DIGITAL PRESCRIPTION SYSTEM

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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/internship titled **"Digital Prescription System"**, submitted by Md. Shafiur Rahman, ID No: 153-15-6462 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 and approved as to its style and contents. The presentation has been held on 6-12-2019.
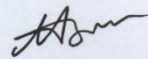
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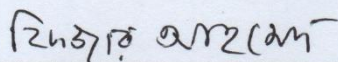Faculty of Science & Information Technology
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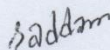Faculty of Science & Information Technology
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DECLARATION

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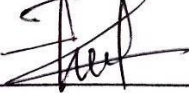
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ABSTRACT

Bangladesh is a small developing country with a lot of possibilities. Further many other sectors our health care sector is improving day by day. However, health care facility of the country is not satisfactory according to its demand, especially the patient care and prescription system. Like many other countries of the world, there are many patients die every year because of only the poor handwriting of doctors. I think this small step, providing a computer-based prescription system will contribute to minimize the problem in the health sector of the country.

The purpose of the Digital Prescription System is to provide a computer printed and fully digitalized prescription to the patient so that there are no more prescription errors. Through this application a doctor can record, analyze, manage patient history and can easily create and manage prescription.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Doctors the world over are renowned for their bad handwriting. Many patients and even some pharmacists cannot read what the doctors hand writing on the prescriptions. The purpose of this project is to computerize the entire prescribing system of doctor's chamber and to develop software which is user friendly, simple, fast and cost-effective. The application deals with the collection of patient's information, his diagnosis details etc. Habitually, these all things are done physically. The fundamental function of the system is to register and store patient's information and creating a clean and meaningful prescription.

1.2 Scope

This application can be used in any doctor's chamber for managing patient's info and generating computerized prescription.

1.3 Motivation

Better health is central to human happiness and well-being. It also makes an important contribution to a countries economic progress, as healthy populations live longer, are more productive, and save more. Every country in the world always struggles to develop the best healthcare system so that the good health of the people of the country is maintained. In Bangladesh, there several steps have been taken for developing this major sector. In Bangladesh like in the world, many patients die every year only because of the poor handwritten prescription of doctors. Many countries around the world have alleviated this huge problem by digitizing their old prescription system, which is still rare in Bangladesh. Because of such bad handwriting by doctors, patients often take the wrong medicine which costs them money and exposes them to unnecessary and sometimes dangerous health risks.

To overcome this problem, the Ministry of Health of Bangladesh has directed all doctors to use computerized prescription. Through my digital prescription system, I want to computerize the whole prescribing system so that there are no more unnecessary injuries causes by bad handwritten prescription. Although some doctors are using software to generate computer printed prescription which are not completely automated. The systems that doctors are currently using can create only a computer-printed prescription but cannot

manage and manipulate patients' medical information. The running systems are desktop application which are difficult to use and time consuming in most of the cases. But, my target is to develop a web application which will be very user friendly, low budget and obviously time saving which can use by the doctors anywhere without the difficulties of installation.

1.4 Objectives
The best way to change the prescription system that doctors handwritten from that old age is to bring it to the software system.

1.5 Expected Outcome
Digital prescription system will be designed to make the system of managing patient and prescription easy and also to do work in short time. With this application I want to give the doctor some benefits that will allow a doctor to easily manage his chambers. That is, saving patients data properly, manipulating them, and making prescriptions for the patient very clearly and so on. The expected features of this application has been given below

- **Dashboard Doctor:** In dashboard doctor can see the short status and report of patient
- **New Patient Entry:** This option use for new patient and their serial entry
- **View All Patient:** Doctor can get all patient information here with their all history and past prescription
- **Doctor's Information:** Here doctor can setup his/her information so that in pad it can print automatically
- **Doctor's Chamber:** Here doctor can setup his/her all chamber address that will print in footer in prescription
- **Patient Serial:** This option use for patient serial
- **View Patient Serial:** This option use to see all patient serial.
- **Patient Disease Setting:** This option can use for pre-disease setting option with pre-prescription so that doctor can create a prescription within some click.
- **New Medicine:** All medicine already in software but if doctor want to enter any new medicine, he can do it by himself/herself.

- **Add New Investigation:** All investigation list is already there but doctor can enter new investigation here if need
- **Add New Document:** With prescription, doctor can print attached documents if need.
- **Add New Advice:** This option use for pre-setup new advice

1.6 Layouts of the report

To finish this report, I include the design. Design is the process of include something in a short structure or in a table to determine the entire procedure in short-term. I use design since I need to determine the mainstream of my work in a short structure, with the goal that observer can understand it clearly.

Chapter 1: This chapter describes the introduction, scope, motivation, objectives and expected outcomes of my project.

Chapter 2: About the project background and the project overview. This chapter gives the information about related work, scope of the problem and project challenges.

Chapter 3: Chapter 3 is shown the requirement analysis and specification of this project.

Chapter 4: Describing the design specification. Also described front-end design, UI & UX, back-end design and functionality.

Chapter 5: Implementation and Testing of this project has described on this chapter

Chapter 6: Conclusion and future scope of the project

CHAPTER 2

BACKGROUND

2.1 Introduction

The web-based digital prescription system is a very well-furnished prescription management project. With this system a doctor can make a patient's prescription better and cleaner. And not only that, through this system, a doctor can store his patients' biodata, the previous medical history, i.e., the entire database of patients, and use it as needed. This system will provide time-consuming as well as hassle-free services. This project is web-based so there is no hassle to install it. If a doctor wants to use any device from anywhere, he / she will be able to login and use the system only on the internet. In this section, we attempt to give a related thought to "Digital Prescription System". This is a project that focuses on the field of automation in health sector.

2.2 Related Project Work

Such computerized prescription systems have begun to be used in many countries around the world. There are some systems in our country that are trying to provide this service to doctors. The followings are some example of such system

2.2.1 PrescribeRx

PrescribeRx personalized and safe prescribing system that allows to easily create and print prescriptions quickly and efficiently that makes the doctors more productive.

2.2.2 Prescriber®

Prescriber® is a well-known prescription writing and patient management software which is giving the doctors to generate a hassle free prescription.

2.2.3 Prescription BD

Prescription BD is an innovative prescription writing system that allows doctors to serve telemedicine session to the patient and manage, use, access or research on patient's medical records or history online from anywhere, anytime. It helps the doctors transform their workplace into computer & internet based digital chamber.

2.3 Comparative Studies

Most of the current systems running the market are desktop applications which have one of the main problems being installation and data protection. Suppose, a doctor has more than one chamber, and if he wants to use a prescription writing software, he will have to install the software on each chamber computer if the system is a desktop application. Another major problem is the security of the data. On the other hand, the application I created is web-based so there is no installation problem. A doctor can access the software using any device from anywhere with an internet connection. And all data stored in the online database will be able to remain secure even without data security or data loss.

