

DISEASE IDENTIFICATION SYSTEM

BY

HASAN SHAMSUDDOHA

ID: 142-15-3780

MD MAHMUDUL HASAN MAMUN

ID: 142-15-3448

AND

AVIZIT SWAR

ID: 142-15-3522

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

Supervised By

MS. SAMIA NAWSHIN

Lecturer

Department of CSE

Daffodil International University



DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

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APPROVAL

This Project titled “**Disease Identification System**”, submitted by Hasan Shamsuddoha, ID No: 142-15-3780, MD Mahmudul Hasan Mamun, ID No: 142-15-3448, Avizit Swar, ID No: 142-15-3522, 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 07/05/2018.

BOARD OF EXAMINERS

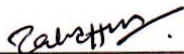
Dr. Syed Akhter Hossain
Professor and Head
Department of CSE
Faculty of Science & Information Technology
Daffodil International University

Chairman



Dr. Sheak Rashed Haider Noori
Associate Professor & Associate Head
Department of CSE
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner



Md. Zahid Hasan
Assistant Professor
Department of CSE
Faculty of Science & Information Technology
Daffodil International University

Internal Examiner



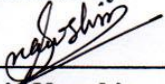
Dr. Mohammad Shorif Uddin
Professor
Department of Computer Science and Engineering
Jahangirnagar University

External Examiner

DECLARATION


We hereby declare that, this project has been done by us under the supervision of **Samia Nawshin, Lecturer, 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.

Supervised by:




Samia Nawshin
Lecturer
Department of CSE
Daffodil International University

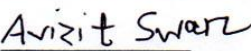
Submitted by:



Hasan Shamsuddoha
ID: - 142-15-3780
Department of CSE
Daffodil International University



Md. Mahmudul Hasan Mamun
ID: -142-15-3448
Department of CSE
Daffodil International University



Avizit Swar
ID: -142-15-3522
Department of CSE
Daffodil International University

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ABSTRACT

The Disease Identification System is an end user support and online consultation project. Here we propose a system that allows user to get instant guidance on their health issues online. The system consists of various diseases and their associated symptoms. The system allows user to share their symptoms and health problems. One of the key aspects of our system is that it can process user symptoms to check and identify illness and health problem of users. If the system is not able to provide suitable results, it informs the user about the type of disease or disorder it feels user's symptoms are associated with. If users symptoms do not exactly match any disease in our database, it shows the diseases user could probably have judging by his/her symptoms. It also consists of doctor address, contacts along with Feedback and administrator.

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CHAPTER 1

Introduction

Introduction

Disease Identification System is a web application that mixes many methods and processes to fulfill the need of end user on disease prediction and health care. The system allows user to share their symptoms and issues. Then the system processes user's symptoms to check for various illnesses that could be associated with it. A systematic approach is followed to allow users to get instant guidance on health issues online through our system.

Motivation

Health is an important issue in our country. So, if we can provide web application which can give health oriented service to end users it can be helpful.

This system will provide proper guidance when the user specifies the symptoms of his illness.

Patients can not consult doctors instantly. But this system allows patients to detect their disease by checking the symptoms.

Getting doctor's schedule and timing is a complex process. This system allows user to find doctor's visiting place and schedule online in less time.

Objectives

The objectives of this project is

- To make a web platform for disease identification.
- Serving users with proper guidance of health.
- The system will contain user's review which will be collected from users online
- It will help users to choose and consult more qualified doctors by getting their information online.

Expected Outcome

The expected outcome of this project is

- Users can search for doctor's help at any point of time.
- Users can talk about their illness and get instant diagnosis
- Doctors get more clients online.
- Patients can access qualified doctors online for better treatment.

Layout of the Report

Chapter one has demonstrated an introduction to the project with its motivation, objectives, and goals.

- Chapter two will have "Overview Background" shows project management phases and project management challenges.
- Chapter three will have Software Requirement.
- Chapter four will have System Analysis.
- Chapter five will have system design and specification.
- Chapter six will have Implementation, and Testing.
- Chapter seven will have conclusion.

CHAPTER 2

Background Overview

Introduction

Disease Identification System focuses on developing a computerized system that enable users to check their health issues. It has login functionality so that it would be an easier way for user to register him and view all the functions on the site and access it easily and quickly.

Overall this study is done to help people of all ages to check the symptoms related to affected area and can cure it as soon as possible, register It has a symptom checker module which actually defines our body structure and gives us liability to select the affected area and checkout the symptoms.

Related Works

A lot of research works have been done for disease prediction system.

In last decade, cloud computing has emerged that provides a new way to establish various services. Health care system is one of these services that can be established in a short time with low cost.

SaaS, short for Software as a Service is one stack of cloud computing, inherits all the benefit of cloud computing and provides web-based services. A lot of work has been done based on SaaS framework. The work has been developed for delivering healthcare as a service.

In order to detect disease, DM techniques like association rule, decision tree algorithms like C4.5 are used to generate the disease rules.

Comparative Studies

In this field of work, there have been a lot of studies . Data mining techniques have been used to develop decision support system for disease classification through a set of medical datasets. Support Vector Machine (SVM), K-Nearest Neighbor (KNN), Neural Network (NN) Adaptive Network-Based Fuzzy Inference System (ANFIS) are some supervised machine learning techniques used in disease prediction globally.

