

# Design and Implementation of E-Diagnostic Information System

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Submitted in partial fulfillment of the requirements for the degree of  
Bachelor of Science in Computer Science and Engineering



**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING  
SONARGAON UNIVERSITY (SU)**

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# APPROVAL

The project titled "**Design and Implementation of E-Diagnostic Information System**" submitted by Rimon Paul(CSE1901016096), Nayne Sotradhar(CSE1901016031), Asaduzzaman (CSE1901016032), Md. Mehedi Hasan (CSE1901016052), and Mahanuz Akter Sabbo (CSE1901016020) to the department of Computer Science and Engineering, Sonargaon University (SU), has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Engineering and approved as to its style and contents.

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# DECLARATION

We, hereby, declare that the work presented in this report is the outcome of the investigation performed by us under the supervision of **Bulbul Ahamed, Associate Professor & Head**, Department of Computer Science and Engineering, Sonargaon University, Dhaka, Bangladesh. We reaffirm that no part of this project has been or is being submitted elsewhere for the award of any degree or diploma.

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## **ABSTRACT**

E-Diagnostic Information System is a system of getting the test information from all hospitals, designed to streamline the health test information. It has been architected to mitigate wrong information about the diagnostics center and test details. Before doing a test a patient needs to search which place will be convenient for him to go and in affordable price. Also it a patient can make booking before going to the hospital to medical test so a patient don't have to wait for long. This system is the solution of all kind of hassle a patient face test and booking related. To use this system hospital must input their details information and test details and patients need to sign in with their personal details to keep secure the site. This information system is controlled, maintained, and supervised by the admin to verify the patients and hospital. This system is a web-based application consisting of HTML, CSS, PHP, LARAVEL, MySQL, JavaScript, and Bootstrap a cross-platform accessible information system.

# ACKNOWLEDGEMENT

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Finally, our deepest gratitude and love to my parents for their support, encouragement, and endless love.

# LIST OF ABBREVIATIONS

CPU	Central Processing Unit
CSS	Cascading Style Sheets
DBMS	Database Management System
HTML	HyperText Markup Language
HTTP	HyperText Transfer Protocol
IE	Internet Explorer
IIS	Internet Information Services
JS	JavaScript
LAMP	Linux, Apache, MYSQL, PHP/Perl/Python
LARAVEL	OPEN SOURCE PHP FRAMEWORK
MySQL	My Structured Query Language
OS	Operating System
PC	Personal Computer
PHP	Hypertext Preprocessor
RAM	Random Access Memory
VS Code	Visual Studio Code
XAMPP	Multiplatform, Apache Server, MariaDB, Perl, PHP

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# CHAPTER 1

## INTRODUCTION TO E-DIAGNOSTIC INFORMATION SYSTEM

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### 1.1 Introduction

E-diagnostic information system is an information system that is designed to streamline the process of diseases awareness of a patient. It has been architected to know about the medical test price and mitigate long time waiting for a patient. To use this application both hospitals and patients are required to register within this information system. This information system is controlled and supervised by an admin team. Also, it will provide test information so that patients can prepare themselves before going for their required test. Comparison of prices and distances allows patients to plan where to go for tests from home.

### 1.2 Objectives

It is fully design to make patients life easier and comfortable some objectives of use E-Diagnostic Information System are given below

- Building people's life easy and comfortable
- No need to face any traffic congestion
- Lifetime test history of a patient
- Complete the payment online
- Book an appointment, and complete the test without waiting for a long time

### 1.3 Why EDIS?

E-Diagnostic Information System is a fully featured integrated solution to streamline the following purposes:

- DIS will control and keep records of each and every transaction between diagnostic and their patients in sophisticated manure.
- Every hospital will be identified by its name.
- Every patient will be identified by their profile.
- Patient can check their previous history of the test reports. Every patient's history will be stored in the database, which could be accessed when required.

### 1.4 Purpose of the Proposed System

The purpose of this information system is to reduce patient harassment about finding medical tests at a convenient cost and dealing with the hassle of traveling to the diagnostic center. A hospital will register with their details and input information about how a test will be conducted it's price, as well as the steps to be taken before and after. In many cases, the patient cannot provide his/her medical history properly. For this reason, sometimes doctors cannot treat the patient properly and quickly nor do they guide them with a narrower path to diagnose the real reason. In this system, a patient could browse their lifetime medication history if they want. After showing it to the doctor, he can prescribe a patient properly. To get information about test place price and booking an appointment before the test is the main purpose of our system.

## 1.5 Project Scope

Bangladesh's health care system, both public and private, is facing serious 'allegations' of wrong treatment of diseases for fake test reports which resulted in death. Casualty or disability of the patient. According to a recent study, 15% of the diagnostics center suggest inappropriate test reports as a result of which doctors prescribe the wrong medicine to their patients. DNCRP team fined Health Checkup Diagnostic Centre Tk50,000 for providing fake medical reports without running proper tests (From Newspaper "The Business Standard" 12-Jan-2023). In our country, 80% of medical services in rural areas provide wrong test reports. The study demonstrates that almost 9 out of 10 people are consulted by the quacks who are popular with quacks doctors from all socio-economic groups.

In most cases, patients have trouble locating where the test will be performed and wonder how much it will cost. They face traffic congestion while looking for where the test held. It is common for patients to wait long in the diagnostic center after making the booking, which can exacerbate their condition.

It will be very helpful for patients wanting to know information about the test that their doctor requires for them to be able to do so from home.

Another concern is, few have difficulty arranging the amount, for medical tests so they explore low-cost tests around the city which is not easy for a city like Dhaka.

This system will be beneficial for them to compare the cost and find the nearest diagnostic center without any hassle.

## 1.6 Advantage of the System

The advantage of using the system

1. This website will help the user to find different hospital and test details and price.
2. The main goal of this website is to help the patient to find the nearest hospital around where they live so that they can go there easily.
3. This project will save the cost of travel and reduce the harassment of traffic congestion.
4. Making appointment will help patient to avoid wait in the hospital. They can go hospital just before the medical test time which they booked for.

# **CHAPTER 2**

## **FEATURES AND FUNCTIONS OF THE PROJECT**

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### **2.1 Registration**

This function allows the hospital and patient to register as a user to interact with the system. The system requires the user to log in before using this application.

### **2.2 View only information online**

Patients, admin and hospitals will be able to view few sites, Like

- Patients are allowed to view their records online by logging in with their accounts.
- Admin are allowed to view and edit hospital profile by logging in with their accounts.
- Hospital can edit their information which is given by them.

### **2.3 View Booking and Test Report**

Hospital and patients view in the system based on booking and test report,

- The hospital will be able to see the appointment and give appointment time.
- The patient completes the payment method.
- Hospitals can upload the test report to the patient profiles.
- Patient can view their own details by login in using their account.

### **2.4 Functions of the Project**

User management: In this project, we have three types of users these are:

- Admin
- Hospital
- Patient

### **2.5 Admin**

An admin can have the following privileges to the system:

- They can view and edit hospital information in the system.
- They can upload the report to the patient's account in the system.

### **2.6 Hospital**

A hospital can have the following privileges to the system:

- They can view self-information in the system.
- They can upload and edit their information in the system for patients.
- They can see patient booking appointment for test and Schedule the time.

### **2.7 Patients**

The patient can have the following privileges to the system:

- They can view self-information in the system.
- They can see all the tests created by the hospital in the system.
- They can retrieve download and print any previous report if they want.
- They can book appointment for test.

# CHAPTER 3

## TOOLS AND TECHNOLOGY

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### 3.1 Tools & Technology

Below tools and technology used for development and production purpose,

- This project is a web application that is developed for cross platform.
- A Linux web server Running PHP V>5.4, MariaDB
- Database Design MySQL
- Front end Design (HTML, CSS & JavaScript, Bootstrap Framework)
- Back-end Design (RAW PHP, LARAVEL)
- Design purpose Adobe Photoshop
- Code Editor Vs Code

### 3.2 Server Specifications

For server specifications needed tools below,

- Processor: Intel Xeon 3.4GHz quad core or above
- Ram: 16GB of Memory
- 10G Link Connectivity
- Environment: LAMP Stack
- PHP Version: For MySQL & MariaDB Editions, PHP 5.4 or above
- Database: MariaDB 5.1 or above

The above requirements are for a production purpose. But for development we used XAMPP.

