

**Centralized Patient Information System**

**BY**

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This Report Presented in Partial Fulfillment of the Requirements for the  
Degree of Bachelor of Science in Computer Science and Engineering

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## **APPROVAL**

This Project titled “**Centralized Patient Information System**”, submitted by Md. Atiqur Rahman, ID No: 142-15-3569 to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering (BSc) and approved as to its style and contents. The presentation has been held on 05/05/2018.

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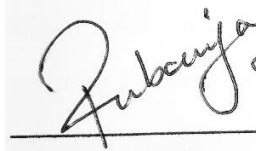
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## DECLARATION

I hereby declare that, this project has been done by me under the supervision of **Rubaiya Hafiz, Lecturer, Department of CSE** Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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## **ABSTRACT**

Hospital service has been provided so well with recent technology and equipment. We can imagine a modern world of treatment where all information of patients, doctors, pathologists should be kept, there should be a database for all of them and keep their track record on that database specially for the patients. Many Hospitals currently use a manual system for the management and maintenance of clinical information. In this system they put all information in paper and sometimes they lost that documents and it creates many problems. “Centralized Patient Information System” Is a web-based application for keeping all the information into a web server. Main purpose of this software is to keep data like background and personal information, problems, taken medicines, and pathological test reports of a patients into a central database and those data will neither have deleted nor lost. Whenever any doctor will face any kind of problem regarding patients then this database will help the doctors in an effective way for background study of the patient. All of this information must be managed in an efficient and effective way so that an institution's resources may be effectively utilized, Centralized Patient Information system(CPIS) will automate the management of the hospital by making it more efficient and error free. It aims at standardizing and consolidating data by ensuring data integrity and reducing inconsistencies. In this project, I tried to create simple patient’s information system for the doctors and the pathologist.

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# CHAPTER 1

## Introduction

### 1.1 INTRODUCTION

“Centralized Patient Information System” is a web-based application for the hospitals for maintaining the patient’s data for a medical center or a diagnostic center. In Bangladesh, there are few hospitals they keep their data on server by using recent technology and few applications for further use but most of the hospitals are using the paper for keeping data and sometimes they lost their paper and data. Doctors don’t check the previous data of that patient properly and patients are afraid to carry all previous data. When a patient come to a hospital or a medical cure center firstly they need to registration that will do by the receptionist. They need to name the problems and the receptionist will assign the best doctor on basis on that problems and make an appointment for checking by the doctor all information will keep in the database. But if the patient already been registered on the database then they just need to tell the problem and make reservation for that doctor. When doctor come to check the patient, the application will show the patient all medical background, pathological background and medicine history with the information of previous doctors and medicines. The problem of patient will already have been that application when patient named that problems to the receptionist. The doctor will write the medicine for the patient there will show some auto suggestion of medicines. If pathological test needed, then doctor should type it and there will be an auto suggestion. after completing all formalities receptionist will print the prescription. if there will be a pathological test suggested then patient need to go that test center. Any pathological report will be uploaded by the pathologist and medicine report will be added by the doctors.

So, the main target of this application is to create a database for the users, doctors, pathologists. In that database all information of a patient will be given by the receptionist while sign up for patients to check up with a doctor. Main purpose of this software is to keep all data of a patients in a central database and those data will not be deleted. There are so many patients assigned for a doctor or in a medical cure center so this will help doctors to reduce the time for a patient checking.

## 1.2 MOTIVATION

Bangladesh is a small country with a huge population. There are lots of people suffering from many disease and in this country there a few qualified doctors live. In a day doctors have to check up a lot of patients in a recent study by UNESCO say that there are only 3.05 doctors in Bangladesh for 10000 people. [1]

In most of the case doctor have less time so they need to check patient's quickly that is why they don't get proper time to check a patient properly. They can't talk more with the patients so they know that background of that patients and patients are so afraid to meet the doctors, they don't want to share their background like previous treatment and previously taken medicine and previous pathological test report and previous doctors. Patients are also feel shy to share their problems with the doctors. There is another problem which is there is no data recording system it Bangladesh, each hospital uses paper and books to keep the patient's information and sometime those documents could not have found when it is necessity, from that thought I think about creating application where doctor's, pathologists and the patients should communicate easily and also all of important data will be kept on the central database. So that any registered doctors or any registered hospital can see those patient's problems and patients don't need to carry his test reports. Patients don't need to tell his problem every time to the doctors, doctors can see the problems can be seen by this application. This is my Main Motivation here are some point out motivation which is given bellow,

- In Bangladesh, there is no central database for Patients.
- To appoint doctor patients, have to attend same medical test for various doctor for many times.
- There was no record for the patient's problems and medicines or doctors who have checked that patients.
- Patients suffer due to various test for different doctors.

### 1.3 OBJECTIVES

“Centralized Patient Information System” This is a very large project, in this project I need to create a big database for patients. Currently this is so expensive and also, we need to communicate with the hospitals and with the doctors for using that software and then this rule will change and data will be keeping in that database and doctors and patients will get the benefit of that software, so basically my objective are given bellow

- To Create a separate Database for Doctors and Patients.
- To enable patient’s history from any registered hospital
- To help the patients for open and good communication with the doctors.
- To insure the privacy for the patients and make theme comfortable to use this software while they are talking about their problem and that problems will be saved in database by the receptionist or the junior doctors.
- Create a database for the pathology test where doctors can rate that.
- To create a very easy and user-friendly software for the users.
- Make the patients database more powerful where all the medicine list and test report will be kept.

## 1.4 EXPECTED OUTCOME

Centralized Patients Information System is a mainly created for the doctors and the patients purpose. By using this application our Doctors can be highly benefited and our patients can freely talk to the doctors. The fear of doctor will be gone by using this application patient will choose the receptionist and openly tell them the problems and when the doctors will see this they can identify the main reason of that problem easily. Patients don't need to carry their previous reports and they don't need to carry previous prescriptions. All background history will be shown to the doctors at once. Patients will be identifying with a unique ID number and treated by the doctors and pathologist.

However, one of the main purpose of this application is to maintain doctors and patients time and keeping all records. So many patients can be handled in an organized way and in case of emergency this application will help the doctors very much. there are few Expected outcomes of this application is given bellow,

- There will be a web-based system for patient's records.
- Medical test of patients will be kept on the database so patients will not need to test many times.
- A database for patient's pathological test and a network to connect doctors and patients.
- Patients background history will be kept in that database.

