HEART DISEASE PREDICTION

BY

MD.MASUD RANA
ID: 151-15-4760

AND

MOST.AFSANA MIMI
ID: 151-15-5166

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

Supervised By
SHAH MD TANVIR SIDDIQUEE
Senior Lecturer
Department of CSE
Daffodil International University

Co-Supervised By
ANUP MAJUMDER
Lecturer
Department of CSE
Daffodil International University

DAFFODIL INTERNATIONAL UNIVERSITY

DHAKA, BANGLADESH

DECEMBER 2018

APPROVAL

This Project titled **"HEART DISEASE PREDICTION**", submitted by Masud Rana, ID No: 151-15-4760, Most. Afsana Mimi, ID No: 151-15-5166 to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering (BSc) and approved as to its style and contents. The presentation has been held on 11 DECEMBER 2018

BOARD OF EXAMINERS

_____

Dr. Syed Akhter Hossain **Chairman**
Professor and Head
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

_____

Narayan Ranjan Chakraborty **Internal Examiner**
Assistant Professor
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

_____

Md. Tarek Habib **Internal Examiner**
Assistant Professor
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

_____

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

DECLARATION

We hereby declare that, this project has been done by us under the supervisor of **Shah Md Tanvir Siddiquee**, **Senior Lecturer of CSE**, Department of CSE Daffodil International University and co-supervisor of **Anup Majumder**, **Lecture 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:

Shah Md Tanvir Siddiquee
Senior Lecturer
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

Co-Supervised by:

Anup Majumder
Lecturer
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University

Submitted by:

Masud Rana
ID: 151-15-4760
Department of Computer Science and Engineering
Daffodil international university

Most.Afsana Mimi
ID: 151-15-5166
Department of Computer Science and Engineering
Daffodil international university

ACKNOWLEDGEMENT

First, we express our heartiest thanks and gratefulness to almighty God for His divine blessing makes us possible to complete the final year project/internship successfully.

We really grateful and wish our profound our indebtedness to our Department Head **Dr. Sayed Akhter Hossain** supervisor **Shah Md. TanvirSiddiquee**, Senior Lecturer and co-supervisor **Anup Majumder**, Lecturer, Department of CSE Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of "ICT" to carry out this project. His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior drafts and correcting them at all stage have made it possible to complete this project.

We would like to express our heartiest gratitude to Department Head **Dr. Sayed Akhter Hossain**, supervisor **Shah Md. TanvirSiddiquee**, Senior Lecturer, and co-supervisor **Anup Majumder**, Lecturer, Department of CSE, for his kind help to finish our project and also to other faculty member and the staff of CSE department of Daffodil International University.

We would like to thank our entire course mate at Daffodil International University, who took part in this discussion while completing the coursework.

Finally, we must acknowledge with due respect the constant support and patience of our parents.

ABSTRACT

This project is intended to develop a web based application on online which will provide heart disease prediction to the user. The proposed project is a web-based application which try to help the people to find out if they have any kind of heart disease. In our project there are two main actor so we defined their activity respectively. First of all user have to login in our system and doctor account is created by admin. Then user fill the form and becomes our registered user. The doctor list is provided with their address information, contact information, and the fields they are specialist in. The admin can add or delete doctor form the doctor's list. User can see the doctor's list and make contact with them. User can test their heart disease by providing some required data asked by our system to enter. Here the Data Mining is used for mining the user provided data and give them specific result for their heart disease prediction. Our system will provide some other services for making user awareness about various heart diseases such as "Heart Healthy Diet". Our system will send notification to the registered user if the misses their heart disease prediction check-up for more than one weak. There will be some risk factor that will indicate which test data range (ex: cholesterol level) can cause human heart disease. After implementation of all functions, the system is tested in different stages and it works successfully as a prototype.

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER 1
INTRODUCTION

1.1 Introduction

Coronary artery disease (CAD) which is one kind of heart disease is an increasingly important medical and public health problem, and is the leading cause of mortality in Bangladesh as well as other countries. The underlying pathophysiology is poorly understood. Statistics show that heart disease risk factors are subject to a multiplier effect. Our project aims to make people aware about the heart disease, since our system will provide the heart disease prediction for the user. So that people can easily find if they are in risk of any heart disease. Here we will be using data mining to make the prediction. There are two type of log in the system. One is admin login and the other is user login. In our project we have also included some mandatory things for being safe from any heart disease such as heart healthy diet, we have included the risk factors for heart disease as well. By using our system the user can easily check to find they are in risk of any heart disease or not, without leaving their home. Our system also includes a bunch of heart specialist's list. The admin can add or remove them from the list. The user can select particular field to see the doctor's list. This website developed by Google based website is an open source project, it is more popular and easily developed. In modern times it is very beneficial for users.

1.2 Motivation

Now-a-days the world has come in our hand through the internet. Various websites and web-applications are being used for health care purposes. We know present day’s in our country Internet become popular so we wanted to create a website that make our people time save and get their expected outcome. So we were motivated from this and try to combine a complete heart disease prediction system and data mining, we pay attention on collecting actual data or risk factor that might cause heart disease. We are trying to build the awareness among people about the heart disease. If we are able to make at lease 10% people aware about their heart health that will be our greatest achievement for the project.

1.3 Objective

To create a profile of user

- To create awareness about heart disease
- To make heart disease prediction easier
- To help user make contact with heart specialist
- To give people information about various heart disease related terminology
- To create interaction between admin and user
- To ensure security

1.4 Expected Outcome

The proposed project is a web-based application which try to provide heart disease prediction for the user. In our project there are two main actor so we defined their activity respectively. First of all user have to login in our system, admin login to the system and doctor account is created by admin.

Admin

Admin can log in the system. They can add/remove doctors in the doctor list. Admin can reply user messages directly in the system messaging feature. Admin can see user feedback also.

User

User can sign in the system. A user profile is created based on user provided information. User's history of previous heart disease check up in the system will be shown in their profile. If the user misses heart disease check-up for more than one week, notification will be shown their profile. User can give feedback to the system.

Doctor

Admin can add/remove doctors from the Doctor's list. Doctor's profile will be created with their address, contact and the field they are specialist in..User can select specific category to see the doctor's list.

1.5 Report Layout

We have organized our report as follows.

In chapter 2, we introduce the background circumstances of our project. We also briefed about the related work, the scope and challenges of the project and we are doing comparative study with many other candidate system. In chapter 3, we specified the requirement project. We defined the business process model, data flow diagram, use case diagram, ER diagram and design requirements. We also discussed about the requirement collection and analysis process. In chapter 4, we specified the front-end and back-end design of the project. In chapter 5, we exhibited the implementation of the whole project and we tested the every section of the project whether the application is working as expected. In chapter 6, we designated about conclusion and the scope for further development of the project. At last of all, we give some related reference to ensure that the information in the report are must be correct.

CHAPTER 2

BACKGROUND

2.1 Introduction

We already discuss that why we choose this project, we try to help people to get their heart disease prediction result through our system, and make people aware about the heart disease. People can get huge benefit for their heart health if they regularly test the risk factors for the heart disease and be aware before any kind of heart diseases affect them. In this chapter we discuss all tasks that we need to concern before taking a step ahead. Here we want to briefly discuss about all related works, Comparative Studies, The Scope of the Problem and Challenges.

2.2 Related Work

Already we told that there are some related work that we found there we defined some of them. Efficient Heart Disease Prediction System is a heart disease risk level prediction web application which is designed to increase people's awareness about heart disease related terminologies.

- Make prediction of human heart disease
- Collect data and inform about the Cardiovascular sickness

It is a web application which aims to determine human heart disease prediction but it is not 100% accurate in its output result.

Disadvantages of the existing app

- It must be accessed through a web browser.
- It cannot send notifications to the user.
- It does not provide mush information about the Cardiovascular disease
- Only restricted to some stereoscopic prediction system.
- User feedback system is not available.
- Security issue is not addressable.

In our proposed application we provide as much as feature to user for helping them and increasing efficiency in our system.

- It must be accessed through a web browser.
- It can send notifications to the user for regular check-up in our system.
- It will provide proper diet plan for the help of human heart health.
- Ensure usability that anyone from anywhere use our application easily.
- It can suggest a bunch of heart specialist's information and contacts.
- It has user feedback system for the system.

So we say that our proposed object is really accurate for now-days and fulfil all possible facilities.

2.3 Feasibility Study

A feasibility study assesses the operational, technical and economic merits of the proposed project. The feasibility study is intended to be a preliminary review of the facts to see if it is worthy of proceeding to the analysis phase. From the systems analyst perspective, the feasibility analysis is the primary tool for recommending whether to proceed to the next phase or to discontinue the project.

The feasibility study is a management-oriented activity. The objective of a feasibility study is to find out if an information system project can be done and to suggest possible alternative solutions [4].Projects are initiated for two broad reasons:

1. Problems that lend themselves to systems solutions
2. Opportunities for improving through:
    - Upgrading systems
    - Altering systems
    - Installing new systems.

A feasibility study should provide management with enough information to decide:

- Whether the project can be done
- Whether the final product will benefit its intended users and organization
- What are the alternatives among which a solution will be chosen
- Is there a preferred alternative

We have checked all the conditions that are stated above and come to the decision that, it's not only a hundred percent feasible project but also a demanding one.

2.3.1: Technical feasibility study

A large part of determining resources has to do with assessing technical feasibility. It considers the technical requirements of the proposed project. The technical requirements are then compared to the technical capability of the organization. The systems project is considered technically feasible if the internal technical capability is sufficient to support the project requirements. The analyst must find out whether current technical resources can be upgraded or added to in a manner that fulfils the request under consideration [5]. When writing a feasibility report, the following should be taken to consideration:

- A brief depiction of the business to evaluate more conceivable elements which could influence the review
- The part of the business being inspected
- The human and financial variable

To satisfy the prerequisites of this project, it requires good knowledge of web development. As we have enough knowledge on PHP and its frameworks, HTML, CSS, Bootstrap and J Query, We were very confident to satisfy us and everyone.

2.3.2 Operational feasibility study

Operational feasibility is a measure of how well a proposed system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development. Operational feasibility reviews the willingness of the organization to support the proposed system.

These include such design-dependent parameters such as reliability, maintainability, supportability, usability, productivity, disposability, sustainability, affordability and others.

2.3.3 Economical feasibility study

Economic analysis could also be referred to as cost/benefit analysis. It is the most frequently used method for evaluating the effectiveness of a new system. In economic analysis the procedure is to determine the benefits and savings that are expected from a candidate system and compare them with costs [7].The analyst must estimate costs in each of the following areas:

- People, including IT staff and users
- Hardware and equipment
- Software, including in-house development as well as purchases from vendors.
- Licenses and fees.
- Facility costs

At this point, the projected costs will only be a rough estimate. The exact costs are not required to determine economic feasibility. It is only required to determine if it is feasible that the project costs will fall within the target budget or return on investment.

2.4 Scope of the Problem

We have already seen that some current application already giving services related to the heart disease prediction but those website do not give any accurate result for the user heart disease prediction. We ensure about the accurate heart disease prediction because we have gathered the data for user heart disease prediction from some well-known heart specialist in our country and also from some popular heart disease related website. We have include a user-admin messaging system so that user can directly ask any help/suggestion for improving the service of our system. Different category of heart specialist will help user to make contact with their desired doctor. We try to our level best that people get their expected feedback.

2.5 Challenges

There is no work exists without challenge. When we are going to collect data from different heart specialist we find some difficulties because they are so busy to give time for us to collect the data. Though we have found enough of the data but we are trying to achieve more data related to the heart disease, so it's bothering us too much. We compete with other existing system so we have to motivated people and manipulated people to use our system and make understandable that our system is easy and better than others.