As disease diagnosis is considered an important factor to mankind , several studies have been conducted on modeling procedures for their classification (Fida et al., 2011; Lahsasna et al., 2012;Palaniappan and Awang, 2008; Cauchi et al., 2015; Chen et al., 2016; Nilashi et al., 2017a; Nilashi et al., 2017b;Nilashi et al., 2017d).

Scope of the problem

Real data from Health care organizations and agencies can to be collected and all the available techniques can be compared for the optimum accuracy.

The disease attributes could be more refined and list of added bio-markers may be incorporated more for more accurate result for prediction for the diseases.

Challenges

- Our system is not fully automated. It will require doctors for full diagnosis of serious patients.
- Maintaining accuracy of all disease symptoms is a big challenge.
- Interpretation and prediction of data sets of our system can be tricky.
- Collection of user feedback and taking required actions can be difficult as we may find different types of users.

CHAPTER 3

Requirement Specification

Introduction

Requirement Specification is a record which contains functional and non-working requirements. It also includes Use Case diagrams, Use Case descriptions, Data dictionary, Abbreviations, etc. It is a contract between customers and software developing farms.

Software Requirement

The selection of software platform is as follows. We managed the web-based platform as work gains. We used PHP 5, JavaScript and Ajax as the front end, MySQL server, CodeIgniter framework as back-end of our project.

Framework, Language, and Tools

The language and tools that we used to develop this project are as follows. We used CodeIgniter and Bootstrap as a framework, PHP, HTML, MySQL, Cascading Style Sheets (CSS), JavaScript as an implementing language.

Hardware Requirement

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- Processor – Dual Core
- Hard Disk – 50 GB
- Memory – 1GB RAM

Tools

A software development tool is a program or applications that is used to design, debug, maintain programs and applications. The term applies to simple programs, which can be connected coincidentally to perform a task, much as one might use multiple control tools fix a physical object.

To improve this website we used the following tools:

- Php storm.
- Brackets
- Mysql database.
- Xampp server.
- Browser

Database

A database is an arranged group of data. The data are typically prepared to design essential characters of reality in a way that maintains means demanding this information. The resulting database is working to improve this website is MySQL.

Selecting a database is vital and more important than any other things for developing a project. We like MySQL because it is the most suitable database for us for some reasons. Those reasons will be given below.

MySQL database is intelligent about saving any data that we want. It will let you quickly store and retrieve information and many website visitors can practice it at one time.

- MySQL is a database server.
- It is ideal for both small and large application.
- MySQL Supports standard SQL.
- It is free to download and use.
- It compiles on some platforms.

These are the purposes we used MySQL as our database as it is very important to select the right database for any application otherwise the whole hard work may go in vain. That's why

considering all the options we've chosen this database, and it was so useful for our project as well as the web application.

Business Process Modeling

Business process modeling is systems engineering is the activity of representing processes of an enterprise, so that the current process may be analyzed, improved, and automated.

BPM is typically performed by business analysts, who provide expertise in the modeling discipline by subject matter experts, who have specialized knowledge of the processes being modeled or more commonly by a team comprising both.

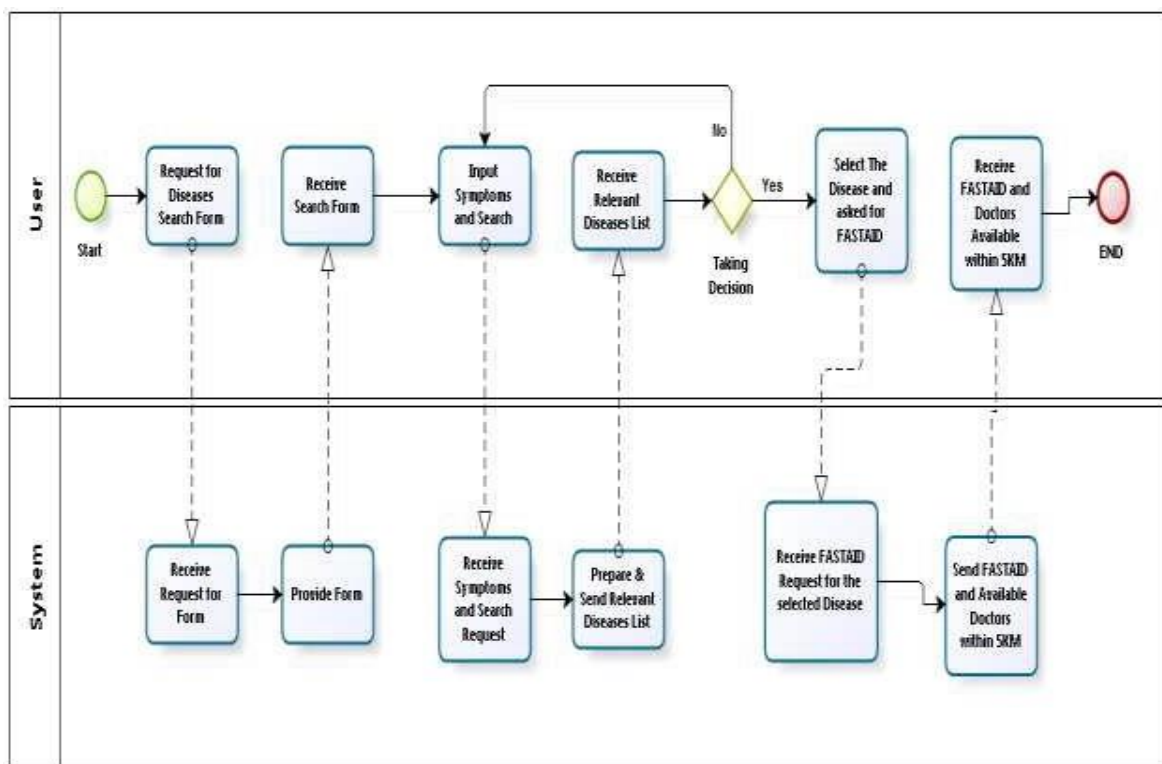


Figure 3.1: Business process model of Diseases Search Process

Use Case Modeling and Description

In software and systems engineering, a use case is a list of actions or event steps that defines the interactions between a role and a system to achieve a goal. The actor can be a human or other external system.