Instead, most of the web-based systems that are running on the market have graphical user interface so complex that very few doctors are willing to use them. So I've tried to simplify my "Digital Prescription System" software as much as possible, so that doctors are more motivated to use it and reduce medication errors.

2.4 Scope of the system

Like other sectors, the health sector of Bangladesh is getting better and more digital. Methods of providing doctors services to control and improve the quality of medical services are becoming more prevalent. And part of this is to make the prescription of doctors' prescriptions more sophisticated and computerized, so that every year, the number of people who suffer from bad handwriting prescriptions across the country is reduced. The application I created is just a small attempt to fix this problem. And nowadays people are slowly leaving the desktop applications and using the web applications. Since this application is a web application, it is in great demand in market.

2.5 Challenges

As a student, my main challenge is to maintain daily time schedule. Together with this,

- Make sure to provide the best UI (User Interface) to the doctors so that they leave the manual handwriting prescription and interested to use this application.
- Maintain proper database security and efficiency.

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Introduction

"Digital Prescription System" is a web based application that will provide to the physicians a simple and easiest way of giving prescription to the patient. Which will be useful to the doctor's chamber as well as the health institution. This system will also be able to maintain patient database which gives the physicians the scope of future research. In this chapter of my report, I will go through the discussion about the Requirement Specification for my project.

3.2 General System Requirement

There is some requirement to build this application. These requirements need to accomplish in order to run this project. A general list of software component has been given below to get an idea that what I used to build my project-

Software Requirement

- Windows operating system
- Browser (Google Chrome, Mozilla Firefox, Opera etc.)
- IDE (PhpStrome, Atom)
- XAMPP Control Panel

Programming Languages and Frameworks

- HTML5
- CSS3
- JavaScript
- Bootstrap 4
- JQuery
- Php OOP
- MySQL

3.3 Use Case Model of the System

The given use case diagram will describe that how many users are going to use this web application and also will give you an idea about the relation between the users.
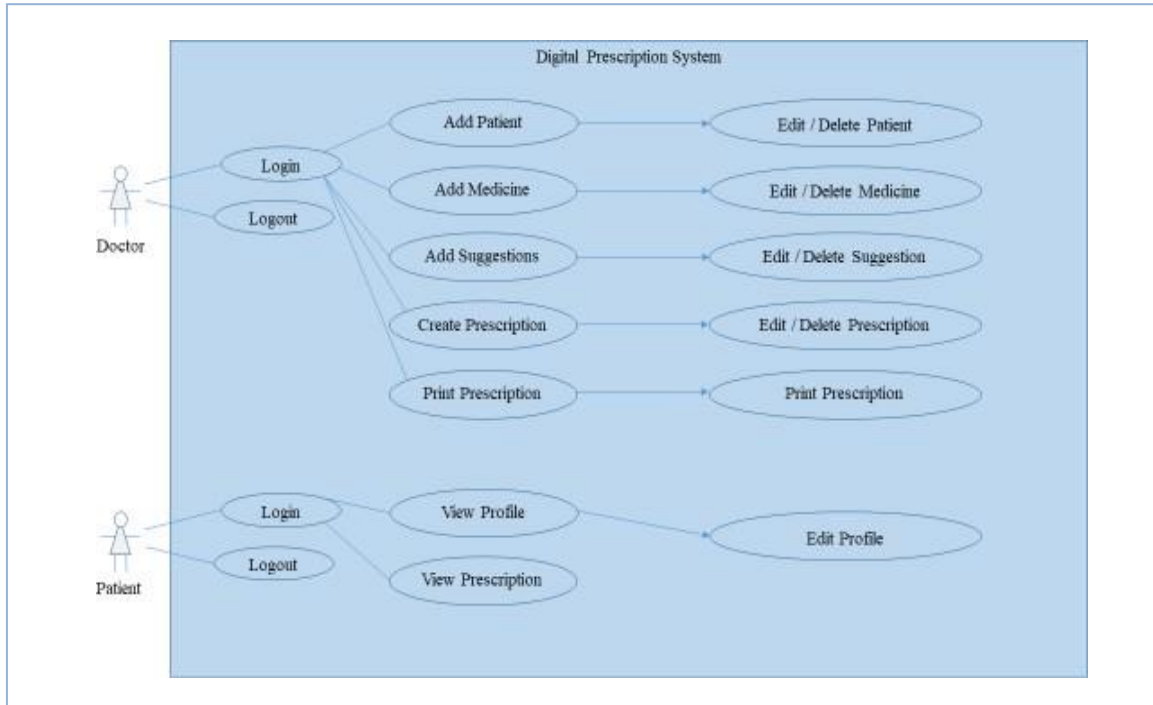

Figure 3.3: Use Case Diagram of full System

3.4 Use Case Description

The description of the given system use case model of (Figure 3.3) is given below. Every attribute will be discussed with a table containing 'Primary Actor', 'Secondary Actor', 'Pre-condition', 'Scenario' and 'Post-condition'.

Table 3.4.1: Use Case Description of Doctor Registration

Use Case	Register
Primary Actor	Doctor
Secondary Actor	Null
Scenario	- Enter Name - Enter Email - Enter Password - Re-enter Password - Click Sign-up
Post Condition	Register Successfully or Failed

Table 3.4.2: Use Case Description of Doctor Login

Use Case	Sign In
Primary Actor	Doctor
Secondary Actor	Null
Scenario	- Enter Email - Enter Password - Click Sign-in
Post Condition	Login Successfully or Failed

Table 3.4.3: Use Case Description of Add Patient

Use Case	Add Patient
Primary Actor	Doctor
Secondary Actor	Null
Scenario	- Enter Patient Name - Enter Patient Age - Enter Contact Number - Enter Patient Email (Optional) - Select Gender - Click Go Ahead
Post Condition	Go To Create Prescription Page or Failed

Table 3.4.4: Use Case Description of Create Prescription

Use Case	Create Prescription
Primary Actor	Doctor
Secondary Actor	Null
Scenario	- Enter Drug Name - Select / Enter Dose - Enter Drug Taking Schedule - Add More Field - Add Patient Dieses History - Click Print Prescription
Post Condition	Print Prescription Page or Failed

Table 3.4.5: Use Case Description of Edit Prescription

Use Case	Edit Prescription
Primary Actor	Doctor
Secondary Actor	Null
Scenario	- Enter Drug Name - Select / Enter Dose - Enter Drug Taking Schedule - Click Add More Field - Add Patient Dieses History - Click Print Prescription
Post Condition	Print Prescription Page or Failed

