A

# Major Project Report

on

# EARLY PREDICTION OF LIFESTYLE DISEASES

Submitted in Partial Fulfillment of
the Requirements for the Degree

of

## Bachelor of Engineering

in

## Computer Engineering

to

## Kavayitri Bahinabai Chaudhari
## North Maharashtra University, Jalgaon

Submitted by

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# CERTIFICATE

This is to certify that the major project entitled *Early prediction of lifestyle diseases*, submitted by

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in partial fulfillment of the degree of *Bachelor of Engineering* in *Computer Engineering* has been satisfactorily carried out under my guidance as per the requirement of Kavayitri Bahinabai Chaudhari North Maharashtra University, Jalgaon.

**Date:** December 3, 2021
**Place:** Jalgaon

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**Guide**

Prof. Dr. K. P. Adhiya                                     Prof. Dr. G. K . Patnaik
**Head**                                                          **Principal**

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# Abstract

Lifestyle diseases are common among the population today not only in India but also in almost every country. Lifestyle diseases are caused because of the habits that we have on a day to day basis. The way one lives his life is the major cause of it. It includes heart disease, hypertension, etc. which all may hear of. In our life also, one also comes across at least one person who is either suffering from such diseases or the diseases became the reason for his death. We also came across many such people who died because they were not aware of their disease and were left with no appropriate time for treatment.

That is why we decided to develop the portal which will analyse the data entered by the user and will give the predictions of the diseases which he or she may have chances to suffer from. This not only gives the predictions but also gives you the preventive measures that are required to stay safe from the very common lifestyle diseases as well as in case of mild symptoms it provides you with the management techniques also. This project makes the person aware of his health so that he will have the treatment well in time if required and will save the lives of many people. This project covers three main aspects which are prediction, prevention and management of lifestyle diseases.

**Keywords:-** Lifestyle diseases, death,treatment, common lifestyle, prediction, prevention, management .

# Chapter 1

# Introduction

Today, people do not have time for the regular checkup. They are so busy with their work that they rarely have time for their own health. But the thing is that, they can do the analysis if the appropriate application can provide them the overall health status of the person. This is because they need not to give the time separately for this, rather they can just utilise the time for example the time of travelling, etc. The only thing required is the smartphones which almost everyone has with them in this century. So, this can be considered as the portable health checker which everyone can use easily just through a web application. In this, we have decided to give the sign up page where the user can sign up using his name, id and password. Then further modules will have the diseases portion. Though the wholehealth check is a somewhat more difficult task, so initially we are adding some of the very common diseases data like heart disease, breast cancer, etc. Later on, we will keep adding more and more diseases.

The organization of this Chapter is as follows. Section 1.1 describes Background of the project. The motivation behind this project selection is represented in Section 1.2. Section 1.3 represents the Problem Definition of the project. Scope of the project is described in Section 1.4. Section 1.5 describes the Objective of the project. Selection of Life Cycle Model for Development of the project is represented in Section 1.6. Section 1.7 represents the Organization of the project. Finally, The Summary is described in the last Section 1.8.

## 1.1 Background

Prediction Of the disease during the pandemic is critical for public health planning of efficient health care allocation and monitoring the effects of policy interventions.

In another study, an algorithm is proposed to achieve local updates and global updates which is critical for the learning process. ML/AI is also used to solve wireless network problems. Cheat al. represented how artificial neural networks can be used to solve various problems in wireless networks.

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Diabetes has been in society for a very long time. Diabetes is further dependent on an individual's body, diet, and way of living. In another study, pre-diabetes is predicted using different applications on the Korean population.

Death in intensive care units (ICU s ) worldwide and its recognition, particularly in the early stages of the disease, remains a medical challenge.

## 1.2    Motivation

Lifestyle diseases are common among the population today not only in India but also in almost every country. Lifestyle diseases are caused because of the habits that we have on a day to day basis. The way one lives his life is the major cause of it. It includes heart disease, hypertension, etc. which all may hear of. In our life also, one also comes across at least one person who is either suffering from such diseases or the diseases became the reason for his death. We also came across many such people who died because they were not aware of their disease and were left with no appropriate time for treatment. That is why we decided to develop a portal for showing early disease information and solutions or precautions.

## 1.3    Problem Definition

In this platform, the people and doctors are joined and they are registered login logout and also they have early knowledge of what is happening in their area and the true information is given to this platform. About the disease which is a large amount of spearing in this area first of all the people see and their area which diseases is spread and also check their symptoms, also in bottom, and also give what the precaution do for the disease not come, also if you have any other disease then also have a chatbox to say your problem there was the best doctor, and they convey you to what to do for these diseases. And also doctors joined this platform as a sub-admin. They solve the people's posted questions, and also add current disease information and safety tips and what precautions we do for these diseases and also know about these doctors who give this information. Admin doctor verifies this doctor's added information and verifies the doctor's status and manages the site settings.

## 1.4    Scope

This project will help the user to overcome the lifestyle diseases which are in themselves a big threat to humans, will reduce the unawareness about the diseases and will help people to remain healthy which is of utmost importance in today's fast-growing world. It will also

change the lifestyle of people for the better. It will also give clarity about the health of a person or his current status.

In future mostly AI and ML is going to be implemented everywhere. Everyone will get so busy with their work that they will not get enough time to visit the doctor. Exceptionally when they get serious. But will ignore the minor and common disease which will eventually become more serious in future. Like in tuberculosis, a person starts to cough and only with preventive measures they can be submerged at that time.so this app will become more and more common in future. Without visiting doctors' people will get to know about their symptoms.

## 1.5 Objective

Objective of this project is as follows;

- Easy identification of any disease.

- Treatment from home is easy for us.

- The online treatment gives us a cost-saving and time-saving solution.

- Treatment is from a multispeciality hospital.

- Treatment is simple and secure.

- Installable in Mobile as well as Desktop.

## 1.6 Selection Of Life Cycle Model

There are many different software development life cycle models. They represent the logical constructed sequence of actions, starting with the need identification and finishing with the software production. Each model represents the process, which consists of the stages aimed at ensuring the integrity of the appropriate actions. Each fully exhaustive stage reduces the degree of project risk due to the application of the criteria of entry and exists to determine the future actions.

The software development life cycles are the techniques, which cover all standards and procedures which impact on the planning, requirements process, design, construction ( coding and testing), implementation of the software system. The popular generalized models provide only possibility of its use for certain project types. The life cycle must be carefully selected according to tasks and goals of the certain project to ensure the efficiency of the life cycle.

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We are the select waterfall life cycle model because all requirements are easy to understand and also development team members have less domain knowledge.
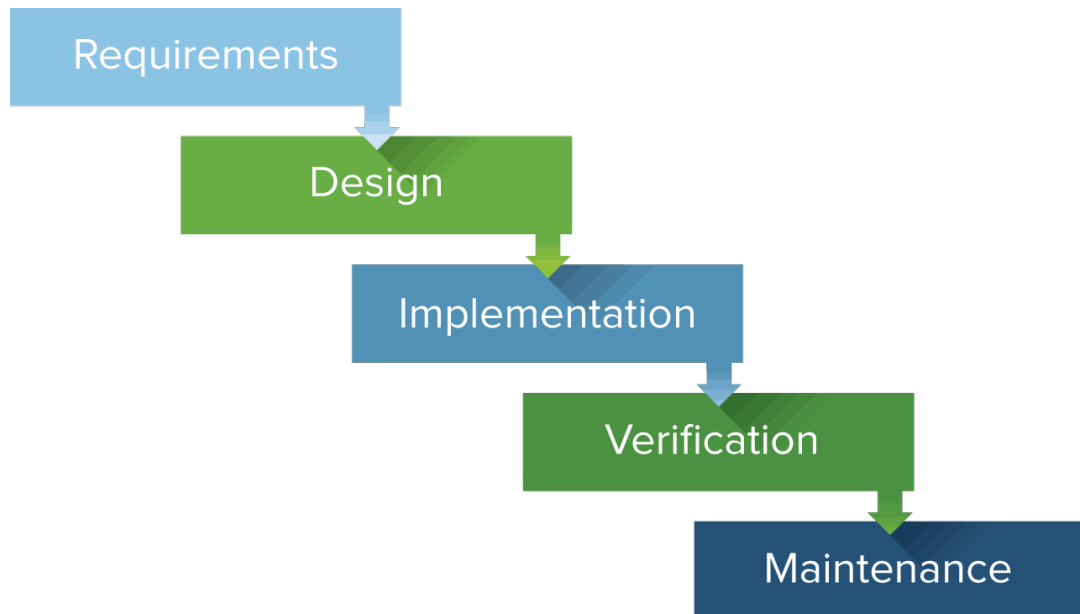


Figure 1.1: Selection Of Life Cycle Model (Waterfall Model)

## 1.7   Organization of Report

The Organization of the Report is structured in the following way:

- **CHAPTER 1**, titled Introduction, presents introduction to the proposed system, problem statement, problem definition, objective and future scope.