### 3.3 What is XAMPP?

XAMPP is a free and open-source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming languages. Since most actual web server deployments use the same components as XAMPP, it makes transitioning from a local test server to a live server possible.

XAMPP's ease of deployment means a WAMP or LAMP stack can be installed quickly and simply on an operating system by a developer, with the advantage that common add-in applications such as WordPress and Joomla! can also be installed with similar ease using Bitnami.

XAMPP is an abbreviation for cross-platform, Apache, MySQL, PHP and Perl, and it allows you to build WordPress site offline, on a local web server on your computer. This simple and lightweight solution works on Windows, Linux, and Mac - hence the "cross-platform" part.

Since WordPress isn't a stand-alone application, XAMPP provides two essential components for its installation - Apache, which is used to create the local server, and MySQL which you can use as a database for your website.

### 3.4 Components of XAMPP

As defined earlier, XAMPP is used to symbolize the classification of solutions for different technologies. It provides a base for testing of projects based on different technologies through a personal server. XAMPP is an abbreviated form of each alphabet representing each of its major components. This collection of software contains a web server named Apache, a database management system named MariaDB and scripting/ programming languages such as PHP and Perl. X denotes Cross-platform, which means that it can work on different platforms such as Windows, Linux, and macOS.

Many other components are also part of this collection of software and are explained below.

**1. Cross-Platform:** Different local systems have different configurations of operating systems installed in it. The component of cross-platform has been included to increase the utility and audience for this package of Apache distributions. It supports various platforms such as packages of Windows, Linus, and MAC OS.

**2. Apache:** It is an HTTP a cross-platform web server. It is used worldwide for delivering web content. The server application has made free for installation and used for the community of developers under the aegis of Apache Software Foundation. The remote server of Apache delivers the requested files, images, and other documents to the user.

**3. MariaDB:** Originally, MySQL DBMS was a part of XAMPP, but now it has been replaced by MariaDB. It is one of the most widely used relational DBMS, developed byMySQL. It offers online services of data storage, manipulation, retrieval, arrangement, and deletion.

**4.LARAVEL:** Laravel is an open-source PHP framework, which is robust and easy to understand. It follows a model-view-controller design pattern. Laravel reuses the existing components of different frameworks which helps in creating a web application. The web application thus designed is more structured and pragmatic.

**5. PHP:** It is the backend scripting language primarily used for web development. PHP allows users to create dynamic websites and applications. It can be installed on every platform and supports a variety of database management systems. It was implemented using C language. PHP stands for Hypertext Processor. It is said to be derived from Personal Home Page tools, which explains its simplicity and functionality.

**6. Perl:** It is a combination of two high-level dynamic languages, namely Perl 5 and Perl 6. Perl can be applied for finding solutions for problems based on system administration, web development, and networking. Perl allows its users to program dynamic web applications. It is very flexible and robust.

**7. phpMyAdmin:** It is a tool used for dealing with MariaDB. Its version 4.0.4 is currently being used in XAMPP. The administration of DBMS is its main role.

**8. OpenSSL:** It is the open-source implementation of the Secure Socket Layer Protocol and Transport Layer Protocol. Presently version 0.9.8 is a part of XAMPP.

**9. XAMPP Control Panel:** It is a panel that helps to operate and regulate other components of the XAMPP. Version 3.2.1 is the most recent update. A detailed description of the control panel will be done in the next section of the tutorial.

**10. Webalizer:** It is a Web Analytics software solution used for user logs and providing details about the usage.

**11. Mercury:** It is a mail transport system, and its latest version is 4.62. It is a mail server, which helps to manage the mail across the web.

**12. Tomcat:** Version 7.0.42 is currently being used in XAMPP. It is a servlet based on Java to provide Java functionalities.

**13. Filezilla:** It is a File Transfer Protocol Server, which supports and cases the transfer operations performed on files. Its recently updated version is 0.9.41.

### 3.5 XAMPP Format Support

XAMPP is supported in three file formats:

- **EXE-** It is an extension used to denote executable files making it accessible to install because an executable file can run on a computer as any normal program.
- **7z - 7zip file-** This extension is used to denote compressed files that support multiple data compression and encryption algorithms. It is more favoured by a formalist, although it requires working with more complex files.
- **ZIP-** This extension supports lossless compression of files. A Zipped file may contain multiple compressed files. The Deflate algorithm is mainly used for compression of files supported by this format. The .zip files are quite tricky to install as compared to .exe

Thus, EXE is the most straightforward format to install, while the other two formats are quite complicated and complex to install.

### 3.6 Audience

Our XAMPP tutorial is designed for the aspirants who want to test their website or application on a localhost webserver. This tutorial will help those who want to build their career as a front end or web developer.

### 3.7 Problem

We assure you that it will resolve all your queries related to XAMPP, and you will not find any problem in this tutorial. Still, if there is any mistake or discrepancy, please post the problem in the contact form.

### 3.8 XAMPP Control Panel

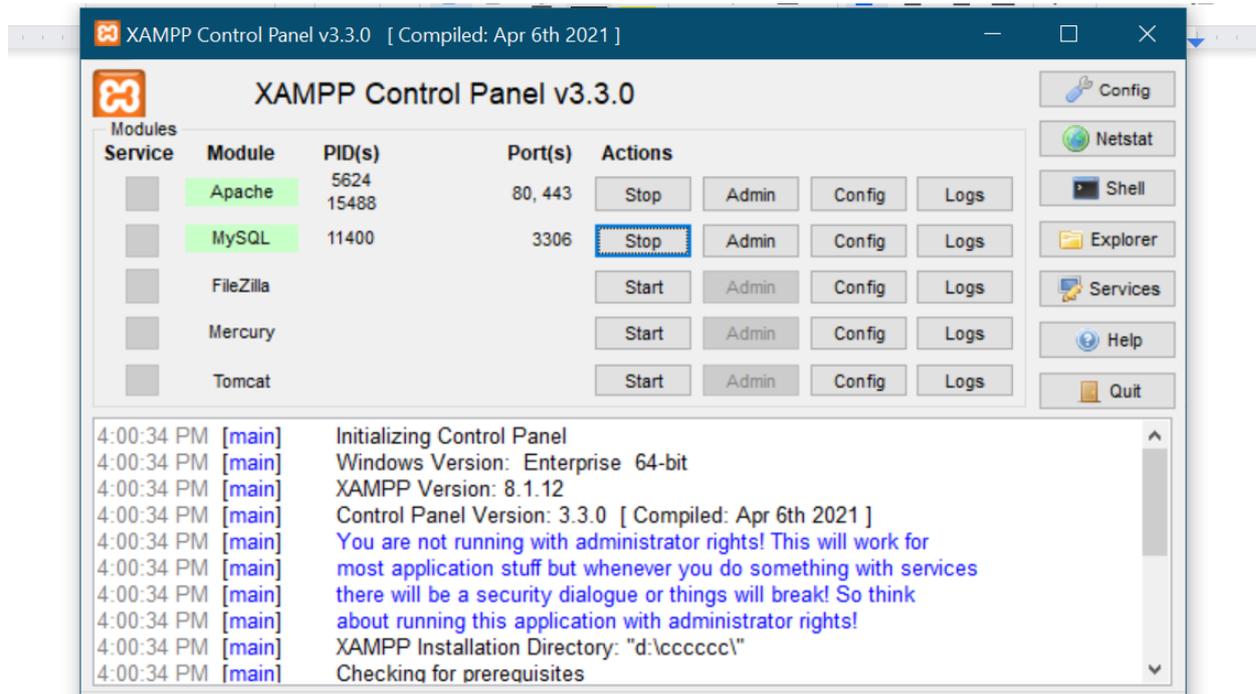


Fig 3.1: XAMPP control Panel

### **3.9 Why XAMPP?**

XAMPP helps a local host or server to test its website and clients via computers and laptops before releasing it to the main server. It is a platform that furnishes a suitable environment to test and verify the working of projects based on Apache, Perl, MySQL database, and PHP through the system of the host itself.