## **CHAPTER 2**

### **Background**

#### **2.1 INTRODUCTION**

In this chapter we will learn about the background of this application. In here we will discuss about few of the related application and my Comparative studies, the scope of this application and its problems and later we will discuss about the challenges of this application. There are a lot of related application in other countries. I studied few of them and then try to create this application for batter usage. In small countries like Bangladesh there is a lot of scope of this application in my eyes this application can be very useful for doctors and patients. For creating this I face a lot of problems and there is a lot of challenges, in this chapter I tried to discuss all of the things.

#### **2.2 RELATED WORKS**

Bangladesh is a small country with a huge population. There are lots of people suffering from many disease and in this country there a few qualified doctors live. In a day doctors have to check up a lot of patients so there are a few applications created by many other software providers and there are few patients about this patient information system. [2]

There is a very popular software in the market which is use by many countries and many medicals is created by the Healthy Catalyst. [3]

This software is a paid software and in this application patient's information is kept automatically and any single piece information was kept from a medical center. This software was widely used in many countries.

Some countries used this kind of software for emergency purposes only but they don't use that software fully in the medical they use different application for the main medical center. One of them is SoftClinic. [4]

This software there they lots of feature about medicine giving, doctors managing, nurse managing, emergency management etc. But in this Centralized patient's information system we use very few features.

There is another software named "E-hospital System" [5] The vendor named "Adroit Info Systems" they created a good application which can interact between doctors and the patients there are few functions like patient's information system, service management, OPD management, online billing management, medical data, store manage, management and appointment system for the patients of the medical.

### **2.3 COMPARATEVE STUDY**

For creating an application first, we have to study about the problems and also the feature. So, for this application I tried to learn from some application that actually what this application should do and how can be those work done. I found some application that similar to this project when I tried to look up those applications and system then I found that few of them actually created to keep the information about patients and the payment of the patients. And few of them are actually made for emergency services in the big countries like USA, Canada etc. Those only work by their social identity number so in smaller country like Bangladesh there no social ID no so we need to create a particular system that can work easily without any previous ID. There are few applications in Bangladeshi medical service that also do the only payment and appointment system but none of them works on interaction with doctors and the pathologist or mainly to the patients. So, I studied them and create some unique feature for this system.

## **2.4 SCOPE OF THE PROBLEM**

To create a new system first we need to find the problem of the previous system and the new feature should be defined so the scope of the problem is given bellow

- This is an open platform software that can be used by any hospital
- Any patient can view their information after the appointment
- Anyone can access the blood portal and the User history portal
- Once patient get registered they can fix appointment at any time to any doctors
- There will be a secure database for the patients where every data will be kept

## **2.5 CHALLENGES**

The main challenge of this system that introducing to a new kind of application to the user and the patients of small country like Bangladesh

- Create a friendly communication between patient and the receptionists and doctors
- Introduce a new system to the patients about to keep all information and share those information with them.
- Create an attractive User Interface(UI) that can be like by every user.



## CHAPTER 3

### Requirement Specification

#### 3.1 REQUIRMENT COLLECTION AND ANALYSIS

Software are created for specific purposes and hospital management software are created to handle day to day use and there should be lots of data come from the patients and doctors. “Centralized Patient Information System” is one kind of hospital management system so this application will have a large number of data input and output. Also, there are four different interfaces like doctors, pathologist, receptionist and also for the patients. So, I need to create a database that can handle all of those data. For this particular application there are lots of this required like separate database table for the internal user and also an internal user controller which will work as a admin in this project. There are also two database that can store patient’s information and problems. There is another portion in this application is dedicated blood bank which is also needed a database. To find the importance of this kinds app in country like Bangladesh I need to research myself first so I asked few peoples in a private diagnostic center and patient says this application should help our huge populated country. In many private hospital and diagnostic center have their personal software but main problem was most of those are basically set the patient appointment and keep note about financial matters. This application having the main purpose of keep the patients’ data but this will not keep those financial notes. This was the main purpose of this application. After analysis those patient’s comments I fix the purpose that will change it from financial note to patient’s medical history notes and adding instant problems and adding medicine in that patient interface.

### 3.2 USECASE DIAGRAM AND DISCRPTION

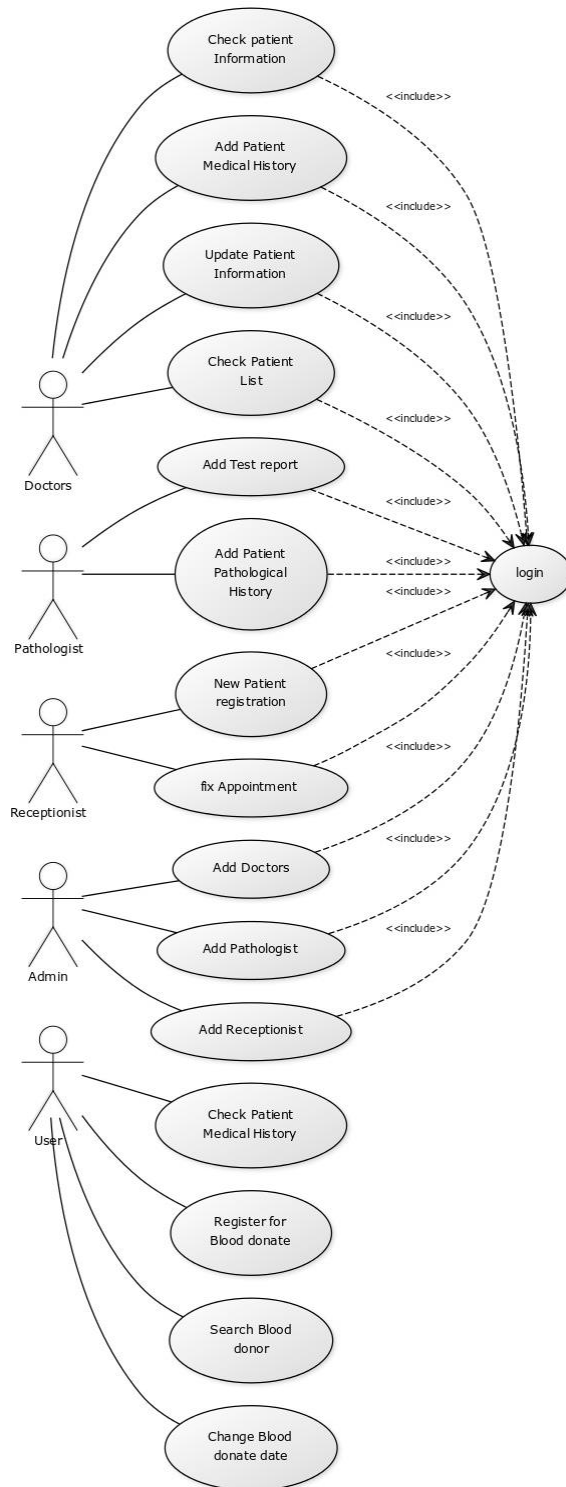


Figure 3.1: Use Case diagram

### 3.2.1 DISCRIPTION

Table 3.1: Use case description of login

<b>Use case:</b>	Login
<b>Precondition:</b>	Added into database by Admin
<b>Actor:</b>	Doctor, Pathologist, Receptionist, Admin
<b>Primary path:</b>	1. Enter User Id 2. Enter Password 3. Press “Login” Button
<b>Exceptional Path:</b>	3.1 Invalid ID, Pass, make them correct and login again