Table 3.4.6: Use Case Description of Add Drug

Use Case	Add Drug
Primary Actor	Doctor
Secondary Actor	Null
Scenario	- Enter Brand Name - Enter Generic Name - Enter Drug Strength - Enter Dosages Description - Enter Manufacturer Name (Optional) - Click Add
Post Condition	Drug Added or Failed

Table 3.4.7: Use Case Description Doctor Logout

Use Case	Logout
Primary Actor	Doctor
Secondary Actor	Null
Scenario	▪ Click Logout
Post Condition	Go To Login Page With Successfully Logout Or Failed

Table 3.4.8: Use Case Description Patient Login

Use Case	Logout
Primary Actor	Patient
Secondary Actor	Null
Scenario	▪ Enter Email ▪ Enter Password ▪ Click Login
Post Condition	Successfully Login or Failed

3.5 Requirement of Design

A design specification gives a details information about the project features to set principles of the project developers will need to meet. Its use is called where a structure or a system product has to be specially made to meet a need. Use case diagram has given a review of a framework by signifying the working technique figure and use case is signifying the relationship of the framework by their ability.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Frontend design

Frontend design is one of the main attractions of this application. This system is designed to keep doctors from using traditional handwritten prescriptions to make them use a digital prescription writing application. So when trying to design the application, it has been tried to be as user-friendly as possible. In this chapter I will talk about some of the main pages of the application I created and the use of them.

4.1.1 Doctor's Register Page

The first thing that comes up is the Registration Page for doctors. In order to use this web application, every doctor must be registered
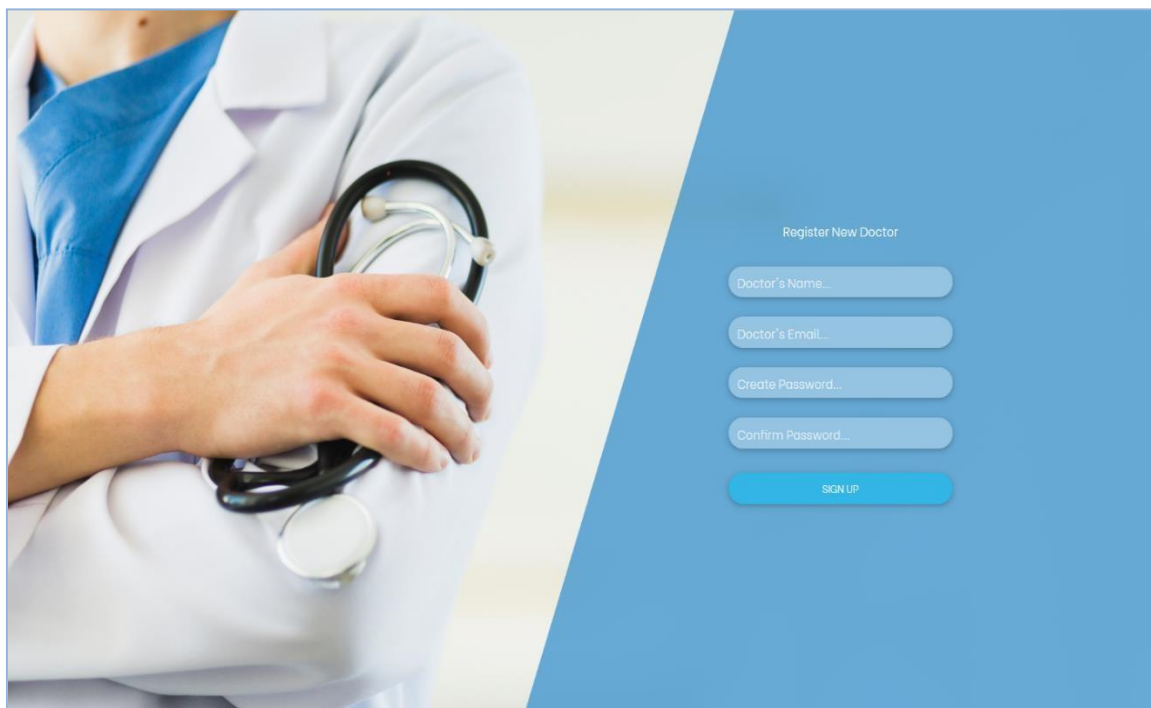
Figure: 4.1.1 Doctor Registration Page