It is used because it shows the interaction logic between the objects in the system in the time order that the interactions take place. Use case diagram of patient activity is given in figure 3.2.

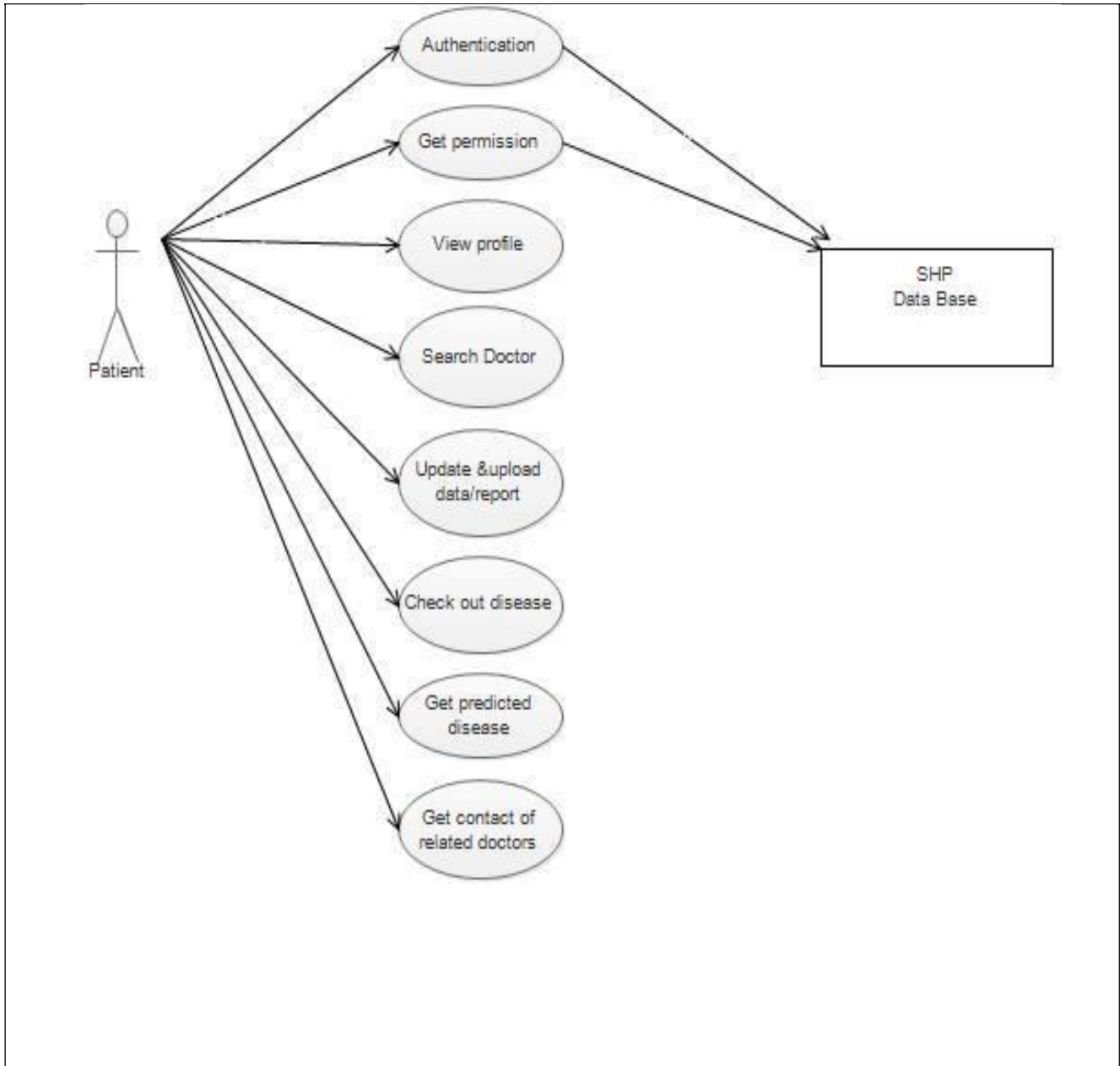


Figure 3.2: Use Case Diagram of Patient activ

Chapter 4

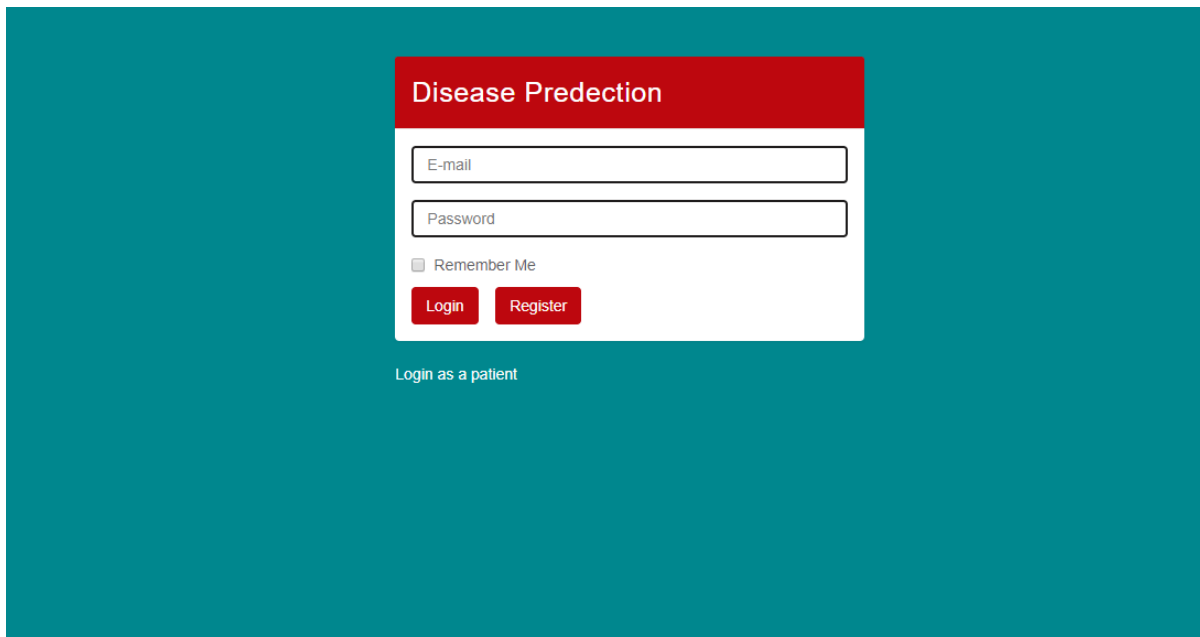
Design Specification

Front-end Design

The front-end design of a system requires creation of the HTML, CSS and presentational JavaScript code that makes up a user interface.

The reason of designing a system is to ensure that when a user accesses a system they see the information in a format that is easy to read and understand. The goal of front-end design is to enhance the performance and accessibility of a system. Our system consists of the following front-end design.

