

Smart Health Care System for Nilphamari

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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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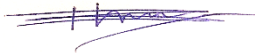
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APPROVAL

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We hereby declare that, this thesis base project has been done by us under the supervision of Mr. Abdus Sattar, Assistant Professor of CSE Department, 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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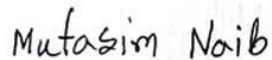
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ABSTRACT

In this pandemic situation, the whole world is fighting for life. In our country, there are so many crises for medical equipment like lack of oxygen, ICU bed, etc. So we tried our best to make this project flexible so one can easily get any information about the hospital. This e-medical management system is a mobile ERP with a distributed web-based application, developed to record and maintain the enterprise information details of doctors working, patients details and work details of any organization such as a hospital. Our project includes registration of patients in the cabin, storing their details into the system, and also computerized billing in the pharmacy, and labs. Our software has the facility to give a unique id for every patient and stores the details of every patient and the staff automatically. It includes a search facility to know the current status of each room. By using this system users can search for the availability of a doctor, availability of hospitals, and the details of a patient using the id, and also collect oxygen.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Web applications are essential for several reasons. They offer many advantages, one being they perform all of the necessary functions utilizing a web browser instead of installed software. Plus, cloud-based functionality has web apps becoming an essential component of business in today's expanding world. Organizations are embracing and creating web applications with the help of developers to meet their business demands. Here are five reasons to consider web apps.

1.2 Motivation

Our main motivation for this project develops a “**Smart Health Care System for Nilphamari**”. If our outcome is satisfied then we will broadly distribute our system.

Why we chose our project web-based?

There are several reasons we chose a web-based project. These are given below

- Competitive Edge
- Uses Numerous Platforms
- Avoid Restrictions
- Security
- Customer Support

1.3 Rationale of the Study

Actually Communication between a human user and a computer system, implying in particular to the use of input or output appliances with supporting software.

When we attached technology to the medical system, it will be helpful for all kinds of people in Bangladesh.

Bangladesh suffers from both a shortage of and geographic maldistribution of HRH. There are an estimated 3.05 physicians per 10,000 population and 1.07 nurses per 10,000 population (estimates

based on MoHFW HRD 2011). There is a severe gap between sanctioned and filled health worker positions: 36% vacancy in sanctioned health worker positions and only 32% of facilities have 75% or more of the sanctioned staff working in the facilities (World Bank, 2009). 28% of treatment provided in government health facilities is through alternative medicine (Ayurveda, Unani, and Homeopathy), yet as of June 2011, there was a 50% vacancy rate for alternative medicine providers (MoHFW AMC 2011).

1.4 Objectives

- Can search for the availability of a doctor and the details of a patient using the id.
- To make a decent management tool.
- To cut back the time taken through the manual system to take care of all the records.
- It also helps the incorrect maintenance of patient and patient details.

1.5 Expected Outcome:

We want change the manual system to a digital where didn't need to use the paperwork. All the daily basis information of the organization will be saved.

1.6 Report Layout:

Chapter 1: Introduction

This chapter describes work inspiration, motivation, project objective, and outturn of the program.

Chapter 2: Background

The background is important and this chapter discusses the background-related work such as comparison with other projects and finds out the problem of the project, the challenges which are face to do the project.

Chapter 3: Requirement Specification

This chapter defines many important things of the project are requirements such as the use case model, business process modeling, and the logical database.

Chapter 4: Design Specification

The purpose of this chapter is the design of the project. Two types of design which are front-end design and back-end design for this project. The proper implementation of the design is very important which describes this chapter in detail.

Chapter 5: Implementation and Testing

This chapter shows the implementation and testing system of the project by the project screenshot. After completion of any project, testing data and its success tell if the project ready to live.

Chapter 6: Conclusion and Future Scope

Every project has some limitations and how it can be overcome and also the future implementation scope is discussed in this chapter.

CHAPTER 2

BACKGROUND

2.1 Introduction

The advent of the internet has changed the world in a big way. In this modern world, we are becoming more and more dependent on online-based technology. we rely on the internet for each and everything in life. We tried to make an online web-based android application named Smart Health Care System For Nilphamari by which it will be easy to remotely maintain the Hospitals, Diagnostics, Doctors, and the Patients' activity.

2.2 Related Works

There are some related works which is given below:

Dactarachen: This System is designed especially for doctor appointment. Some of their features is unavailable. And there is no option for Hospital's owner also there is no list of diagnosis test cost.

Medicsbd: I would like to mention that it's an online reading platform.

Sebaghar: Its slightly related to our project. I tried myself several times and I don't get any confirmation from them.

2.3 Scope of The Problem

The abundance of the internet is low but it increasing rapidly. The maintenance of an internet connection system is not good in our country and also the price is enormous. Most of the villages have not exist any internet connection yet. Proper training is also needed for rural peoples otherwise it can fail to reach the valuable sign.

2.4 Challenges

Every task has challenges. For this project, we also face challenges and try to cope with them. Some main challenges describe in below-

1. As we know it is our web base android application so lack of internet connection is our main challenge.
2. We should build our application properly and make sure it works smoothly and also user-friendly.

3. Making our system fully secured.
4. Data privacy and maintenance is one of the most challenging for us.

CHAPTER 3

REQUIREMENT SPECIFICATION

3.0 Requirement Collection and Analysis

This Web application is basically for all users because it's fully responsive. For smooth work, this application requires a very simple configuration.

Hardware configuration required:

- Android Smartphone.
- Desktop
- Laptop

Software configuration required:

- OS: Android, Windows.
- DB: MySql.

It also provides the following requirements that are required:

- Data accuracy
- Efficiency of working
- Real-time location data show
- User friendly
- Effective

3.1 Features:

1.User:

- Make appointments
- Overview of the Hospital System, and cost.
- Contact the doctor immediately.
- Can book the equivalent room.
- Can view the equivalent medical equipment.