Table 3.2: Use case description of Add Doctor

<b>Use case:</b>	Add Doctor
<b>Precondition:</b>	Login
<b>Actor:</b>	Admin
<b>Primary path:</b>	1. Add information about Doctor 2. Press “Add Doctor” Button
<b>Exceptional Path:</b>	2.1 Missing some data, insert again

Table 3.3: Use case description of Add Pathologist

<b>Use case:</b>	Add Pathologist
<b>Precondition:</b>	Login
<b>Actor:</b>	Admin
<b>Primary path:</b>	1. Add information about Pathologist 2. Press “Add pathologist” Button
<b>Exceptional Path:</b>	2.1 Missing some data, insert again

Table 3.4: Use case description of Add Receptionist

<b>Use case:</b>	Add Receptionist
<b>Precondition:</b>	Login
<b>Actor:</b>	Admin
<b>Primary path:</b>	1. Add information about Receptionist 2. Press “Add Receptionist” Button
<b>Exceptional Path:</b>	2.1 Missing some data, insert again

Table 3.5: Use case description of Patient Information Checking

<b>Use case:</b>	Patient Information Checking
<b>Precondition:</b>	Login
<b>Actor:</b>	Doctor, User
<b>Primary path:</b>	1. Enter Patients Id 2. Press “Submit” Button
<b>Exceptional Path:</b>	2.1 wrong patient id, submit again

Table 3.6: Use case description of Add Patient History

<b>Use case:</b>	Add Patient History
<b>Precondition:</b>	Login
<b>Actor:</b>	Doctor, Receptionist
<b>Primary path:</b>	1. Enter Patients Id 2. Press “Add history” Button
<b>Exceptional Path:</b>	2.1 wrong patient id, submit again

Table 3.7: Use case description of Add New Patient

<b>Use case:</b>	Add New Patient
<b>Precondition:</b>	Login
<b>Actor:</b>	Receptionist
<b>Primary path:</b>	<ol style="list-style-type: none"> <li>1. Enter Patients Name</li> <li>2. Enter Age and gender</li> <li>3. Press “Add patient” Button</li> </ol>
<b>Exceptional Path:</b>	3.1 Fields are not filled, fill the form and submit again

Table 3.8: Use case description of Fix Appointment

<b>Use case:</b>	Fix Appointment
<b>Precondition:</b>	Login
<b>Actor:</b>	Receptionist
<b>Primary path:</b>	<ol style="list-style-type: none"> <li>1. Enter Patients Name</li> <li>2. Enter Age and gender</li> <li>3. Press “Add patient” Button</li> </ol>
<b>Exceptional Path:</b>	3.1 Fields are not filled, fill the form and submit again

Table 3.9: Use case description of Add Test Report

<b>Use case:</b>	Add Test Report
<b>Precondition:</b>	Login
<b>Actor:</b>	Pathologist
<b>Primary path:</b>	<ol style="list-style-type: none"> <li>1. Enter Patients Id</li> <li>2. add test report file</li> <li>3. Press “Add” Button</li> </ol>
<b>Exceptional Path:</b>	3.1 wrong patient id, test file not found, submit again

Table 3.10: Use case description of Search Blood Donor

<b>Use case:</b>	Search Blood Donor
<b>Precondition:</b>	
<b>Actor</b>	User
<b>Primary path:</b>	1. Enter Location or Blood Group 2. Press “Search” Button
<b>Exceptional Path:</b>	2.1 no input, insert and submit again

Table 3.11: Use case description of Register as a Blood Donor

<b>Use case:</b>	Register as a Blood Donor
<b>Precondition:</b>	
<b>Actor</b>	User
<b>Primary path:</b>	1. Enter Information 2. Press “signup” Button
<b>Exceptional Path:</b>	2.1 data missing, insert and submit again