Admin Login: Admin can login the system using his user Id and password.



The image shows a login form for an application titled "Disease Prediction". The form is centered on a teal background. It features a white header with the title "Disease Prediction" in white text. Below the header, there are two input fields: "E-mail" and "Password". Underneath the password field is a checkbox labeled "Remember Me". At the bottom of the form are two red buttons: "Login" and "Register". Below the form, there is a link that says "Login as a patient".

Figure 4.1: Login page of Admin

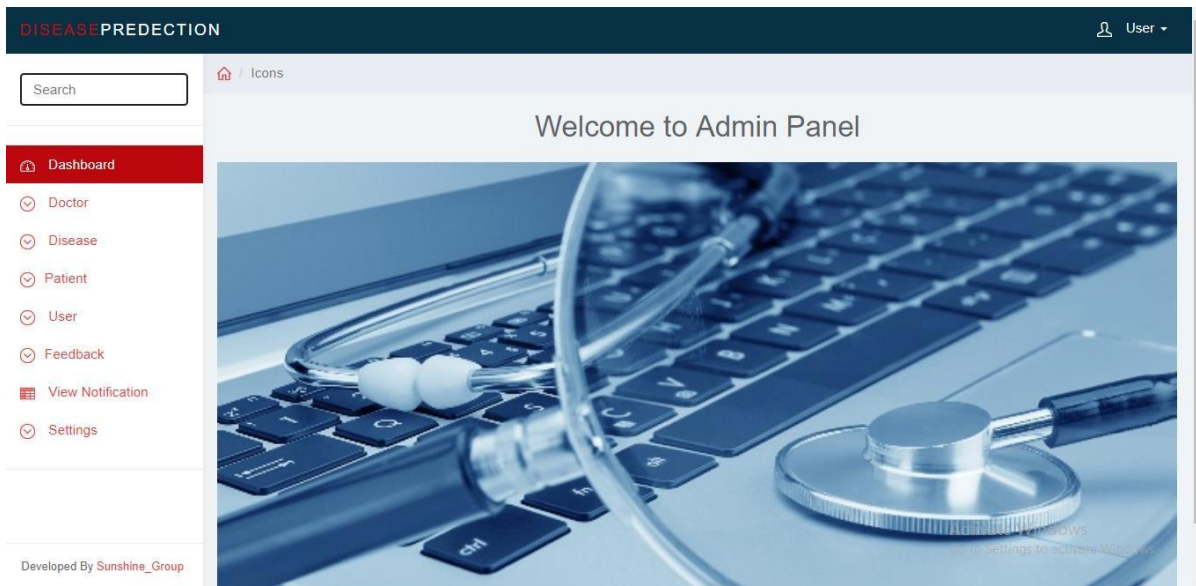


Figure 4.2: Page of Admin panel

Admin panel: The admin panel consists of the features and functionalities of admin. The following features are discussed below.