CHAPTER 3
REQUIREMENT SPECIFICATION

3.1 Requirement Collection & Analysis

Our framework is gathered enormous measure of information when any client enrol in our framework. We investigation information and consider the information that we gather from client. Admin can get to the information and watch out for the client that on the off chance that they do any hostile work they can without much of a stretch discover.

3.1.1 For Admin

we collect data information, doctor area and client get these data through us. We utilize this data to build up our framework and make a report for client.

3.1.2 For User

From user we collect their personal information, previous result system and create a report for user.

3.1.3 For Administrator

The Administrator is a definitive client of the framework. Administrator should login to the framework to work. None other than Admin can get to the full framework. Just administrator will have the capacity to alter, refresh, include and erase the information from this framework

3.1.4 For Doctor

Doctor account is created by admin. Every doctor has different and a unique Id which provided by administrator. They can analysis information and approved the account of user and doctor.

3.2 ER Diagram

Now for our system the ER diagram given below

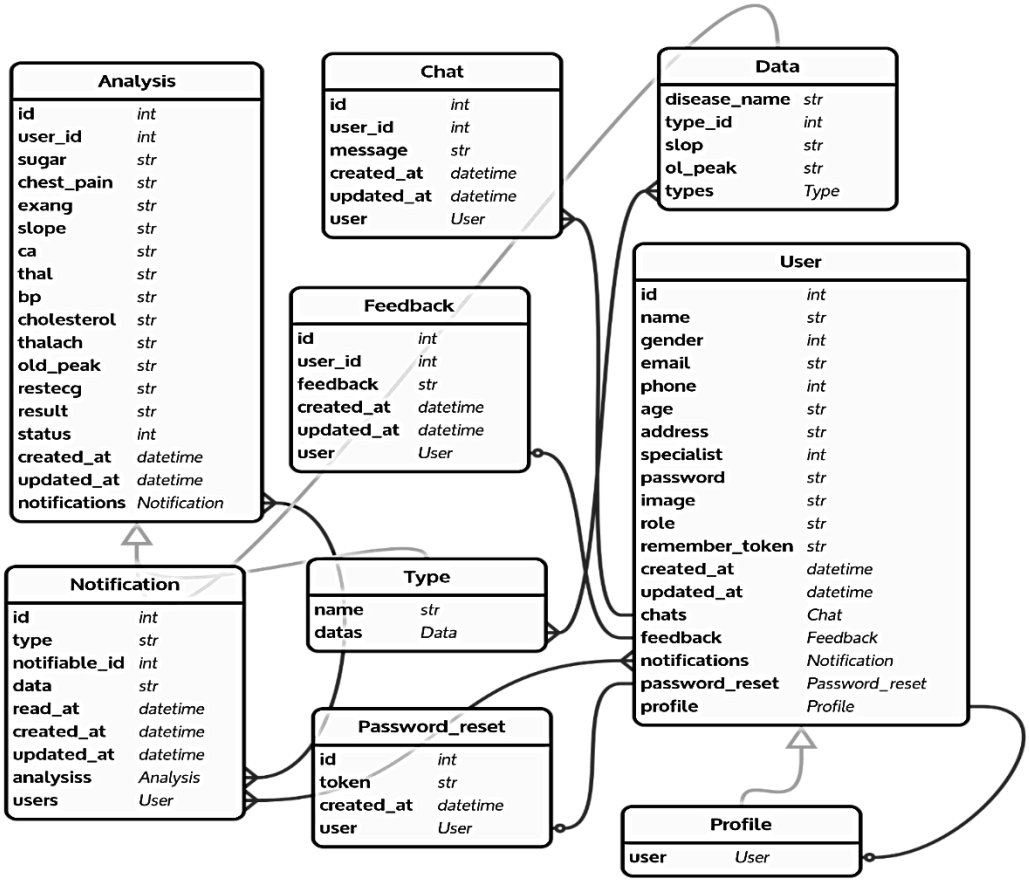


Figure 3.2.1 : ER Diagram

3.3 Use Case Modelling and Description

UML Use Case Diagrams can be utilized to portray the usefulness of a framework on a level plane. That is, instead of simply speaking to the subtle elements of individual highlights of a framework, UCDs can be utilized to demonstrate the majority of its accessible usefulness. It is imperative to note, however, that UCDs are on a very basic level unique in relation to succession graphs or stream diagrams since they don't make any endeavor to speak to the request or number of times that the frameworks activities and sub activities ought to be executed [7]. The figures are appeared beneath for administrator, police, property holder and occupant individually.

3.3.1 Use case (Administrator part)

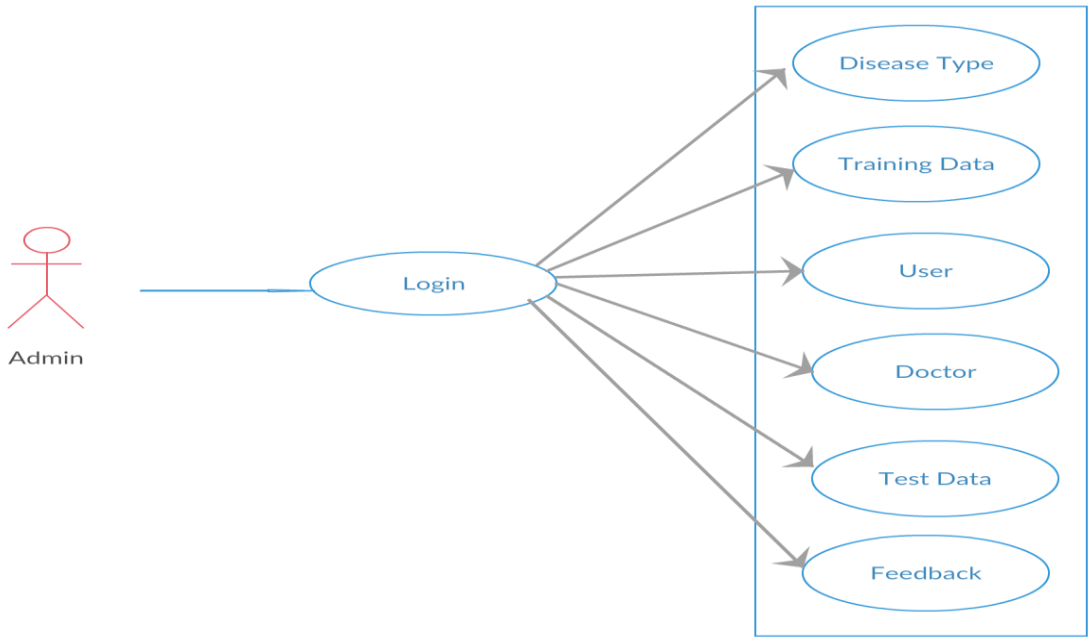


Figure 3.3.1: User case model for Admin

3.3.2: Use case (User)

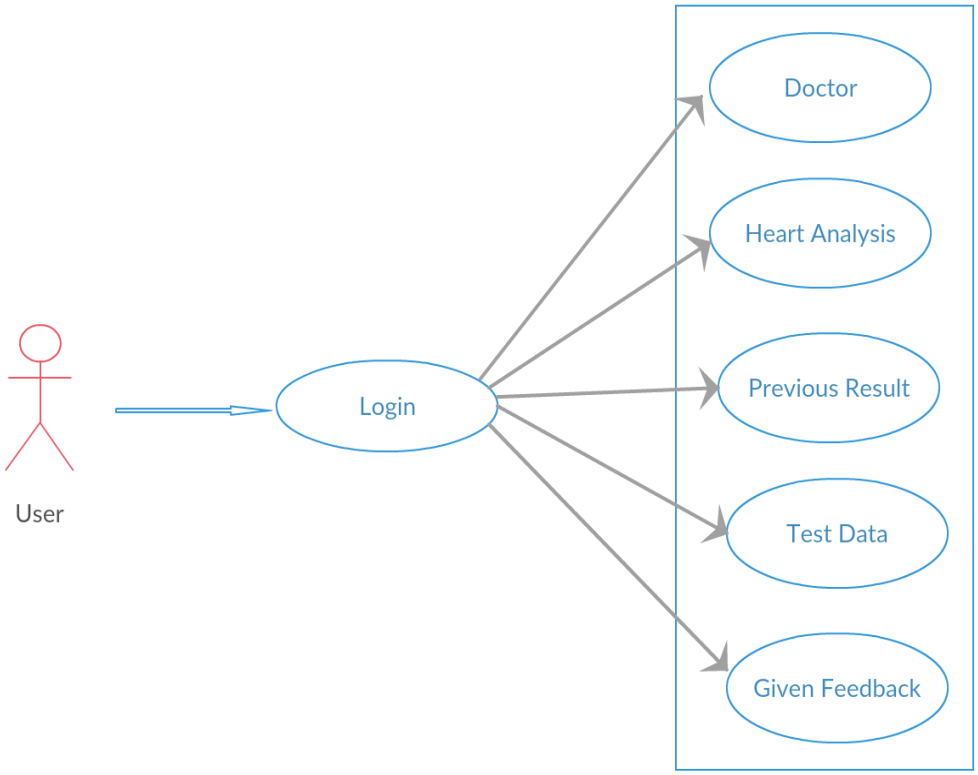


Figure 3.3.2: User case model for User

3.4 Logical Data Flow Diagram

Above all else we have presented about the whole image which we have use to draw the framework flowchart of the framework. The DFD clears up structure requirements and recognizes genuine changes that will get the opportunity to be extends in system plot. It is IPO Chart: Here we have select five unique images to start five distinct purposes.

- Input, Process, Output Chart
- This is the sign the DFD, there are FIVE symbols:
    - Input, Process, Output Chart
    - This is the sign the DFD, there are FIVE symbols:

This rectangular Defines a Input data

Identifies data flow from Job analysis to Retirement.

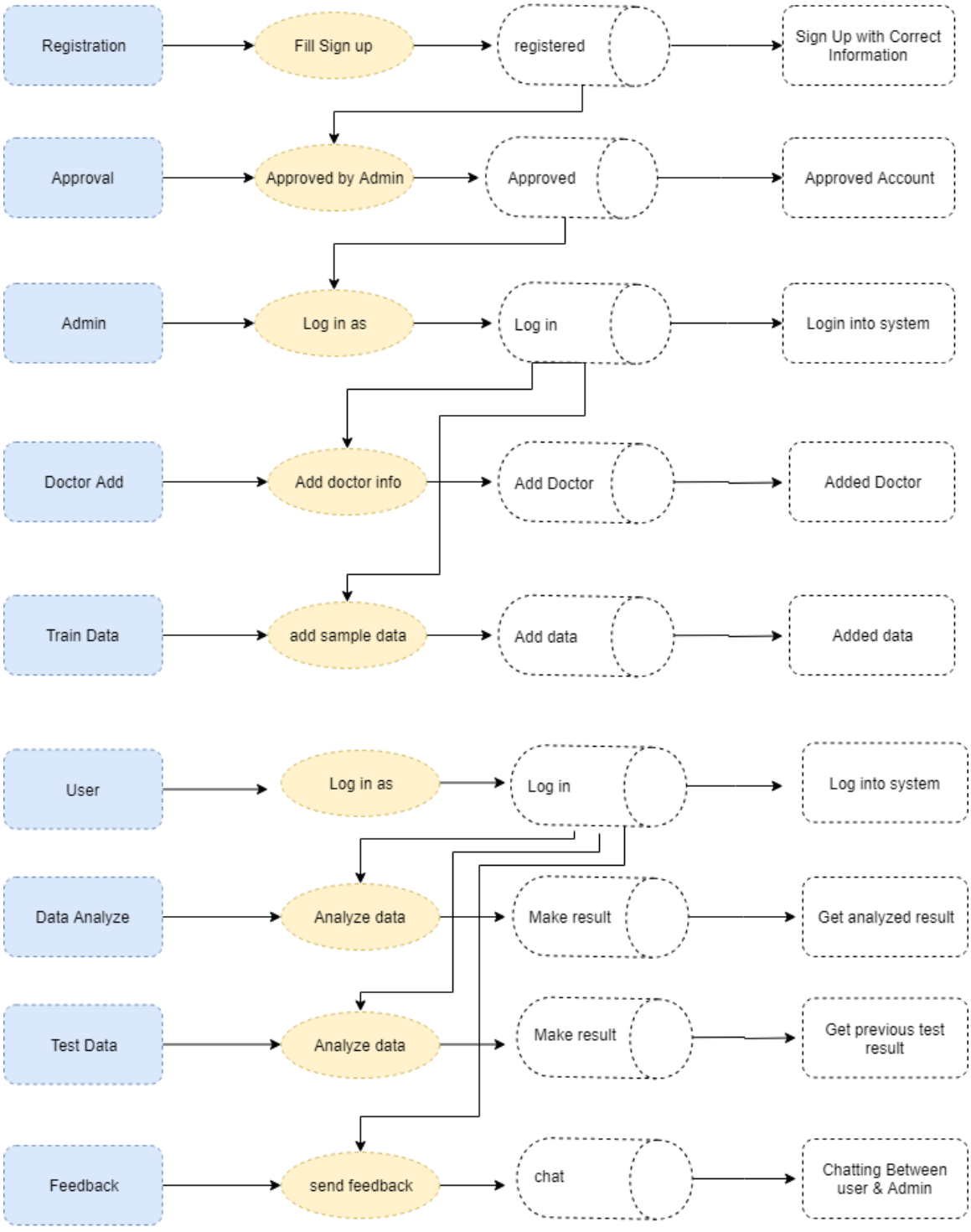
Represents a process that transforms incoming data flow into outgoing data flow.