2. Hospital Admin:

- Better communication with chronically ill patients.
- Can accept or decline patient's request.
- More complete and accurate patient information.
- Configure the room management.
- Organize the whole system such as fix the price of lab tests, cabin, and others.
- Discharge the patient from the portal.

3. Doctors:

- Can see the list of patients who request an appointment.
- Can see the patient's diagnosis test.
- Make prescription easily by using our system
- Can give diagnosis tests from the portal.

4.Admin: An Admin can update full system. They have a page where contain there's information.

- Admin has an ID and password.They control system to need to login there's ID and password.
- Admins are work in Owner authorizations.
- Owners and administrators both have all permissions, including posting listings, editing the organization's profile, and managing the permissions of other administrators, but an owner has control over other owners as well as administrators.
- They have dashboard also.

3.2 Use Case Modeling and Description:

A use-case model is a model of how different types of users interact with the system to solve a problem. First of all, Super Admin needs to log in to access the functionality and to add the Admin or other actors which is showing in the use case as include.

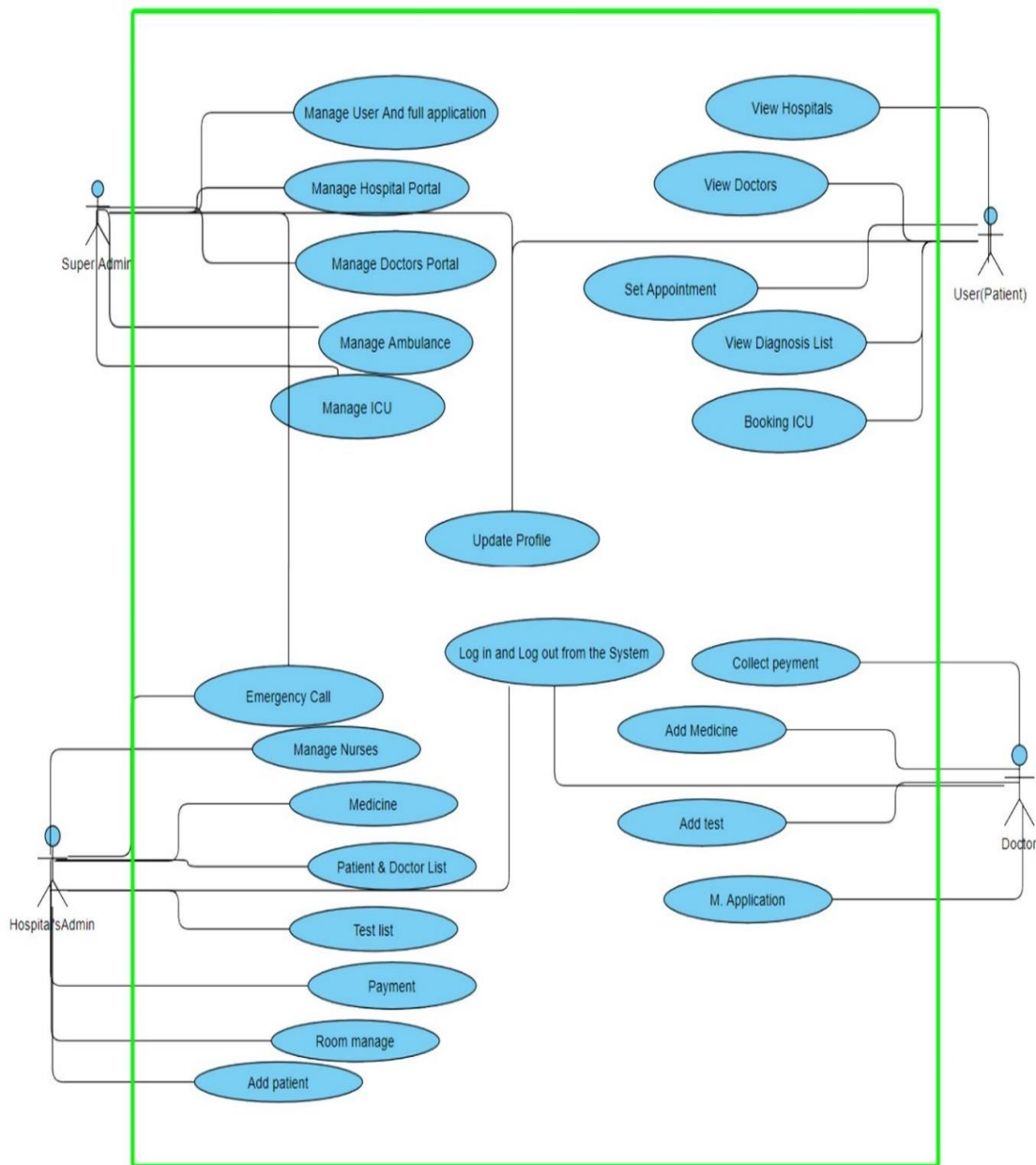


Fig 3.2.1 Use case Modeling and Description

3.3 Entity Relationship Diagram and Description:

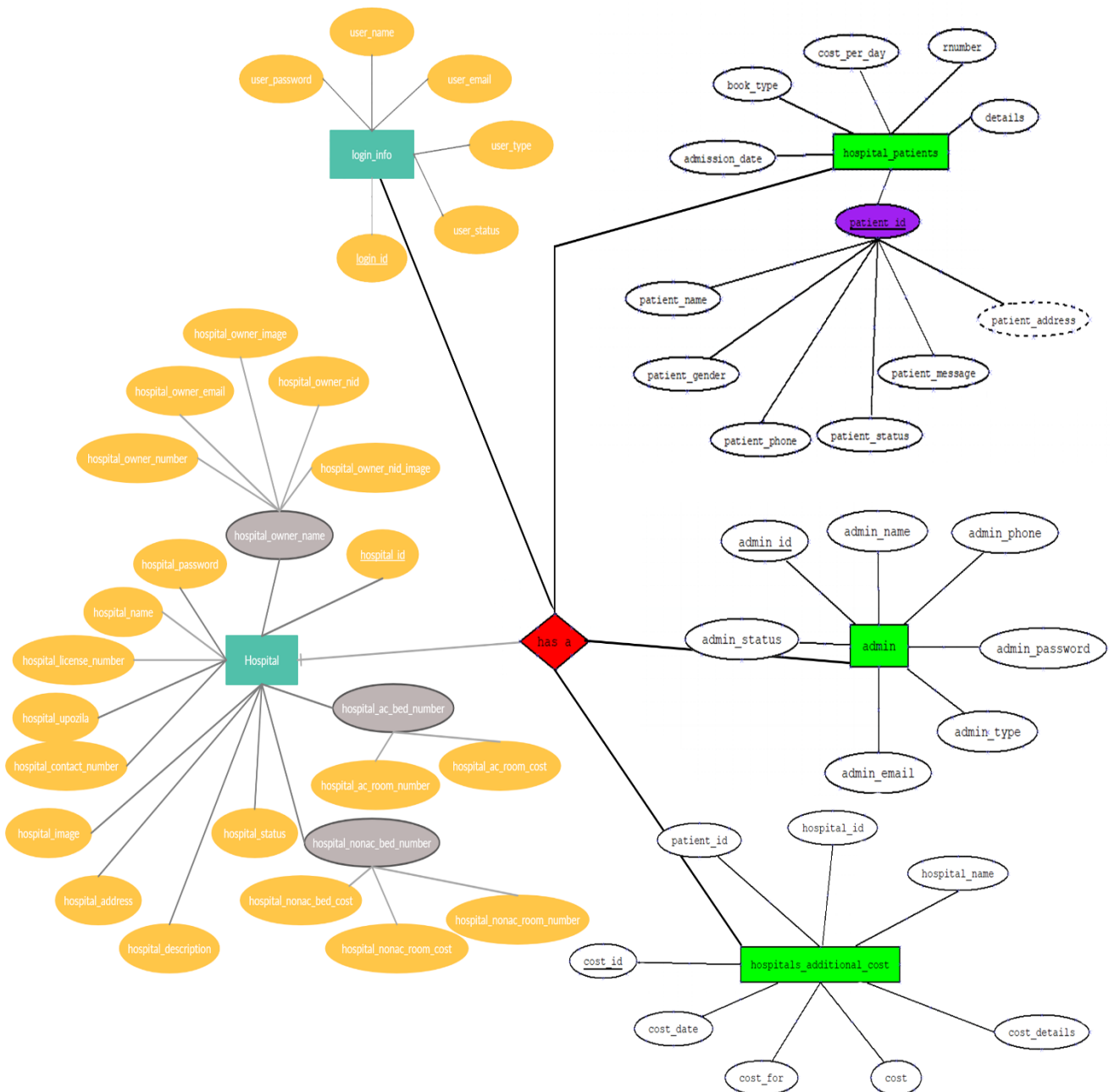


Fig 3.3.1 ER Diagram

3.4 Logical Data Model:

All the data will have to remain in the database which shows below the Logical Data Model figure and it will be the current time responsible. Firstly, data will transfer from database to website or web version and after that, it will transfer to android application. That means the mobile application will take all the data from the website, which makes the application lighter.

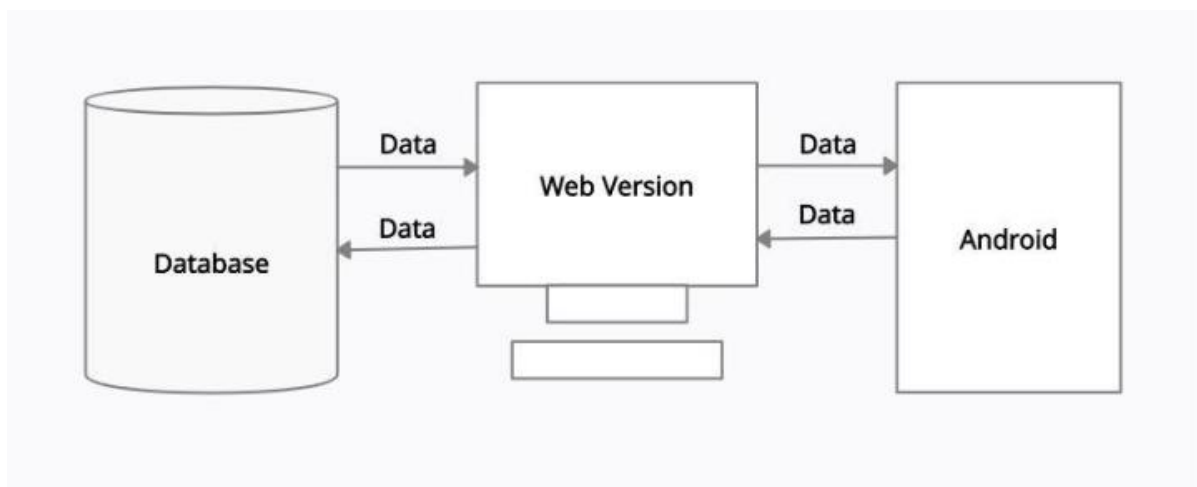


Fig 3.4.1 Logical Data Model

3.5 Design Requirements:

Design requirements are very important for the website and mobile application. It attracted the user to use. So, to complete the design we required the proper website and mobile application design skills. For this, we have to know the various types of computer programming languages. Market analysis can be a good trick for the design. We have to give proper attention to design the database so that it works appropriately and easy way.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-End Design:

Front-End design is one of the best parts's for directly interact with the user. So that consider this factor we make a user friendly, easier to handle and smoothly working design. Here Every customer can easily able to handle this application. We use some front-end technology to design this tremendous application. Those are –Asp.net MVC, HTML-5, CSS-3, Bootstrap-4, Javascripts, jquery etc.