### **3.10 JavaScript**

JavaScript is a text-based programming language used both on the client-side and server-side that allows you to make web pages interactive. Where HTML and CSS are languages that give structure and style to web pages, JavaScript gives web pages interactive elements that engage a user.

### **3.11 HTML**

HTML is used to create the structure of the website. The User Interface part of the website constructed by HTML5. So that, it becomes more user friendly. The extended reach of information and services to users that the Internet has enabled, has created a new challenge for the developer. The developer should develop a user interface that is distributable, available on multiple platforms and supports a wide range of client environments from handheld wireless devices to high-end workstations. So, to maintain a broad reach to client environments and to achieve greatest compatibility with all browsers, this system uses standard HTML. Hyper Text Markup Language is the standard language for creating documents for the World Wide Web. An HTML document is a text file, which contains the elements, in the form of tags that a web browser uses to display text, multimedia objects, and hyperlinks using HTML; we can format a document for display and add hyperlinks to other documents. The user interface has been designed in HTML hence can be browsed in any web browser.

### **3.12 CSS**

CSS is used to provide the attractive design of the HTML structure. So that, user can catch the required things easily. It has been used to separate data form presentation. By using these style sheets throughout the project, a uniform look and feel can be maintained for all the HTML elements and tags that have been used in the project. If there is any revamp the way the content has been presented in the website.

### **3.13 LARAVEL**

#### **What is LARAVEL?**

- LARAVEL is an SERVER SIDE PHP FRAMEWORK"
- LARAVEL is a widely-used, open-source scripting language
- LARAVEL scripts are executed on the server
- LARAVEL is free to download and use

### **3.14 What Can LARAVEL Do?**

Framework Laravel is used for execution of the planning. Some of point are given below,

- LARAVEL can generate simple dynamic web page
- LARAVEL can create, open, read, write, delete, and close files on the server
- LARAVEL can collect form data
- LARAVEL can sends and receive cookies
- LARAVEL can add, delete, modify data in your database
- LARAVEL can be used to control user-access
- LARAVEL can use open SSL for encryption

With LARAVEL you are not limited to output HTML. You can output images, PDF files, and even Flash movies. You can also output any text, such as XHTML and XML.

### **3.15 Why LARAVEL?**

- LARAVEL runs on various platforms (Windows, Linux, Unix, Mac OS X, etc.)
- LARAVEL is compatible with almost all servers used today (Apache, IIS, etc.)
- LARAVEL supports a wide range of databases
- LARAVEL is free. Download the Laravel installer using Composer.
- LARAVEL is easy to learn and runs efficiently on the server side

### **3.16 Adobe Photoshop & Illustrator**

Adobe Photoshop Illustrator is a professional vector-based design and drawing program. Used as part of a larger design workflow, Illustrator allows for the creation of everything from single design elements to entire compositions. Designers use Illustrator to create posters, symbols, logos, patterns, icons, etc.

### 3.17 What is VISUAL STUDIO CODE?

Visual Studio Code is a streamlined code editor with support for development operations like debugging, task running, and version control. It aims to provide just the tools a developer needs for a quick code-build-debug cycle and leaves more complex workflows to fuller featured IDEs, such as Visual Studio IDE.

### 3.18 VISUAL STUDIO CODE in Action

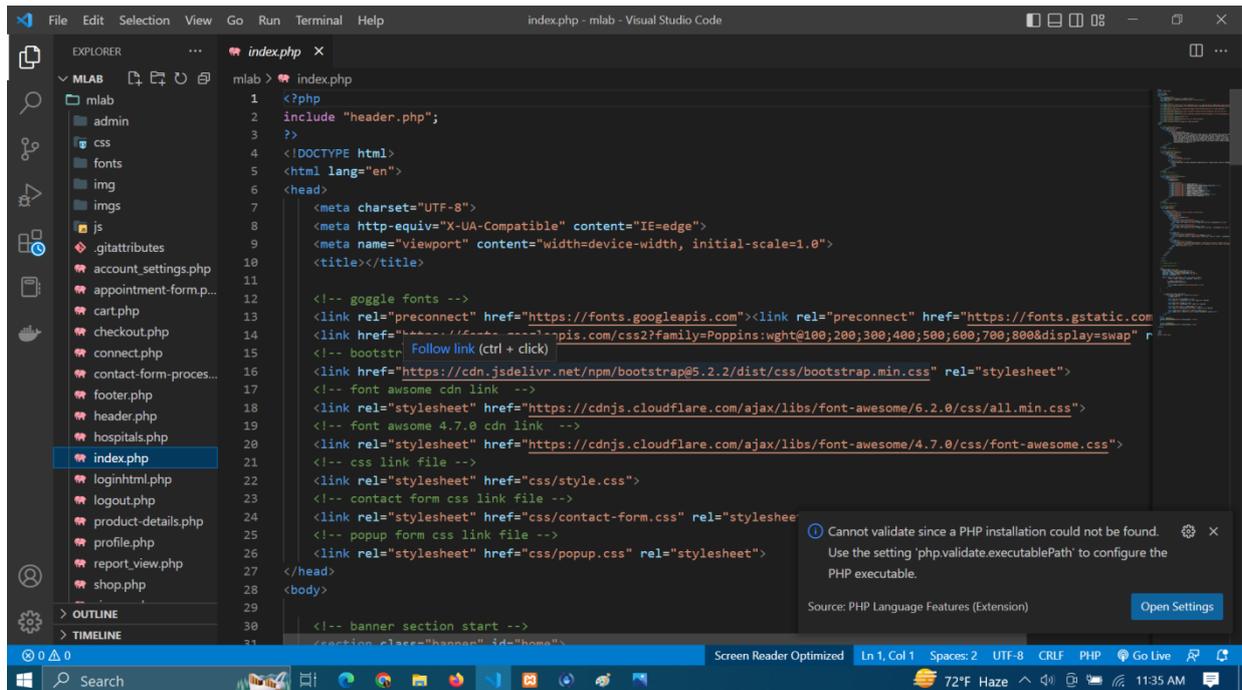


Fig 3.2: Visual Studio in Action

### 3.19 Why VISUAL STUDIO CODE

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# CHAPTER 4

## SOFTWARE DESIGN

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Software design is the process of defining the architecture, components, interfaces, and other characteristics of a software system. It is the process of creating a plan or blueprint that describes how the software will meet the needs of its users, and how the different components of the software will work together. The goal of software design is to produce a representation of the software that can be used to guide its construction, testing, and maintenance.

There are many different approaches to software design, each with their own strengths and weaknesses. Some of the more popular approaches include:

- Object-oriented design, which focuses on the development of reusable objects and classes, and the interactions between them.
- Component-based design, which focuses on the development of reusable software components that can be easily combined and reused in different systems.
- Service-oriented design, which focuses on the development of loosely, coupled services that can be easily integrated with other systems.
- Event-driven design, which focuses on the development of systems that respond to events, such as user inputs or system changes.
- Agile design, which emphasizes on adaptability, rapid prototyping, and iteration.

The specific approach and techniques used will depend on the requirements of the software and the goals of the project.

### 4.1 DFD

A Data Flow Diagram (DFD) is a graphical representation of the flow of data through a system. It is used to model the flow of information in a process or system, including the inputs, processes, and outputs. The goal of a DFD is to show the flow of data through a system, from external entities to internal processes and data stores, and out to external entities again.