File store process data

Identified Output Data.

To draw the system flow chart of Tenant information management system we will use these diagram

3.4.1 Data Flow Diagram



Fifure 3.4.1: Data Flow Diagram

3.5 Design Requirements

Dashboard has been utilized to actualize the pages of the proposed framework. HTML, CSS, JavaScript, JQuery likewise have been utilized to manufacture the site page. Here we present four distinctive dashboard for our framework administrator, police, occupant, property holder deferentially. Each dashboard has distinctive assignment with various highlights which are structured premise of Bootstrap with HTML, CSS, JavaScript, and JQuery.

CHAPTER 4

DESIGN SPECIFICATION

In this part we will talk about procedure of the proposed data framework. A data framework (IS) is any sorted out framework for the gathering, association, stockpiling and correspondence of data [7]. All the more particularly, it is the investigation of corresponding systems that individuals and associations use to gather, channels, and process, make and circulate information. In this part we will quickly clarify about each capacity of our framework and will demonstrate the procedure how it functions. Here we will quickly clarify about every last capacity which we have incorporated into this task.

4.1 Front-end design

Our venture front-end has planned by HTML, which remains for Hypertext Mark-Up Language, is the dialect for depicting organized archives and in addition the dialect used to make site pages in the Internet. CSS and Bootstrap system used. Cascading Style Sheets (CSS) is a template dialect utilized for depicting the introduction of an archive written in a mark-up dialect. Bootstrap contains HTML-and CSS-based plan layouts for typography, frames, catches, route and other interface parts, and additionally discretionary JavaScript expansions. A few cautions and intuitive assignments are produced by JavaScript. Right around 35 pages of our venture have substance of front-end. Numerous highlights of a protest arranged dialect and Tools for outline UI are included as an undertaking need.

4.1.1 Login

In computer security, a login alludes to the accreditations required to get access to a PC framework or other confined zone. In this way, in this framework in other to gain admittance to the backend, the framework requires a client validation (login) for security purposes. The client will embed his username and secret key and afterward he will go for login. In the event that such client exist in the database the framework will give the client access to the framework, if not the framework will demonstrate a blunder message to the client. This implies he can't approach the framework. The figure is appeared beneath in figure 4.1

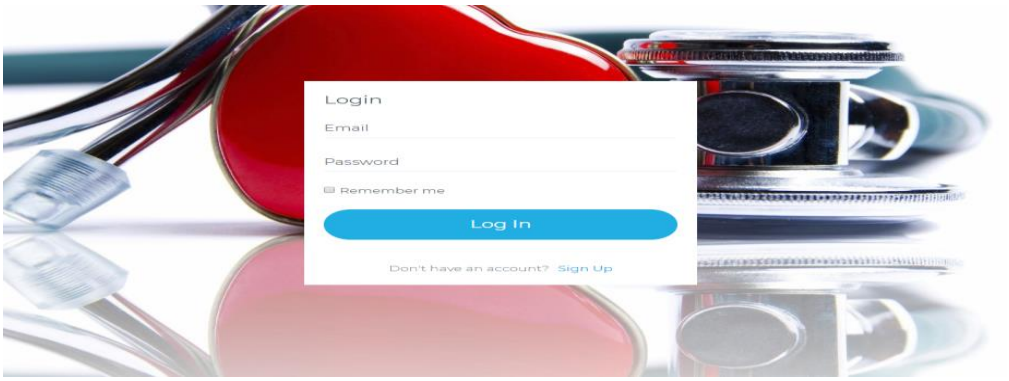


Figure 4.1: Login

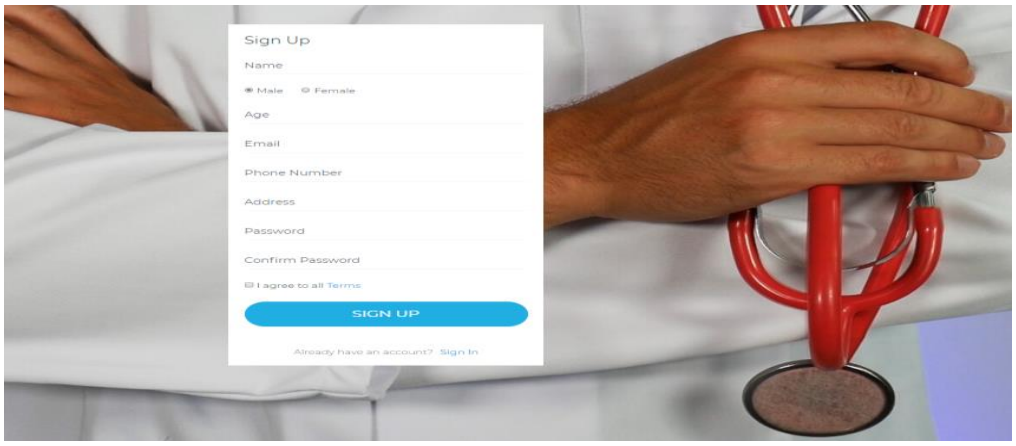


Figure 4.2: Signup form

4.1.2 Fill the Form as patients or User

After login to the system user or patients and everyone saw their profile and information. The situation shown in figure below.