The image displays two side-by-side login form designs for an E-medical system. Both forms are enclosed in a teal border and have a white background.

Left Form: E-medical Hospital Login

- SIGN IN**
- Login to your Hospital account
- Email address
-
- Password
-
-

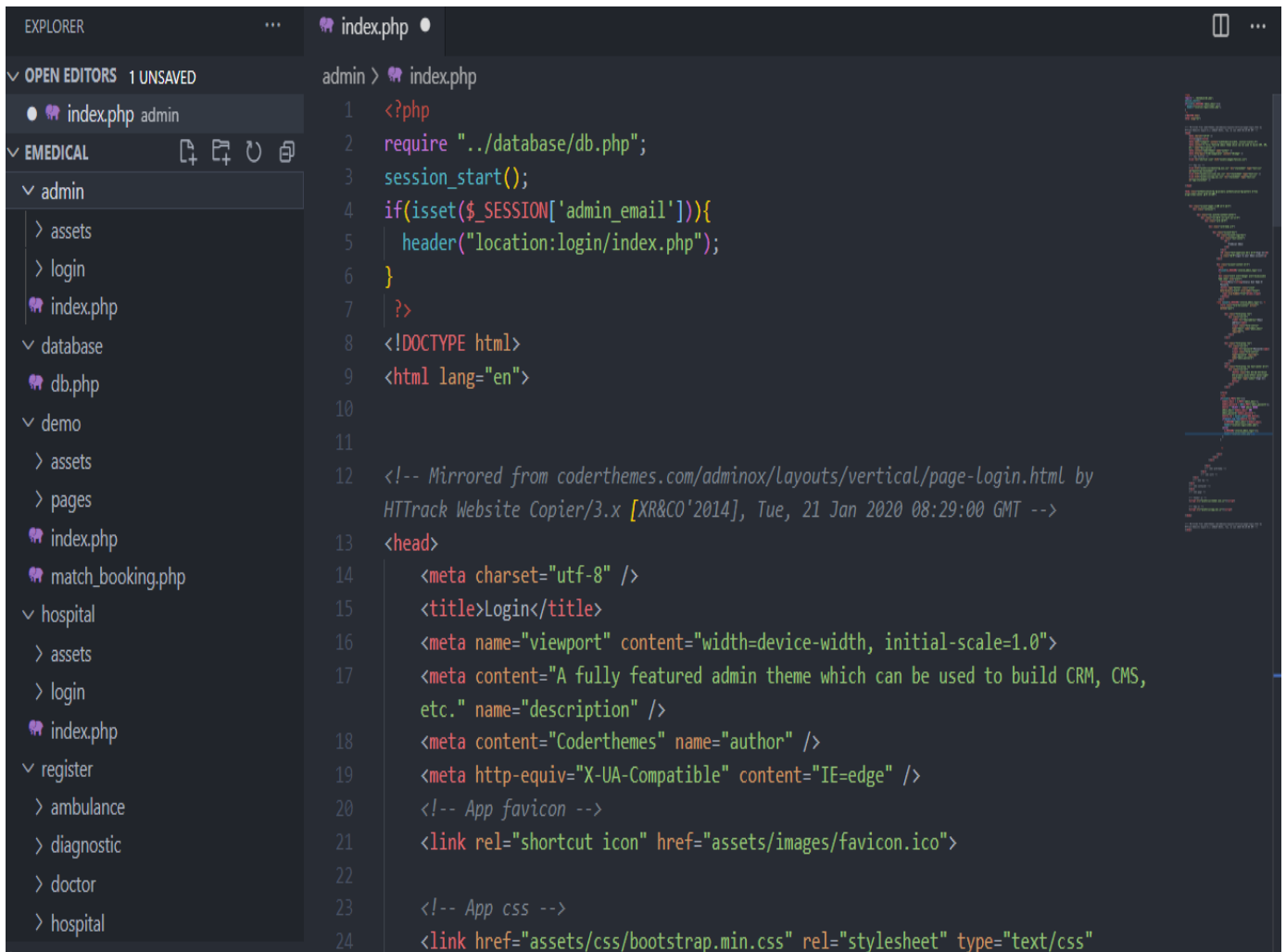
Right Form: E-medical Admin

- SIGN IN**
- Login to your Admin account
- Email address
-
- Password
-
-

Fig 4.1.1 Front-End Design view

4.2 Back-End Design

Basically, in programming back-end means rendering server-side. Usually, the backend consists of three parts: an application, a server, and a database. For the database, we use