- **CHAPTER 2**, titled Project Planning  Management, presents a literature survey, existing system for data perturbation approach, proposed system, feasibility study and risk analysis.

- **CHAPTER 3**, titled System Requirements specifications, presents hardware and software requirements needed for the proposed system.

- **CHAPTER 4**, titled System Design, presents proposed system Flow which provide detail information about project flow, data flow diagrams, E-R Diagram, UML Diagrams.

- **CHAPTER 5**, titled Conclusion and Future Work, presents conclusions for the proposed approach and provides the direction for future development in data perturbation methods.

## 1.8  Summary

In this chapter, Introduction is presented. In the next chapter, System Analysis is presented.

# Chapter 2

# Project Planning and Management

Project planning is a procedural step in project management. It is the practice of initiating, planning, executing, controlling and closing the work team to achieve specific goals. Project planning and management is important because it ensures that the right people do the right things, at the right time. It also ensures the proper project lifecycle.

The organization of this Chapter is as follows. Section 2.1 Literature Survey is presented. Section 2.2 presents Feasibility Study. Risk Analysis is described in Section 2.3. Project Scheduling is presented in Section 2.4. Effort Allocation is described in Section 2.5. Section 2.6 describes Cost Estimation Finally summary is presented in the last section 2.7.

## 2.1   Literature Survey

After a survey of this topic. We are developing this project using a machine learning concept that is Data Mining. Also another concept like speech recognition, many others.

Data Mining is a technique of analyzing the huge amount of data in different aspects to discover useful information or knowledge discovery. It combines the concepts of artificial intelligence, statistics, probability, machine learning, deep learning and database system technology. The processes of data collection, selection, cleaning, handling the missing values, transformation, mining, evaluation of pattern, and knowledge visualization involved in the data mining process.

The data is increasing exponentially as in the case of the health sector. It is also a major data producing sector which is not only heterogeneous but also valuable as it stores the sensitive health information of the person which can even cost the life of a person. The majority of the methods are used to predict, prevent and manage the diseases appropriately and efficiently. The medical diagnosis is subjective and important in other aspects and depends upon the data available and in this case the data entered by the user.

Healthcare related data mining is a difficult field as some minor changes may lead to the huge difference in the predictions and will further affect the output. It explores the

hidden patterns which further helps in discovery and extracting knowledge in a database to predict diseases that a person may suffer from. We will use both the core models of data mining i.e., descriptive as well as predictive in big data. In case of descriptive data analysis, it uses user data to identify the patterns in the data and analyze the relationship between various variables and samples. Descriptive models are apriori association rule, data clustering, summarization and visualization. These models are generally developed by using complete data set but we will try to reduce the number of variables or samples required to predict the output which increases its performance as well as the efficiency.

While in case of predictive data analysis, it uses historical data and current data for predicting the probabilities of the future lifestyle diseases or used for diagnosing and curing the diseases as well. But in case of severe symptoms, it will always suggest the user to consult the doctor as soon as possible. Further enhancement of the model can include the nearby hospitals or the clinics available using the google maps. This can be done by several techniques like Dijkstra's algorithm. CART Decision trees, artificial neural network (ANN), random forecasting and the regression (linear, logistic and ridge) are the commonly used predictive data models

## 2.2 Feasibility Study

A Feasibility Study is an analysis of the viability of an idea. It ensures that a project is technically, economically feasible, and operationally justifiable. The early Prediction of Lifecycle Diseases Software / Healthcare is among the most popular tools that support the viewing and understanding of spread of Lifecycle and Pandemic disease. It also provides a detailed documented status to the user. Feasibility is also useful to identify the risk, cost, and benefits related to economics, technology, and user operation. Feasibility is the first stage in the process of project development. There are several types of feasibility depending on the aspects they cover. Some important feasibilities are as follows:

### 2.2.1 Technical Feasibility

The early Prediction of Lifecycle Diseases Software / Healthcare is among the most popular tools that support the viewing and understanding of spread of pandemic disease. The technical feasibility study assesses the details of how developers will deliver a product or service in the available market place. Technical feasibility is very important and significant because it is helpful to decide realistic business models for a particular product. This Software / Healthcare is to provide the platform to the user on this platform, the people and doctors are joined and they are registered login logout and also they have early knowledge of what

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is happening in their area and the true information is given to this platform.

### 2.2.2 Economical Feasibility

This includes an evaluation of incrementally costs and benefits expected if the beginning opposed system has economized. The users will be economically satisfied with this application because this application is free of cost to the users and users can only require log-in in this application to add their reviews. So developing this application is economically feasible.

### 2.2.3 Operational Feasibility

Operational feasibility helps in taking advantage of the opportunities and fulfills the requirements as identified during the development of the project. It takes care that business clients and users support the project.This software is to provide they have early knowledge of what is happening in their area and the true information is given to this platform.

In this application,doctors also joined this platform as a sub-admin. They solve the people's posted questions, and also add current disease information and safety tips and what precautions we do for these diseases and also know about these doctors who give this information. Admin doctor verifies this doctor's added information and verifies the doctor's status and manages the site settings.So this application is operationally feasible.

## 2.3 Risk Analysis

Risk analysis in software development is a method of software testing where software risk is analyzed and measured. It is the process of prioritizing risks for further analysis or action by combining and assessing their probability of occurrence and impact. Plan risk management should take place early in the project, it can impact various aspects for example cost, time, scope, quality, and procurement.

As the healthcare industry begins to use new technologies such as predictive analytics, government health agencies, doctors, and primary health providers must be aware of the risk and agree on standards. Technology is playing an integral role in health care worldwide as predictive analytics has become increasingly useful. Health care has a long track record of evidence-based clinical practice and ethical standards in research.

Most of the projects have their own risks but developers need to understand all risks and find the better and best solution for the risk.

In our technology-based health care application, there is a risk of getting the wrong information about the disease or risk of any type of fraud. But this risk has not affected

the project or application, because they are only verified and the best doctors are allowed to give advice or suggestions to the general public or people.

## 2.4   Project Scheduling

Project scheduling activity is used to schedule the software development lifecycle. Project scheduling is important to note, however, that the schedule evolves overtime. During the early stages of project planning and a microscopic schedule is developed. The schedule identities all major software engineering activities. Also identifies the product functions to which they are applied.

We are planning how much time is required to develop actual software. Figure 2.1 shows the project scheduling.
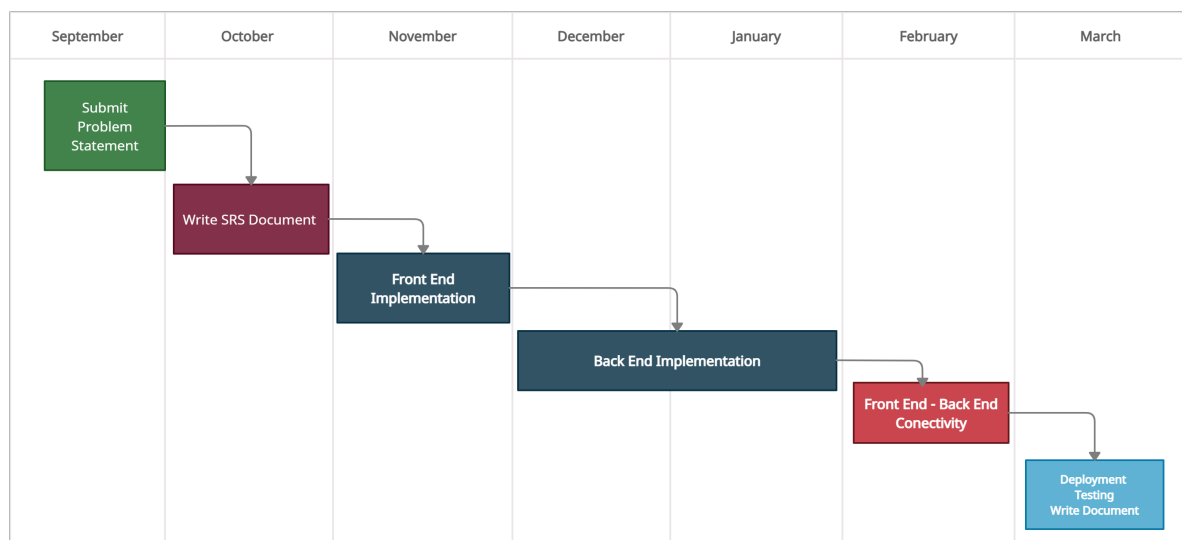


Figure 2.1: Project Scheduling

## 2.5   Effort Allocation

Identification of project, requirements gathering and study of existing system accounts is 10 percent of efort. 15 percent of effort is normally applied to data modeling and coding. Identification of functional and nonfunctional requirements, testing results by using some test cases take 5 percent of project effort. Designing requires 30 percent of efort.