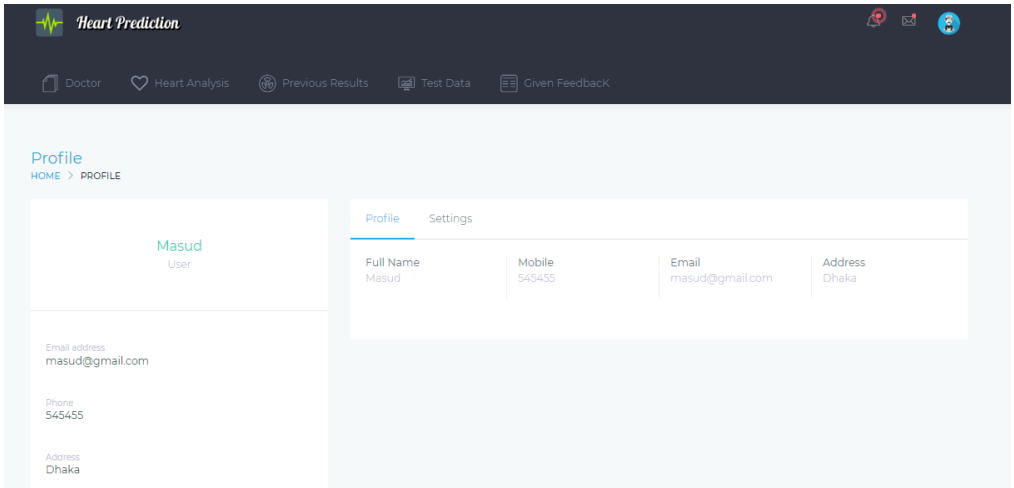


Figure 4.3: After login

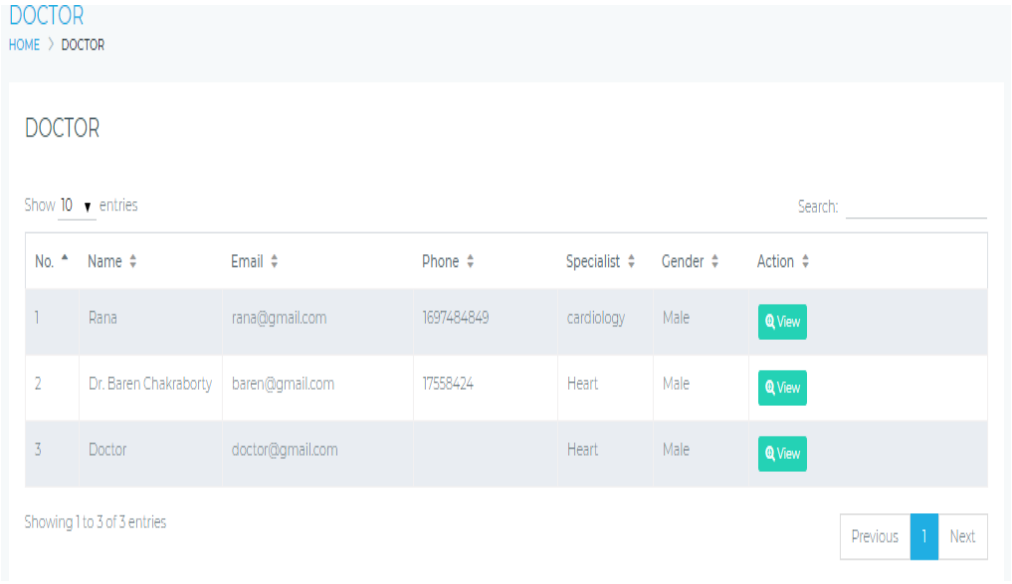


Figure 4.4: Doctor List

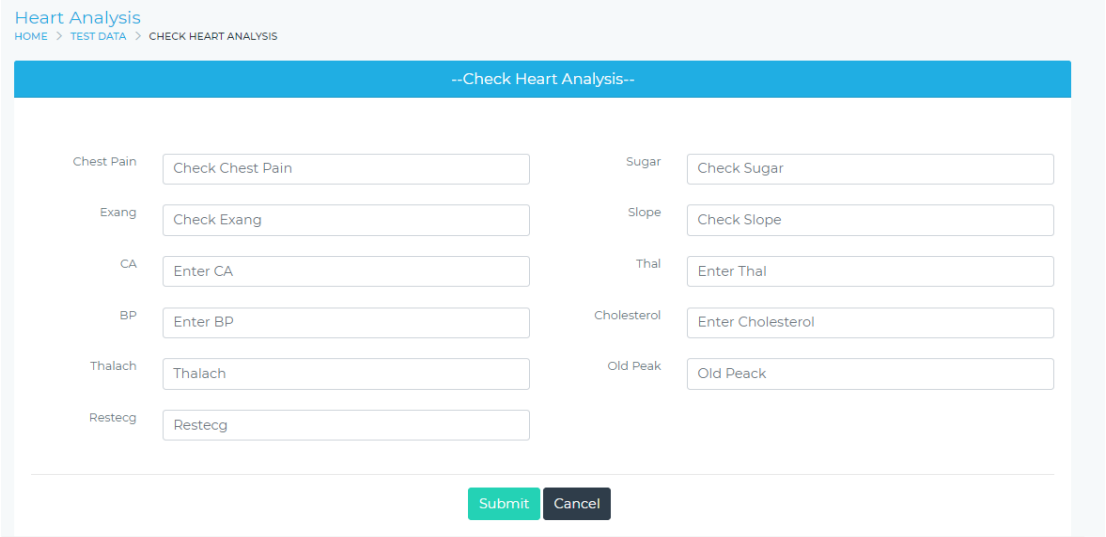


Figure 4.5: Heart Analysis

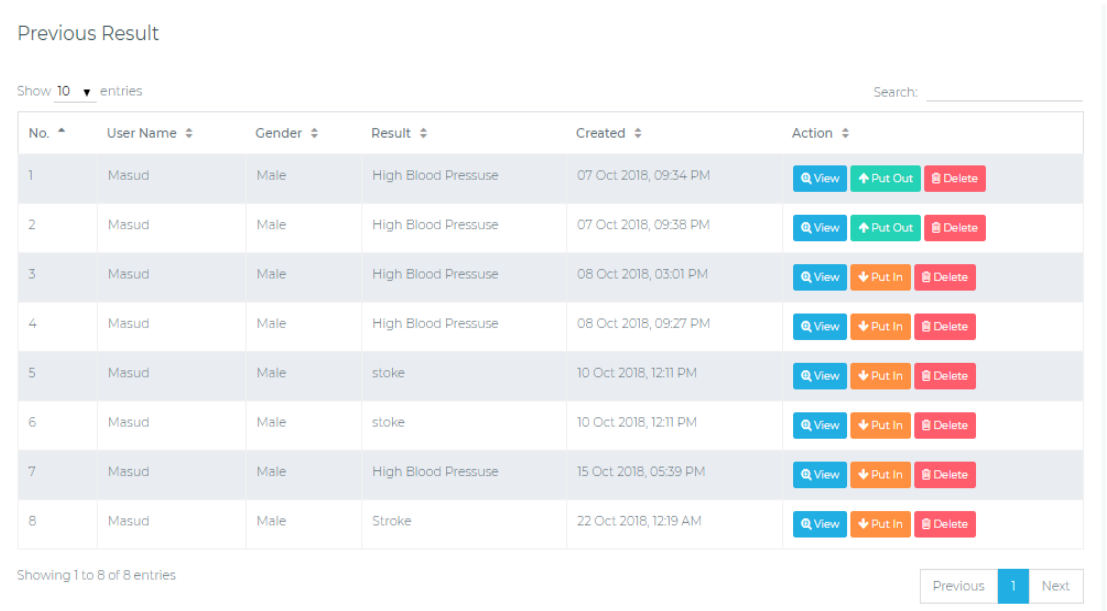


Figure 4.6: previous result

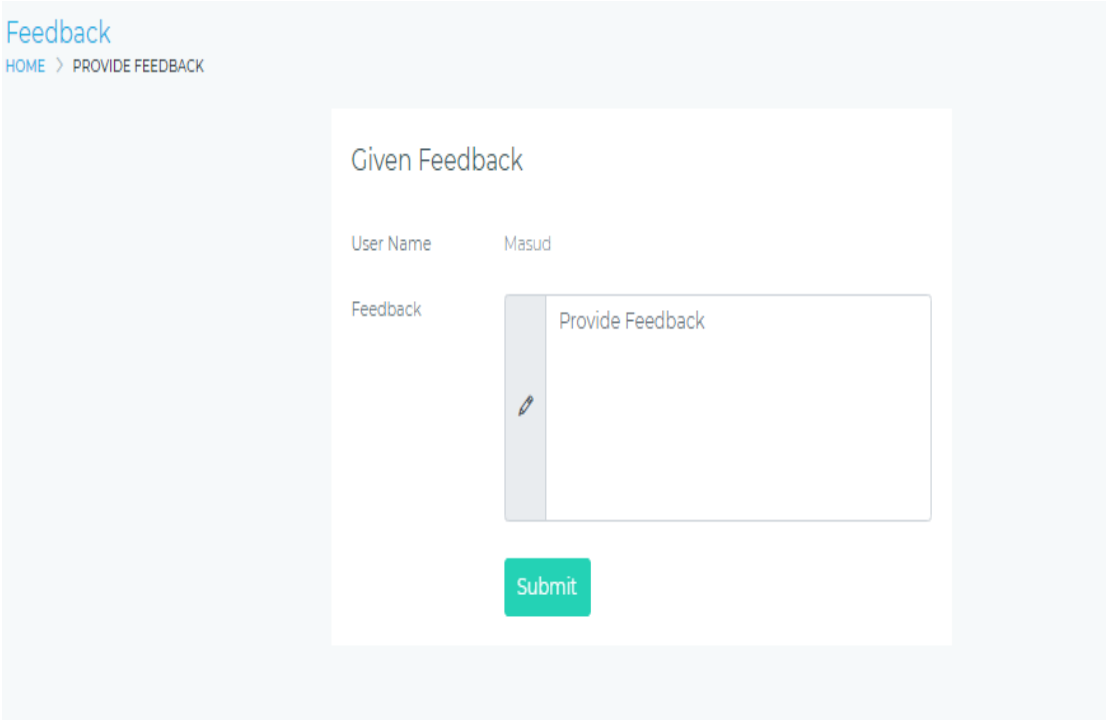


Figure 4.7: User Feedback

4.1.4 Admin Account

Director is with everything taken into account of any framework. In our framework administrator account is made by administrator themselves and they can do anything what they need with improvement and dashboard too. Administrator can make their record to utilizing database.

4.2 Back-end Design

Our project back-end has outlined by PHP, PHP is a server-side scripting dialect composed essentially for web improvement yet in addition utilized as a universally useful programming dialect. MySQL database has utilized. Right around 45 pages of our venture have substance of back end implies push PHP. In our task 14 tables made to oversee information. There are some canter tables, a few tables are transitory premise and client information contains by a few tables. PHP have a solid holding with SQL question dialect parsing, every single sensible guidance made by PHP. Client session creation and decimate are overseen by PHP libraries. Information exchange between pages are utilized $_POST strategy the vast majority of time. We are intrigued to make reference to some imperative undertaking done by PHP point to point.

- PHP makes session for clients and in addition approve client.
- PHP have power over all information exchanging User end to Saver end.
- All Logical declaration created utilizing PHP code
- Loops, If-else and control proclamation done by PHP
- Main calculation wrote in PHP
- Data exchange between pages utilizes $_POST strategy for PHP

4.2.1 Admin Dashboard

An admin can see all reports, all account that’s are approved or cancelled, all patient list, all doctor list, print many things that they need. Admin can controlled whole system.

Here given the admin dashboard details.