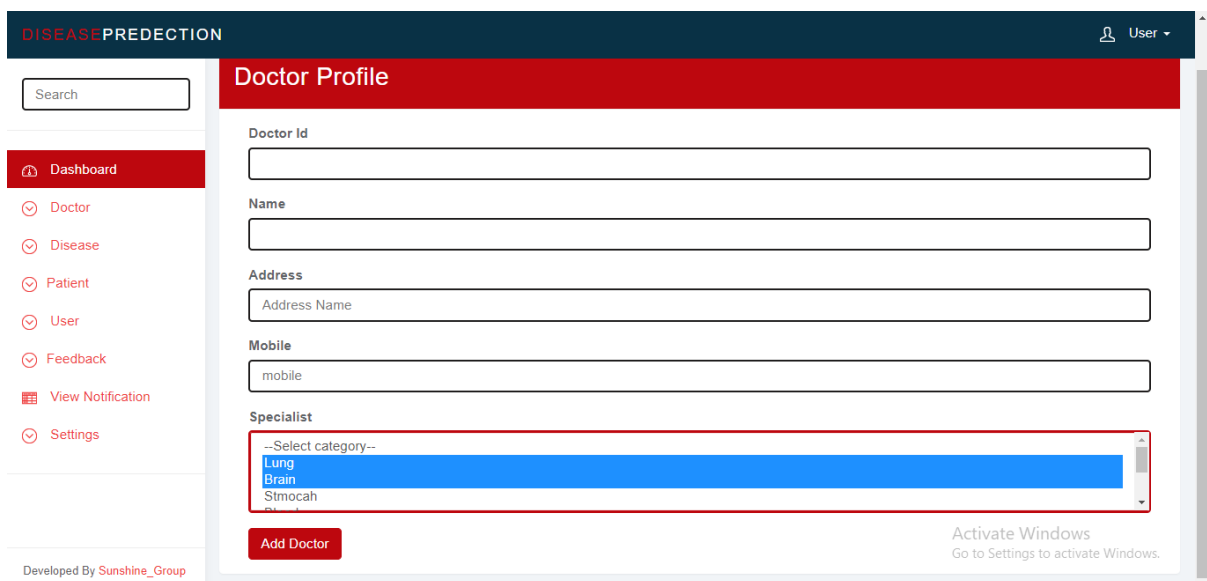


Figure 4.3: Page of Add Doctor

Add Doctor: Admin can add new doctor details and create a profile for each doctor. Each doctor will have a unique Id and admin can categorize the doctors by selecting specialty.

The screenshot shows the 'Patient Profile' form in the DISEASEPREDECTION application. The form is located on the right side of the page, with a red header bar. The form fields are: Patient Id, Name, Address (with a sub-field for Address Name), and Mobile. A red 'Submit' button is located at the bottom of the form. The left sidebar contains a navigation menu with options: Dashboard, Doctor, Disease, Patient, Feedback, View Notification, and Settings. The top navigation bar includes a search box, a home icon, the text 'Icons', and a user profile icon labeled 'User'. The footer of the page reads 'Developed By Sunshine_Group'.

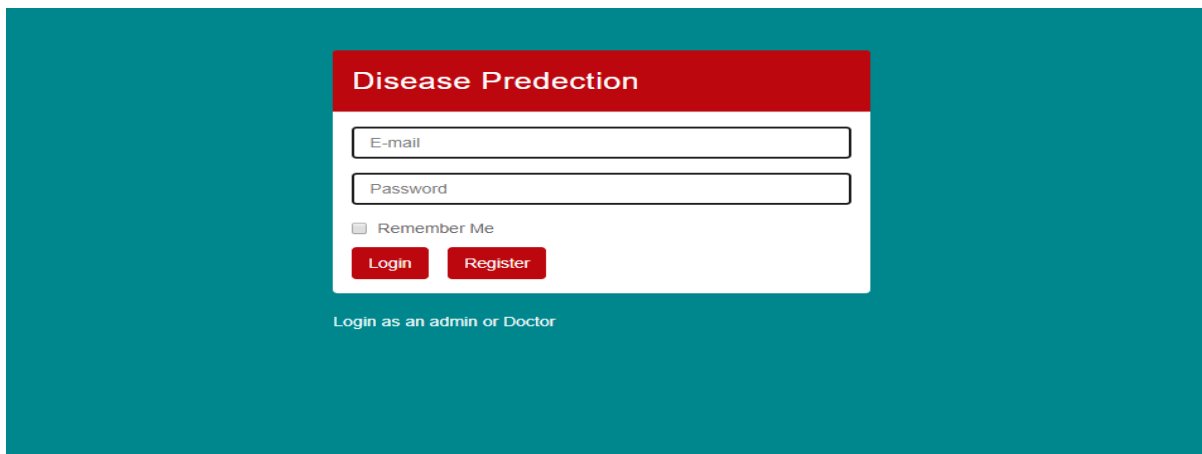
Figure 4.4: Page of Add Patient

The screenshot shows the 'Add Disease' form in the DISEASEPREDECTION application. The form is located on the right side of the page, with a red header bar. The form fields are: Disease Id, Name, Category (a dropdown menu with the text '--Select category--'), and Symptom (a text area with a blue background). A red 'Add Disease' button is located at the bottom of the form. The left sidebar contains a navigation menu with options: Dashboard, Doctor, Disease, Patient, User, Feedback, View Notification, and Settings. The top navigation bar includes a search box, a home icon, the text 'Icons', and a user profile icon labeled 'User'. The footer of the page reads 'Developed By Sunshine_Group'. An 'Activate Windows' watermark is visible in the bottom right corner of the page.

Figure 4.5: Page of Add disease

Admin can add patient and diseases with related symptoms. Both patient and disease have an unique Id and other input options filled by admin.

Patient Login: Patient can login the system using his user Id and password.



The image shows a web form titled "Disease Prediction" on a teal background. The form is white and contains the following elements: a red header bar with the text "Disease Prediction" in white; an "E-mail" input field; a "Password" input field; a "Remember Me" checkbox; a red "Login" button; and a red "Register" button. Below the form, there is a link that says "Login as an admin or Doctor".