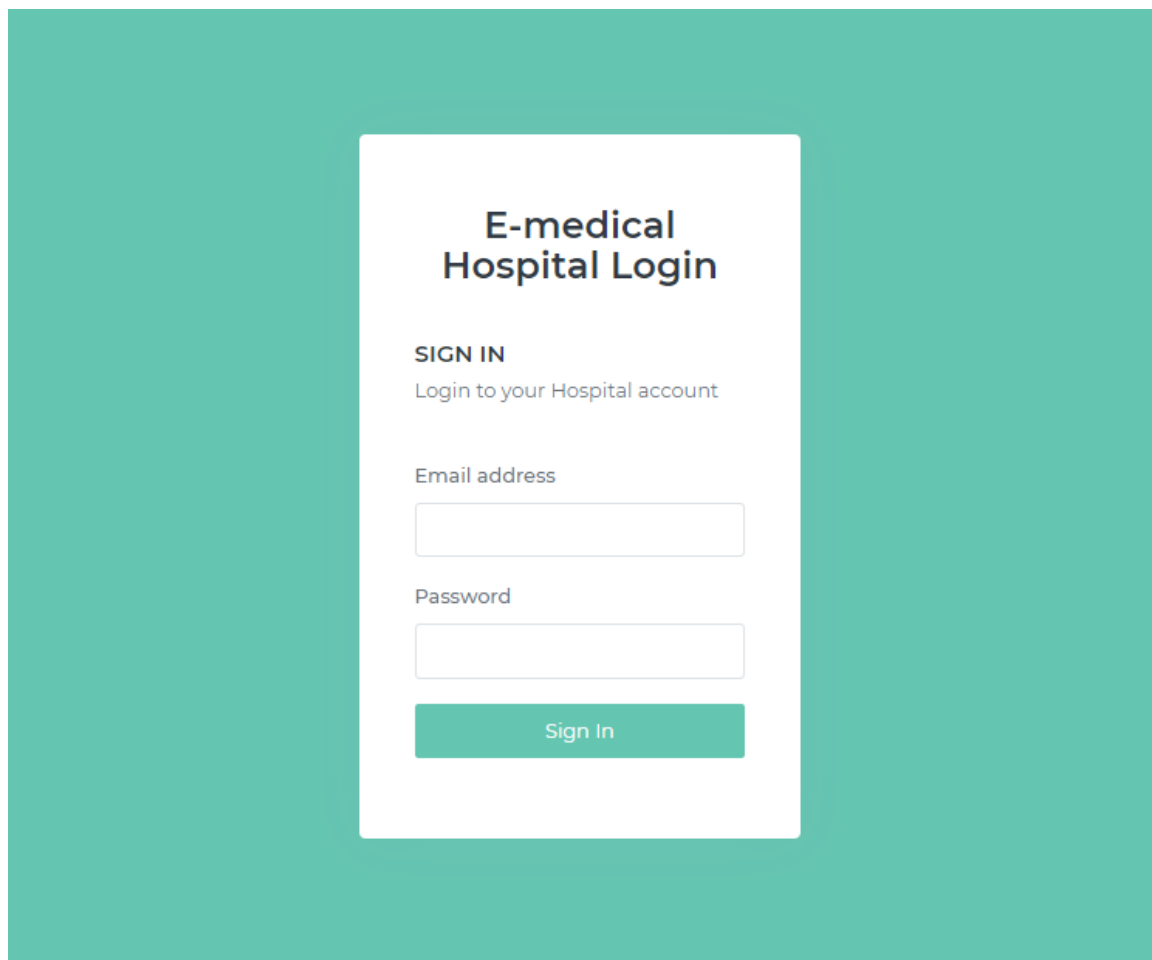
```
1 <?php
2 require "../database/db.php";
3 session_start();
4 if(isset($_SESSION['admin_email'])){
5     header("location:login/index.php");
6 }
7 ?>
8 <!DOCTYPE html>
9 <html lang="en">
10
11
12 <!-- Mirrored from coderthemes.com/adminox/layouts/vertical/page-login.html by
13 HTTrack Website Copier/3.x [XR&CO'2014], Tue, 21 Jan 2020 08:29:00 GMT -->
14 <head>
15     <meta charset="utf-8" />
16     <title>Login</title>
17     <meta name="viewport" content="width=device-width, initial-scale=1.0">
18     <meta content="A fully featured admin theme which can be used to build CRM, CMS,
19     etc." name="description" />
20     <meta content="Coderthemes" name="author" />
21     <meta http-equiv="X-UA-Compatible" content="IE=edge" />
22     <!-- App favicon -->
23     <link rel="shortcut icon" href="assets/images/favicon.ico">
24     <!-- App css -->
25     <link href="assets/css/bootstrap.min.css" rel="stylesheet" type="text/css">
```

MySQL server. Some back-end technology is PHP, jquery, Javascript, ajax, Bootstrap.

Fig 4.2.1 Back-End Design View

4.3 Interaction Design and UX

We try to make our project UX design as simple as possible. Because we research on the internet and visit the various site, we able to find out that more engagement happened on simple UX design applications. So, we make our application design as simple as possible.



4.3.1 Interaction Design and UX

4.4 Implementation Requirements

It was our first management-related work so we had to learn a lot of new technology and spend huge time to full fill all the requirements. We need to think about our unique UX design.

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of Database

Database design and implementation of the database are very fundamental for any kind of data storage. In this project, we used MySQL Server which is a relational database management system. Database design doing makes sure that actually how to represented to the data table. The database has two procedures, one is logical and another one is physical. The database collects too much data for its data model.