4.1.2 Login Page

Like every application, this app has a login page whereby the doctor can login to the system with his user ID and password.
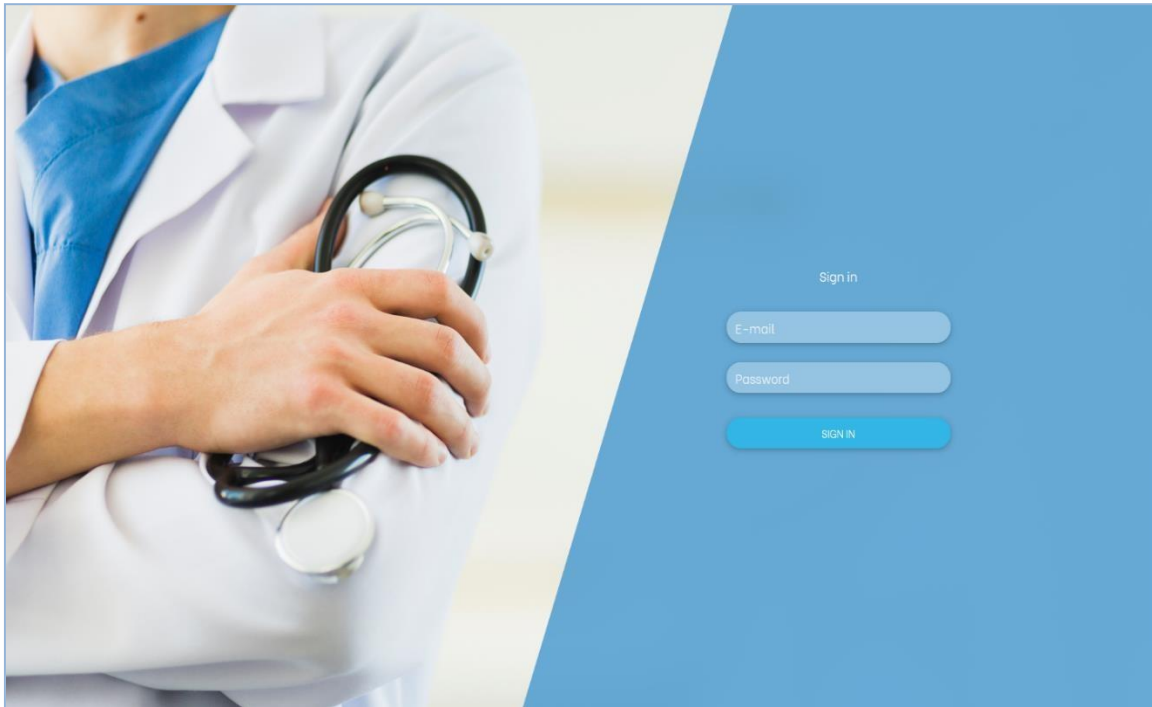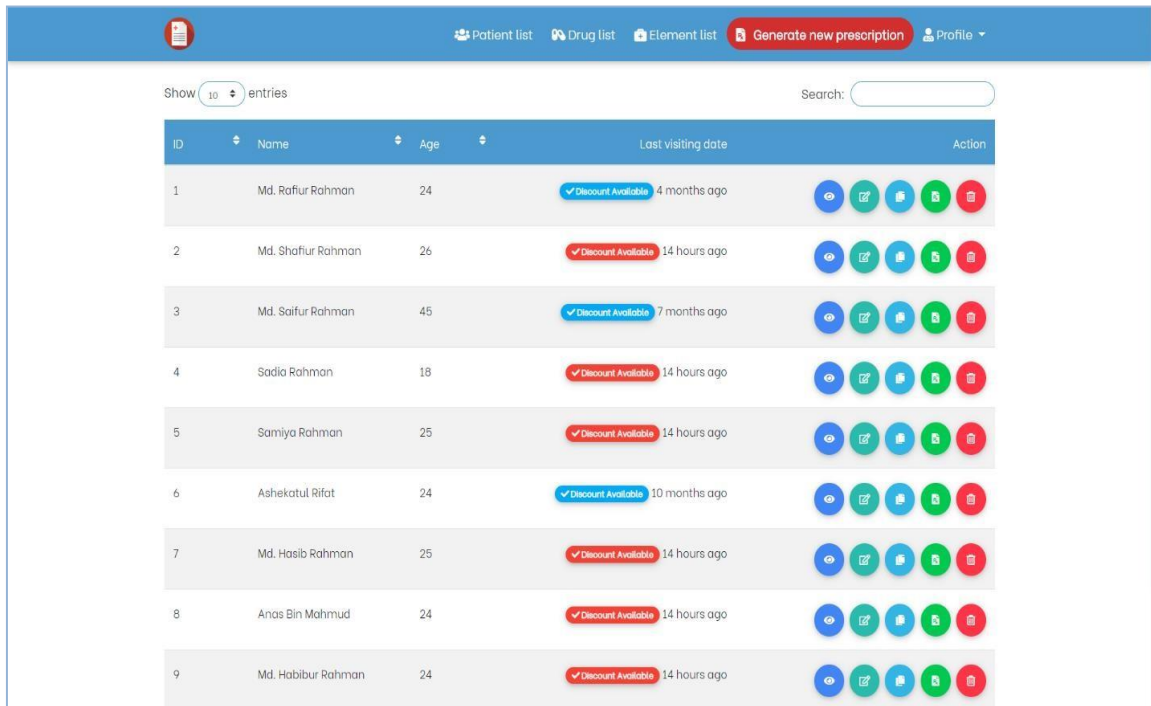
Figure: 4.1.2 Login Page

4.1.3 Home Page or Patient List Page

The page that doctors will log into immediately after login is the home page of this application where all the previous patient's information given. The doctor will be able to see a list of all visited patients. Doctors can easily search any patient within a second.

Figure: 4.1.3 Home Page or Patient List Page

4.1.4 Patient Profile

Now, let's talk about the action button of patient's list data table. There are five action button for each patient entry. From the left the first button is view patient full profile-
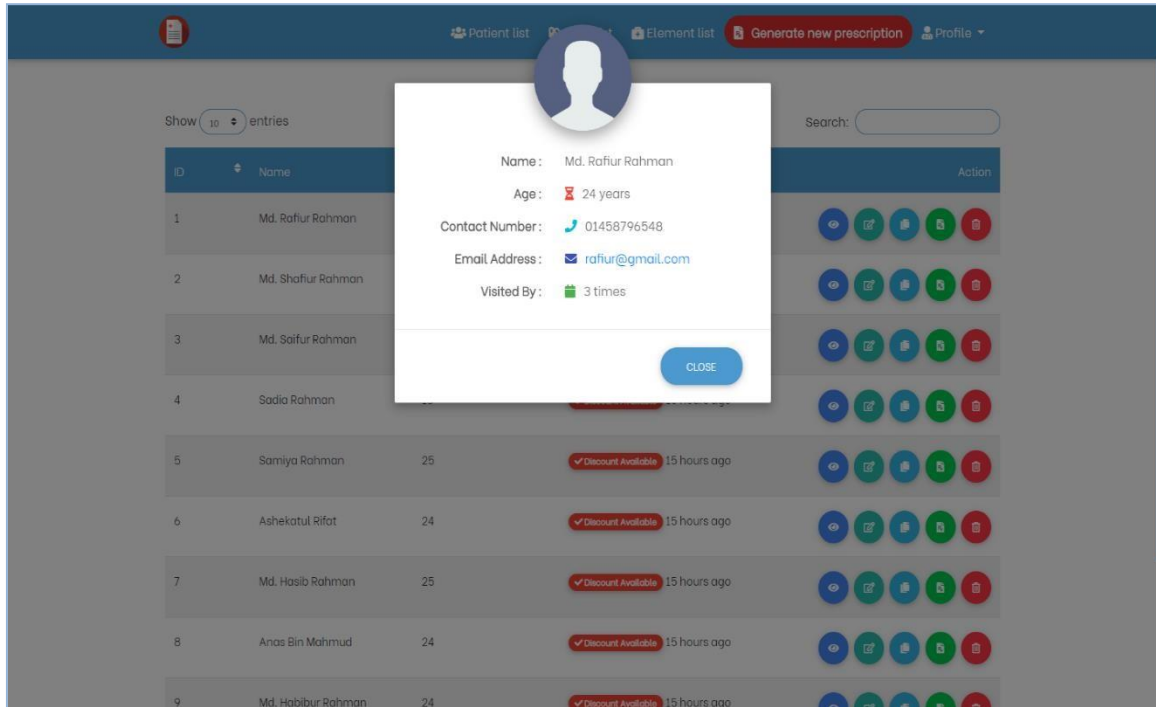