DFD's are used in many different fields, including software engineering, information systems, and business process modeling. They are particularly useful for modeling complex Page | 20 systems, as they provide a clear, visual representation of the flow of data and can help identify potential bottlenecks and areas of improvement.

DFD's are divided into two types:

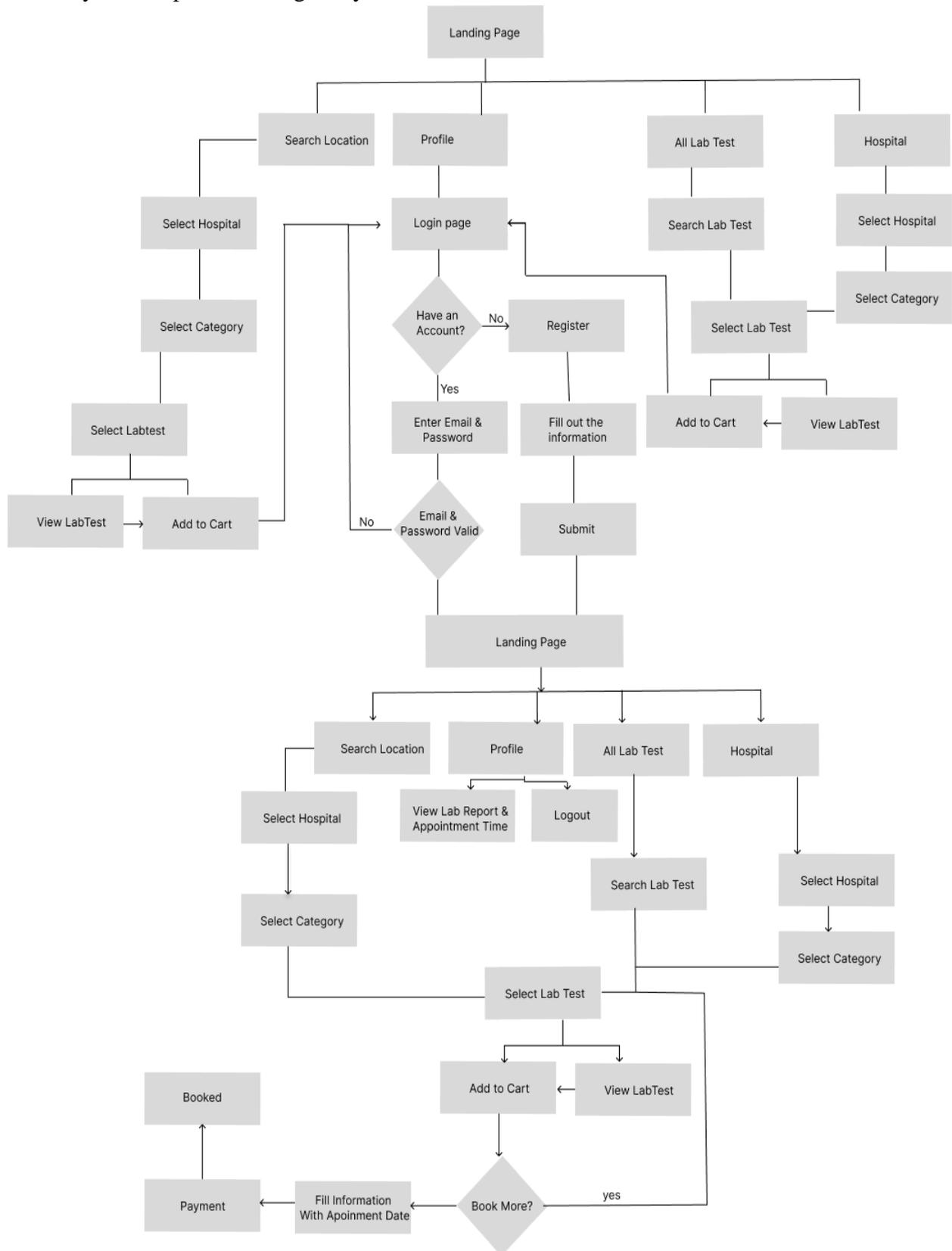
Context Diagram:

- Context diagrams are also called Level 0 diagrams.
- Context diagrams are also called Level 0 diagrams. It depicts the system boundary by showing the inputs and outputs that the system receives and sends, respectively.
- It is the highest-level DFD and provides an overall view of the entire system.
- Level 1 DFD:

- A level 1 DFD is a detailed view of the single process that was represented in the context diagram.
- Level 1 DFD breaks down the process into smaller sub-processes.
- Level 1 DFD provides a detailed view of what the system does and how it does it.

DFD's use a standardized notation that includes circles (representing data sources or destinations), rectangles (representing processes), and arrows (representing data flows). The notation is used to show how data flows through the system and how it is transformed by the processes that it passes through.

**Fig 4.1** shows ‘1’ Level Diagram of Rental house systems represent a basic overview of whole system or process being analyzed or modeled.



**Fig 4.1: Work Flow Diagram of EDIS Diagram**

## 4.2 ER Diagram

An ERD, or Entity Relationship Diagram, is a graphical representation of entities and their relationships to each other. It is used in the field of software engineering and database design to represent the structure of a database. The goal of an ERD is to show the relationships between entities, including how data is stored and retrieved, and to provide a visual representation of the data model.

ERDs use a standardized notation that includes three main components: entities, attributes, and relationships.

### 1. Entities

- Represented by rectangles in the ERD.
- It represents the object or concept in the real world.
- Examples: Customers, Orders, Products etc.

### 2. Attributes

- It represents the object or concept in the real world.
- It describes the characteristics of an entity.
- Examples: customer name, order date, product price.

### 3. Relationships

- Represented by diamond shapes in the ERD.
- It defines how two or more entities are related to each other.
- Examples: A customer makes many orders; A product belongs to a specific category.