Table 2.1 shows the Effort Allocation Chart. Figure 2.2 Show the Efforts Allocation in percentage format.

| Sr. No | Task | Pruthviraj | Kirti | Harshada | Sumit |
|--------|------|-----------|-------|----------|-------|
| 1. | Selection of Project Title | YES | YES | YES | YES |
| 2. | Writing Problem Definition | YES | YES | YES | YES |
| 3. | Writing Abstract | YES | NO | YES | NO |
| 4. | Background and Scope of Project | NO | YES | YES | NO |
| 5. | Objectives | NO | NO | NO | YES |
| 6. | Selection of Life-Cycle Model | YES | YES | YES | YES |
| 7. | Literature Survey | YES | YES | YES | YES |
| 8. | Feasibility Study | NO | YES | NO | NO |
| 9. | Risk Analysis | NO | NO | YES | NO |
| 10. | Project Scheduling | YES | YES | YES | YES |
| 11. | Analysis | YES | YES | YES | YES |
| 12. | Design | YES | NO | NO | YES |
| 13. | Conclusion and Future Work | YES | YES | YES | YES |
| 14. | Project Report Writing in LaTex | NO | YES | YES | NO |

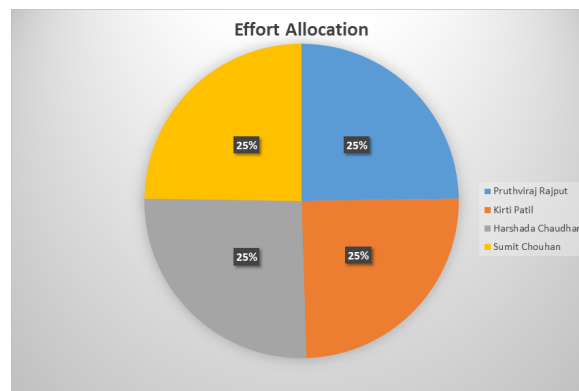Table 2.1: Effort Allocation Table



Figure 2.2: Effort Allocation

## 2.6    Cost Estimation

For any new software project, It is necessary to know how much it will cost to develop and how much development time it will take. These estimates cost estimation in software engineering is typically concerned with the financial spend on the effort to develop and test the software.These evaluations are needed before development is started and conveyed to the team. The software industry has inconsistently defined and explained metrics or atomic units of measure,data from real and actual projects are largely and highly suspect in terms of consistency and comparability.

## 2.6.1   COCOMO MODEL

**Boehm proposed COCOMO in 1981.COCOMO** is one of the most generally used software estimation models in the world. **COCOMO** predicts the efforts and schedule of a software product based on the size of the software.

The necessary steps in this model are:

- Get an initial estimate of the development effort from the evaluation of thousands of delivered lines of source code **(KDLOC).**

- Determine a set of 15 multiplying factors from various attributes of the project.

- Calculate the effort estimate by multiplying the initial estimate with all the multiplying factors i.e., multiply the values in step1 and step2.

Three modes of software development are considered in this model: organic, semi- detached, and embedded. In the organic mode a small team of experienced developers In the organic model, a small team of experienced developers develops software in a very familiar environment. The size of software development in this mode ranges from small (few KLOC to medium (few tens of KLOC), while in the other two modes the size ranges from small to very large (a few hundred KLOC). According to Boehm, software cost estimation should be done through three stages:

- Basic Model

- Intermediate Model

- Detailed Model

**Basic COCOMO Model:**The basic COCOMO model provides an accurate size of the project parameters. The following expressions give the basic COCOMO estimation model:

$$Effort = a1 * (KLOC)a2 PM Tdev = b1 * (efforts)b2 Month \tag{2.1}$$

Where,

-KLOC is the estimated size of the software product indicate in , a1,a2,b1,b2 are constants for each group of software products,

**-Tdev** is the estimated time to develop the software, expressed in months,

**-Effort** is the total effort required to develop the software product, expressed in person-months (PMs)

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## 2.7  Summary

In this chapter, Planning of project management is discussed. In the next chapter Analysis of the project is explained.

# Chapter 3

# Analysis

System Analysis is the process of gathering and interpreting facts, diagnosing problems and using the facts to improve the system. System analysis chapter will show overall system analysis of the concept, description of the system, meaning of the system. System analysis is the study of sets of interacting entities, including computer system analysis. The development of computer-based information systems includes the system analysis phase which produces or enhances the data model which itself is to create or enhance a database. There are a number of different approaches to system analysis. The analysis is the process which is used to Analyze, Portal for Early Prediction Of Lifestyle Diseases. Analysis activity provides a graphical view of the entire System.

The organization of this Chapter is as follows. Section 3.1 represents Requirement Collection and Identification. Software Requirements Specification (SRS) of the project is described in Section 3.2. Section 3.3 represents Summary of this chapter.

## 3.1 Requirement Collection and Identification

We have identified some requirements during the requirements collection phase;

- User means people check the symptoms , View all diseases information, search disease information using text enter otherwise speak and they also post questions and give the feedback.

- Doctors can register themself also login. They can add disease details, update details,delete details. They solve people's questions.

- Admin can be verifying the register doctor details. Also they can verify diseases with added details. Also see all the user details and doctors details. Manage site settings.

## 3.2 Software Requirement Specification

### 3.2.1 Product Features

- The website is easy to navigate.

- The website content is fully authoritative.

- The website has a fast load time.

- The website has Browser consistency which is helpful in user interference.

- The website has a Contrasting color scheme which is very attractive from a presentation point of view.

### 3.2.2 Operating Environment

This Platform will operate with the following software components and applications:- It is a Web-based application run on a web application server Node js and access data on an enterprise information system, such as a MongoDB database and node js server. The components of web-based applications are spread across multiple tiers, or layers. Node js provides capabilities to create its own web server which will handle HTTP requests asynchronously. Node js provides a global variable process. An object that contains all environment variables available to the user running the application.

### 3.2.3 Assumptions

This platform will link doctors to people.The entrepreneur will get all the resources they need. The team members they are dealing with have all the required skills. The scope of the project will not change throughout the life cycle. All equipment will be in working conditions through the project cycle. Project cost will stay the same as initially budgeted cost. Project will follow an Incrementally methodology throughout execution. The website is well developed for all devices.

### 3.2.4 Functional Requirements

A functional requirement defines a function of a software system on its component. A function is described as a set of in out, the behaviour and output. Functional requirements may be calculations, technical details, data manipulation and processing and other specific functionality that defines what a system is supposed to accomplish.

This platform doctors and people join and the people check their symptoms, post questions and perform this activity. Doctors are added to the disease information, answers to asked questions also admin verify doctors details these are our project function requirements.

### 3.2.5 Non-Functional requirements

Nonfunctional requirements deny the needs in terms of performance, logical database requirements,design constraints, standard compliance, reliability, availability, security, maintainability and portability.

A non-functional requirement is a requirement that specific criteria that can be used to judge the operation of a system, rather than specific behaviors. It should be contrasted with functional requirements that define specific behavior or functions. The plan for implementing functional requirements is detailed in the system design. The plan for implementing non functional requirements is detailed in the system architecture.

### 3.2.6 External Interfaces

■ *Hardware Requirements*

- **System :** Any.

- **RAM :** 4 Gb or above.

- **Hard Disk :** 1Tb or above.

- **Input Device :** Keyboard or Mouse.

- **Output Device :** Monitor, PC or Laptop.

■ *Software Requirements*

- **Operating System :** Any.

- **IDE :** Visual Studio Code.

- **Front End :**

  - HTML (Hypertext Markup Language).