### 3.3 DATAFLOW DIAGRAM

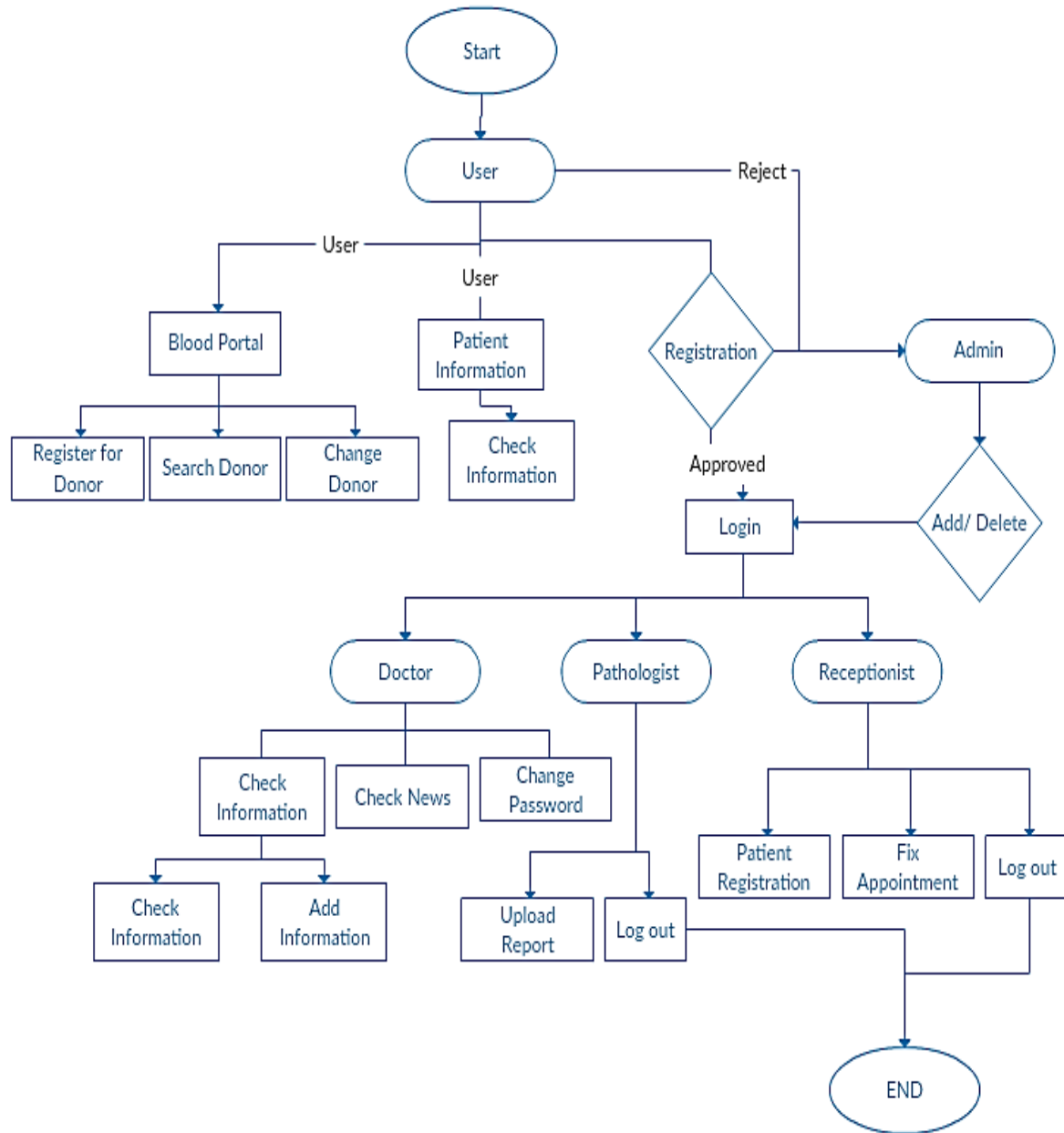


Figure 3.2: Data Flow Diagram

### 3.4 DESIGN REQUIRMENT

Design Requirements one of the most important term when any software or application is created. In this case this application there is interfaces and databased and also user interaction with a large number of data input and output so the main requirement for designing this software is to handle those information input and output and the database.

- In this system, I have authentication for Doctors, Pathologist and Receptionist by admin. So, I have design a registration section which will access by Admin only. I also design a login section for those users.
- In this system there are five types of users like Admin, Doctor, Receptionist, Pathologist and Patients. Only Blood donor can get registered by themselves and the Patient can only view the profile of Patients and Blood donors.
- After approved by the admin Internal user can do their work on application.
- Admin have the full power to edit or delete of any profile.
- In our system we allow the patient to choose the doctors.



## **CHAPTER 4**

### **Design Specification**

Design Specification means how a design is developed. In the section I tries to show the front-end and back-end design of The Centralized Patient Information web application. All tools and the platforms will be discussed here, which I use to develop my application.

#### **4.1 FRONT-END DESIGN**

Front end design means that what can actually the user of this application will see and how this screen will interact with the application main properties. Actually, this is mean the user interface of the software. The objective of designing a site is to ensure that when the users open up the site they see the information in a format that is easy to read and relevant. This is further complicated by the fact that users now use a large variety of devices with varying screen sizes and resolutions thus forcing the designer to take into consideration these aspects when designing the site.

### 4.1.1 Home Page

The home page of this application is like bellow there are admin portion and separate login portion for those internal users and there is also Patient service portion which is redirected to Patient Information Portal and Blood Donation portal, and in contact there is address, Phone number and map for that particular Hospital.

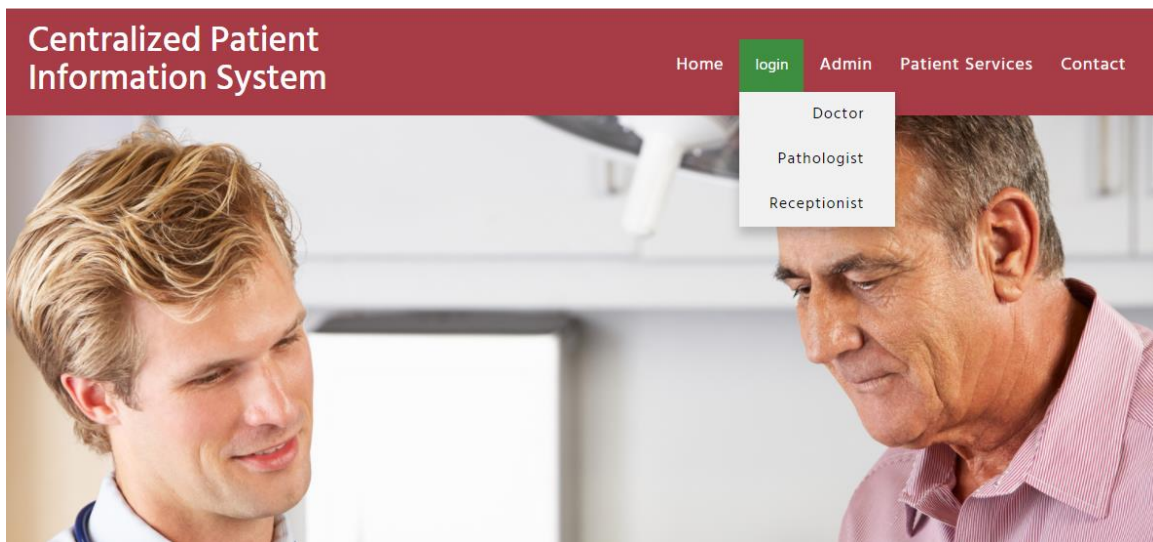
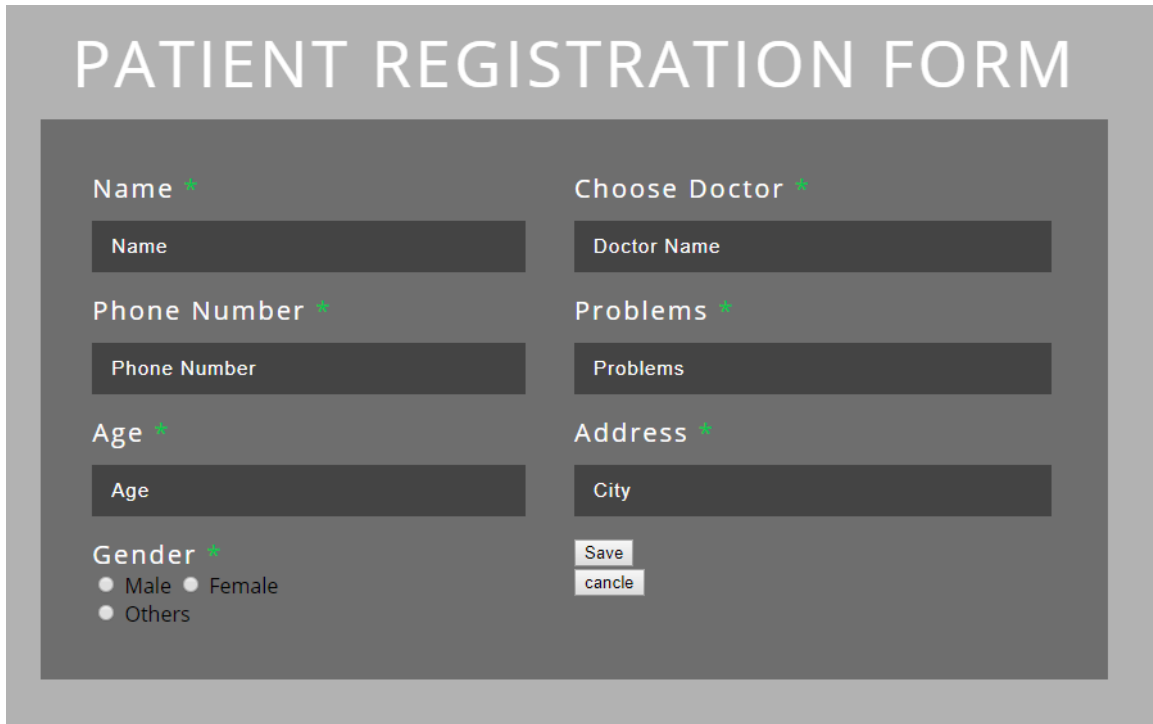