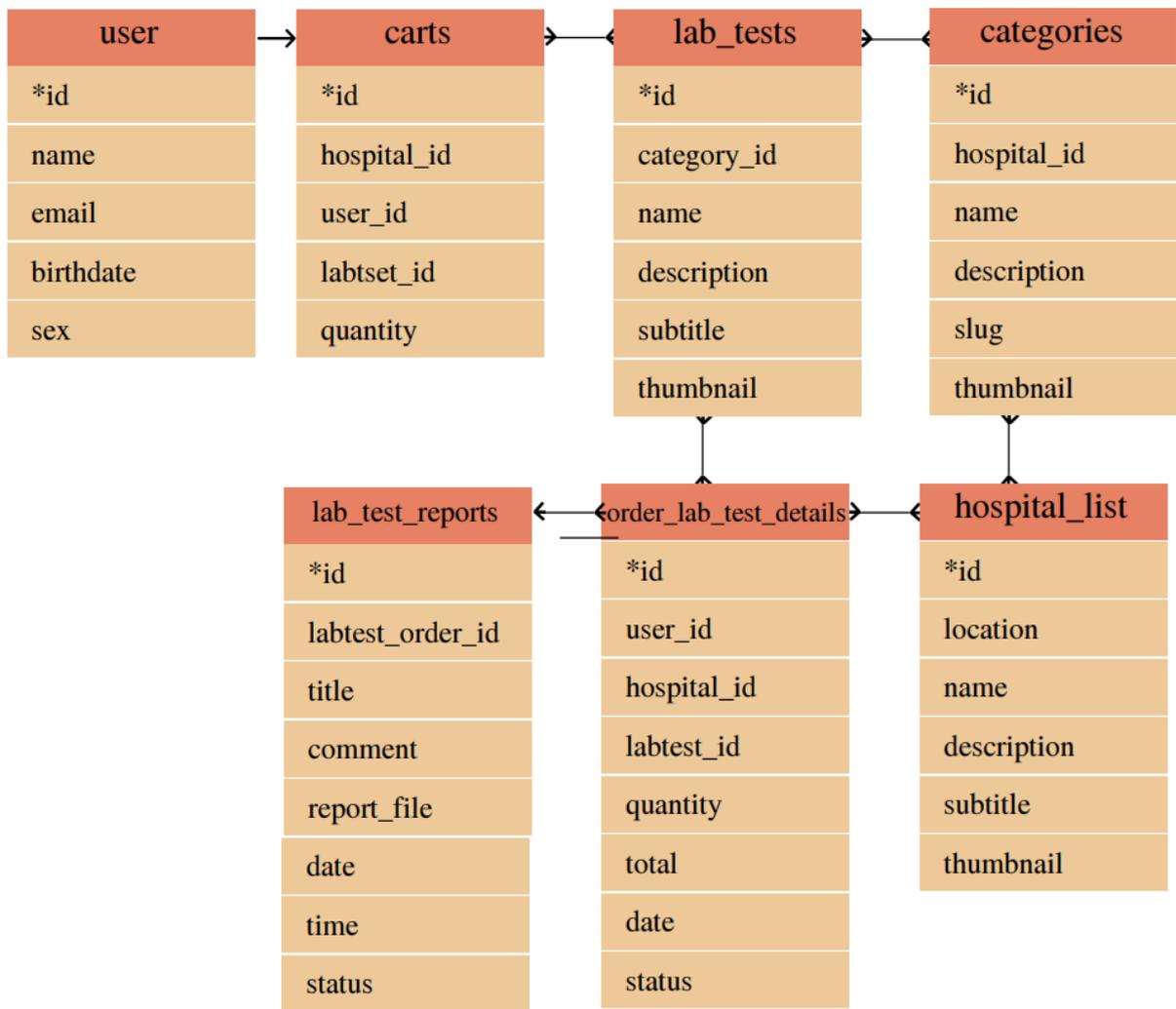


Fig 4.2: Entity Relationship Diagram

### 4.3 Database Schema Relationship

Every database has a schema. A database schema is the structure that represents the way the database is built. The database schema defines how data is stored in the database tables and how the relations among tables are associated.

In this lesson, we'll create visual representations of database schema and talk about the most common SQL database relationships:

- one-to-many
- many-to-many
- one-to-one



Fig 4.3: Database schema Relationship

## Database Hospital-management

### 4.4 Table Structure for Admin

Column	Type	Null	Default
<i>id</i>	bigint(20)	No	
username	varchar(255)	No	
email	varchar(255)	No	
phone	varchar(255)	Yes	NULL
image	varchar(255)	Yes	NULL
password	varchar(255)	No	
Is_admin	tinyint(4)	No	
created_at	timestamp	Yes	NULL
updated_at	timestamp	Yes	NULL

Table 4.1: Table for admin

### 4.5 Dumping Data for Admins

1	admin	admin@gmail.com	01709876543	1.webp	\$2y\$10\$mqHirybwtVzoRLiTcmQa.6Iblypn7tFo7QhQk/ga.JcThBI5kF2q	1	2023-01-18 15:18:02	2023-01-18 15:18:02
2	squire	squire@gmail.com	NULL	NULL	\$2y\$10\$TGcF4r2YD5u4KeP.P50ejuNyhZxfgqrM16J8aRBMFDnTkN0dho7py	0	2023-01-18 15:18:02	2023-01-18 15:18:02
3	labaid	labaid@gmail.com	01765432567	NULL	\$2y\$10\$ZsP6rMtd5wU5.PV6l47defct3MgE8.VmRB6/145OngXm/cM2AGJS	0	2023-01-18 20:10:20	NULL

Table 4.2: Data for admins

### 4.6 Table Structure for Carts

Column	Type	Null	Default
<i>id</i>	bigint(20)	No	
user_id	bigint(20)	No	
hospital_id	bigint(20)	No	
labtest_id	bigint(20)	No	
quantity	int(11)	No	
created_at	timestamp	Yes	NULL
updated_at	timestamp	Yes	NULL

Table 4.3: Table for carts

## 4.7 Dumping Data for Carts

12	3	2	1	1	2023-01-20 08:19:39	2023-01-20 08:19:39
13	3	1	3	1	2023-01-20 10:22:03	2023-01-20 10:22:03
19	4	2	1	1	2023-01-20 15:24:40	2023-01-20 15:24:40

Table 4.4: Data for carts

## 4.8 Table Structure for Categories

Column	Type	Null	Default
<i>id</i>	bigint(20)	No	
<b>hospital_id</b>	bigint(20)	No	
<b>name</b>	varchar(255)	No	
<b>slug</b>	varchar(255)	Yes	NULL
<b>description</b>	text	Yes	NULL
<b>thumbnail</b>	text	No	
<b>admin_id</b>	bigint(20)	No	
<b>created_at</b>	timestamp	Yes	NULL
<b>updated_at</b>	timestamp	Yes	NULL

Table 4.5: Table for categories

## 4.9 Dumping Data for Categories

1	1	Blood Test	blood-test	<p>Most blood tests only take a few minutes to complete and are carried out at your GP surgery or local hospital by a doctor, nurse or phlebotomist (a specialist in taking blood samples).</p>	Untitled design (6).png	2	2023-01-18 15:18:02	2023-01-20 09:19:51
2	1	Lungs Test	lungs-test	<p>Lungs</p>	Untitled design (7).png	2	2023-01-18 17:27:29	2023-01-20 09:26:25
3	2	Bones & Joints	bones-joints	<p>Bones & Joints</p>	Bones & Joints.png	3	2023-01-18 20:10:57	2023-01-20 09:34:43
4	1	Heart Test	heart-test	<p>Heart</p>	Untitled design (8).png	2	2023-01-18 20:51:18	2023-01-20 09:24:07

Table 4.6: Data for categories



## 4.12 Table Structure for Lab Tests

Column	Type	Null	Default
<i>id</i>	bigint(20)	No	
hospital_id	bigint(20)	No	
category_id	bigint(20)	No	
name	varchar(255)	No	
slug	varchar(255)	Yes	NULL
price	varchar(255)	Yes	NULL
description	text	Yes	NULL
thumbnail	text	No	
admin_id	bigint(20)	No	
created_at	timestamp	Yes	NULL
updated_at	timestamp	Yes	NULL

Table 4.9: Table for lab tests

## 4.13 Dumping Data for Lab Tests

1	2	3	Calcium	calcium	170	<p>Calcium</p>	Bones & Joints.png	1	2023-01-18 15:18:02	2023-01-20 09:35:40
2	1	1	Vitamin D	vitamin-d	599	<p>Vitamin D</p><p>Available in 9.00 A.M - 9.00 P.M</p>	Untitled design (6).png	2	2023-01-18 17:00:58	2023-01-20 14:38:51
3	1	1	Blood Count	blood-count	299	<p>Blood Count</p>	Blood (2).png	2	2023-01-18 17:28:03	2023-01-20 09:29:02
4	2	3	Arthritis Profile	arthritis-profile	1350	<p>Arthritis Profile</p>	Bones & Joints.png	3	2023-01-18 20:11:19	2023-01-20 09:36:30
5	1	1	Dengue NS1	dengue-ns1	699	<p>Dengue NS1</p>	Blood (2).png	2	2023-01-18 21:08:08	2023-01-20 09:31:14

Table 4.10 : Data table for lab tests

#### 4.14 Table structure for lab test reports

Column	Type	Null	Default
<i>id</i>	bigint(20)	No	
labtest_order_id	bigint(20)	No	
title	varchar(255)	No	
comment	text	No	
report_file	text	Yes	NULL
created_at	timestamp	Yes	NULL
updated_at	timestamp	Yes	NULL