Figure: 4.1.4 Patient Profile

4.1.5 Edit Patient

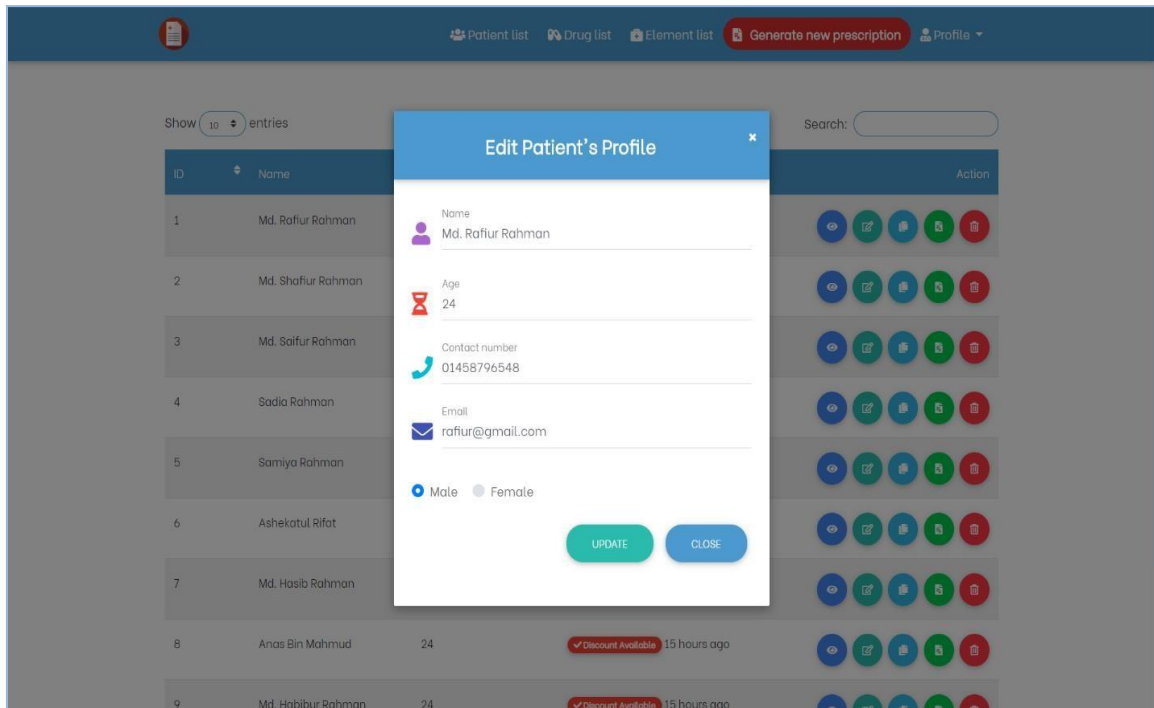The second button is for edit an existing patient information

Figure: 4.1.5 Edit Patient

4.1.6 Patient Previous Prescriptions

The third button is to view the list of a patient's all previous prescription. The next time a patient comes to the doctor for a checkup or for a new treatment, the doctor may need to see the patient's previous prescriptions. This benefit is given in view of that situation. The doctor will be able to see all the patient's previous prescriptions date wise.
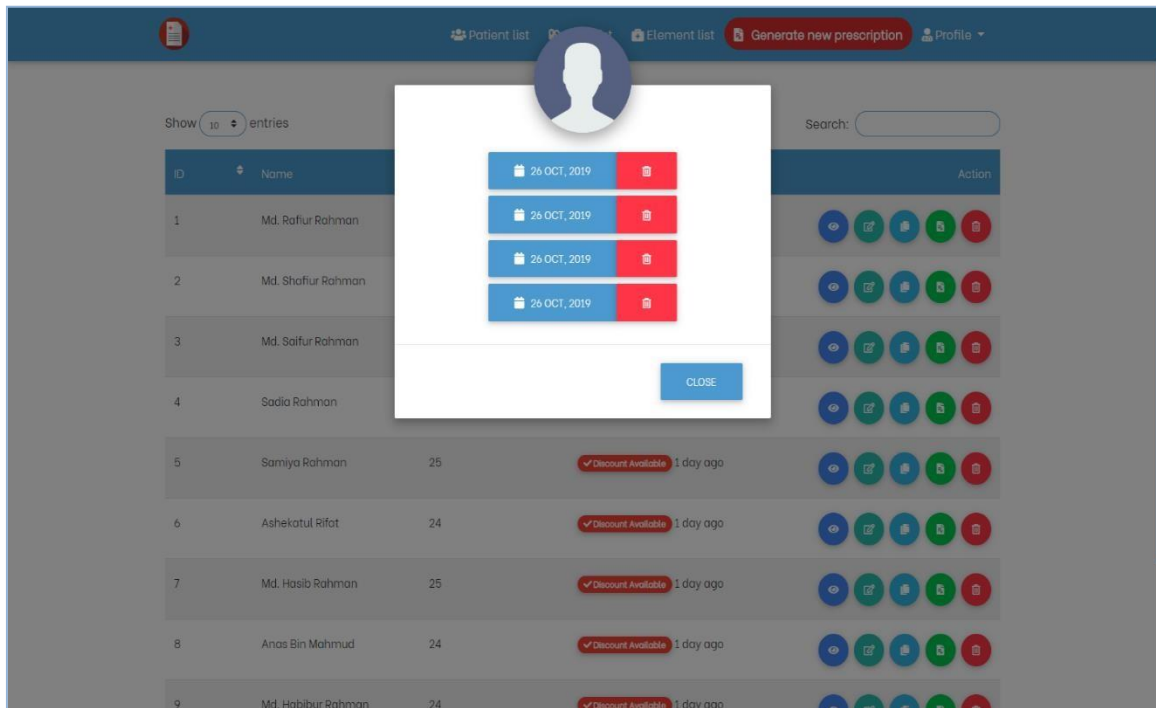

Figure: 4.1.6 Patient Previous Prescriptions

Also, doctor can delete any prescription from here.

