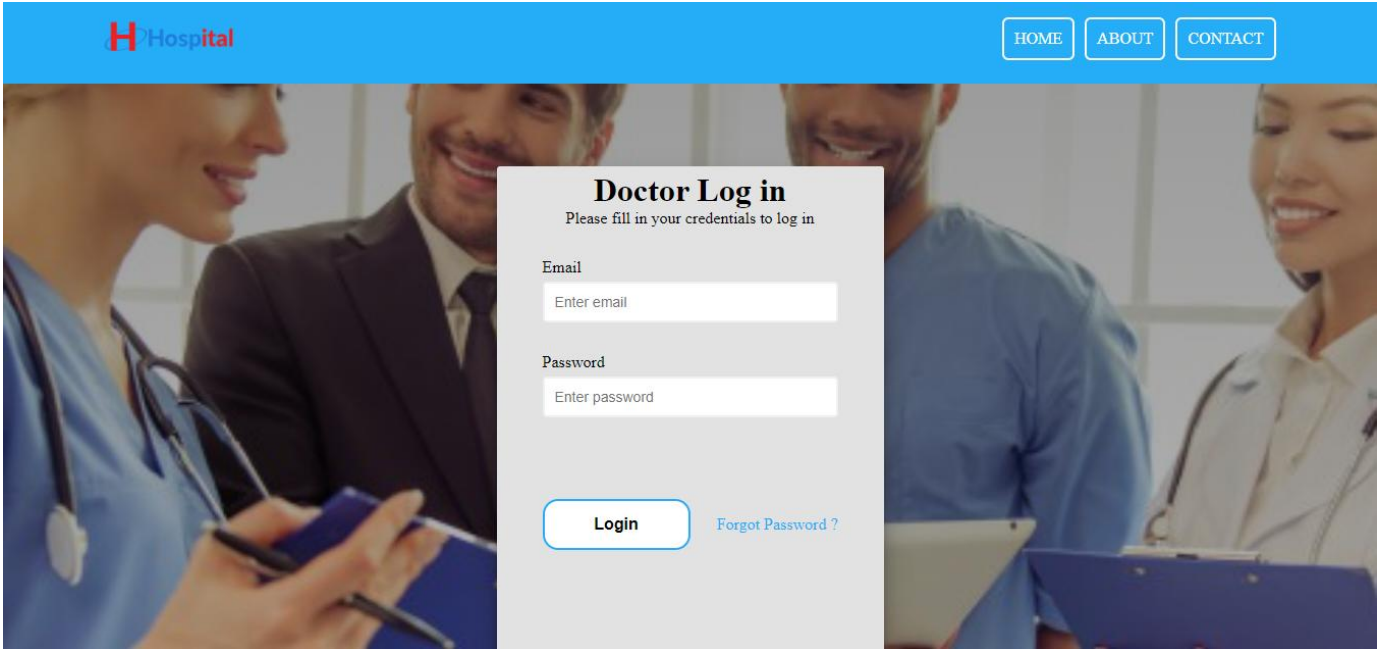
User : User patient.
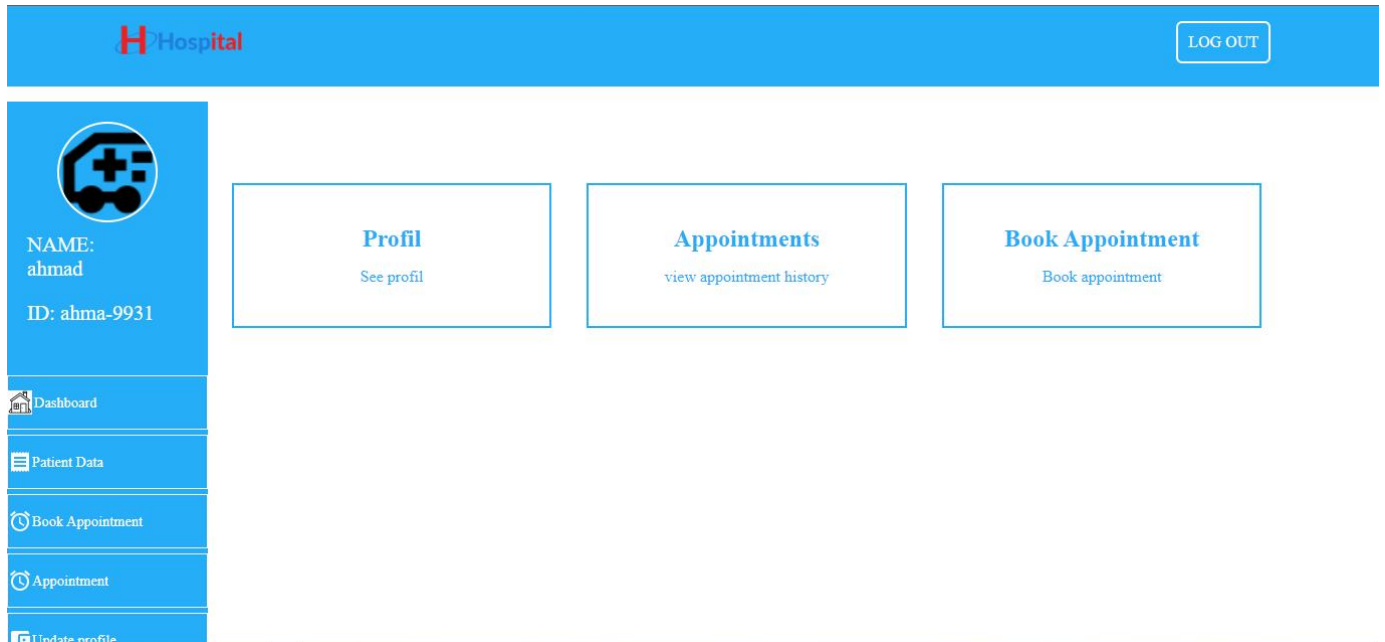
Flow:

(1) The User must to be fill up all the input field.

Alternate Flow:

(1) If the necessary fields are not fill up then alert is shown.

4.5.8 Login page for Doctor

User : Doctor User.

Flow:

    (1) the User Log in with his/her user email and user password.

CHAPTER 5: System Implementation

5.1 System Implementation

Implementation is the process of getting system personnel check out and provide new equipment into use, instruct the user on how to install a new application, and generate any data files needed to use it is known as implementation. There are three separate execution strategies. A computer system takes the role of a manual way. Some of the challenges that have been encountered include covering files, training users, producing accurate files, and evaluating printouts for integrity. A new computer is being installed to replace an old one.

This is usually a challenging conversion. If the event is not very well, many complications can develop. A big computer system conversion can take up or even a year. Implement a rebuilt program to replace the current one on the same machine. Because the file rarely changes, this type of contact is relatively simple to manage. Our work is still in the planning stages.

5.2 The Implementations Environments

The actual representation of data processing and data structure is depicted in the implementation perspective of system software requirements. Typically, this automated system is described in such a way that specific implementation details must be accommodated.

The implementation environment of the designed system allows multiple users to be using it all at the same moment. The interface are designed with the idea that the computer users are familiar with GUI-based systems. As a response, we restrict ourselves to building a GUI-based method to make it easier for the end user into becoming acquainted with the finished product.

5.3 Functional Requirement

This system interface is divided into two section

1. Administrator interface.
2. Users interface.

5.3.1 Administrator Interface

1. Administrator can delete any post from the database.
2. The Admin can easily verified the user account.

5.3.2 The User Interface.

1. To post an ad, you must first create an account.
2. Users can make changes to their own accounts..
3. Log_in and Log_out from the system.
4. To register a new account, the user must confirm his email with a verification code.
5. If a user forgets his or her password, he or she can regain his or her account by verifying his or her email address and establishing a new passcode.