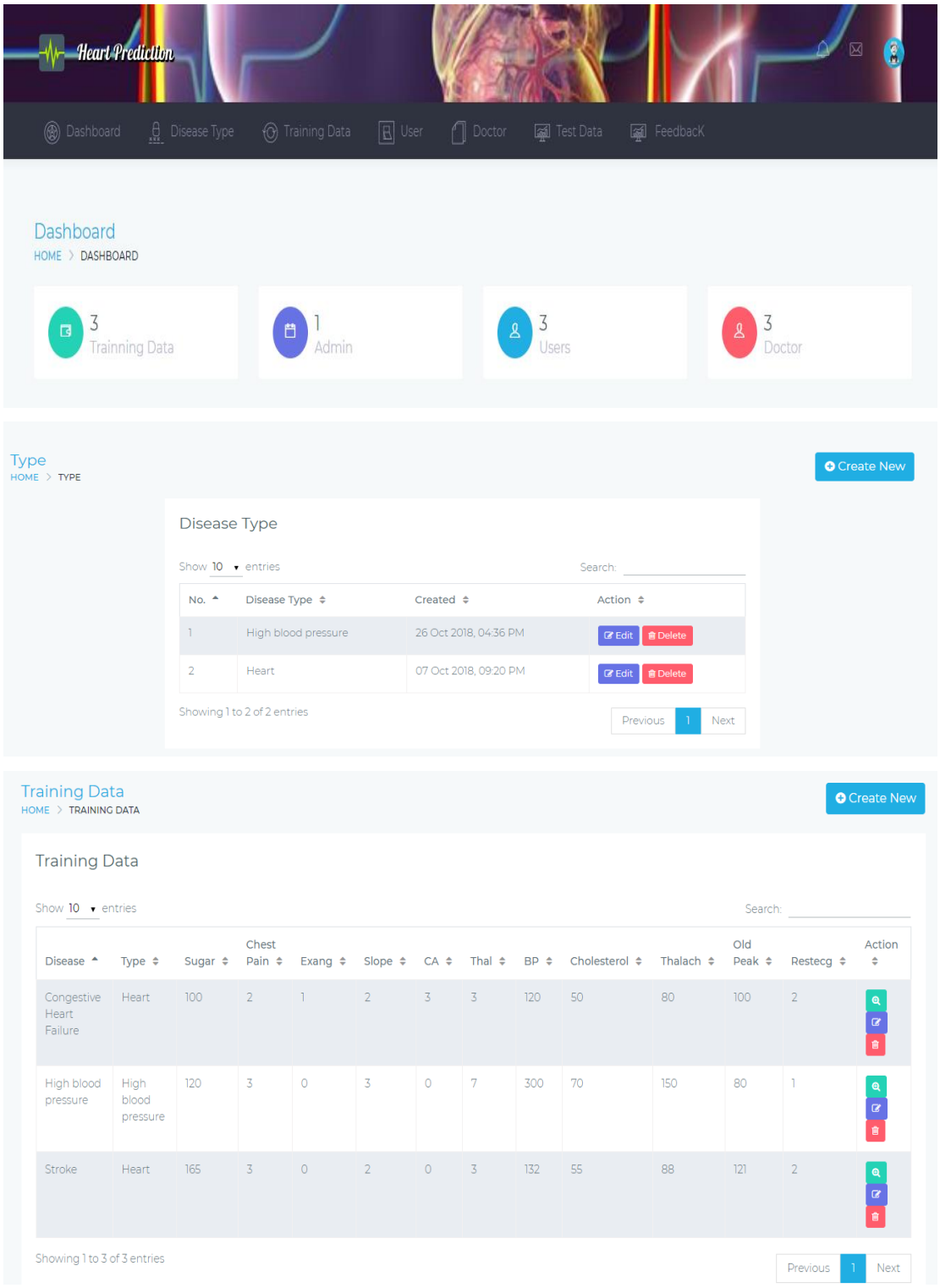


Figure 4.8: Admin dashboard

4.2.2 Training dashboard

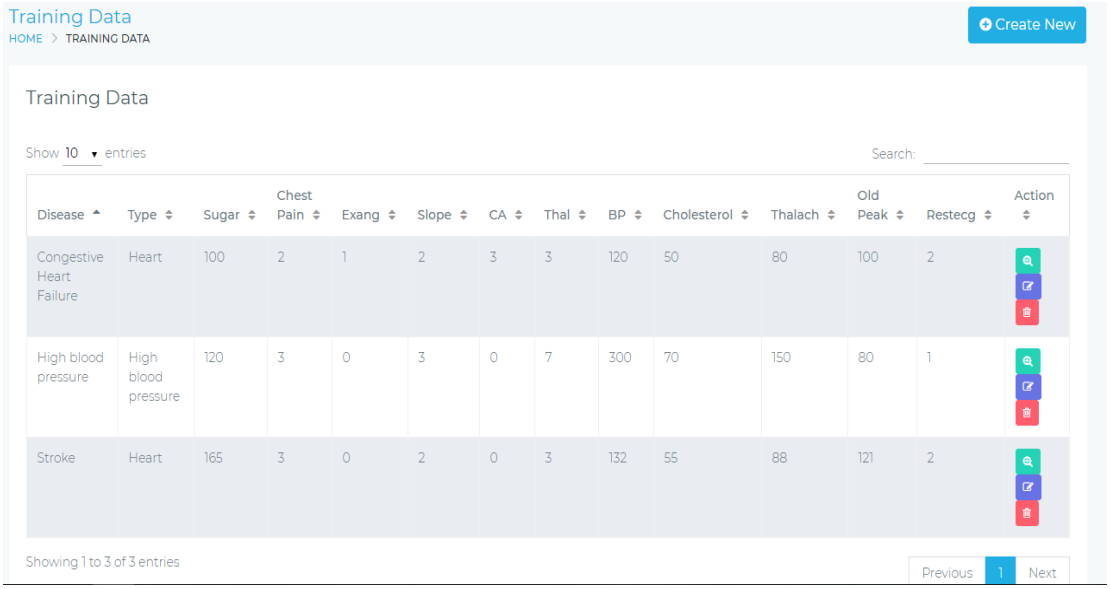


Figure 4.9: Training dashboard

4.2.3 User dashboard

As a patent login our system you can find out dashboard like below in Figure

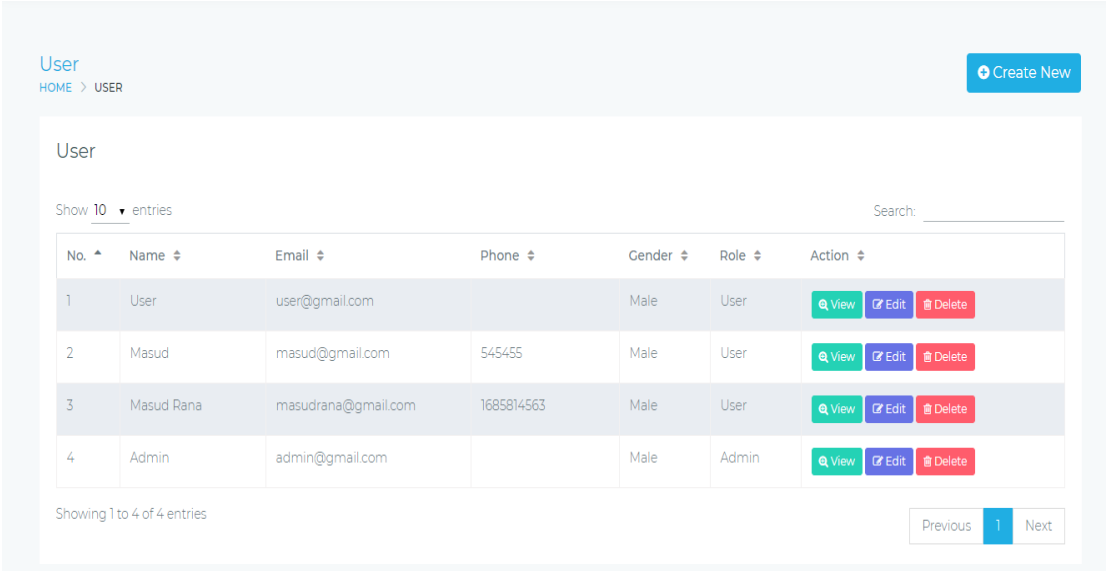


Figure 4.10: User dashboard

4.2.4 Doctor dashboard

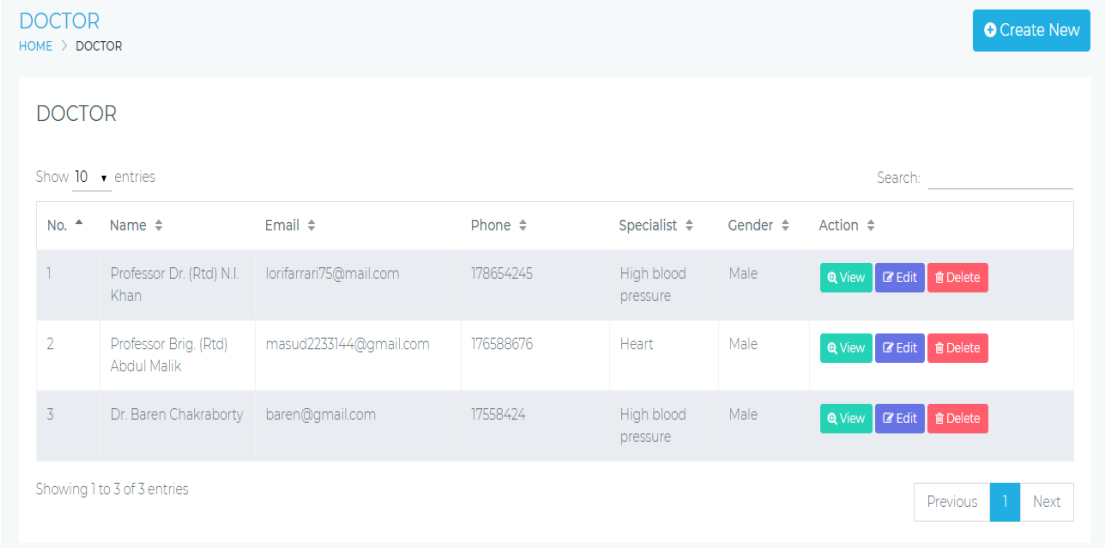


Figure 4.11: Doctor Dashboard

4.2.4 User Feedback dashboard

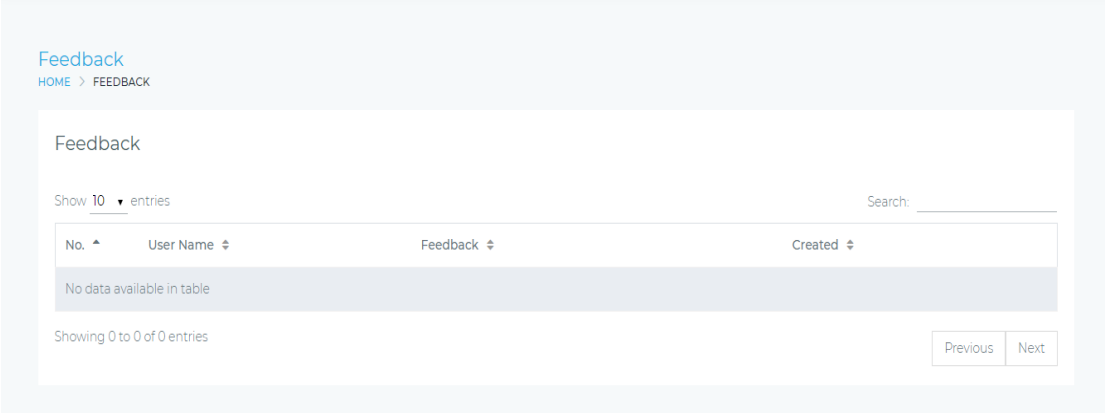


Figure 4.12: User Feedback Dashboard

4.3 Interaction Design and UX

Cooperation outline basic for any task what is exceptionally an ideal lead between a framework and client. This is consolidated outline what will assist client with interacting with framework effortlessly. It causes client to spare their time. There have a few measurements of portrayal of a framework or programming to clients what will improve client encounter. For example, Button Labels, Images, Typography, Icons that guide in client communication.

4.4 Implementation of Requirements

We need two kinds of requirements. The requirements are:

- Hardware requirement.
- Software requirement.

Hardware Requirement

One database server must be accessible to execute the framework with following design.

- PC
- 1 server class brand PC hosting MySQL
- Database Server

Software Requirement

- Any computer operating system (minimum update 2007)
- Wamp or xampp server [PHP, APACHE, MySQL] installed
- Laravel v5.2 installed
- Composer installed
- Any text editor can be used
- Any browser

Server

All the work happens on the server. A particular application, called a web server, will be in charge of speaking with the program. A social database server stores whatever data the application requires. At last, we require a dialect to intermediary asks for between the web server and database server, it will likewise be utilized to perform automatic assignments on the data that comes to and from the web server. Obviously none of this is conceivable without a working framework. The web server, programming dialect, and database server we utilize must function admirably with the working framework.

There are many web servers out there in the market. To execute exam computerization framework, it is financially savvy. It is brisk and ground-breaking. It might not have each chime and shriek accessible for a social database, yet for most clients there is bounty. WAMP or XAMPP server is blend of PHP, APACHE, and MYSQL server.

CHAPTER 5
IMPLEMENTATION AND TESTING

5.1 Implementation of Database

For our task database is a basic part. We know numerous database administration framework are utilizing around the world. We decide for our task MySQL. MySQL is the world's most well-known open source database. With its demonstrated execution, unwavering quality and usability, MySQL has turned into the main database decision for online applications. MySQL is an open-source social database administration framework (RDBMS).

All database related information's are given shortly:

- Database name: hear.sql
- 10 tables and each table have multiple columns

We are demonstrating a figure 5.1 which will indicate table name with its motivation and a rundown of website pages to which this tables has a place with.

Database execution incorporates the usage of the functionalities of every module and the execution of information reinforcement and rebuilding. Here we will accentuation on presenting the execution of information reinforcement. Information reinforcement alludes to capacity of client information including documents, database and application programs and so on for information recuperation. Hence, it is basic to give information reinforcement and reclamation component to enhance framework security.

Here, in our database 10 tables and each table has various segments and each section pronounced distinctive credit which are help to actualize our framework.

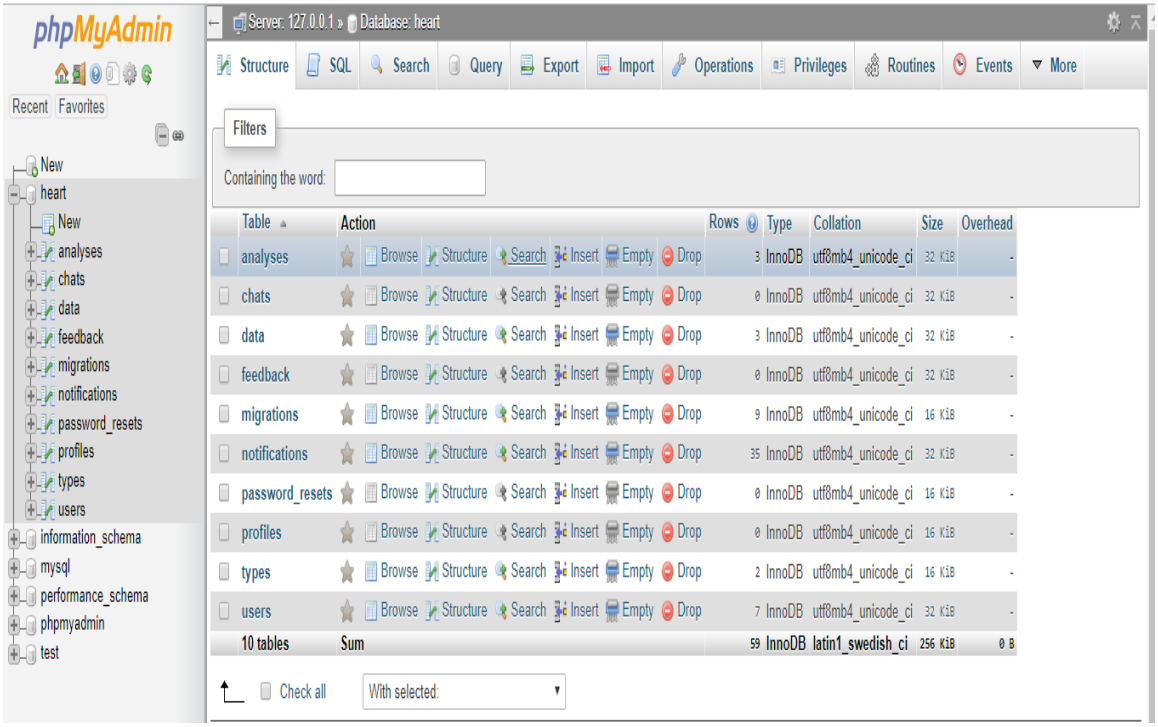


Figure 5.1: Database

5.2 Implementation of Front-end Design

We as of now observe after login to the framework administrator dashboard (figure 4.6) and administrator can see the User. Administrator can make doctor account in (make sense of 4.5) and likewise check the rundown of doctor account. Administrator can seek as prerequisite of their important. Here given the all figure about the element of adman's an administrator can see the current and past area of doctor, current and past doctor of hospital and furthermore check profile of client.