4.1.7 Delete Patient

Last action button is to delete a specific patient entry. It's simply opens a popup window to alert the doctor if he/she actually want to delete the patient entry from record. 'Yes' to delete the patient and 'No' to continue.
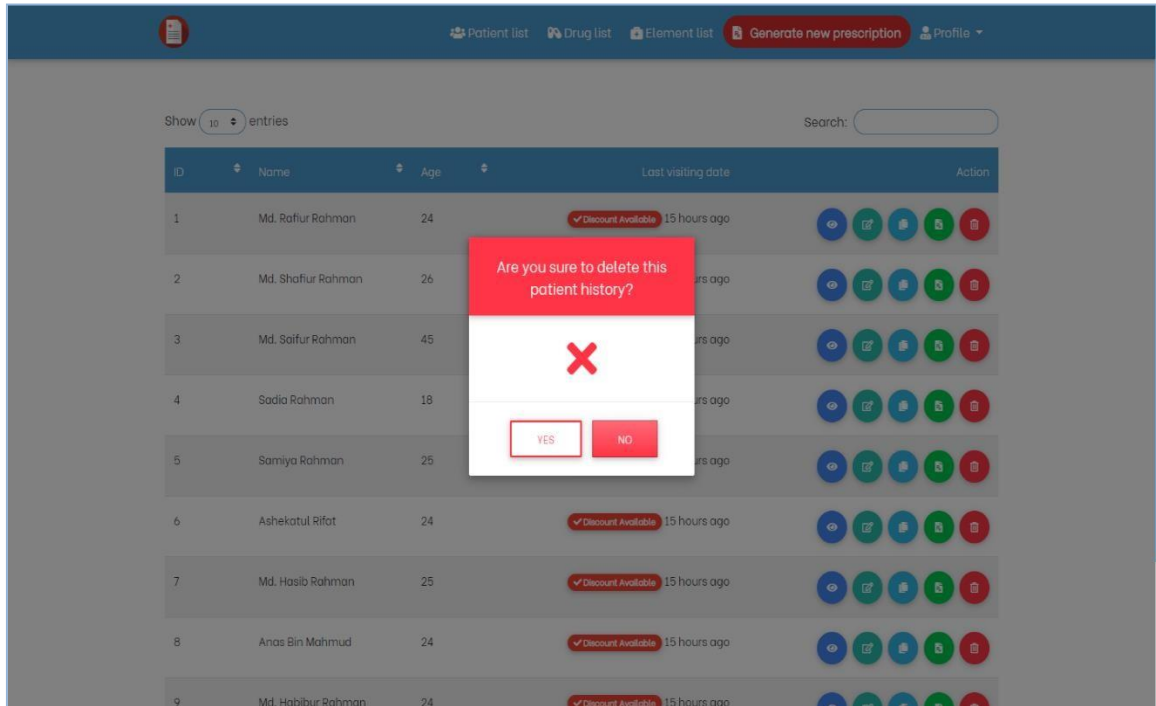

Figure: 4.1.7 Delete Patient

4.1.8 New Patient Entry

Now, comes the main featured UI of this application which is generate a new patient prescription. Before going to the prescription writing page doctor need to add some patient information to register the patient.
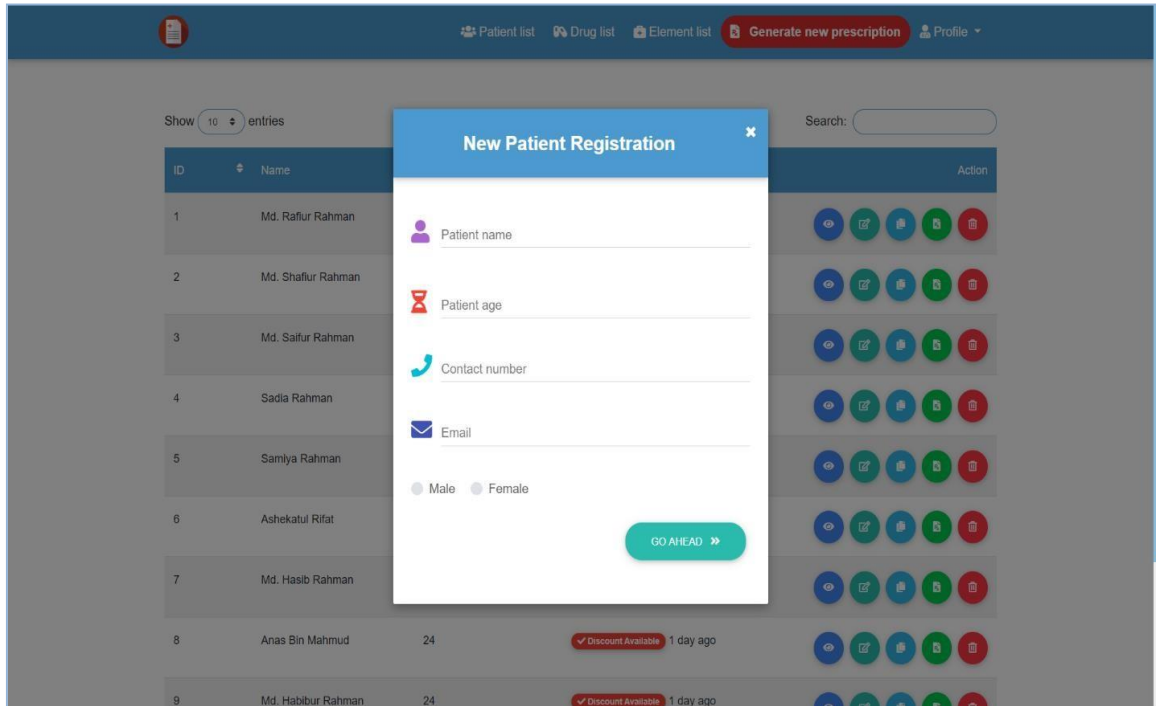
Figure: 4.1.8 New Patient Entry

4.1.9 Prescription Writing Page

This page is the more functional and the main page where a doctor can write a prescription for a specific patient easily. I try to build this page layout as like as a general prescription pad where the doctor's used to write their handwritten prescription so that they can feel like they are writing on a pad which makes the less complex.

Figure: 4.1.9 Prescription Writing Page

4.1.10 Print Prescription Page

After completing prescription with necessary medicines and other suggestions when doctor click the 'Print Prescription' button then a view of full pdf window open for print.

Figure: 4.1.10 Print Prescription Page

4.1.11 Drug List Page

Doctor's needs the drugs to create prescription. All the drug is up-to-date in the drug list page. Anyway if doctor wants to add a new drug or want to edit and remove one he/she can do this from this page
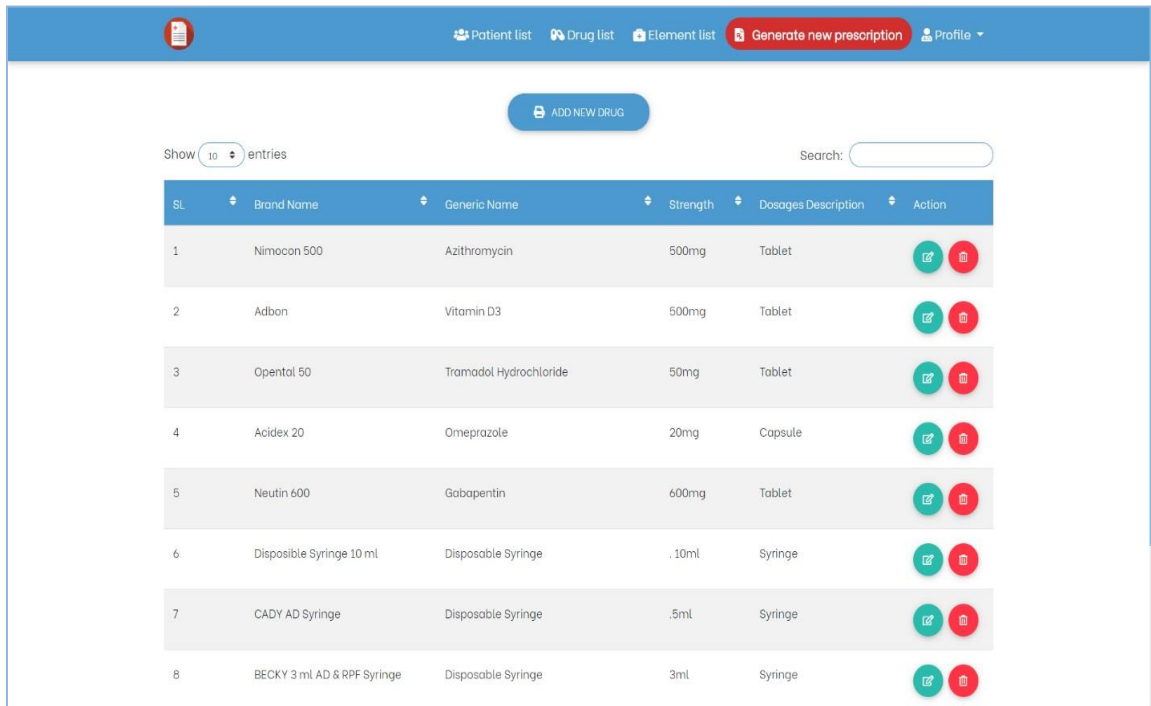
Figure: 4.1.11 Drug List Page