Table 4.11: Table for lab test reports

#### 4.15 Table structure for order lab test details

Column	Type	Null	Default
<i>id</i>	bigint(20)	No	
user_id	bigint(20)	No	
hospital_id	tinyint(4)	No	
labtest_id	tinyint(4)	No	
quantity	int(11)	No	
total	varchar(255)	Yes	NULL
payment_method	tinyint(4)	Yes	NULL
fname	varchar(255)	Yes	NULL
lname	varchar(255)	Yes	NULL
email	varchar(255)	Yes	NULL
address	varchar(255)	Yes	NULL
status	tinyint(4)	No	0
created_at	timestamp	Yes	NULL
updated_at	timestamp	Yes	NULL

Table 4.12: Table for order lab test details

#### 4.16 Data for table order lab test details

16	4	1	2	1	299	1	Pau	Rimo	imrimon6@gmail.com	+880 18218185 01	0	2023- 01-20 14:33: 48	NUL L
17	4	1	3	1	299	1	Pau	Rimo	imrimon6@gmail.com	+880 18218185 01	0	2023- 01-20 14:33: 48	NUL L

Table 4.13: Data for order lab test details

#### 4.17 Table structure for users

Column	Type	Null	Default
<i>id</i>	bigint(20)	No	
name	varchar(255)	No	
email	varchar(255)	No	
email_verified_at	timestamp	Yes	NULL
password	varchar(255)	No	
remember_token	varchar(100)	Yes	NULL
created_at	timestamp	Yes	NULL
updated_at	timestamp	Yes	NULL

Table 4.14: Table for users

#### 4.18 Dumping data for users

1	test	test@gmail.com	NULL	\$2y\$10\$IVdL3dmypJuhxR8PfyWoR.ku/knrMYyBIVnYbCQIsu7MymIeEW.bu	NULL	2023-01-18 15:19:34	2023-01-18 15:19:34
3	abmasad	abmasad@gmail.com	NULL	\$2y\$10\$nPHOqqD9DIvSYPu9pS8AeOU0EmpfiTfwBEq052slb8uTr8LA.NZj.	NULL	2023-01-20 07:37:20	2023-01-20 07:37:20
4	Rimon Paul	imrimon6@gmail.com	NULL	\$2y\$10\$9mJu9VAyAICxEsnfozA19.OGaEPbs5TAAEk6Sv4ahvcbdjredDtLe	NULL	2023-01-20 10:25:53	2023-01-20 10:25:53
5	Noyon	noyon@gmail.com	NULL	\$2y\$10\$0S15yXqmy18e.b2t5vfjoO39VhtOGvGuGUJ.kpKdJHo9u5f/2QjxO	NULL	2023-01-21 11:34:49	2023-01-21 11:34:49

Table 4.15: Data for users

# CHAPTER 5

## SYSTEM AND INTERFACE DESIGN

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### 5.1 System Design

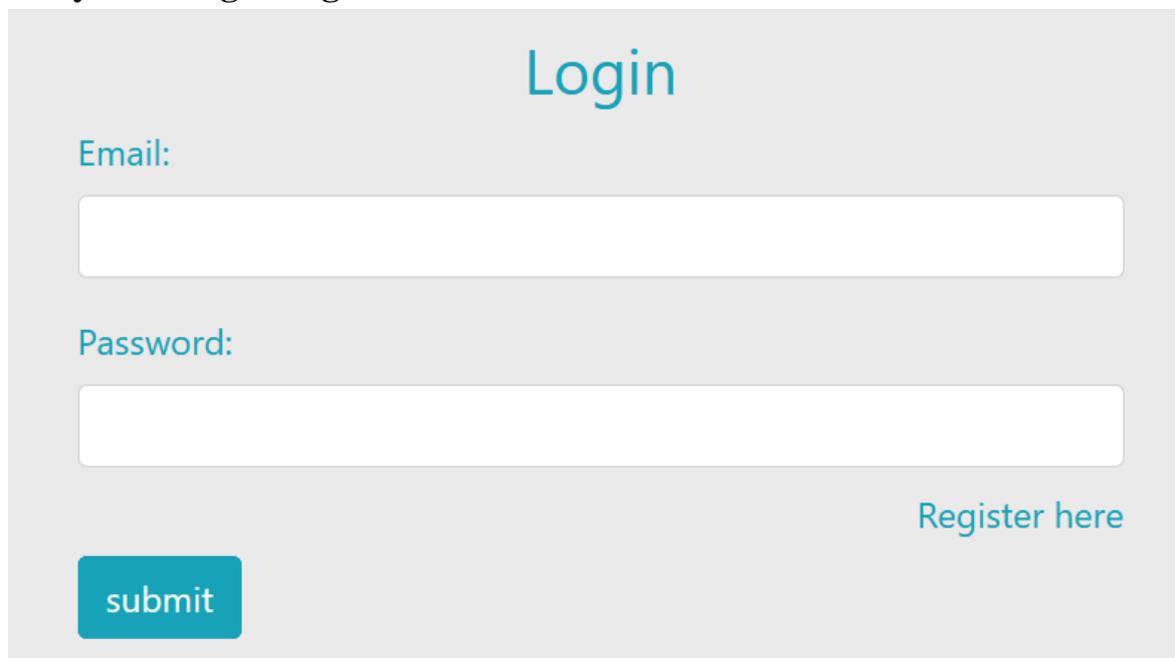
Our entire system has been developed in LARAVEL, HTML, CSS, bootstrap, blade & JavaScript, languages.

Through data collection and research studies, we have seen a variety of challenges in the Current hospital information system, which often affect its good performance and efficiency. I have described the current system below.

### 5.2 System Menu

- ❖ Hospital
  - View name, date
  - Accept appointment
  - Add test Information
  - Add time
- ❖ Patient
  - View Profile
  - View Test Report
- ❖ Admin
  - Add Hospital Profile
  - Delete Hospital Profile

### 5.3 System Login Page

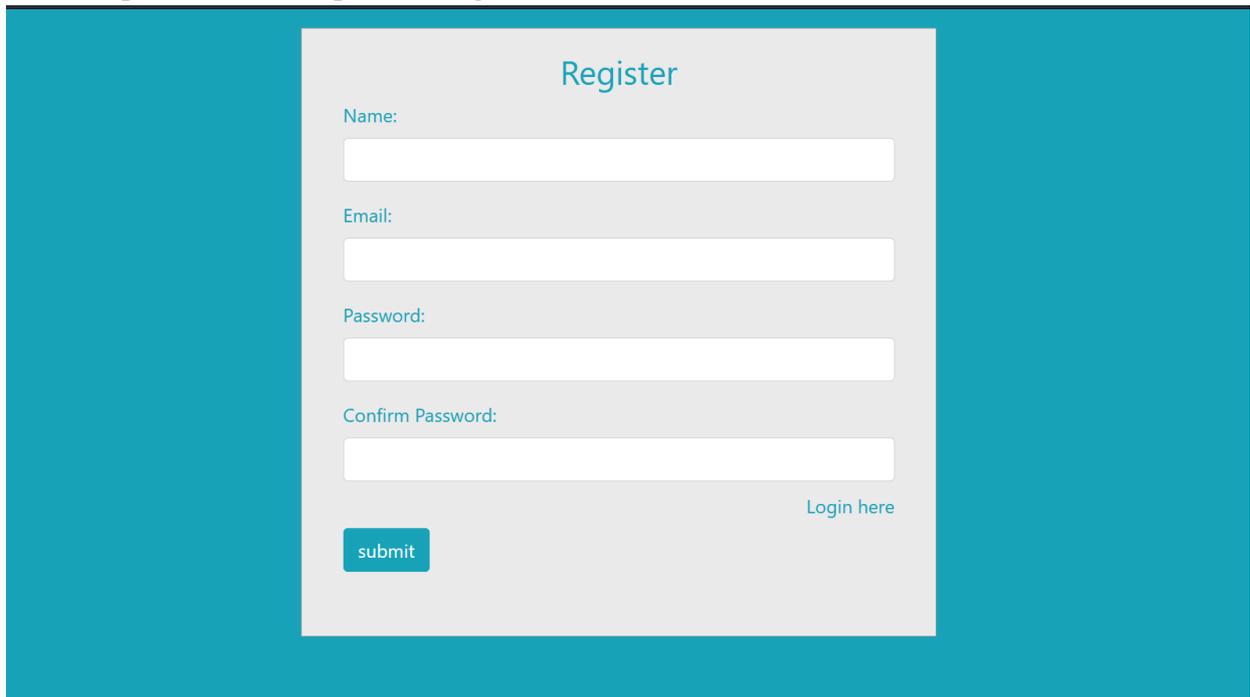


The image shows a login page with a light gray background. At the top center, the word "Login" is written in a large, blue, sans-serif font. Below it, the label "Email:" is in a smaller blue font, followed by a white rectangular input field with a thin gray border. Below that, the label "Password:" is in a smaller blue font, followed by another white rectangular input field with a thin gray border. In the bottom right corner, the text "Register here" is written in a blue font. In the bottom left corner, there is a teal-colored rectangular button with the word "submit" written in white, lowercase letters.