CHAPTER 6: SYSTEM TESTING

6.1. The Integration Testing

Integration testing is typically the first step. Integration testing is carried out before, during, and after the integrating of a new component through into major software system. This involves putting each code module to the test. A single piece of software may contain multiple modules, many of which were written by different programmers. Testing the influence of each component upon that overall system model is crucial. After integration testing, the project is ready to go.

6.2 Unit Testing

Unit testing is performed on each component or software framework throughout development. Unit testing is usually performed by the programmer who wrote the code.

6.3 System Testing

A product testing corporation performs testing process on a developed software product before it is delivered to the market.

6.4 Acceptance Testing

Acceptance testing is a type of better testing in which the technology is tested by the end user.

6.5 Recovery Testing

The purpose of recovery testing is to demonstrate that a software product is reliable, dependable, and suitable of returning from failures.

6.6 Functional Testing

Functional testing, often called functional integrity testing, is a sort of testing that looks at a system's performance. The goal of functional testing is to find any potential gaps in functionality. Throughout functional testing, inspectors may develop a list of potential extra features for a product.

6.7 Hardware/Software Testing

Devices testing is referred to as "HW/SW Testing" by IBM. During system testing, the tester focuses his or her focus on the relationships between the software and hardware.

6.8 Security Testing

Safety testing ensures that a company's software systems are clean of faults that could lead to a big loss. The purpose of security testing is to find any possible weaknesses and vulnerabilities in a system that could result in data in the hands of workers or outsiders.

6.9 Advantages

The program provides responsible assistance in managing hospital and health provider management. Classic software provides components that help doctors control their tasks and schedules, patient records, store track of inventory, medicine recording, record keeping, health centre (with useable blood type) information, individual case records with test reports, nursing and housekeeping service details, payment data, such as finished billing and fees, billing information, as well as more. After the specialized software is released and integrated with existing, patient care and healthcare control become easier.

CHAPTER 7: Conclusion

7.1 Conclusions

In many ways, this endeavor has been a fantastic and satisfying experience. The completion of the project has enlightened us in the following ways.

a) We are familiar with how the HOSPITAL functions. This is a normal situation in the real world.

b) We have a better understanding of database design, which is vital since database design should always be performed appropriately in order to get final outcomes.

c) You gain an excellent sense of time control when you plan a project and stick to it.

d) There has been a considerable increase in teamwork and confidence in handling real-life assignments.

e) Validation was initially problematic, but after some debate, we were able to integrate validations.

7.2 Limitations of the system

- o Online payment is not available at this version.
- o Data delete & edit system is not available for all section.
- o User account not verified by Mobile SMS not available in this system.
- o Loss of data due to mismanagement.

7.3 Future Plan

- o Diagnostics billing system.
- o Video call
- o Adding more futures

Reference

[1]   Abraham Silberschatz, Henry F. Korth and S. Sudarshan "Sixth Edition Database System Conceptsreleased", January 28, 2010. 206-253 pp.

[2]   Bootstraphttp://getbootstrap.com/,

[3]   Deepak Thomas "Beginning PHP 4 Databases", Wrox Press Ltd. Paperback-17, October,2002.70-130 pp.

[4]   HTML &CSS https://www.w3schools.com/,

[5]   https://stackoverflow.com/,

[6]   Luke Welling, Laura Thomson. Sams HP and MySQL Web Development, 2nd edition,

        Paperback- 20 February, 2003. 105-209 pp.

[7]   Matt Doyle, "Beginning PHP 5.3, 2ndedition", October 2009. 150-270 pp

[8]   Server-Side Scriptinghttp://php.net/manual/en/index.php,

[9]   W. Jason Gilmore "Beginning PHP 5 and MySQL 5 from Novice to Professional SECOND EDITION", Jul 9, 2008.100-150 pp.