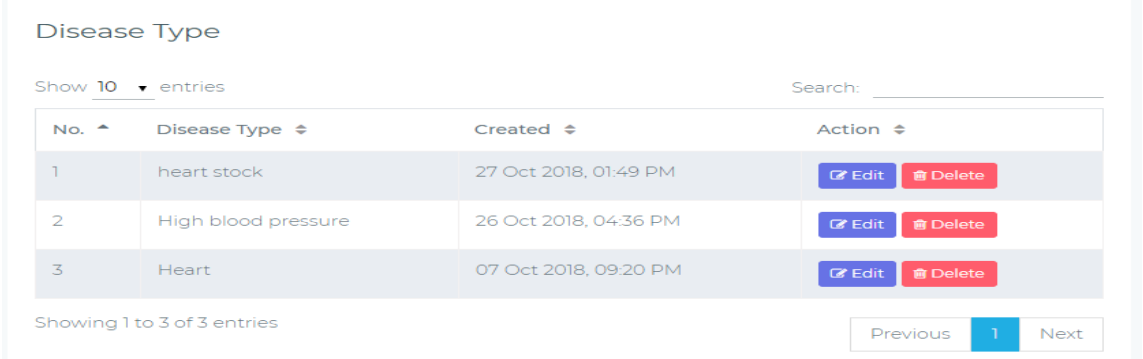


Figure 5.2: List of Disease Type

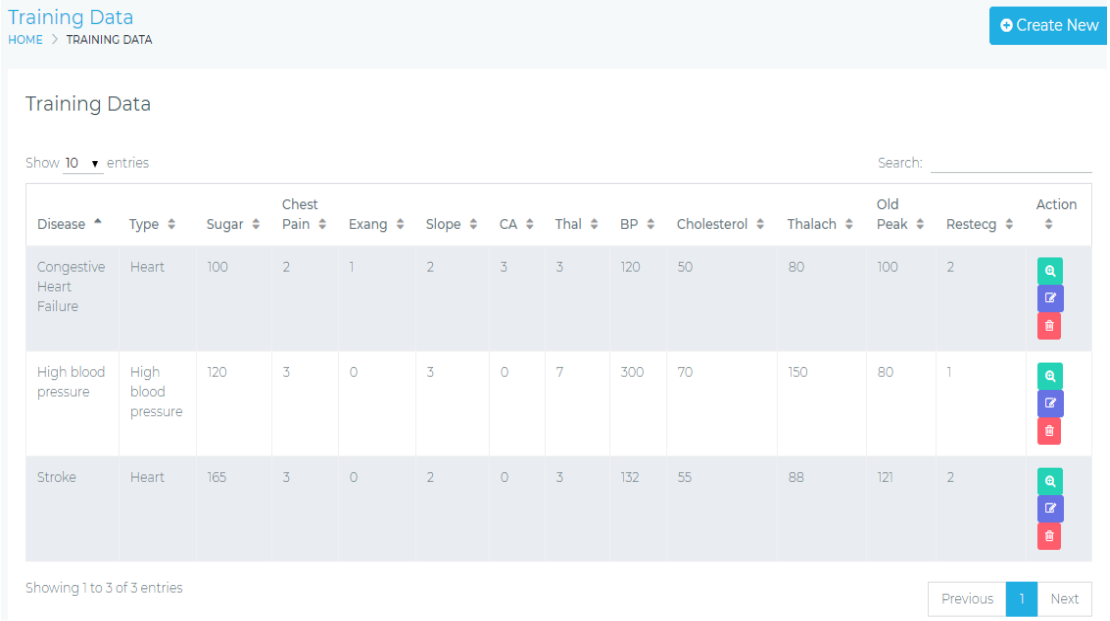


Figure 5.3: List of Training Data

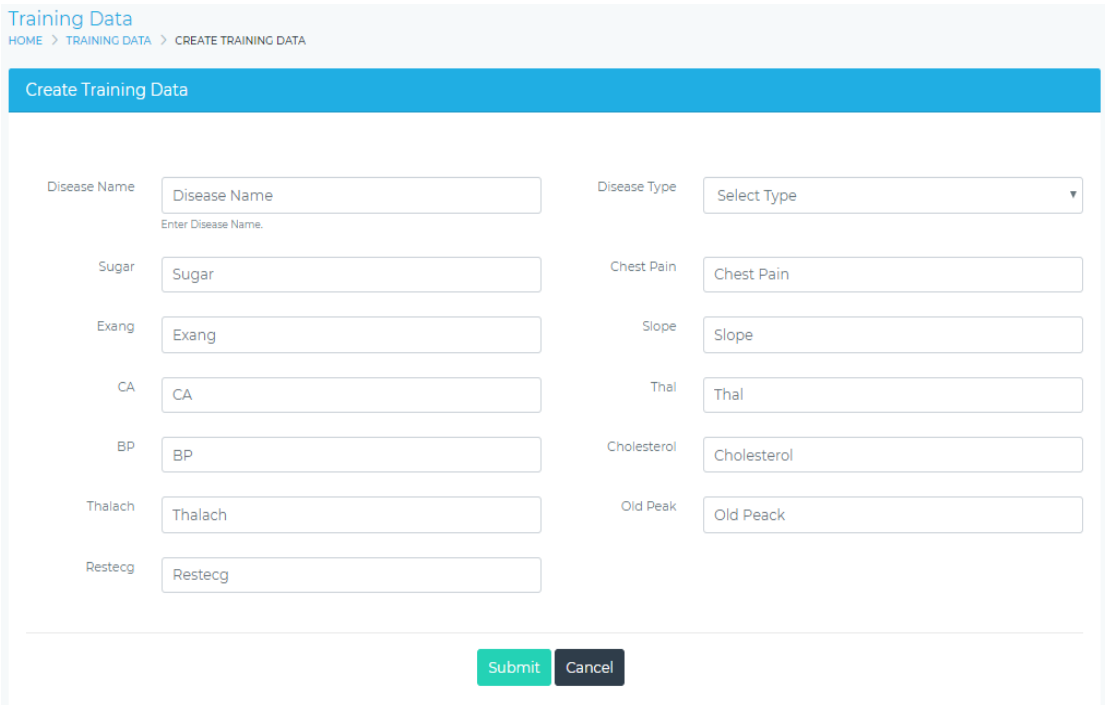


Figure 5.4: Training Data Input

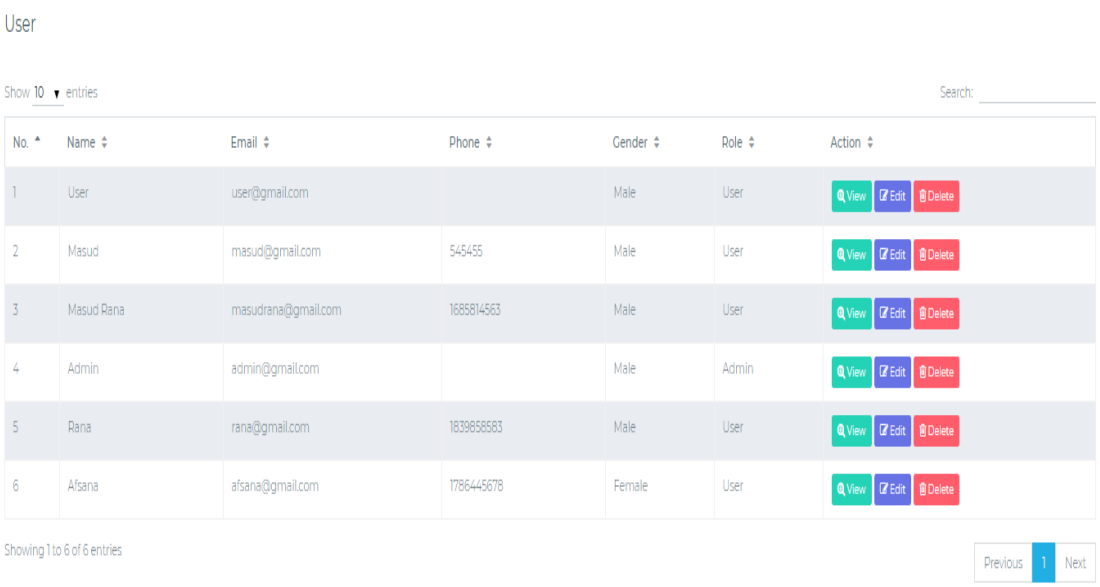


Figure 5.5: List of user

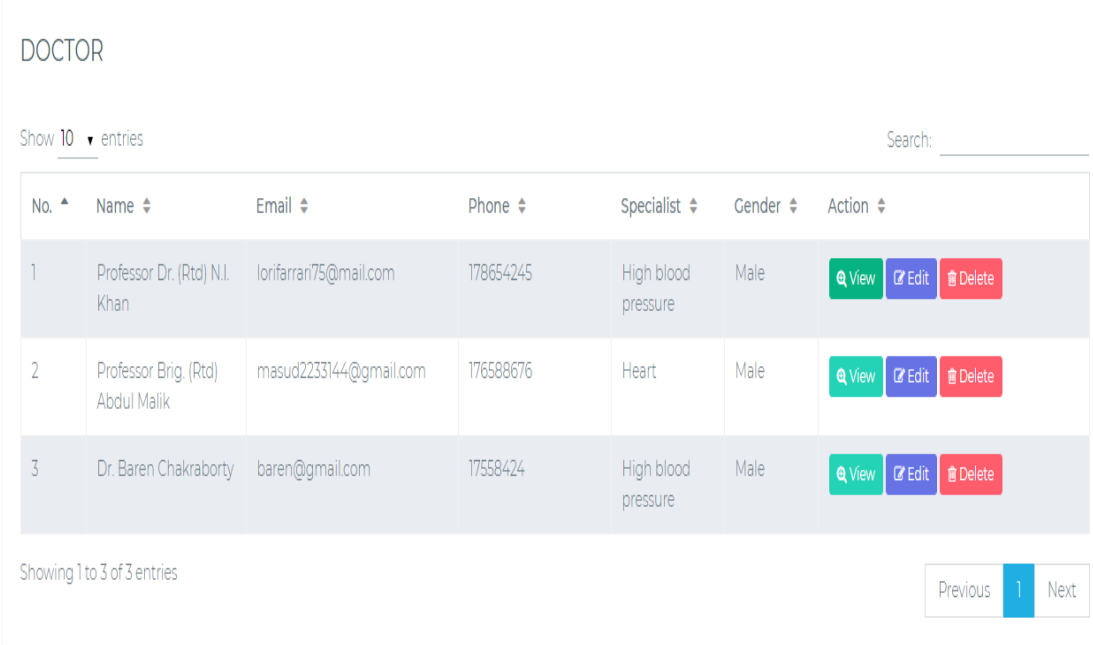


Figure 5.6: List of doctor

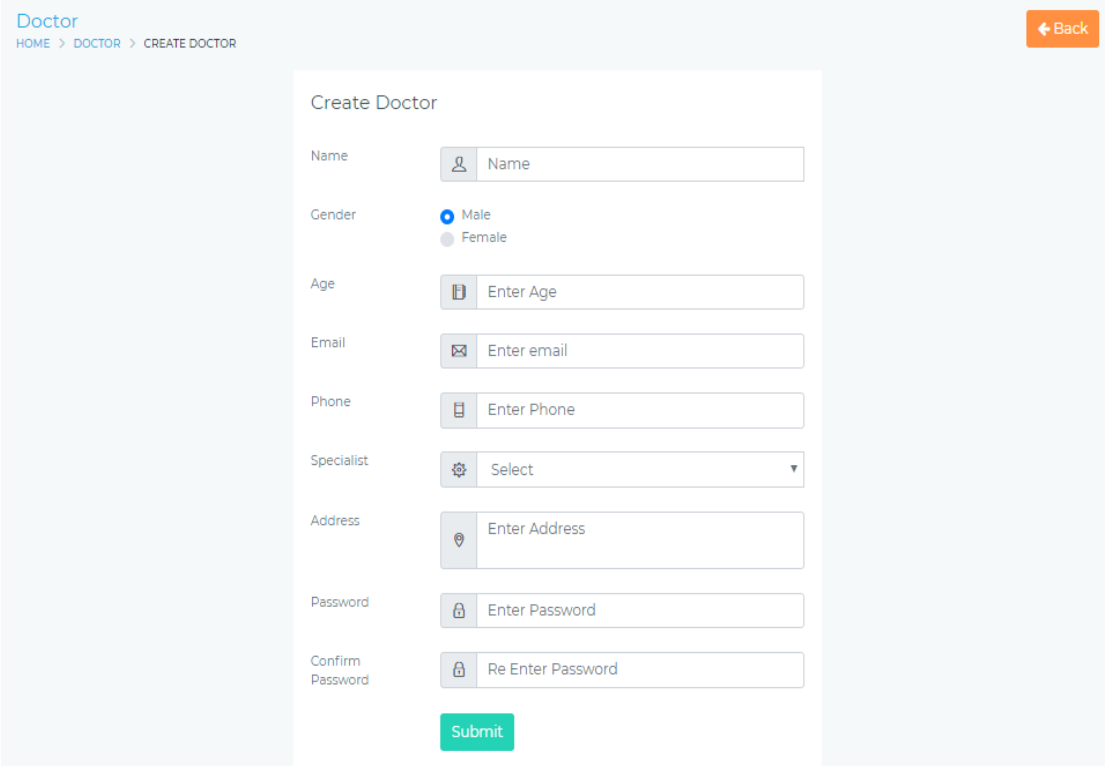


Figure 5.7: Doctor Data Input

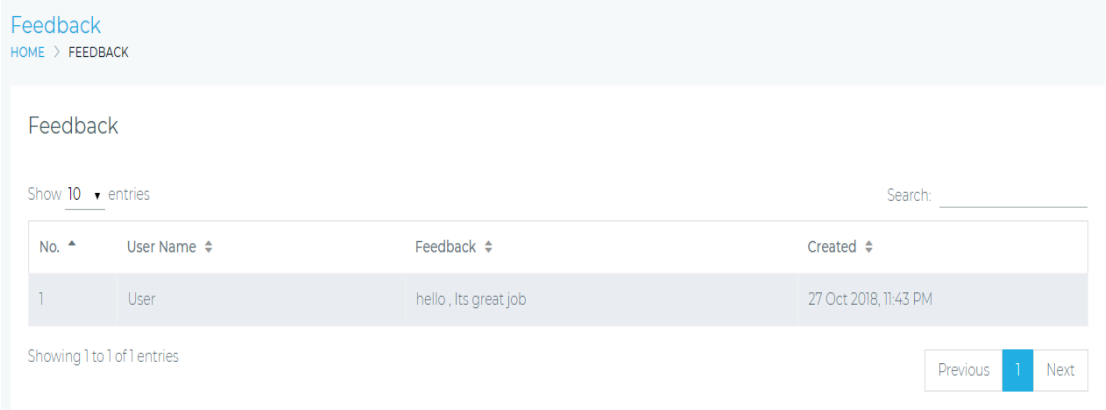


Figure 5.8: User feedback list

User

We as of now check whether any patient login our framework can see the dashboard.