Fig 5.1: Login Page

## 5.4 System Design Snapshots

Some important form snapshots are given below



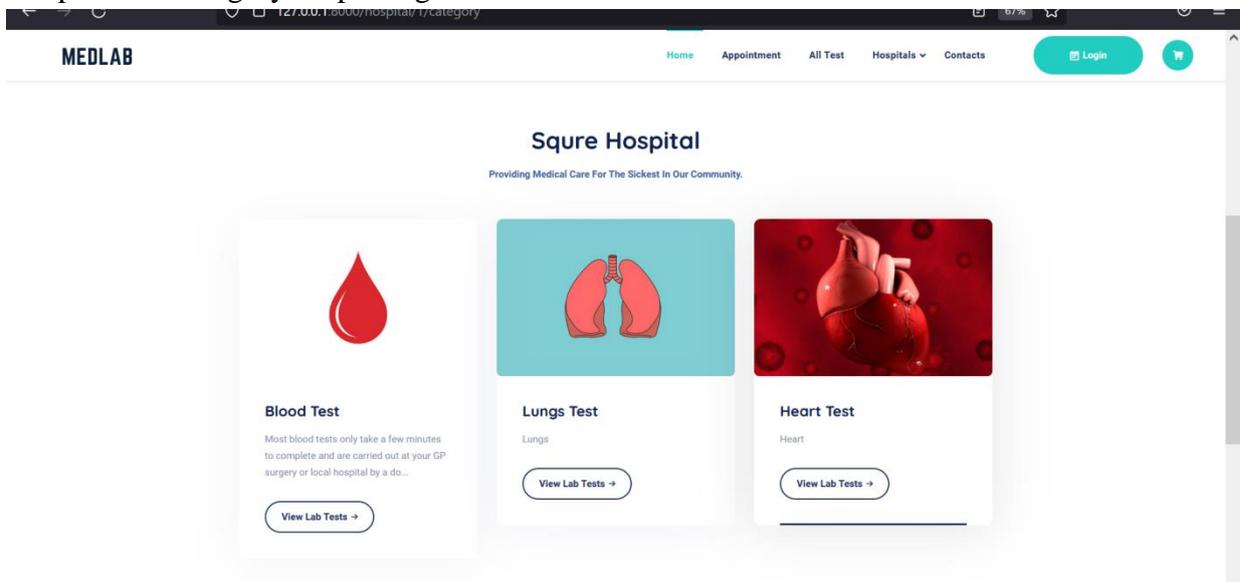
The image shows a user registration form titled "Register" on a teal background. The form is contained within a light gray box and includes the following fields and elements:

- Name:** A white text input field.
- Email:** A white text input field.
- Password:** A white text input field.
- Confirm Password:** A white text input field.
- submit:** A teal button with white text.
- Login here:** A teal text link.

Fig 5.2: User Registration Form

## 5.5 Hospital Information

Hospital test category snapshot given below



The image is a screenshot of a web application for "MEDLAB". The header includes the logo "MEDLAB" and navigation links: Home, Appointment, All Test, Hospitals, and Contacts. A "Login" button is also present. The main content area is titled "Squire Hospital" with the tagline "Providing Medical Care For The Sickest In Our Community." Below this, there are three test category cards:

- Blood Test:** Features a red blood drop icon. Text: "Most blood tests only take a few minutes to complete and are carried out at your GP surgery or local hospital by a do...". A "View Lab Tests ->" button is at the bottom.
- Lungs Test:** Features a teal background with a red lungs icon. Text: "Lungs". A "View Lab Tests ->" button is at the bottom.
- Heart Test:** Features a red background with a heart icon. Text: "Heart". A "View Lab Tests ->" button is at the bottom.

Fig 5.3: Hospital Test Information

## 5.6 Add Hospital Information

### Hospital information input form

The screenshot shows the 'Add Hospital' form in a web application. The form is titled 'Add Hospital' and includes a 'Back' button in the top right corner. The form fields are as follows:

- HOSPITAL NAME \***: Enter Hospital Name
- EMAIL \***: Enter Hospital email
- CONTACT NUMBER**: Enter Hospital phone
- SUB-TITLE**: Enter Hospital subtitle
- DESCRIPTION**: A rich text editor with a toolbar containing options like Paragraph, Bold (B), Italic (I), Link (G+K), and others.
- THUMBNAIL \***: Browse... No file selected.
- USERNAME \***: Enter Hospital username
- PASSWORD \***: Enter Hospital password

A 'Send' button is located at the bottom of the form. The page footer shows '© 2023'.

Fig 5.4: Hospital Add Form

The screenshot shows the 'Labtest List' page in a web application. The page is titled 'Labtest List' and includes an 'Add New' button in the top right corner. The table below lists the lab tests:

#	NAME	CATEGORY	PRICE	IMAGE	ACTIONS
1	Calcium	Bones & Joints	170		<a href="#">Edit</a> <a href="#">delete</a>
2	Vitamin D	Blood Test	599		<a href="#">Edit</a> <a href="#">delete</a>
3	Blood Count	Blood Test	299		<a href="#">Edit</a> <a href="#">delete</a>
4	Arthritis Profile	Bones & Joints	1350		<a href="#">Edit</a> <a href="#">delete</a>
5	Dengue NS1	Blood Test	699		<a href="#">Edit</a> <a href="#">delete</a>

The page footer shows '© 2023'.