  - CSS (Cascading Style Sheets).

  - Java Script.

- **Back End :** Node Js.

- **Library :**

  - React Js.

  - Chart Js.

- **FrameWork :** Express.

- **Ui FrameWork :** React-Bootstrap.

- **Database :** MongoDB.

- **Project Managed :** GitHub  Git.

### ▍ *Communication*

State the requirements for any communication functions the product will use, including email, Web browser, network communications protocols, and electronic forms. Dene any pertinent message formatting. Specify communication security or encryption issues, data transfer rates, and synchronization mechanisms.

## 3.3   Summary

In this chapter, Analysis of the project is described. In the Next chapter, detailed Design of Project is explained.

# Chapter 4

# Design

System design provides the understanding and procedural details necessary for implementing the system. Design is an activity concerned with making major decisions, often of a structural nature. Design builds coherent, well planned representations of programs that concentrate on the interrelationships of parts at the higher level and the logical operations involved at the lower levels. Software design is the rest of the three technical activities: designs, coding and tests which are required to build and verify the software.

In Section 4.1 System Architecture is presented. E-R Diagram is presented in Section 4.2. In Section 4.3 Data Flow Diagram is presented in Section 4.4. UML Diagrams present in Section 4.4 Finally summary is presented in the last Section 4.5.

## 4.1   System Architecture

The system architecture is the conceptual model that denotes the structure, behavior and more views of a system. An architecture description is a formal description and representation of a system. It provides a broad understanding of the portal.

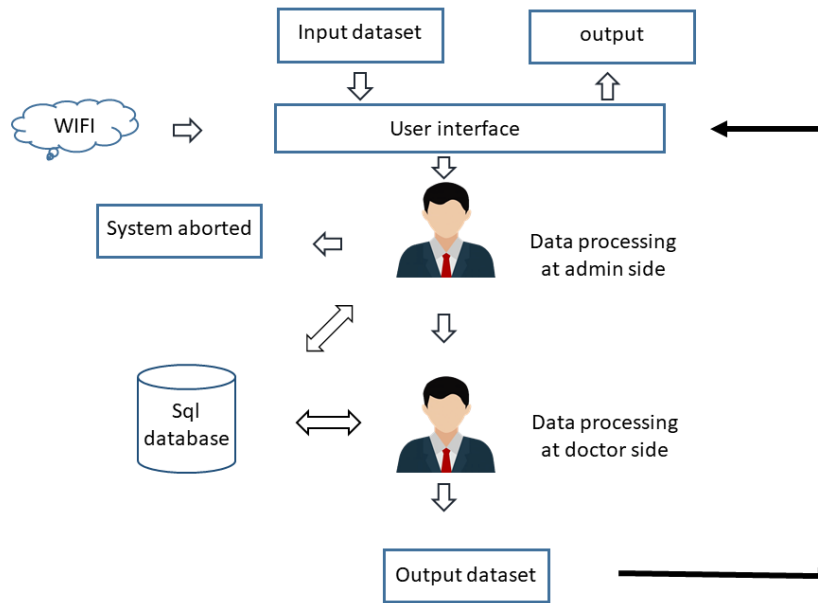The figure 4.1 shows the system architecture of our project.

Figure 4.1: System Architecture

## 4.2   E-R Diagram

An entity–relationship model (or ER model) describes interrelated things of interest in a specific domain of knowledge.[2] A basic ER model is composed of entity types (which classify the things of interest) and specifies relationships that can exist between entities (instances of those entity types).In software engineering, an ER model is commonly formed to represent things a business needs to remember in order to perform business processes. Consequently, the ER model becomes an abstract data model that defines a data or information structure which can be implemented in a database, typically a relational database.

In This project use database structure mentioned in figure 4.2. The database structure defined Like Entity people this entity attributes like name, id is primary key, email, address, password like this all database structure defined.
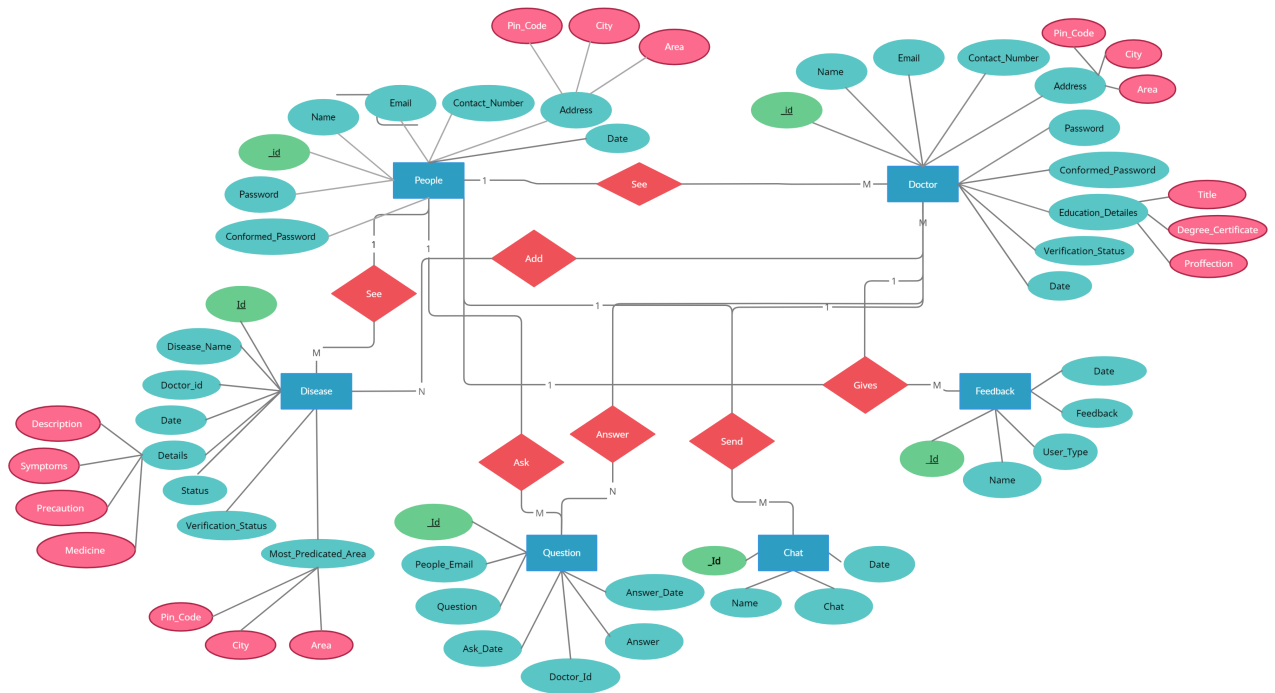
Figure 4.2: ER Diagram

## 4.3 Data Flow Diagram

DFD is concerned with designing a sequence of functions that converts the system input into the required output.

### 4.3.1 level 0 DFD

Level 0 contains one input and one output. The system provides information to the user means the system is input and the user is output.
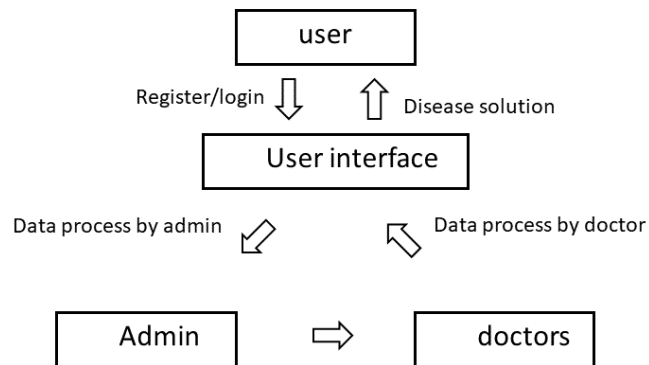
Figure 4.3. shows the level 0 DFD.