The drugs stored in the prescription pages will be auto-adjusted in the input field when the doctor writes the medicine. This will make prescription writing easier and faster, and doctors will not have to worry about spelling of the medicine.

4.1.12 Add New Drug

Doctor can add a new drug from the drug list page. Although, all the drugs is up-to-date
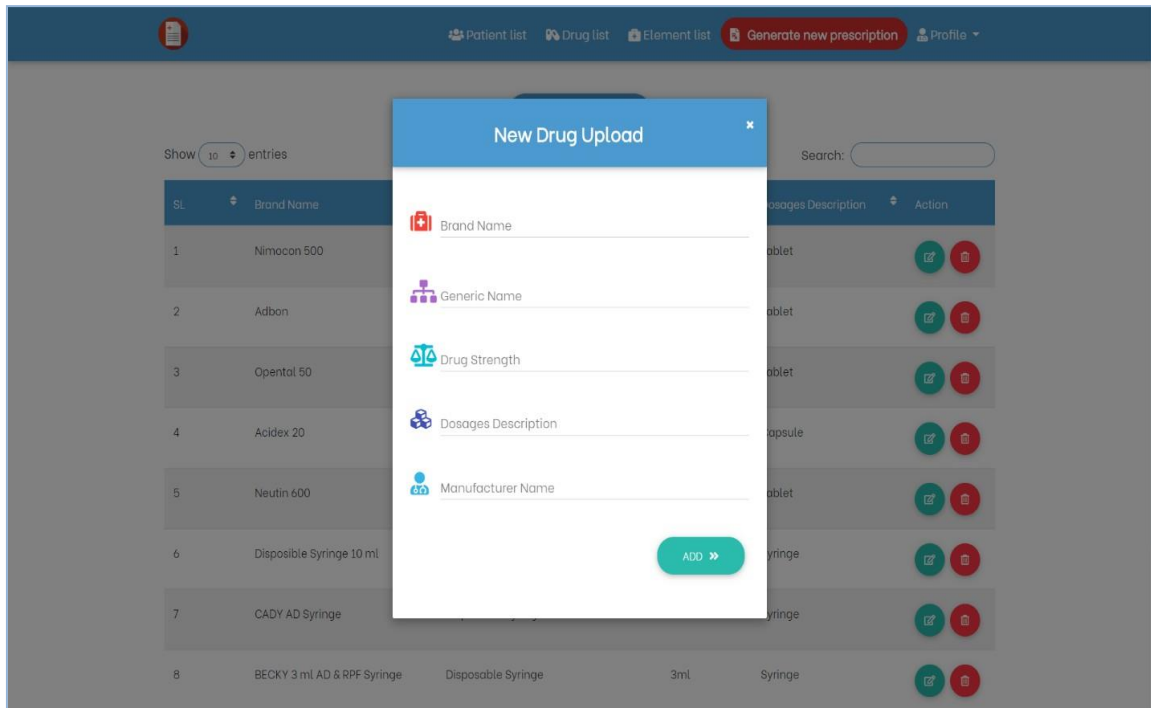
Figure: 4.1.12 Add New Drug

4.1.13 Element List Page

Doctor's need to use some suggestion or any health information about patient like- Chief complaints, Comorbidities, Drug History, Provisional diagnosis etc. to create a proper prescription. All these things will also suggest in the prescription page to easily write prescription for doctor's. Doctors can add new item of suggestion from these page.
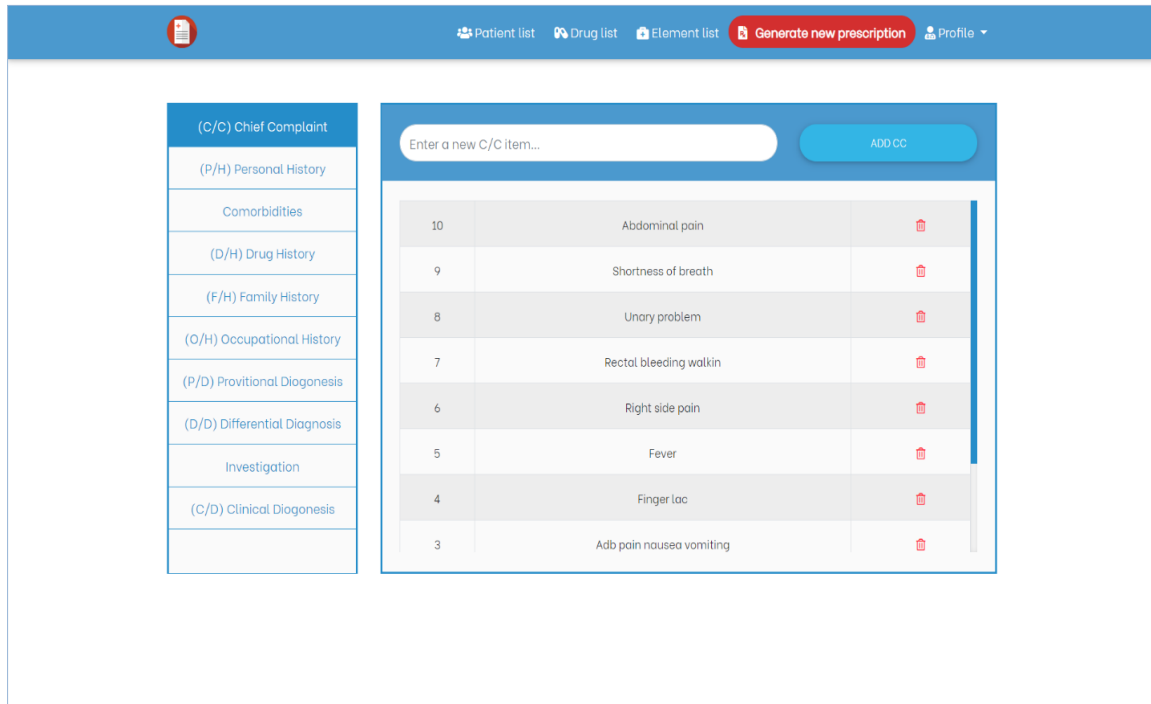
Figure: 4.1.13 Element List Page