Figure 4.6: Login page of Patient

Back-end Design

The back-end, or the "server-side" design is, actually how the site works, updates and changes.

This refers to everything the user can't see in the browser, like databases and servers.

Back-end design deals with things like security, structure and content management.

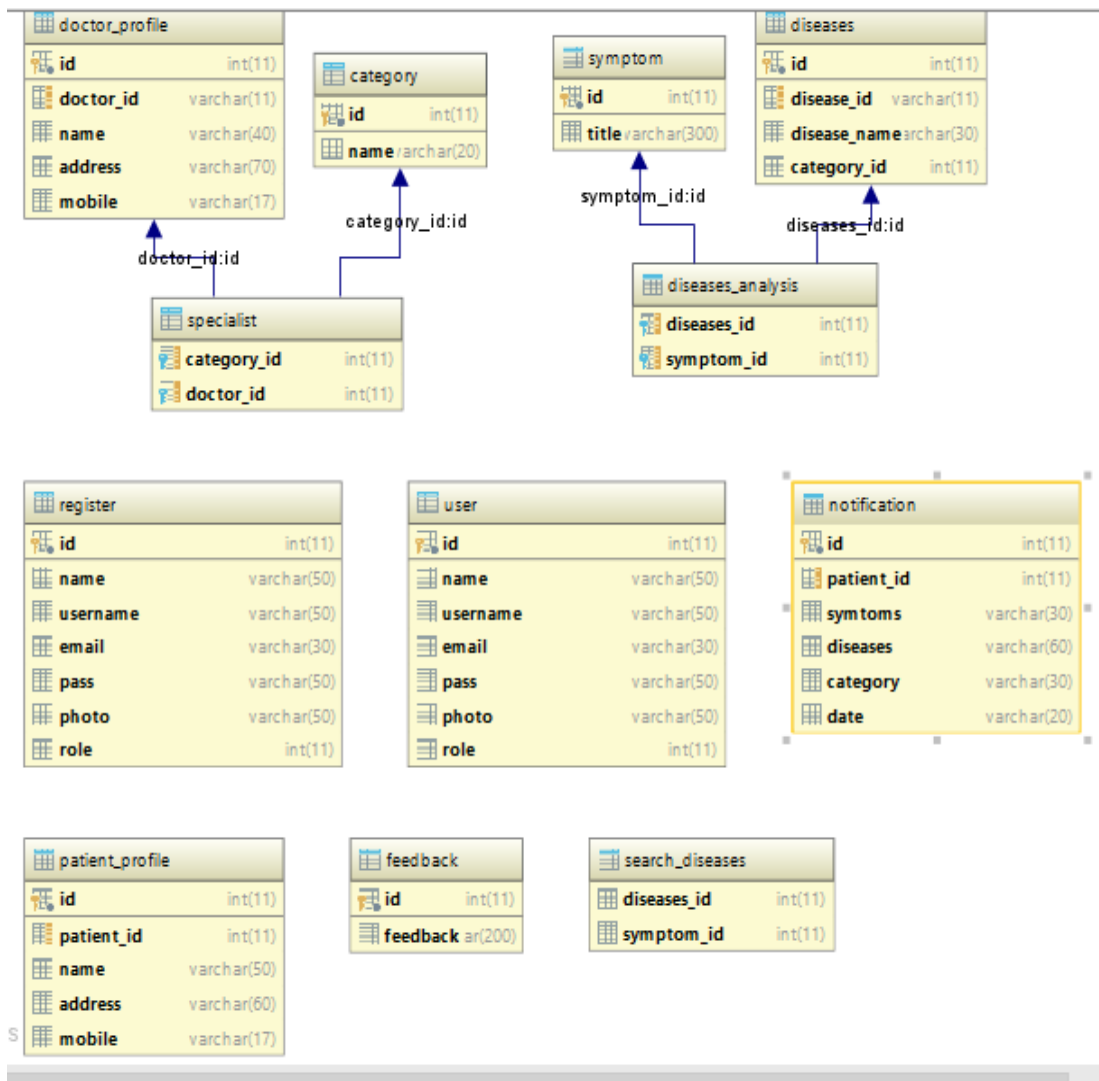


Figure 4.7: Back-end Design of disease identification system

Interaction Design and UX

Interaction design is the design of the interaction between users and products. The goal of interaction design is to create products that help the user to achieve their objectives in the best way possible.