Figure 4.3: Level 0 DFD

## 4.3.2 level 1 DFD

Scheme management helps to generate the scheme and criteria management helps to provide the information according to the user's criteria.
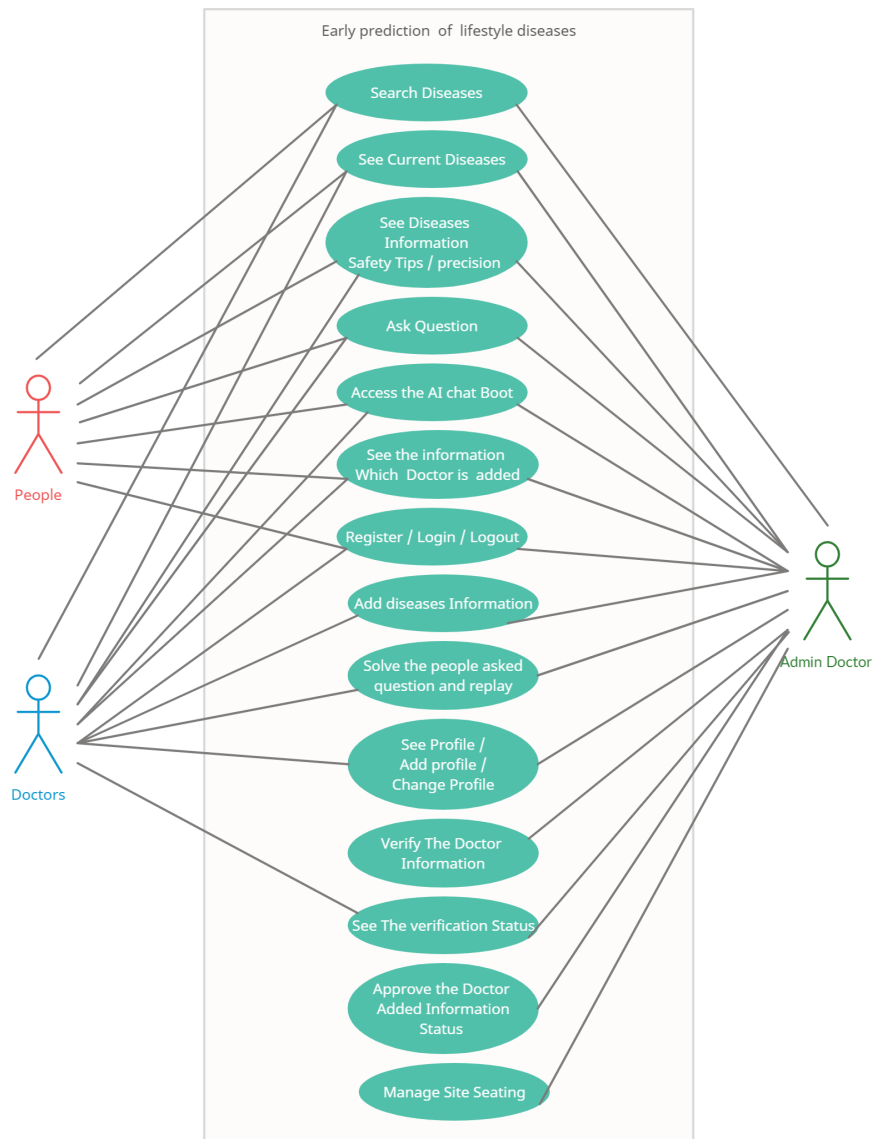
Figure 4.4. shows the level 0 DFD.

Figure 4.4: Level 1 DFD

## 4.4 UML Diagrams

The Unified Modeling Language is a language that defines the industry's best engineering practices for the modeling systems. The goal of UML is to be a ready-to-use expressive visual modeling language that is simple and extensible. Use case diagram shows a set of use cases, actors and their relationships. Use case diagrams address the static use case view of a system. These diagrams are especially important in organizing and modeling the behaviour of the system.

Subsection 4.4.1 shows the use case diagram. Sequence diagrams show the subsection 4.4.2. Subsection 4.4.3 shows the collaboration diagram. Activity diagrams show the subsection 4.4.4. Subsection 4.4.5 shows the class diagram. Components diagram shows the subsection 4.4.6. Subsection 4.4.7 shows the state chart diagram. Finally subscription 4.4.8 shows the deployment diagram.

### 4.4.1 Use Case Diagram

The Use Case diagram of the project disease prediction system consists of all the various aspects a normal use case diagram requires .The use case diagram shows the various actors like users ( Peoples ), Doctors, admin doctor and the relation and dependency between them. It also shows the functionality of the entire system.

Figure 4.5. shows the Use Case Diagram.

Figure 4.5: Use Case Diagram

### 4.4.2  Sequence Diagram

The Sequence diagram of the project disease prediction system consists of all various aspects a normal sequence diagram requires.

The Figure 4.6. shows the sequence of interaction between the various objects like login, register and logout functionalities. The Figure 4.7. shows the sequence of interaction between the user ( people ) Interaction to the portal. The Figure 4.8. shows the sequence of interaction between the Doctors Interaction to the portal. The Figure 4.9. shows the sequence of interaction between the Admin Doctors Interaction to the portal.

∎  *Register Login Logout*

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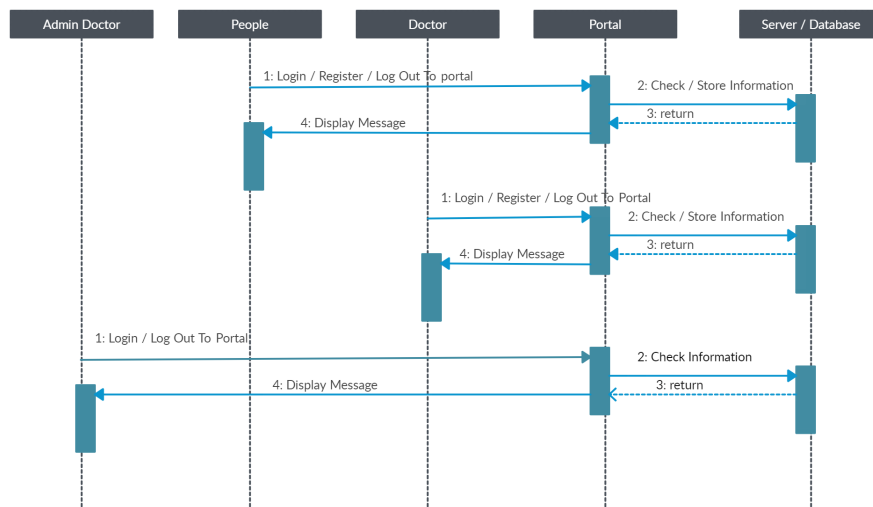
Figure 4.6: Sequence Diagram Login Logout

■ *User ( People ) Sequence Diagram*
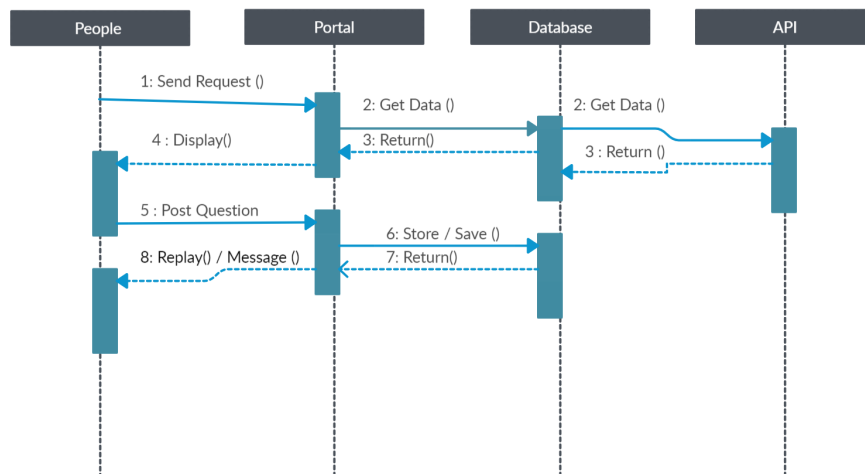


Figure 4.7: User ( People ) Sequence Diagram
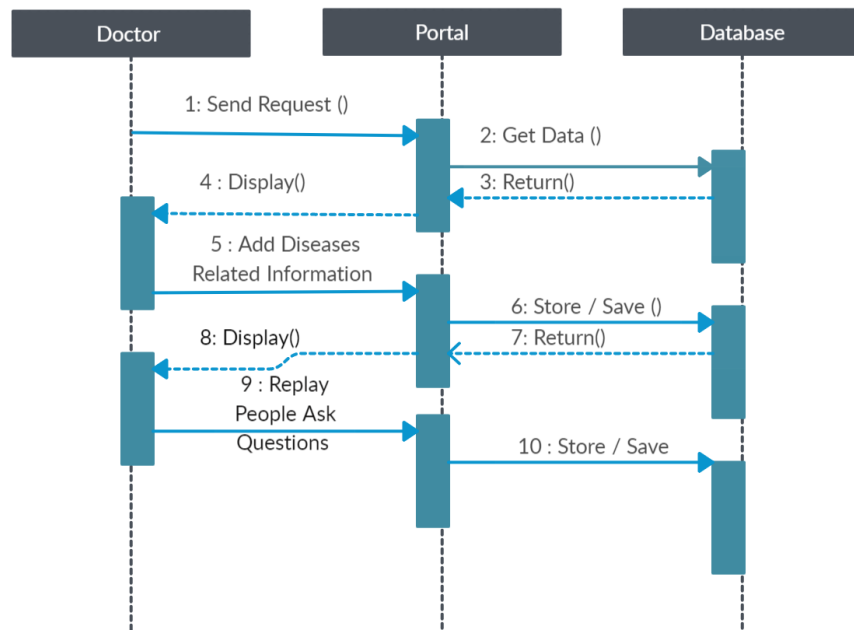
■ *Doctors Sequence Diagram*