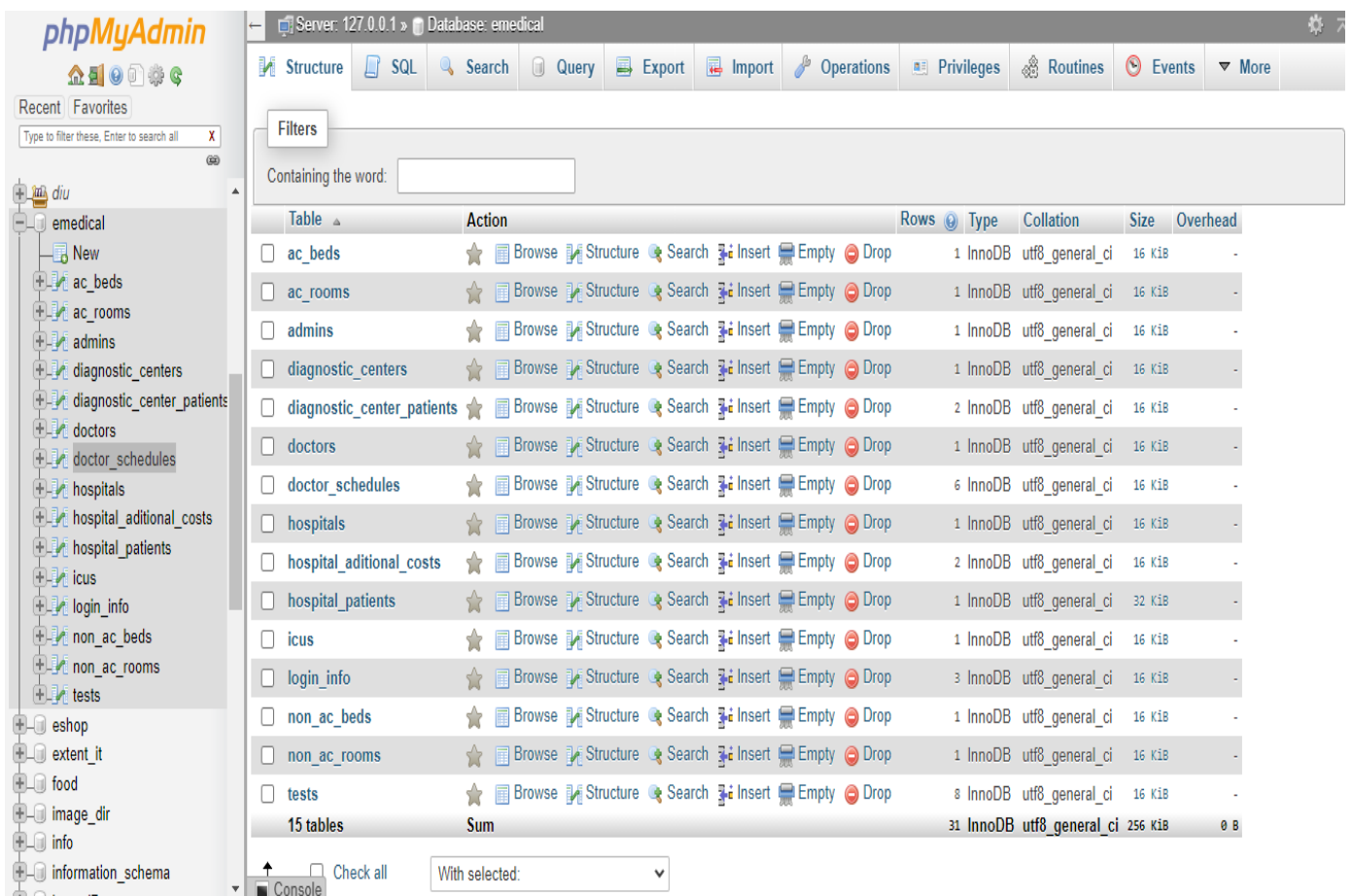


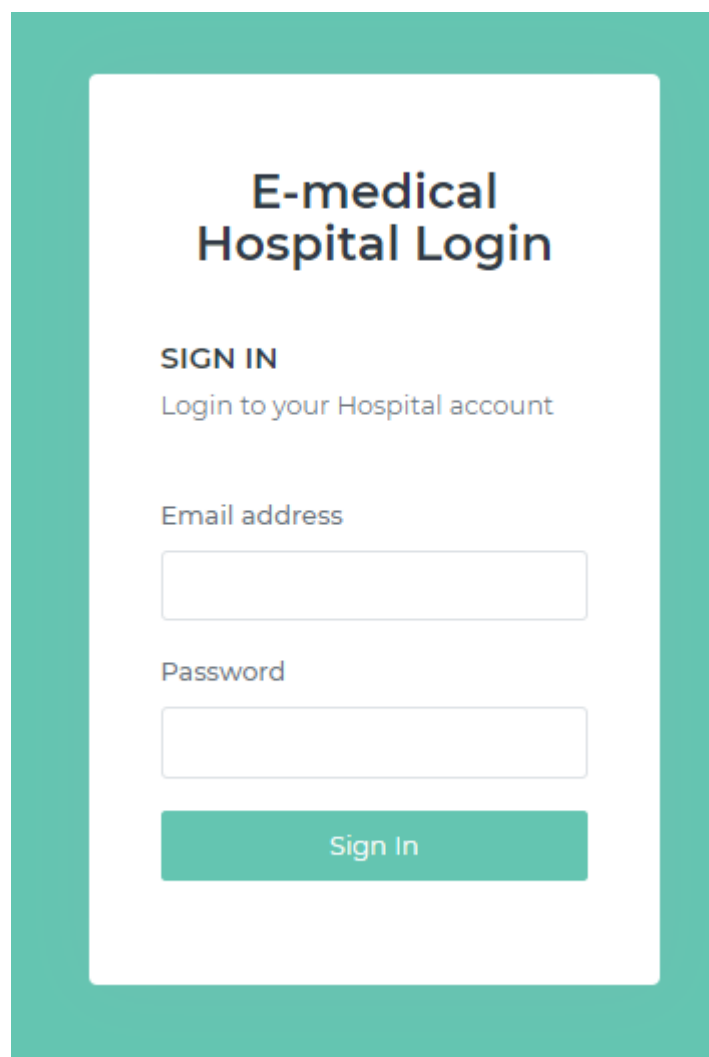
Fig 5.1.1 Database sample view

5.2 Implementation of Front-end Design

Front-end design is very essential because of its visualization to the users. Developing a design for a site, all time we have to consider the user-friendly and smooth front end. It is very difficult to make the perfect design that attracted all.

Login View

In the login view, we have the project title, logo, fields for taking login information, and a login button.



The image shows a login form for an E-medical Hospital. The form is centered on a white background with a teal border. At the top, the title "E-medical Hospital Login" is displayed in a bold, black font. Below the title, the text "SIGN IN" is shown in a smaller, bold, black font, followed by the subtitle "Login to your Hospital account" in a regular black font. There are two input fields: "Email address" and "Password", both with light gray borders. Below the "Password" field is a teal button with the text "Sign In" in white.

Fig 5.2.2 Login view

Home View

Home view which shows a cover photo that looks good. On the right side, the key features – Home Page, Our Services, Register, Login, About Us, Booking track are shown.