Figure 4.1: Home Page

### 4.1.2 Patient Registration Page

When receptionist will meet patient and note his problem along with the all information about patient, and provide a doctor's appointment. All those data create a new patient and data will store on a database for doctor and for further use.



The image shows a patient registration form with the following fields and options:

- Name \***: Text input field with placeholder "Name".
- Choose Doctor \***: Text input field with placeholder "Doctor Name".
- Phone Number \***: Text input field with placeholder "Phone Number".
- Problems \***: Text input field with placeholder "Problems".
- Age \***: Text input field with placeholder "Age".
- Address \***: Text input field with placeholder "City".
- Gender \***: Radio button options for "Male", "Female", and "Others".
- Buttons**: "Save" and "cancel" buttons.

Figure 4.2: Patient Registration page

### 4.1.3 Patient Information Page

This page is for doctors and the other users like patients. In this page all of the information provided my patient will show and patients last medicine and last doctors name and also the pathological test report will be shown in this page. For accessing user information doctors or the user should provide the patient id. In this page there is also a portion name “Add” which is only available for the doctors where doctors can add patients medicine information and pathology tests

Patient ID:

Name:	Atiqur Rahman	Age:	22	Gender:	male
Phone :	02225	Address :	dhaka		

#### Patient treatment History

Date	Problems	Doctor	Tests Report	Medicine
2018-02-02	smkdfn	aminul	NONE	NONE
0000-00-00	matha	Aminul		napa

Figure 4.3: Patient Information Page

#### 4.1.4 Doctor, Pathologist, Receptionist Registration Page

This is an admin page. Only admin can access this page by providing all information about doctors, pathologist, receptionist admin can create an internal user there will be a unique user id and password for each user which will needed for login for the internal users. There is also table for showing the added users for each section.

User Id

Name

Password

Phone

User Id	Name	Pass	Phone	Action
doc02	atiquir	0147	017845	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
0015	Aminul	0144	0154512	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
0012	atiq	0147	000000	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Figure 4.4: User Registration Page

## 4.1.5 Blood Donation Portal page

This is an User page. Here anyone can search for blood donor by the blood group or the location where donor is needed. The result will show under the search button and show in a table. There is a registration part where user can register himself for blood donation and they can change their blood donation date.

Centralized Patient Information System  
Blood Bank

Become a Donar Change Donation date Back

### Welcome to Blood Bank

Search Blood

Blood Group

OR

Location  
 Search

Name	Blood Group	Phone	Address	Last Donation Date
atiqur	AB+	01781589625	dhaka	2018-02-22

Figure 4.5: Blood Donor Portal

Centralized Patient Information System  
Blood Bank

Become a Donar Change Donation date Back

### Please enter your Phone No and your Last Donation Date for Change

Phone

date

Change

Figure 4.6: Blood Donation Date Change page

#### 4.1.6 Doctor Profile Page

This is the main profile page for the doctors. From here doctors can see the patient list or they can read some medicine portals or they can see the patient's history and after when patient visit, some medicine can be added by the doctor. Here doctors can change their password.