Fig 5.5: Category List

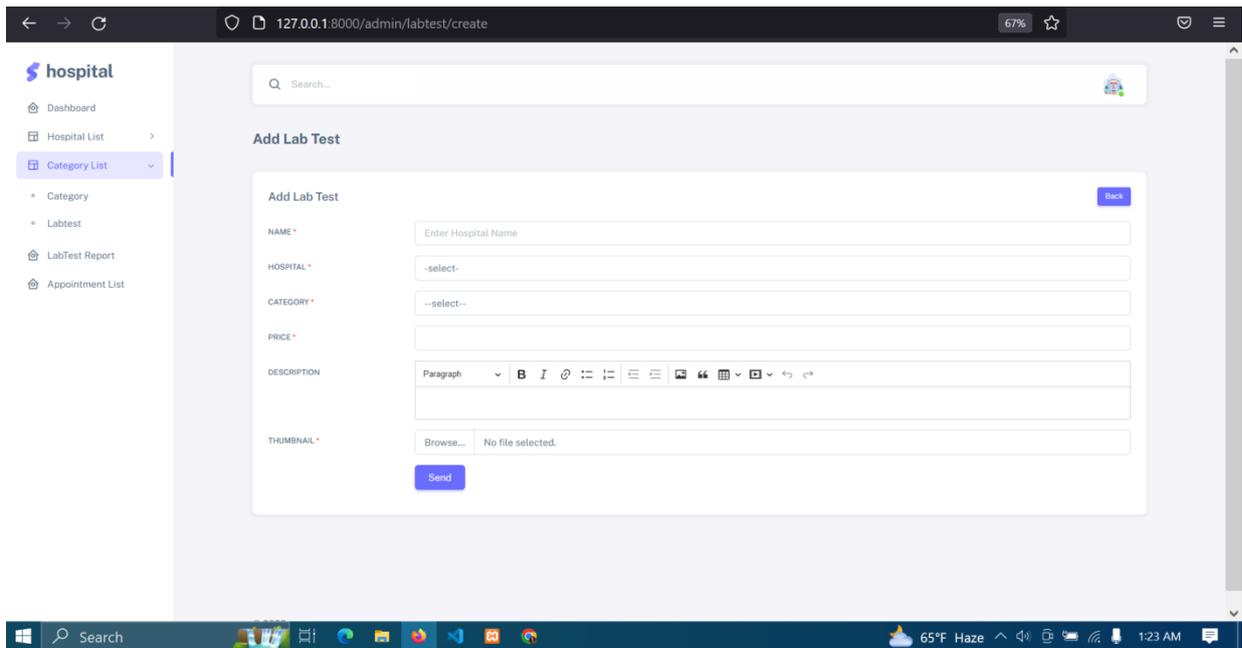


Fig 5.6: Add Lab Test

## 5.7 Booking Snapshots

Same snapshots given below

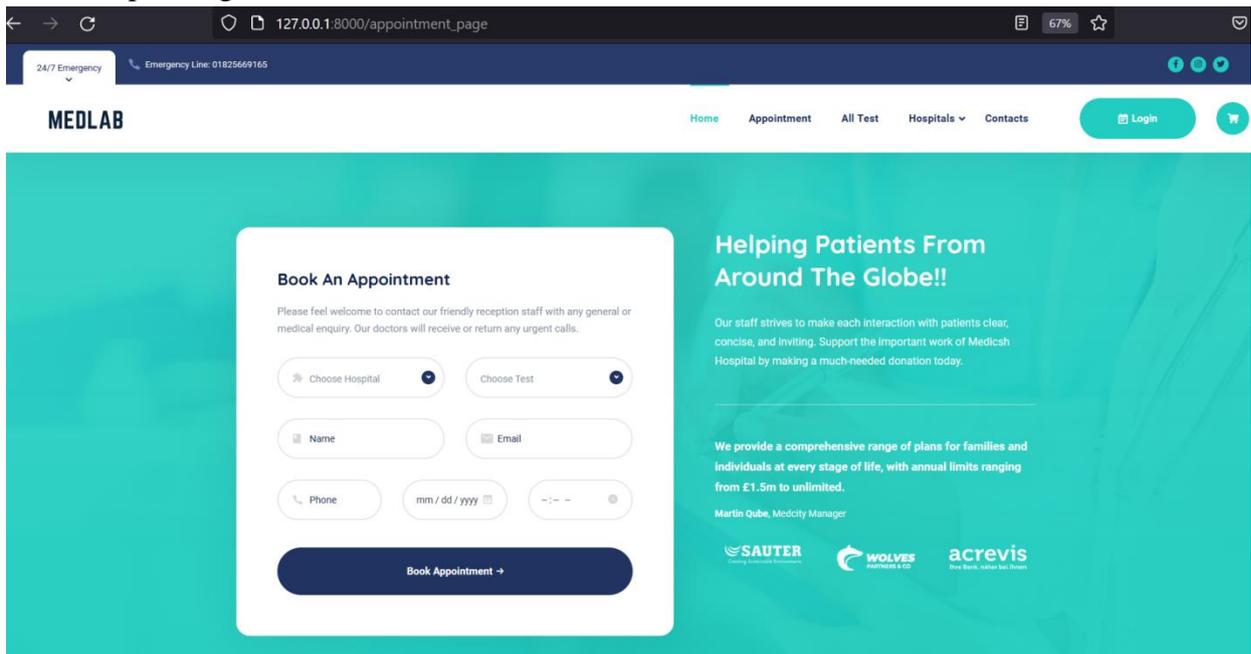


Fig 5.7: Booking Appointment

# CHAPTER 6

## SECURITY AND IMPLEMENTATION

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### 6.1 User Management

Server level system admin can modify user's account.

### 6.2 User Authentication

Users need to provide their username and Password every time as they need to access the system.

### 6.3 Admin Authentication

Administrator need to provide administrator username and Password every time as they need to access the system.

### 6.4 Pages Permission

Page access for user and admin,

- Admin: Admin can access almost all pages.
- User: User can access their permitted pages.

### 6.5 Change Password

Each of the users can update their account's password by the admin if they feel their password is not secure anymore.

### 6.6 System Requirements in detail

The term system requirements mean the minimum hardware and software requirement of a computer. If the computer full fill this minimum requirement, then the system will run smoothly from this computer. The requirement specification given below.

## 6.7 Minimum Software Requirements

Software	Minimum Requirement	Reason
Operating System for computer	Window 7, Windows 8.1, Windows 8. window, XP. Linux, MAC OS	Globally distributed and widely accessed
Database Management System	MySQL	Easy to use and scalable
Browser	Opera, Google Chrome, IE, Mozilla Firefox	Standard browser

Table 6.1: Minimum Software Requirements

Shows the software requirements for the web application that define the prerequisites needed for the optimal functioning of the web application. Each of the following operating system can handle the application, windows 7, windows 8, windows 8.1, Linux, those operating systems were chosen because they are affordable and readily available. MySQL was used in the development of the databases and is relatively cheap, easy to use and scalable. Browsers: any browser including opera, Google chrome, Microsoft Internet explorer and Mozilla Firefox.

## 6.8 Result of Analysis

It shows overall progress of a project. The analysis result focus on Results of Implementation, Results of Testing, Achievements of the project, and Limitations of the project. By this analysis we may able to know how much a project efficient or not.

## 6.9 Results of Implementation

It demonstrates that it will have a web interface where user of the system (User /system admin) can login, where customer parking a vehicle and parking out vehicle also payment daily, monthly and yearly.

## 6.10 Results of Testing

Cross browser testing was done to ensure that the web application looks the same in major browsers that is Google chrome, Mozilla Firefox, Opera and Internet explorer. The web project is consistent (looks exactly the same) in Google chrome, Mozilla Firefox and Opera but the looks vary slightly in internet explorer.

## **6.11 Achievements of the Project**

Admin control across all aspects of the application.

- Admin can add, delete or update a hospital profile.
- Hospital can upload test report and note down booking appointment.
- Hospitals give appointment time.
- Patient can see the test list of all the hospital and the test reports.
- Patient can book appointment.

# CHAPTER 7

## CONCLUSION AND FUTURE WORKS

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### 7.1 Conclusion

With the theatrical inclination of our syllabus, it becomes very essential to take the advantages of any opportunity of gaining practical experience that comes along. The building blocks of this major project "E-Diagnostic Information System - EDIS" was one of these opportunities. It gave us the required practical knowledge to supplement the already taught theoretical concepts thus making more competent as a computer engineer.. The functional services provided in the current version are profile management. This project has given me an ample opportunity to design, code, test and implements an application.

This has helped in putting into practice of various Software Engineering principles and Database Management concepts like maintaining integrity and consistency of data. The project from personal point of view also helped us in understanding the following aspects of project development:

- The planning that goes into implementing a project.
- The importance of proper planning and an organized implementation.
- The key element of team spirit and co-ordination in a successful project.

The project also provided us the opportunity with interacting with our teachers and to gain from their best experience.

### 7.2 Scope of Further Development

There is a lot to research and include more options for make this site easier to use. Some of them are:

- Enabling Two Factor Authentication for secured account.
- Password will be required when a hospital, admin and user tries to enter a patient's history page.
- More research should also be done to extend this project to include online appointment of patient with doctor.
- I recommend that through making the web application more responsive the patient will be able to choosing his hospital for make the test.
- Hospital will see history of the patient and lab-test details.
- Add 'blood collection from home' feature.
- Add telemedicine feature.
- Add prescription upload option for with AI who auto detect lab-test from image.

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