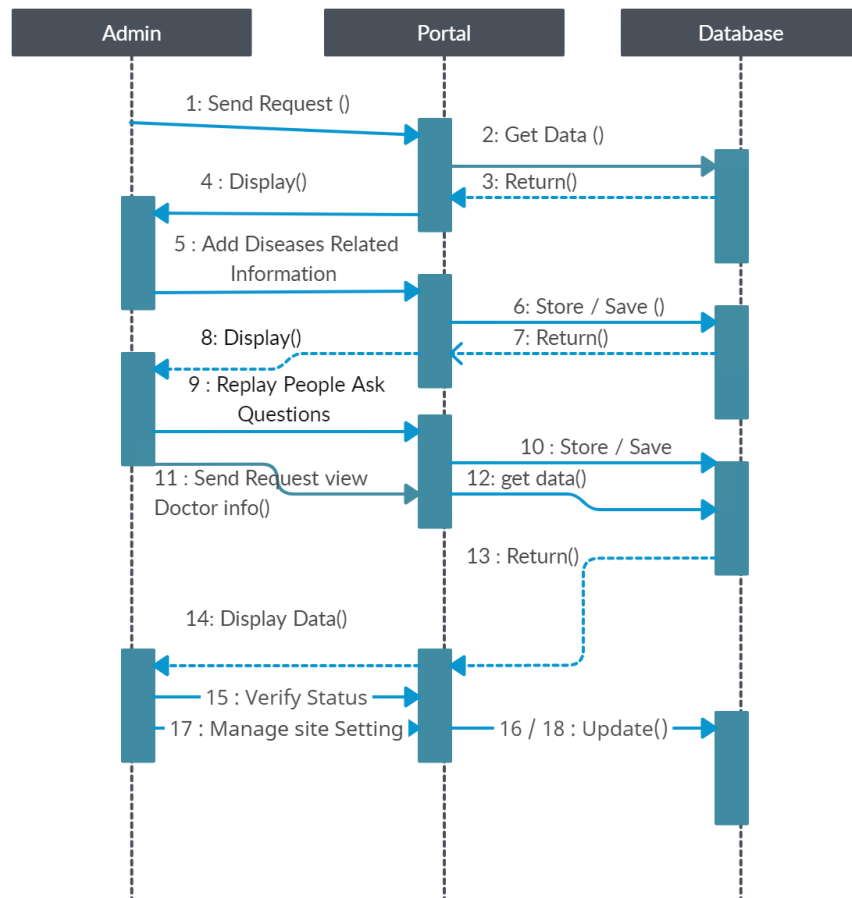Figure 4.8: Doctors Sequence Diagram

■ *Admin Sequence Diagram*



Figure 4.9: Admin Sequence Diagram

### 4.4.3 Collaboration Diagram

A collaboration diagram, also known as a communication diagram, is an illustration of the relationships and interaction among software objects in the UML. These diagrams can be used to poetry the dynamic behaviour of a particular use case and define the role of each object.

Here this figure 4.10 shows how all the modules are connected to shoes the correct result starting from people, where the opens the portal then using the portal he does registration and the registration data is saved into database and using those data people / admin logs to the portal and then he provides all the necessary information in order to get the accurate result, then portal evaluates the people / admin entered information and finally gives the correct result.
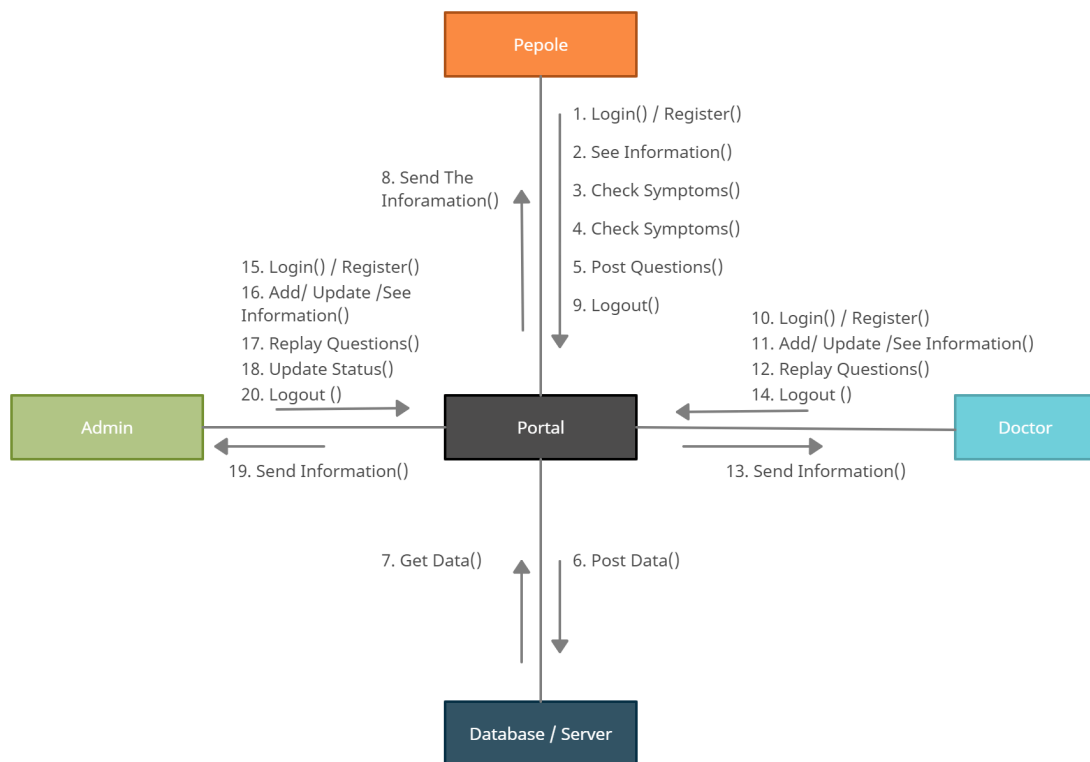


Figure 4.10: Collaboration Diagram

### 4.4.4    Activity Diagram

Activity diagram is another important diagram UML describes the dynamic aspect of the system. Activity diagram is basically flowchart to represent the flow from one activity to another activity. The activity can be described as an operation of the system. The control flow is drawn from one operation to another