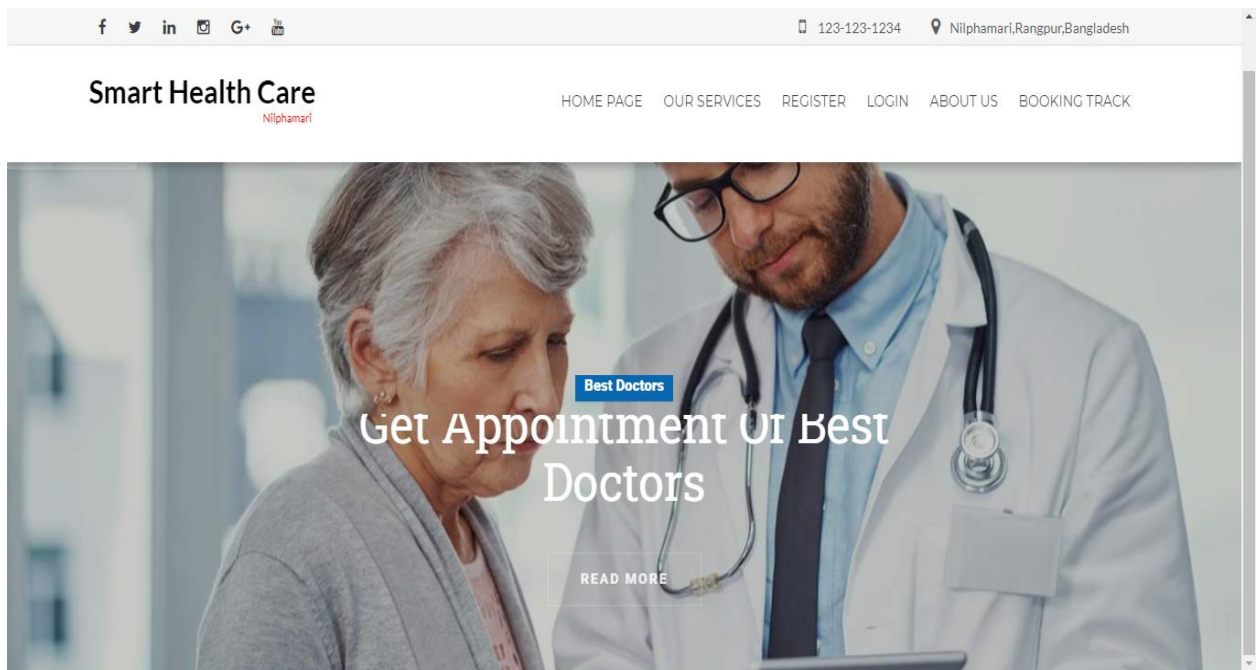


Fig 5.2.3 Home View

5.3 Implementation of Interactions

Hospital's owner view:

The screenshot displays the Adminox Hospital Management interface. The left sidebar contains navigation options: Hospital Management, Non Ac Bed, Ac Bed, Non Ac Room, Ac Room, ICU, Patient, Calendar, and LogOut. The main content area is titled 'Available Non Ac bed' and includes two input fields: 'Available Non Ac bed' (value: 223) and 'Non Ac bed Cost Per Day' (value: 500). There are 'Update' and 'Available' buttons. Below this is a 'NON AC BED PATIENT LIST' table with columns: S/N, Bed Number, Patient Name, Contact Number, Admit Date, Discharge Date, and Action. The table contains one entry for a patient named 'System Architect' from 'Edinburgh' with contact number '61', admitted on '2011/04/25', and a discharge cost of '\$320,800'. The interface also features a search bar, a 'Show 10 entries' dropdown, and a 'CHOOSE DEMOS' button on the right.

S/N	Bed Number	Patient Name	Contact Number	Admit Date	Discharge Date	Action
1	System Architect	Edinburgh	61	2011/04/25	\$320,800	\$320,800

Fig 5.3.1 hospitals owner view

Controlling patient Request:

The screenshot displays the Adminox Patient Request List interface. The left sidebar contains navigation options: Hospital Management, Patient, Patient Request, Admitted Patient, Discharged Patient, Calendar, and LogOut. The main content area is titled 'PATIENT REQUEST LIST' and includes a search bar, a 'Show 10 entries' dropdown, and a table with columns: S/N, Patient Name, Contact Number, Date, Sex, Type, and Action. The table is currently empty, displaying the message 'No data available in table'. The interface also features a 'Showing 0 to 0 of 0 entries' message and 'Previous' and 'Next' buttons.

S/N	Patient Name	Contact Number	Date	Sex	Type	Action
No data available in table						

Fig 5.3.2 Controlling patient request view

5.4 Testing Implementation:

Hospital's Owner Form:

HOSPITAL REGISTRATION FORM

Basic Information

Hospital Name Hospital License Number Upazila

Hospital Contact Number Hospital Email Set A Password

Hospital Owner Name Hospital Owner Number Hospital Owner Email Hospital Owner NID

Hospital Owner Image N..n Owner NID Image N..n Hospital Image N..n

Hospital Address

Bed Information

Total Number Of Non A.C Bed Non A.C Bed Cost Per Day Total Number Of A.C Bed A.C Bed Cost Per Day

Room Information

Total Number Of Non A.C Room Non A.C Room Cost Per Day Total Number Of A.C Room A.C Room Cost Per Day

Hospital Description

Want to go back to our website? [Go Back](#)

Fig 5.4.1 Hospital's owner form view

Diagnostic center's Form:

DIAGNOSTIC CENTER REGISTRATION FORM

Basic Information

Diagnostic Center Name Diagnostic Center License Number Upazila

Diagnostic Center Contact Number Diagnostic Center Email

Diagnostic Center Owner Name Diagnostic Center Owner Number Diagnostic Center Owner Email Diagnostic Center Owner NID