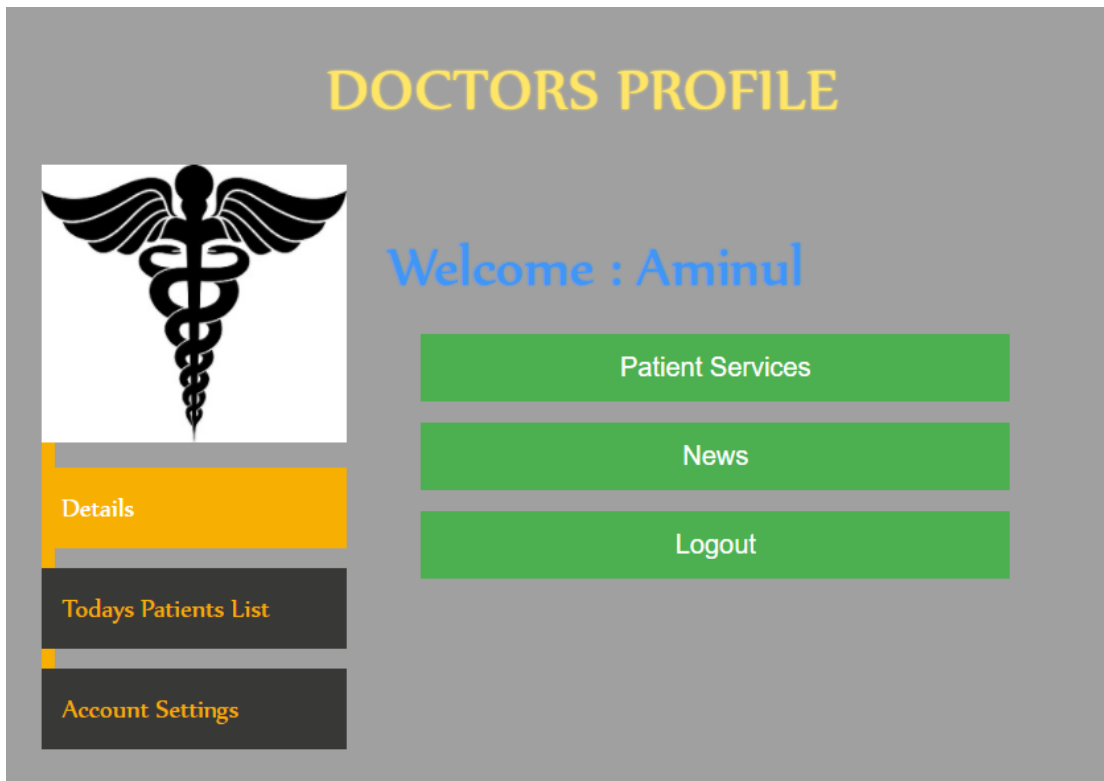


Figure 4.7: Doctor Profile Page

### 4.1.7 Pathologist Profile Page

This is the main profile page for the pathologist. From here pathologist can upload the pathological test report. The report can be uploaded in only few formats like .docx, .doc, .pdf, .jpg, .png etc. Here doctors can change their password.

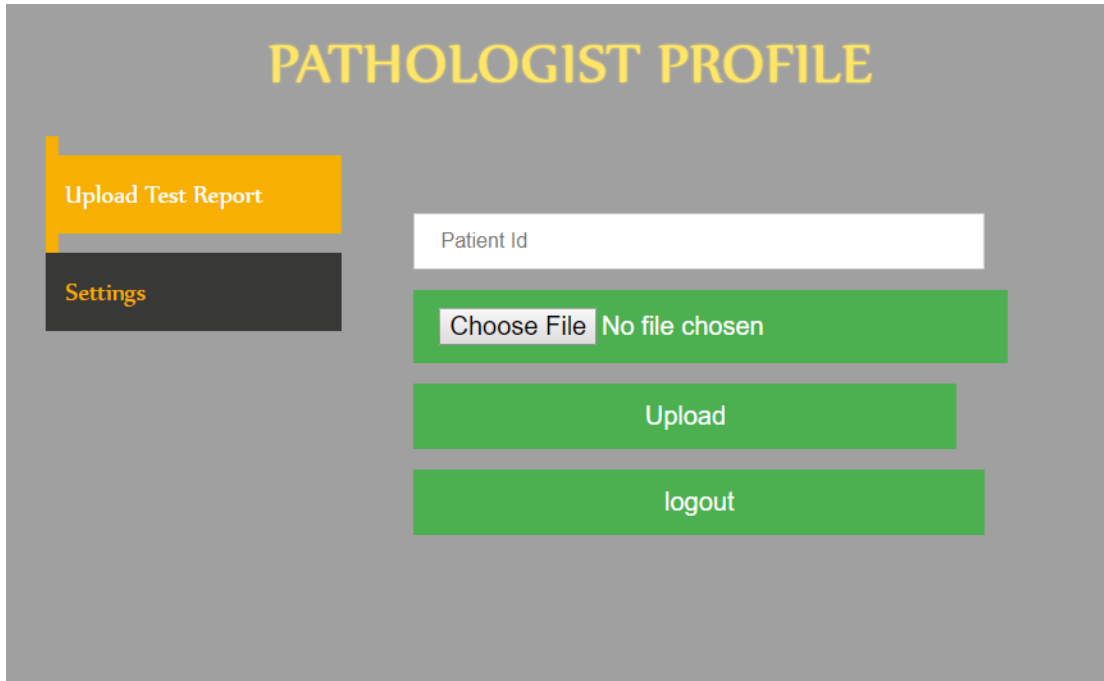


Figure 4.8: Pathologist Profile Page



## 4.2 BACK-END DESIGN

In an application back-end design means the behind works of an application what it do, how it store data or where it stored those all things are known as back-end part of an application. In this case this application need to store various data. In this application, we will store the information of patients and doctors. There are many database types like Microsoft SQL, MySQL for creating an application, we need to create a database for corresponding user in this case our main user are doctors and pathologist and receptionist, so we create a database for them and we created a separate database for keeping the information of the patients. The patient's database information is given bellow,

Table	Action	Rows	Type	Collation	Size	Overhead
blood	★ Browse Structure Search Insert Empty Drop	3	InnoDB	latin1_swedish_ci	16 KIB	-
doctors	★ Browse Structure Search Insert Empty Drop	3	InnoDB	latin1_swedish_ci	16 KIB	-
pathology	★ Browse Structure Search Insert Empty Drop	2	InnoDB	latin1_swedish_ci	16 KIB	-
patient	★ Browse Structure Search Insert Empty Drop	2	InnoDB	latin1_swedish_ci	16 KIB	-
patient_problem	★ Browse Structure Search Insert Empty Drop	3	InnoDB	latin1_swedish_ci	32 KIB	-
reception	★ Browse Structure Search Insert Empty Drop	1	InnoDB	latin1_swedish_ci	16 KIB	-
<b>6 tables</b>	<b>Sum</b>	<b>14</b>	<b>InnoDB</b>	<b>latin1_swedish_ci</b>	<b>112 KIB</b>	<b>0 B</b>

Figure 4.9: Database all tables

#	Name	Type	Collation	Attributes	Null	Default	Extra
1	name	varchar(255)	latin1_swedish_ci		No	None	
2	phone	varchar(255)	latin1_swedish_ci		No	None	
3	pass	varchar(255)	latin1_swedish_ci		No	None	
4	location	varchar(255)	latin1_swedish_ci		No	None	
5	last_donation	date			No	None	
6	b_group	varchar(255)	latin1_swedish_ci		No	None	
7	id	int(11)			No	None	AUTO_INCREMENT

Figure 4.10: Database for this Blood Donors

#	Name	Type	Collation	Attributes	Null	Default	Extra
<input type="checkbox"/> 1	<b>id</b>	int(255)			No	None	AUTO_INCREMENT
<input type="checkbox"/> 2	<b>name</b>	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/> 3	<b>pass</b>	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/> 4	<b>phone</b>	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/> 5	<b>userid</b>	varchar(255)	latin1_swedish_ci		No	None	