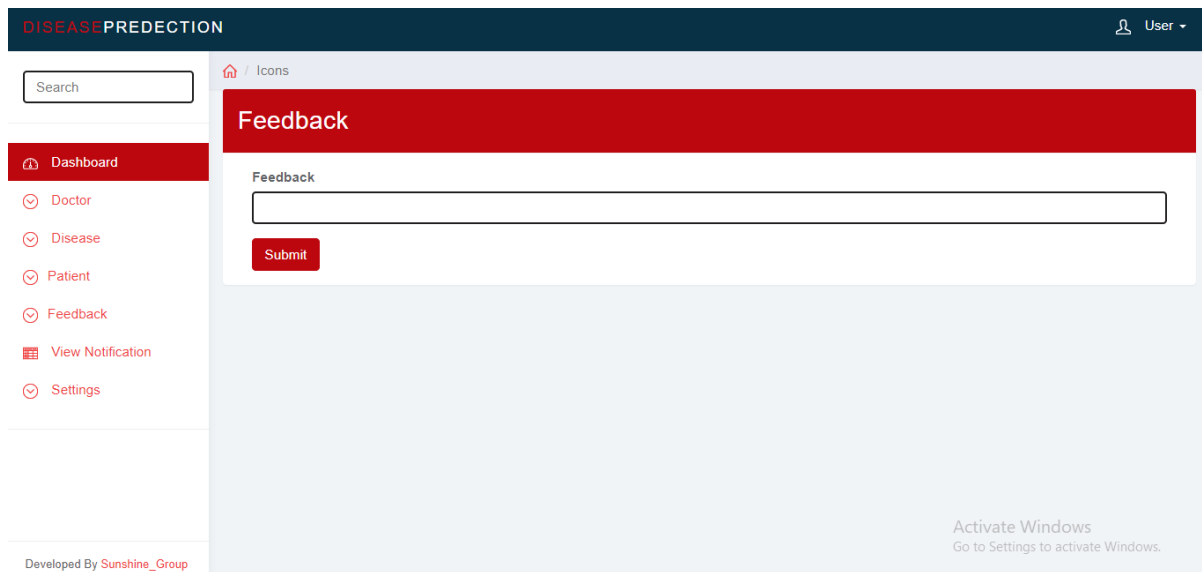


Figure 4.8: Patient feedback

Our system allows the users to give their valuable feedback about our system. Admin(S) of the system can receive the feedback and analyze the quality of the system.

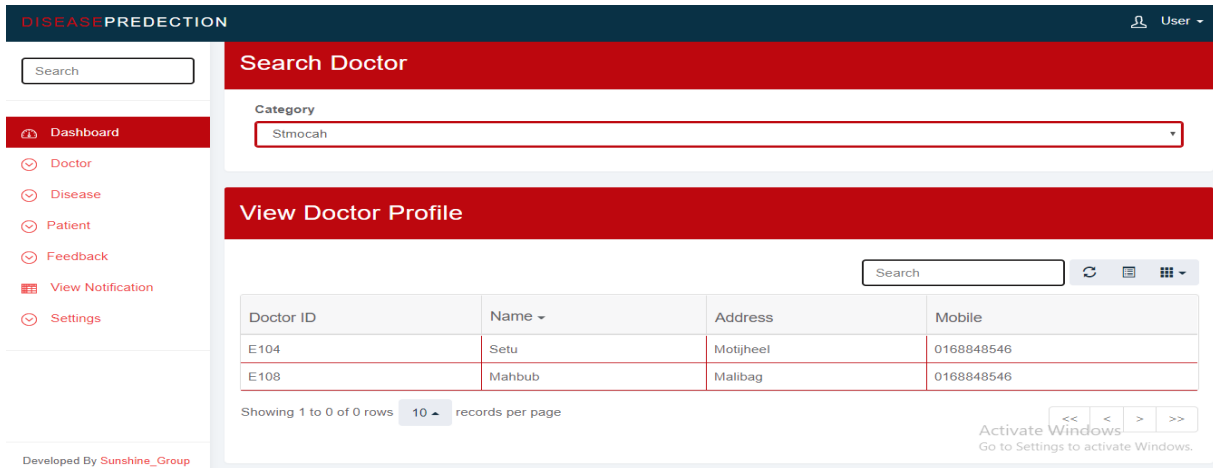


Figure 4.9: Search doctor

Users can search doctors by selecting the category and get their address and contact number. It is time and cost saving because user can do it from anywhere.

UX Design refers to user experience design which is the process of improving user satisfaction by maintaining the usability, accessibility, and pleasure provided in the interaction between the user and the product.

It is not just concerned with the interactive materials but also the way certain materials look, feel or contrive to deliver certain outputs.

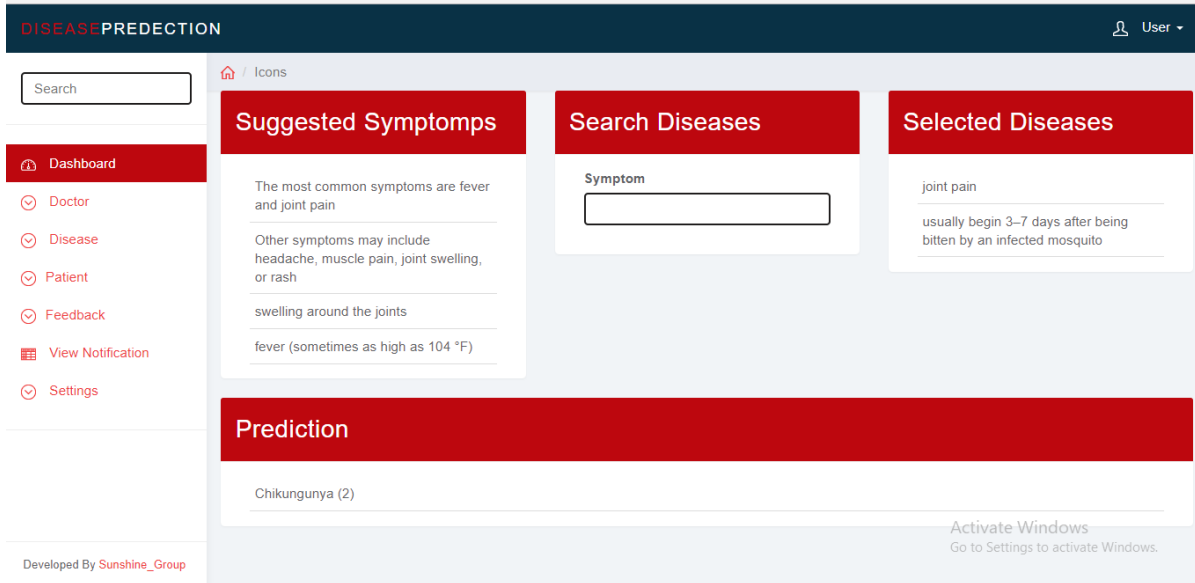


Figure 4.10: Search and predict disease

This is one of the most important features of our system. In this feature, user search their disease by giving input in the symptom option . Then symptoms are matched with our database to find the similarities and give a prediction result of the disease occurred.