Diagnostic Center Owner Image N..n Owner NID Image N..n Diagnostic Center Image N..n

Diagnostic Center Address Diagnostic Center Description

Already have an account? [Sign In](#)

Fig 5.4.2 Diagnostic center's Form view

Doctor's Form:

DOCTOR REGISTRATION FORM

Basic Information

Doctor Name Doctor License Number Doctor Department

Doctor Contact Number Doctor Email Set A Password

Doctor NID Image No file chosen Doctor Image No file chosen

Doctor Address Doctor Degree

Patient's Registration for Hospital:

Step 1: Choose the hospital name and select view details

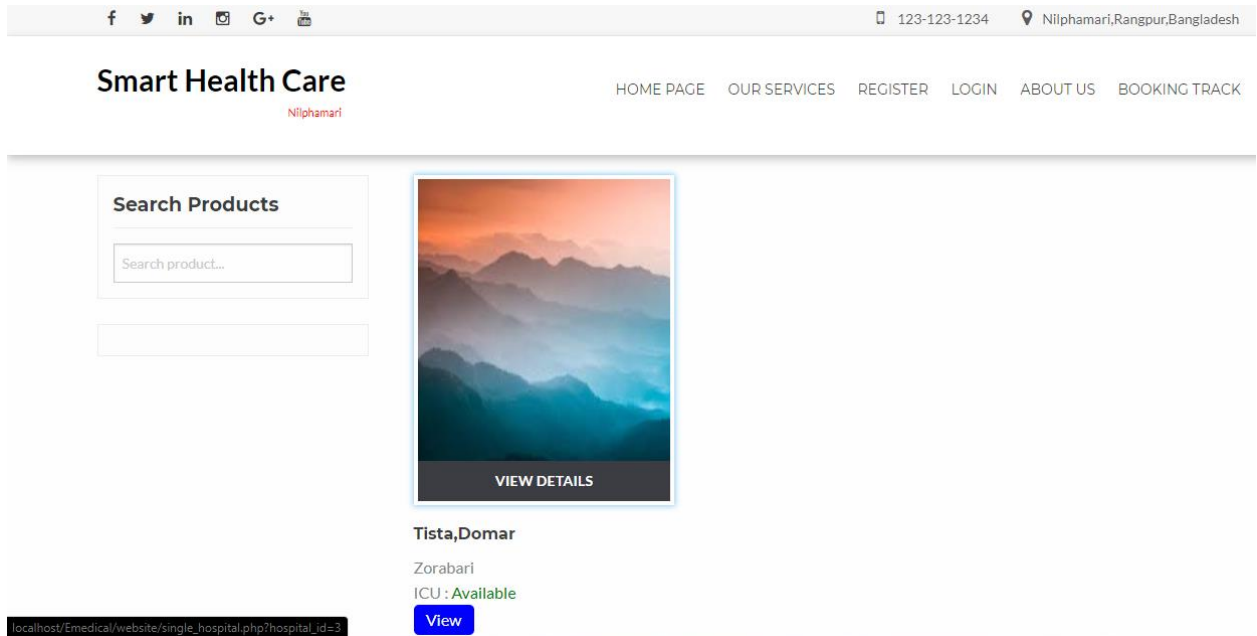


Fig 5.4.3 Patient Registration

Step 2: Then fill the form with your information and wait for the confirmation from the hospitals. You will get an SMS.


Book Hospital

Patient Full Name *


Patient Phone *

Patient Gender Male Female

Booking Date *

Select Type *

Cost(1 day 1 person 1 bed/room/icu) Taka

Patient Message *

5.5 Test Results and Reports: Invoice paper for hospital’s cost: You can receive your invoice online

Tista , Domar

Patient Name : ss
 Patient Phone : 01763353113
 Patient Gender : Male

Billing Address
 Domar

Invoice

Discharge Date: 2021-05-01
 Discharge Time: 17-33-48
 Patient ID: 8

S/N	Cost For	Duration	Cost	Cost Date
1	Ac_Room	1 Days	(1 * 2500) = 2500 Taka	2021-05-01
2	ecg	-	500	2021-05-01
3	Ac_Bed	-	1000	2021-05-01

Sub-total: 4000 Taka

Fig 5.4.4 Invoice paper for hospital’s cost view

Invoice paper for diagnostic test: also test

www , Domar

Patient Name : ss
 Patient Phone : 123456
 Patient Gender : Male

Billing Address
 Zorabari

Invoice

Test Date: 2021-05-03
 Test Time: 5.30 pm
 Patient ID: 2

S/N	Cost For	Cost	Cost Date
1	Echocardiogram	200	2021-05-03
2	Chest X-rays	500	2021-05-03

Sub-total: 700 Taka

VAT (0): 0 Taka

Fig 5.4.5 Invoice paper for the diagnostic test.

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

6.1 Discussion and Conclusion

Every organization, whether big or small, has human resource challenges to overcome. Every organization needs different management therefore we design an exclusive E-medical management system that is adapted to managerial requirements. This is designed to assist in strategic planning and will ensure that organization is equipped with the right level of human resources to reach future goals. Also, for those busy executives who always on the go, our system comes with remote access features, which will allow you to manage your workforce anytime, at all times. Those systems will ultimately allow you to better manage resources and transport like an ambulance. One of the main features of this management system is time tracking for patients. Effective time tracking and transportation saves human life.

6.2 Scope for Further Developments

Limitation of time, knowledge, and experience, we can't develop some key features of our project. In the future, we want to develop those features for sure one by one. We think those features will make our application more attractive and diligent to all. Those features are –

- Develop this system with Laravel framework
- Prescription management system
- User's direct interaction with hospitals and doctors.
- Request feedback.
- Publish the IOS version.
- Publish an android application.
- Better Oxygen management during covid-19 crisis.

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