Figure 4.11: Database for this Doctors, Pathologist, Receptionist

#	Name	Type	Collation	Attributes	Null	Default	Extra
<input type="checkbox"/> 1	<b>id</b>	int(255)			No	None	AUTO_INCREMENT
<input type="checkbox"/> 2	<b>name</b>	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/> 3	<b>gender</b>	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/> 4	<b>age</b>	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/> 5	<b>address</b>	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/> 6	<b>phone</b>	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/> 7	<b>problem</b>	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/> 8	<b>doctor</b>	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/> 9	<b>date</b>	date			No	None	

Figure 4.12: database for this Patients


#	Name	Type	Collation	Attributes	Null	Default	Extra
<input type="checkbox"/>	1 id 	int(255)			No	None	AUTO_INCREMENT
<input type="checkbox"/>	2 test_report	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/>	3 last_medicine	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/>	4 problem	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/>	5 add_doctors	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/>	6 add_report	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/>	7 add_problems	varchar(255)	latin1_swedish_ci		No	None	
<input type="checkbox"/>	8 patient_id	int(255)			No	None	
<input type="checkbox"/>	9 date	date			No	None	

Figure 4.13: database for this Patients Problems

### 4.3 INTERACTION DESIGN AND UX

Interaction design means which can communicate between system and the users it also observes interaction between a system and its user, processing problems and show the results, do the actions by that results and solve the problem. In the other hand, user experience focused on the experience between the user and an application. In this application, there are some features that can interact with the user and doctors also it can communicate user to user. One of the feature is store all data into database, which can share information to the doctors and the users. There is another feature for blood donor where any user can register and search for blood. In UX, I tried to give some user friendly and good experience by this application. This system is simple and easy for better experience and performance for the internal and external user. I try to store data perfectly and as quick as possible.

#### 4.4 IMPLEMENTATION OF REQUIRMENTS

For implementing this project, different type of tools is being used, few components and a platform which help me to developed this project successfully. In this section I am going to discussed about all those tools and platforms that needed develop this application.

To develop the front-end of the web application I use HTML5, CSS3 and bootstrap as a framework.

- To develop the back-end I use PHP as a scripting language and I use Raw PHP for easy use.
- XAMPP server used to build a local server for this application.
- For Database I use MySQL (Engine: InnoDB).
- Hosting platform is a Linux based server.
- Scheduled backup from server for Both source code and Database
- Form validation needed using java-script before server site validation.
- Maximum attach limit for the test report.
- Invalid or blank data input will display with an error.
- For specific design jQuery is needed.
- For visual aspect different types of fonts and icons are collected from google fonts.

## CHAPTER 5

### Implementation and Testing

#### 5.1 IMPLEMENTATION OF DATABASE

Database design means to create a detail data model of database. Data model contains logical and physical design choices. Those physical data storage parameters should be generated in a design in its own definition language, so that be it could create a database. A data model contains detailed attributes for each entity. Database collects and stores data in such organized way that the application needed and data requirements are satisfied by application and the database. The main purpose is to make data access easy, quick, inexpensive and flexible for the user and for the interface of a system. There are more specific objectives like control redundancy from failure, privacy, security and performance. A collection of relative records makes up a table. To design and store data in a database some table must be created.

Two main part of a database are:

- Primary key: This field is unique for storing all the record.
  - Foreign key: This field used to set relationship between two or more tables.
- By Normalization redundancy is avoided in those tables.

There are six tables in our database which are

**Doctors table:** All Information of a doctor like as name, password, phone, user id is stored in this table.

**Receptionist Table:** Information like as name, password, phone, user id of a Receptionist is stored in this table.

**Pathologist Table:** All Information of a Pathologist like as name, password, phone, user id is stored in this table.

**Patient Table:** Patient table contains some data like patient name, location, cell number, gender, age, problem, doctor want to appoint and that date will be inserted.

**Patient Problem Table:** In this table all new problems and the test report and the medicine history by doctor and the doctors name will kept in this table and this table also kept the date for each event.

**Blood Donor table:** This is a user table for separate user this part has created for donor registration there is name of donor, mobile no, location, blood group and last donation date will be for those registration.

**Relational Between Table:**

There are two tables which are connected with each other's "Patient" table and "patient\_problem" table they are connected by foreign key. In "Patient" table the "id" is the unique key and in "patient\_problem" the foreign key is "patient\_id".

## 5.2 IMPLEMENTATION OF FRONT-END DESIGN

For an application Front-end design is the main impression for a user. If first impression goes wrong then this application will lose its interest. So, I try my level best to make the front-end part to be more simple, attractive and user friendly. But the challenging portion is to make this application device independent, but most of the time this application will run on a device like computer or Tablet computer. So, I make this application responsive, so that when users visiting from different device will face no difficulties to see our application. I tried make interface more relative and standard with the help of HTML, CSS, JavaScript and jQuery.

There are some factors of implementing the front-end design are given below

- There will be five types of users like Admin, Doctors, Receptionist, Patient and Pathologist.
- Internal User can login using their given user id and password given by the admin.
- Internal User can change password by filling up the form of Change password form.

### **5.3 IMPLEMENTATION OF INTERACTION**

Interaction of an application means to communicate between user and that application. It also communicates inside the software database to user and the user interface. In a software system the architecture defines the component and interaction of those components.

Interaction is one of the most important part of the real world. Almost everywhere it is being used. It is the only way to create dynamic system to attract people or the user of a system. So, without creating a system interactive no application will get popularity. As to implement interaction I tried harder to create this application more attractive for the users. As I mention before those application also have some unique features that can be used as easily as possible by any user. This application is looks like a virtual prescription for the patients and database keeper for the hospital and also it keeps all the information about a patient that it can help the doctors. For this implementation I user HTML for creating the fields, CSS for create an attractive look, PHP for interaction with the database, MySQL for creating the database and Google Chrome web browser for checking the input and output and also there are some JAVASCRIPT for the form validation

## 5.4 TESTING IMPLEMENTATION

Table 5.1: Test case for Design & Development of Centralized Patient Information System.