Some of the diseases have similarity in symptoms. So, our prediction result finds the similarities and tries to give an appropriate result.

Implementation Requirements

Implementation requirement is the process of execution a plan, a method, or any design, idea, model for building a system. It is the action that must follow any preliminary thinking in order for something to actually happen.

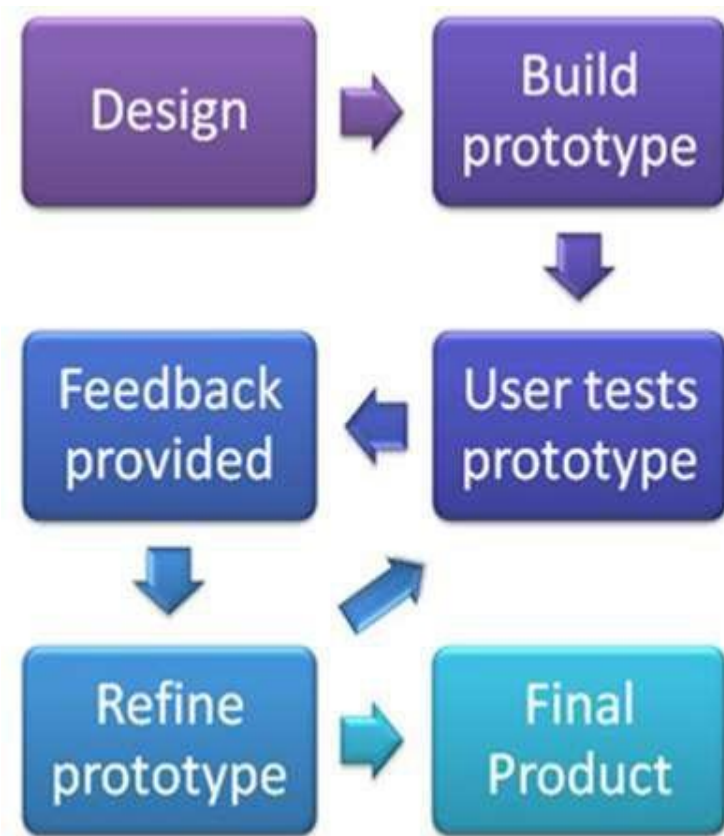


Figure 4.11: Requirements of Implementation

Our system is developed in such a way that it can readily be modified in response to end-user and customer feedback.

We build the database, user interfaces and working functions. After the user evaluates the prototype he suggests improvements. This loop continues until the user is satisfied.

CHAPTER 5

Implementation and Testing

Introduction

Implementation is an important part to manage an application. It improves to development of the strategic systems for applying the plan. After implementation a plan we need to develop the process according to the system.

Implementation of Database

Database is an ordered collection of data. Database management systems are particularly designed software applications that combine with the user, developer, and the database itself to receive and analyze data.

Well-known DBMSs include MySQL ,Postage SQL, Microsoft SQL Server, Oracle, SAP and IBM DB2. A database is not movable across several DBMSs.

The vital tools for implementing database management system are:

- Software.
- Hardware.
- Procedures.
- Database Access Language.

Implementation of Front-end Design

Implementation of front–end design is one of the essential process for beginning a web application.

There are several tools available that can be used to design the front end of a website. We have used the following tools for implementing front-end design of our system.

- HTML (backbone of any website development process).
- CSS (demonstrates the presentation aspect of the site and allows a web application to have unique look).
- JavaScript (transform a static HTML page into a dynamic interface).
- Bootstrap (a front-end framework containing HTML- and CSS-based design templates).
- jQuery (a cross-platform JavaScript library designed to simplify HTML).

Implementation of Interaction

Implementation of interaction is done considering the requirement of users of a system. We have considered the following criteria for implementing the interaction of our system.

- User satisfaction.
- Making the system easy to navigate.
- Having a comment section by creating a feedback option.

Test Results and Reports

Table 5.5.1:LoginReport

Test ID	Date	Module	Test Cases	Test Data	Pass/Fail	Status of Bug	Comments
1	7/04/18	Login	Login as Admin	Admin's username and password	Pass	N/A	Only login panel for Admin
2	7/04/18	Login	Login as patient	Patient's username and password	Pass	N/A	Only login panel for registered Patient

CHAPTER 6

Conclusion and Future Scope

Discussion and Conclusion

We tried our best to complete the project and fulfill the purpose of developing our project. We believe our system is fully unique system and we also believe that it will helpful for the users with the existing features and contents.

Scope for Further Development

Our project can be enhanced with more features and contents to help the users .Some of the features are discussed below:

- Get the input of the images for CT scan or X-Rays from connected device.
- Blood bank information.
- Producing ECG by using connected device.
- Video Conferencing facility for people of remote area for better treatment.
- Hangout for different doctors and patients at different locations.

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