Here in the figure 4.11 describe user view activities starts from checking symptoms and also search disease like this. And figure 4.12 describes admin view activities starting from login like this.
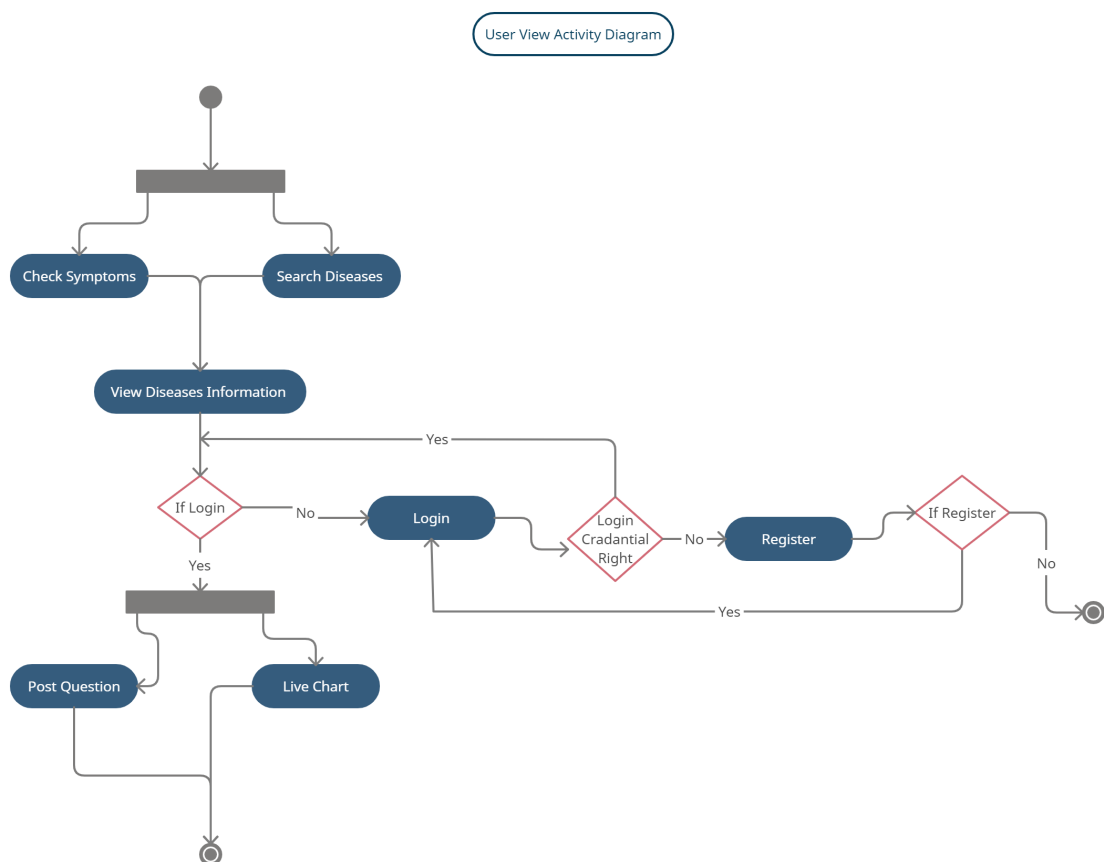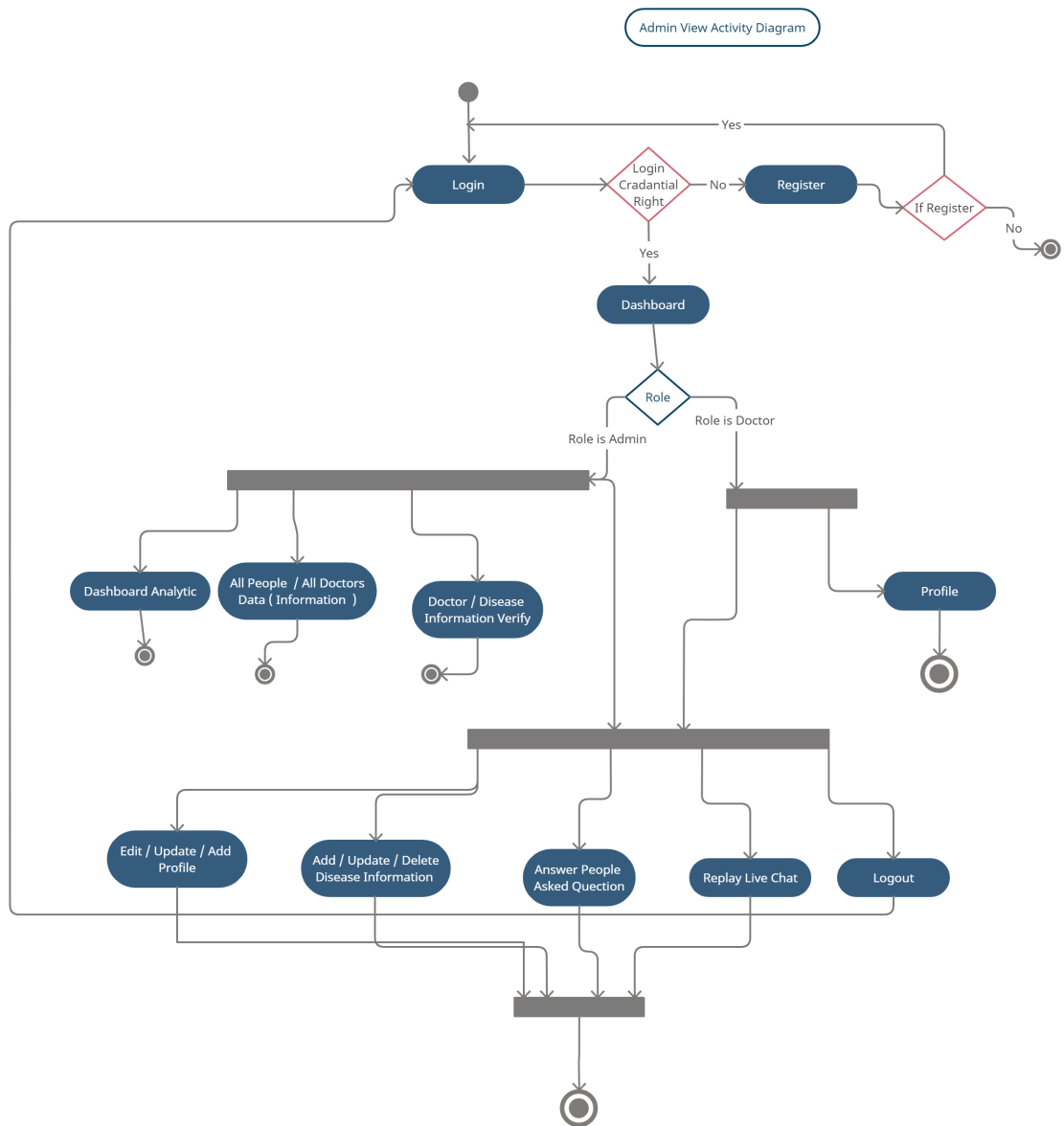


Figure 4.11: Activity Diagram (User View)

Figure 4.12: Activity Diagram (Admin View)

### 4.4.5 Class Diagram

Disease prediction system consists of a class diagram that all the other applications that consist of the basic class diagram, here the class diagram is the basic entity that is required in order to carry on with the project. Class diagram consist information about all the classes that is used and all the related datasets, and all the other necessary attributes and their relationships with other entities, all these information is necessary in order to use the concept of the prediction, where the people will enter all necessary information such as name,email,contact number, and many more attribute that is required in order to login into the system and using the database we will store the information of the people, admin,

doctors who are register into the system and retrieves those information later while logging into the system. The figure 4.13. shows a class diagram of the overall system.
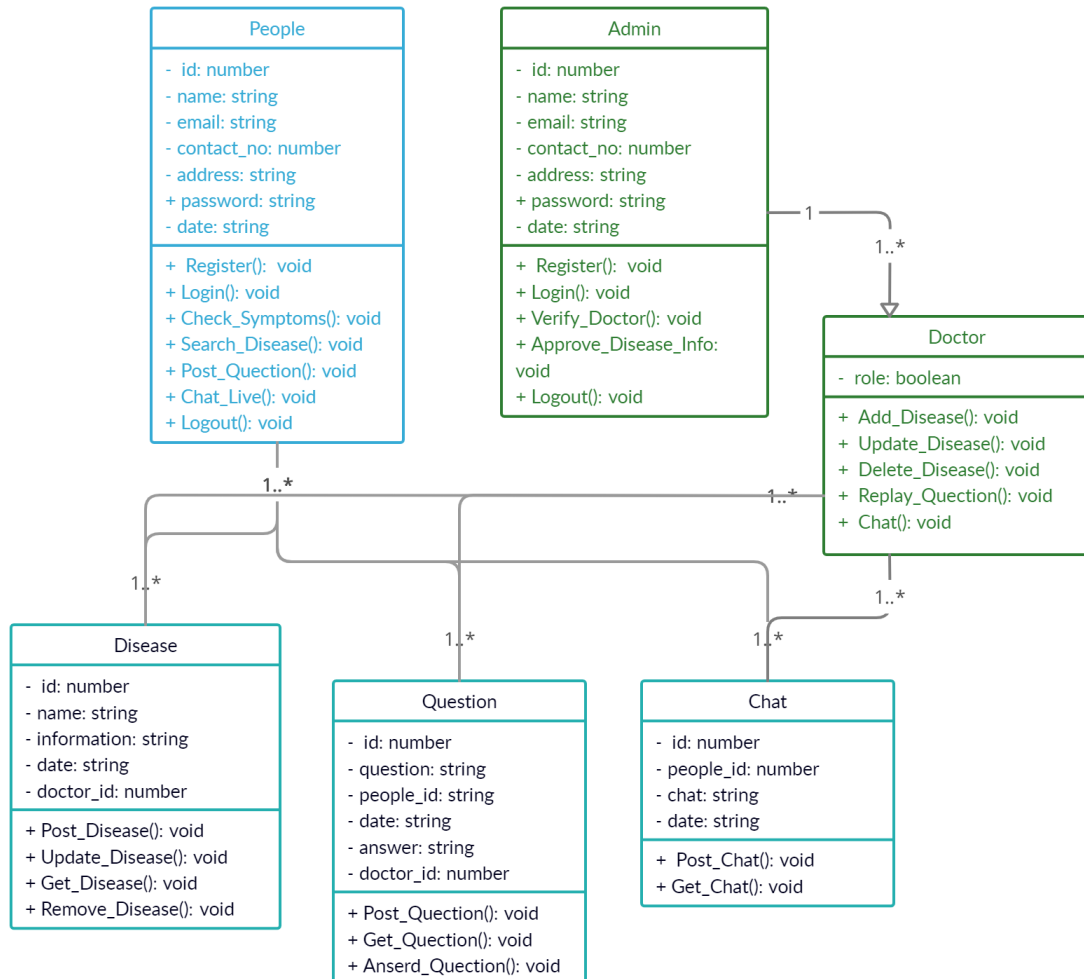