<b>Test Case</b>	<b>Test Input</b>	<b>Expected outcome</b>	<b>Obtained outcome</b>	<b>Result</b>	<b>Tested on</b>
1. Login	Login form various devices like Computer and smart devices. For various users	Successfully login	Successfully login	Passed	21-03-2018
2. Username or Password	Blank or incorrect username or Password.	Give a warning message username or password must be entered.	Showed the warning message.	Passed	21-03-2018
3. Password	incorrect password.	Give a warning message that password not matched	Showed the warning message.	Passed	21-03-2018



4. Patient medical history	Enter patient ID and press submit button	Show the patient history with all informatio n	Showed Patient Profile and informatio n successfull y	Pass ed	21- 03- 2018
5. Search Blood Donor	Insert Blood group or the location	Show blood donor list on that particular input	Give the list of blood Donor	Pass ed	21- 03- 2018
6. Become a Blood Donor	Insert name, phone no, location, donation date, blood group	Get user be registered for blood donor.	Registered user successfull y	Pass ed	21- 03- 2018
7.Chang e Last Donate date	Input the cell no and date	Last Donation date will change	Date changed Successful ly	Pass ed	21- 03- 2018
8.Add Patient medicin e	Input all data to correspond ed section	Medicine will be added in user database	Medicine inserted on the patient table	Pass ed	21- 03- 2018

9.View Medical Portal on Web	Click on “news” button by only doctor profile	Redirected to a trusted medical based portal	Show the medical portal on another tab in browser	Passed	21-03-2018
10.Admin panel	Log into the admin panel	To create new internal user	Show the panel	Passed	21-03-2018
11. View Todays patient list	Click the todays patient list on doctor profile tab	To see today’s pending patients in a table	Show the patients list on a table	Passed	21-03-2018
12.Change password	Insert the two-different new password	Show an error that password should matched	Show a warning that two passwords are not matched	Passed	21-03-2018
13. Logout	Click on the Logout button	To logout from that account.	Logged out Successfully.	passed	21-03-2018
14. Upload test report	Upload the report as an image file	Report will store on user database	Report uploaded Successfully	passed	21-03-2018

14. Manage internal user by Admin	Edit and Delete user informatio n	For delete user will be deleted and for edit user informatio n will be updated	User informatio n updated and one user deleted	passee d	21- 03- 2018
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## 5.5 TEST RESULTS AND REPORT

For an application testing is one of the most important things, because without testing no application can be sure that will work or not. The test result reflects on the test report. the formal way to present a test result is this test report. In here the expected outcome and the input can be seen quickly and estimate this testing results quickly. It keeps that record in a document of those tests to be obtained from an evaluation experiment in an organized way.

Test reports are as important as the application input output and it is the prove of that application weather working or not. Those features of an application in working or not can be told by see those test results. In this section I tried to show those test results in a formal way on the Table 5.1 I tried to show some test case for that application. I need to run many types of testing for ensuring that all feature of that application is working. There are many types of testing:

- Functionality
- Regression
- Security
- Performance

- Scalability
- Usability
- System interoperability
- Localization

If any system passes through all these types of testing then an application or system is finally ready to launch. In my case Centralized Patient Information System passes almost every test from above. So, I think that this application is ready to launch.

In the End this application can carry out the bellow results as the benefits of usability testing.

- Application is in Good Quality.
- An easy system for using by any user.
- This system is readily accepted by internal users.
- For new user it is very easy to use.
- Good UI for interaction between systems.

## CHAPTER 6

### Conclusion and Future Scope

#### 6.1 DISCUSSION AND CONCLUSION

The main purpose and the objective of “Centralized Patient Information System” project is achieved. A better graphical user interface, good web page designing is quite easy and in a realistic form. Good designing makes this application so flexible that user will explore and this will rich to their imagination. In this application there are separate portion for separate person of a hospital or in a medical system. Reception will take input from the patient and fix the appointment and those data will be forwarded to doctors and after viewing those data doctor will view the patient and put the proper suggestion to the patients and pathologist can upload the test report of a patient if needed. There is also a portion where that patient can check the doctors medicine which was given to that patient and there is another part where any user can search blood for any patient and any user can be the blood donor. This was the main purpose of this application, That when the patient viewed by any doctor they have face so many trouble for test report of their shyness or their Unconsciousness they do some mistake and sometime doctor could not find the proper solution on that leak of information, in this application patient provide those information to a friendly person and then doctor will soot those information and give medicine to that patient here this process is also time consuming for the doctors also. After completing this system, I think this will work properly for all of the users and it will do as the objective says before in objective section.

To create this application, I face a lot of problems. Few of them in writing codes in PHP and few in writing code in HTML, CSS, because some time I could not make a proper UI for attraction for the user. I could not make up the cross communication between different programming languages. Sometime JavaScript not worked and not

giving any kind of alert or any kind of message, but in the end, I taught a lot of things about PHP, HTML, CSS and also how to create a good project and learn some good manners.

## **6.2 SCOPE FOR FURTHER DEVELOPMENTS**

After completing this project when I was trying to over view that system and I found some developments to do and also found some limitation of this application. Though I've tried to reduce all kind of limitation but few of them are cannot be overcome. Few limitations are given below.

- Without patient registration this application will not go further process.
- Patient ID is almost required in every situation and every case.
- There is no chatting site or forum for patient-doctor or doctor-doctor discussion site created in this system.
- Patient information printing is missing in this system, so in next this will be added for the patient and the doctors.
- There is no sequence maintained for doctor appointment so that any patient can get appointment at any time.
- There is a feature this application is needed much is the digital prescription system where doctor will put the all information of medicine taking time and the test time or every data needed to reminded by the patient.
- There is no list showing available for the pathologist that who is going to appointment or have a test on every day.

So, in future few kinds of feature can be added to create this system more perfect in this type of application. This application is particularly created for the medical hospitals and pathological test centers. Mainly if each hospital uses this type of application then this application uses will more effective than any patient can visit any hospital and get benefited, this was one of the main purpose of this application.

## REFERENCES

- [1] “Tertiary Hospitals” internet: <http://www.who.int/workforcealliance/countries/bgd/en/> [last accessed: March 21, 2018 at 7:00 pm].
- [2] “Patient Information System” internet: <https://www.google.com/patents/US6988075> [last accessed: March 21, 2018 at 7:00 pm].
- [3] “Health catalyst” application internet: <https://www.healthcatalyst.com/information-systems-for-accountable-care-organizations> [last accessed: March 21, 2018 at 7:00 pm].
- [4] “Feature of a Hospital Management System” available at << [http://www.softclinicsoftware.com/hospital\\_software\\_features.html](http://www.softclinicsoftware.com/hospital_software_features.html)>>, [last accessed: March 21, 2018 at 7:00 pm].
- [5] “E-Clinic Software” available << <https://www.adroitinfosystems.com/products/ehospital-systems> >>, last accessed: March 21, 2018 at 7:00 pm

# PLAGARISM REPORT

Figure: Plagiarism Report Screenshot