4.2 Backend Design

Backend design (also stylized as back-end or back end development) is the skill that powers the web. Yet it does it modestly, Back end Development states to the server side of development where you are vitally centered on how the application functions will work. My backend is design and developed by-

- ▪ PHP OOP
- ▪ Laravel (The most popular and powerful php framework)
- ▪ MySQL Database

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Introduction

The primary purpose of this project is to identify common system issues and to provide a computer based automated prescription system by solving those problems. Once the project is successfully completed it will be delivered to the doctor's chamber for use with digital and complete computer-based prescriptions. For testing, each module will be tested separately but it will be combined and ultimately the input output and usability will be verified.

5.2 Implementation of Frontend design

Front end design and development is the technique by which an accustomed plan really gets portrayed on the web. Frontend design involves creating the HTML, CSS, and presentational JavaScript code that makes up a user interface. I have built up my front-end by HTML5, CSS3, JavaScript, JQuery and Bootstrap 4. My core design is based on JavaScript. Since JavaScript is a lightweight interpreted with first-class function. While it is the most well-known as the scripting language for the world of web application development. JavaScript is a prototype-based multi-paradigm, dynamic language, supporting object-oriented, imperative and declarative styles. It may be questioning why I have given JavaScript so much importance to my project.

The reasons behind-

- JavaScript is very easy to learn. No setup is required; it's built right into the web browser! Just start writing code and see the results immediately in your browser.

- No compilation needed.

- JavaScript is used everywhere…web browser, server-side, mobile, desktop, games, Internet of Things, robotics, virtual reality, etc.

- Easy to debug and test.

- Event-based programming language
- Gives OOP features also

Besides this, I also use the most popular framework Bootstrap and some helper plugin of JavaScript for making the frontend more attractive and user friendly.

5.3 Implementation of Interaction

In order to make my application (Digital Prescription System) more interactive I make the Graphical User Interface responsive so that it can be used from any kind of devices. Similarly, I tried my best to build a well-strong server to provide hassle-free service to the user. The design or UI of the system is user-friendly.

5.4 Implementation of Testing

Implementation testing generally refers to the process of testing implementations of technology specifications. This process assists the dual purpose of verifying that the specification is implementable in practice, and that implementations follow to the specification.

Table 5.4: Implementation of Testing

Test Cases	Test Input	Expected Outcome	Actual Outcome	Status	Tasted on
1. Doctor Register	Register via web browser using "Doctor Name", "Email", "Password" & "Conform Password"	Successfully register as doctor and go to home page	Successfully register as doctor	Pass	29 October, 2019
2. Doctor Login	Login via web browser using "email" & "password"	Successfully login as doctor	Successfully login as doctor	Pass	29 October, 2019
3. Create Prescription	Create prescription with necessary inputs and click "Print Prescription"	Successfully print a pdf copy of prescription	Successfully print a pdf copy of prescription	Pass	29 October, 2019
4. Password	Give incorrect or empty field in login form	Show alert for incorrect password or required password	Show alert for incorrect password or required password	Pass	29 October, 2019
5. Logout	Click "Logout" button	Successfully logout	Successfully logout	Pass	29 October, 2019

5.5 Test Result and Report

The test report is required to reflect testing result in a proper way, which gives a scope projected testing results speedily. Implementation is the way towards putting an activity for the detailed planning. Before I implement, the arrangement must to have been finished and my goal should be cleared. Testing in every last one of those activities I planned in the system is said to be implementation trying. If the system passes through all types of testing, then it is ready to launch so that I can carry out the results as the benefits of usability testing.

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

6.1 Discussion and Conclusion

The system will help physicians to manage and maintain patient's prescription. It will save time and reduce the erosion of medicine caused by poor handwriting by physicians. Through the system, patients will be able to make a specific doctor's appointment. The system is still in service. The system will come with more upgrades and new features day by day in future. This can be fixed in a variety of ways. It will be upgraded with further evaluation reports and I also plan to expand to every medical organization that needs the digital prescribing method.

6.2 Further Development and Future Scope

- This application features will be updated gradually for better user experience
- All new and upcoming features will be added based on doctor's and patient's feedback
- User Interface will be developed gradually so that doctors can feel more comfortable than manual system
- In the future, the system will be designed to allow physicians to easily research patients' medical data.
- Data protection will be more updated and standardized so that no one can misuse it.
- I will take UX (User Experience) and security as a major part to be enhanced.
- As more users' information is in our database, further steps will be taken to ensure data safety.

REFERENCES

[1]   Learning about the working principals of an Electronic Prescription System <<
https://www.adsc.com/blog/how-an-electronic-prescription-works>>, Last accessed on 29
March 2019.

[2]   An Overview on Infrastructure of Digital Prescription and a Proposed Strategic Plan.
Journal of Health Management and Informatics written by Mohammad Keshavarz,
Shahabeddin Abhari, Last accessed on 5 January 2019.

[3]   A comparative review of electronic prescribing system
<<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5348854/>>, Last accessed on 29 March
2019.

[4]   Bangladesh court orders doctors to write legibly. Article on tribiun.com. Published on
10   January   2017   <<https://tribune.com.pk/story/1290177/bangladesh-court-orders-doctors-
write-legibly/>>, Last accessed on 2 December 2018.

[5]   Poor   handwriting   remains   a   significant   problem   in   medicine
<<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1676338/>>, Last accessed on 29 March
2019.

[6]   Electronic   Prescription   System   for   Pediatricians
<<https://arxiv.org/ftp/arxiv/papers/1707/1707.02341.pdf>>, Last accessed on 9 April 2019.

[7]   Health   System   in   Bangladesh: Challenges   and   Opportunities
<<https://www.researchgate.net/publication/276105127_Health_System_in_Bangladesh_Challen
ges_and_Opportunities>>, Last accessed on 8 May 2019.

[8]   Learn   about   use   case   diagram   from
<<https://www.tutorialspoint.com/uml/uml_use_case_diagram.htm>>, Last accessed on 29
October 2019.

[9]   Learn Laravel PHP framework, available at <<https://laravel.com/>>, Last accessed on
1 October 2019.

[10]   Learn   JavaScript   PHP   framework,   available   at
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