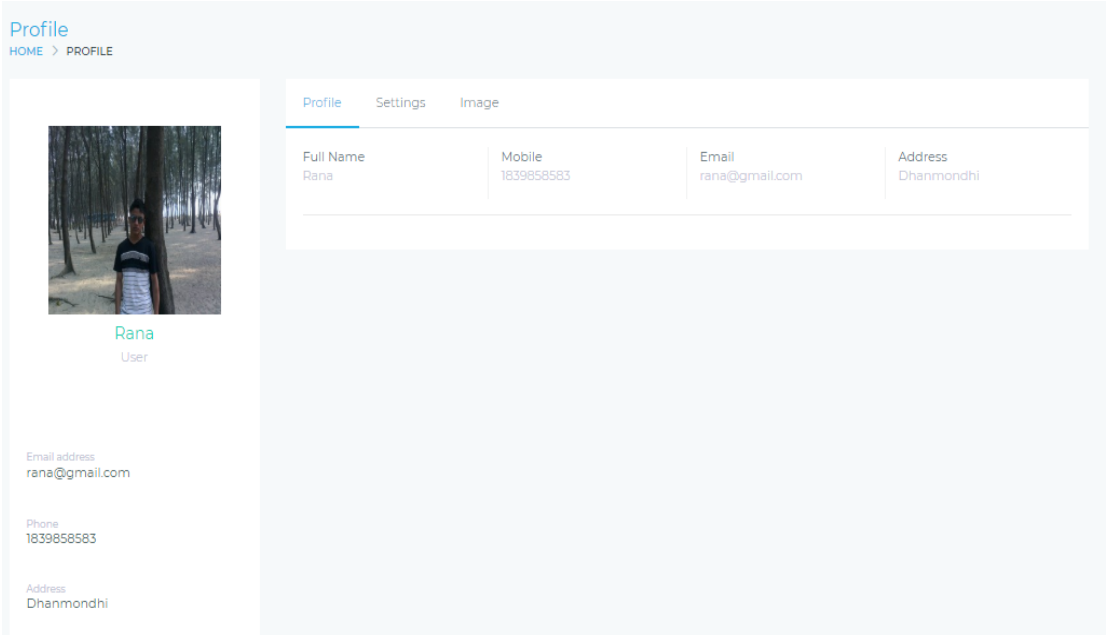


Figure 5.9: User profile

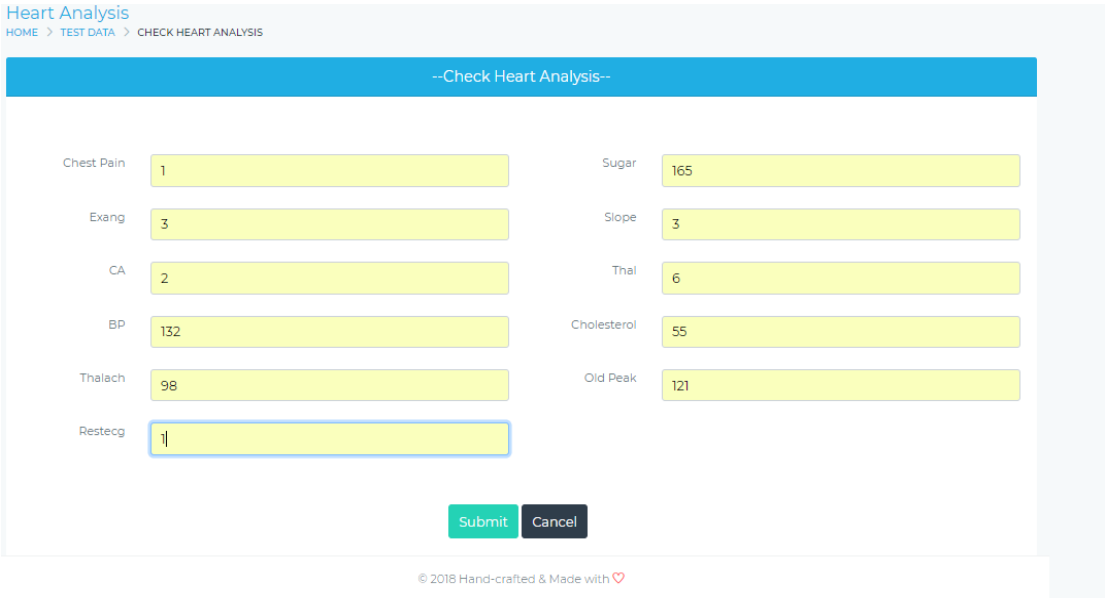


Figure 5.10: User Data input

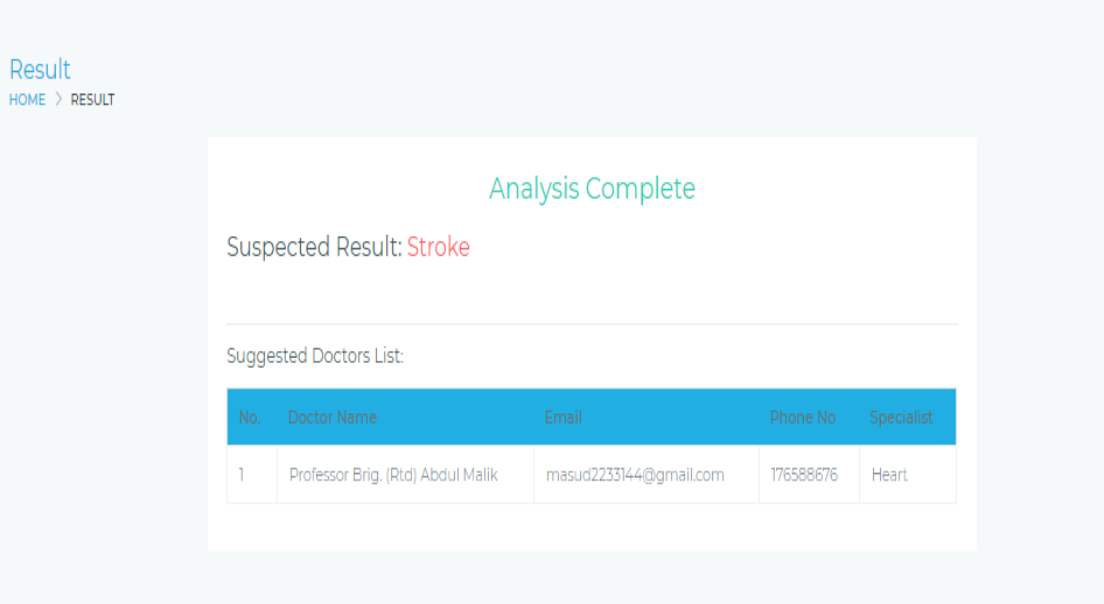


Figure 5.11: User heart Analysis Result

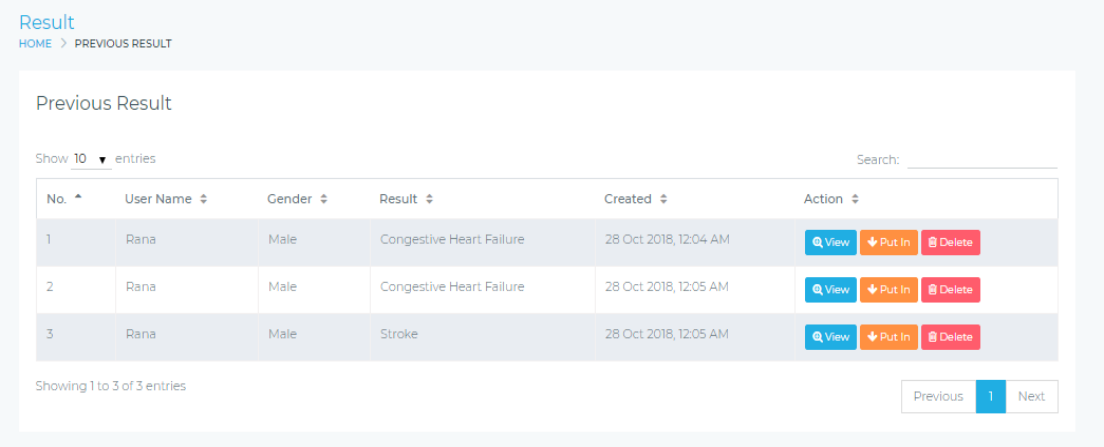


Figure 5.12: User Previous Result

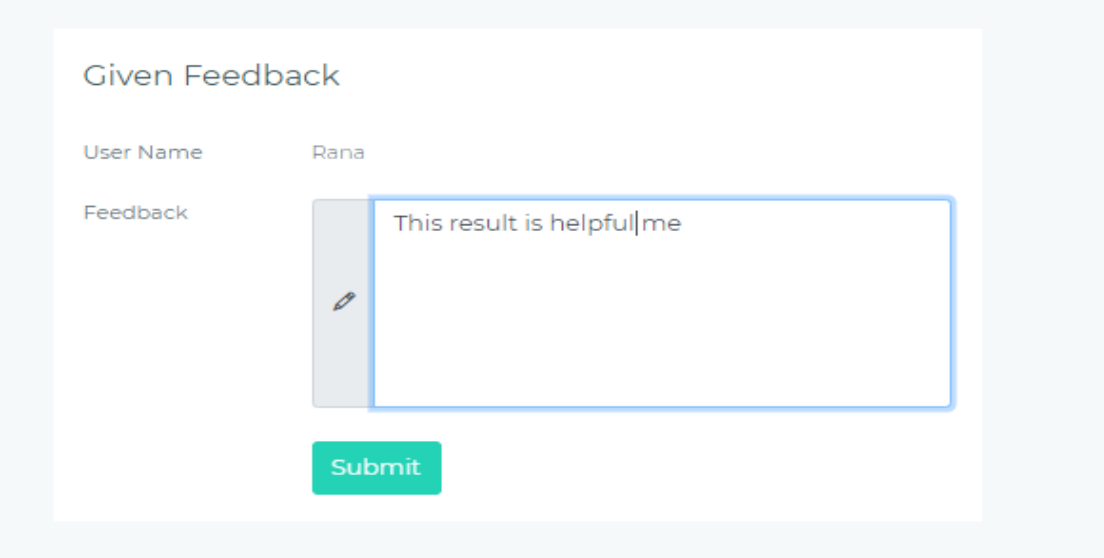


Figure 5.13: User Feedback

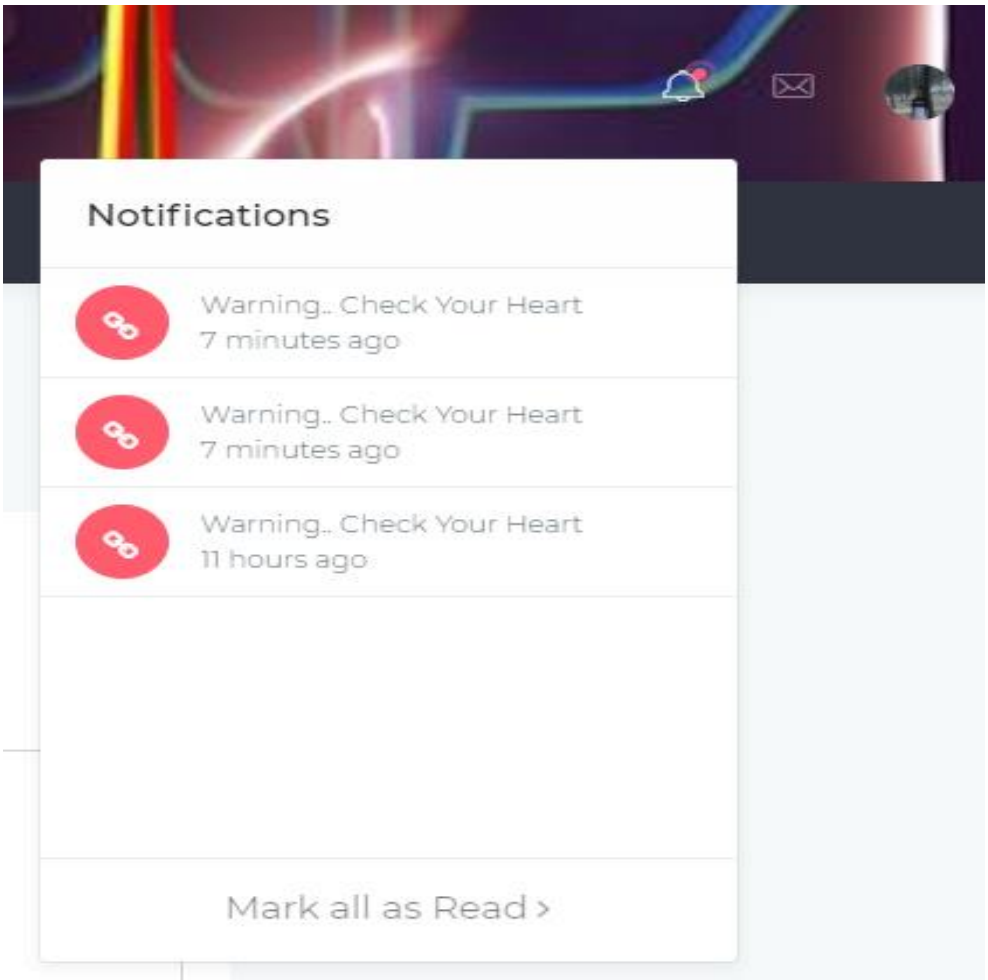


Figure 5.14: Notification

5.3 Implementation of Interaction

To make our framework (All in one doctor's facility administration framework) we have executed intelligent UI for better client encounter. As a rule we have utilized intuitive symbol instead of content connection or catch. The framework configuration planned with succession of sequential strides to help individuals for comprehension.

Execution of Interactions is regular assignment for all advancement ventures. As our venture is a web base task such a large number of assets and client movement need to cooperate. Here we utilize database like MySQL. Also, our venture greatest errand is identified with information. So every time server and customer imparting to each other's. Information read, compose and alteration, information getting all are progressing huge numbers of the movement. Information exchange between page to page additionally take places.

5.4 Testing Implementation

Testing is an arrangement of movement that can be arranged ahead of time and directed efficiently. Designer of the product and a free test bunch conducts testing. The product ought to be tried for expected outcome and proficiency after usage of the framework. Since amid execution everything may not be finished by the framework structure. So without testing those blunders can't be identified and afterward revised. In this way framework testing is essential period of a framework improvement.

5.4.1 Test plan

Prior to testing starts, a test plan is made. A run of the mill test plan records input esteems for the test, systems used to play out the testing and the normal yield esteems or results. Test designs go from extremely easy to exceptionally mind boggling, for the most part in connection to the Complexity of programming forms which are to be tried. For example, testing whether another client provoke is added to a screen may not require a test plan by any means, while testing an entangled procedure may require recording many differed input situations and the relating expected outcomes and yields for each case. Amid testing, the test plan is refreshed to log test exercises, results and fluctuations with what was initially anticipated.

5.4.2 Unit Testing

Unit testing centres check exertion around the littlest unit of the framework plan the product part or module. Every one of the information sources taken every module will be tried by testing information and diverse in results when including approval will be appeared.

Distinctive tests are led as a major aspect of unit testing are as per the following:

- Interface testing
- Local data structure testing
- Error handling paths testing
- Boundary condition testing
- Independent paths testing
- Execution path testing

And the plan of the framework we had led these tests much of the time.

5.4.3 System Testing

Framework testing includes testing of the total arrangement of use program. This testing will be completed to guarantee that the program can be meet the requests of clients. In the event that would check the usefulness of the proposed framework. The test would pick the territories that should be adjusted any exclusion or lacks in the manner in which the framework works. We create one specific component and attempt to test it and if it's not work right we experience the coding or execute it on the program over and over until the point when it work legitimately.