Figure 4.13: Class Diagram

### 4.4.6 Component Diagram

A components diagram, also known as a UML component diagram, describes the organization and writing of the physical components in a system. Component diagrams are often drawn to help model implementation details and double-check every aspect of the system's required function is covered by planned development. Here the component diagram consists of all major components that are used to build a system. Figure 4.14. describes the components diagram.
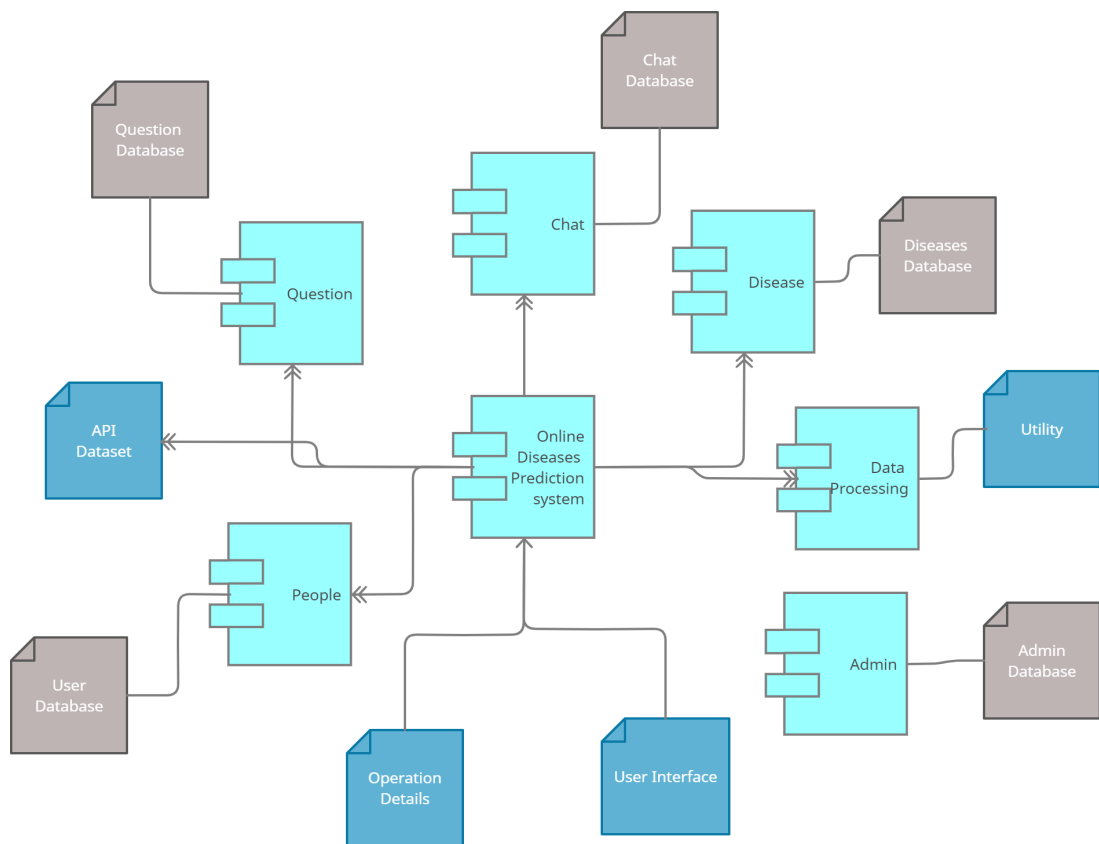


Figure 4.14: Component Diagram

### 4.4.7 Deployment Diagram

A deployment diagram shows the configuration of run time processing nodes and the components that live on them. Deployment diagram is a kind of structure diagram used in modeling the physical aspect of an object-oriented system. Here the deployment diagram shows t5he final stage of the project and it also shows how the module looks after doing all the process and deploying in the machine. Starting from the system, how it processes the people entering information and then comparing that information with the help of datasets, then training and testing that data using the algorithms such as decision tree, naive Bayes, random forest. Then finally processing all those data and the information the system gives the desired result in the interface.

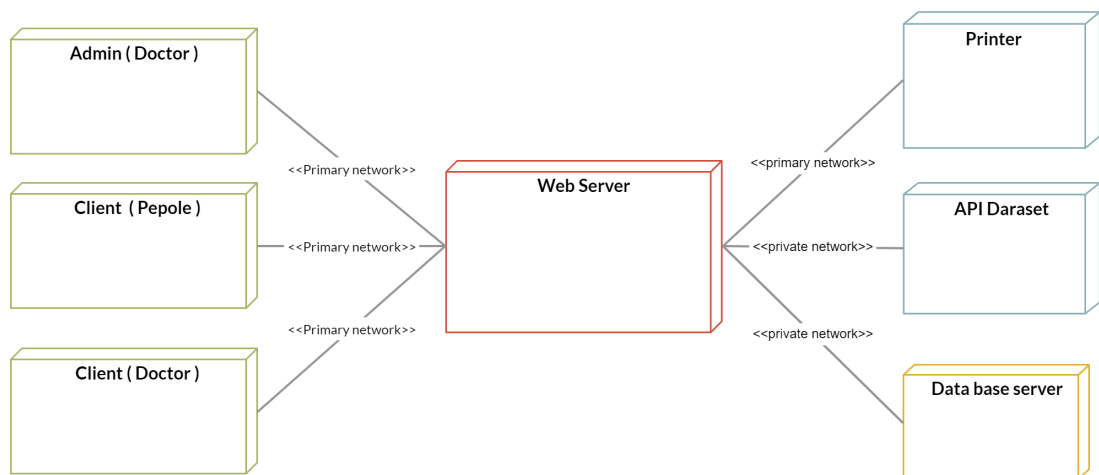Figure 4.15. Shows the deployment behaviour.



Figure 4.15: Deployment Diagram

## 4.5 Summary

In this chapter, System Design is presented. In the next chapter. Conclusion and Future Work Discussed.

# Chapter 5

# Conclusion and Future Work

## 5.1 Conclusion

So, Finally we conclude by saying that, this project early prediction of lifestyle diseases .learning is very much useful in everyone's day to day life and it is mainly more important for the healthcare sector, because they are the one that daily uses these systems to predict the diseased of the patients based on their general information and there symptoms that they are been through. Now a day's health industry plays major role in curing the diseases of the patients so this is also some kind of help for the healthy industry to tell the people and also it is useful for the user in case he/she doesn't want to go to the hospital or any other clinics, so just by entering the symptoms and all other useful information the user can get to know the disease he/she is suffering from and the health industry can also get benefit from this portal by just asking the symptoms from the user and entering in the system and in just few seconds they can tell the exact and up to some extent the accurate diseases. If the health industry adopts this project then the work of the doctors can be reduced and they can easily predict the disease of the patient. The Disease prediction is to provide prediction for the various and generally occurring diseases that when unchecked and sometimes ignored can turn into fatal disease and cause a lot of problems to the patient and as well as their family members.

## 5.2 Future Work

Our team is planning in the future to implement an overall system.

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