Expected to check canter point is the site will do all canter functionalities. Content help and cross-site and cross-area checking issues likewise should have been considered.

5.5 Test Result and Report

Results are the fundamental worry of our venture. Above all else our task is result arranged. Each venture needs a yield therefore. According to our testing background we have discovered every normal outcome.

We performed required experiments as per improvement criteria. Diverse experiments have made for a particular procedure and put away all experiment results in like manner to translate all outcome. This will settle on choice with better level of precision.

We have made cycle astute and robotized testing to settle on better choice. When test results are deliverable, at that point it has been discharged. A test outcome ought to be assess as indicated by DOD (Definition of done) of particular piece of a venture.

CHAPTER 6
CONCLUSION & FUTURE SCOPE

6.1 Discussion & Conclusion

At the end of our project we can conclude on the note that today's world is incomplete without the presence of information system. In every field and every aspect of any business or non-business organization we will find the extreme use of information system. Our project was to enlighten the fact that how easy and quick can be a work process through the use of information system. We have illustrated the information system for the user to find their heart disease prediction and learn about the risk factors regarding the heart disease. Here we have applied the data mining techniqes for mining the user provided data and the existing data in the database and thus the system can show an accurate heart disease prediction.

6.2 Scope for Further Development

We try our level best that we fulfil the requirement that we proposed. We can converted our system is an android application in future, because nowadays smart phone is available to everyone.

- We can use IOT.
- We can provide SMS notification system to the user for regular check-ups in the system.
- Could also suggest the best budget friendly hospital or clinic to the user for further
- Heart disease treatment in specific area.

REFERENCES

[1] S. Biafore, Predictive solutions bring more power to decision makers Health Management Technology, 20 (10) (1999), pp. 12-14

[2] M. Silver, T. Sakata, H.C. Su, C. Herman, S.B. Dolins, M.J. O'Shea Case study: how to apply data mining techniques in a healthcare data warehouse Journal of Healthcare Information Management, 15 (2) (2001), pp. 155-164 View Record in Scopus

[3] Heon Gyu Lee, Ki Yong Noh, Keun Ho Ryu, "Mining Biosignal Data: Coronary Artery Disease Diagnosis using Linear and Nonlinear Features of HRV," LNAI 4819:

[4] Ceusters, W. (2001). Medical natural language understanding as a supporting technology for data mining in healthcare. In Medical Data Mining and Knowledge Discovery, Cios, K.J. (Ed.), PhysicaVerlag Heidelberg, New York, 41-69.

[5] Megalooikonomou, V. & Herskovits, E.H. (2001). Mining structure function associations in a brain image database. In Medical Data Mining and Knowledge Discovery, Cios, K.J. (Ed.), Physica-Verlag Heidelberg, New York, 153-180.

[6] J.R. Quinlan. 1995, MDL and Categorical Theories (Continued). In Machine Learning: Proceedings of the Twelfth International Conference. Lake Tahoe, California. Morgan Kaufmann, , 464-470.

[7] Heart attack dataset from http://archive.ics.uci.edu/ml/datasets/Heart Disease.

[8] J. Alcalá-Fdez, L. Sánchez, S. García, M.J. del Jesus, S. Ventura, J.M. Garrell, J. Otero, C. Romero, J. Bacardit, V.M. Rivas, J.C. Fernández, F. Herrera, 2009 KEEL: A Software Tool to Assess Evolutionary Algorithms to Data Mining Problems. Soft Computing 307-318.

[9] Mark Hall, Eibe Frank, Geoffrey Holmes, Bernhard Pfahringer, Peter Reutemann, Ian H. Witten 2009; The WEKA Data Mining Software: An Update; SIGKDD Explorations, Volume 11, Issue 1.