**A PROJECT REPORT ON**

# "Health Card"


## Prepared by

Bikram Prasad (U42000000853)

Tejal Laxkar (U42000000874)


## Under the guidance of

Prof. Hardik Patel

## Submitted in

Partial Fulfillment of the Requirements for the Degree of Bachelor of Technology in Computer Science and Information Technology

## Submitted at


**MAY 2020**

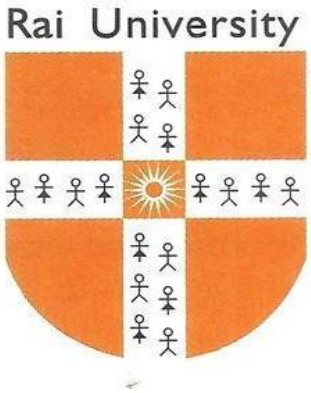

**DEPARTMENT OF CSE/IT**

**SCHOOL OF ENGINEERING & APPLIED SCIENCE**

**SARODA, DHOLKA - 382260**

**DIST: AHMEDABAD, GUJARAT**

**SCHOOL OF ENGINEERING & APPLIED SCIENCE**
**RAI UNIVERSITY**




# CERTIFICATE

This is to certify that Mr. **Bikram Prasad** of B.Tech. Semester VIII (Computer Science & Engineering) has completed his project work titled **"Health Card"** satisfactorily in partial fulfillment of the requirement of **Bachelor of Technology** degree of **Computer Science & Engineering, Rai University, Saroda, Ahmedabad** in the year 2020.

**Internal Guide**
Prof. Hardik Patel
**CSE/IT Department**
**Date:**

**Head of Department**
Prof. Rajdipsinh Vaghela
**CSE/IT Department**
**Date:**

**SCHOOL OF ENGINEERING & APPLIED SCIENCE**
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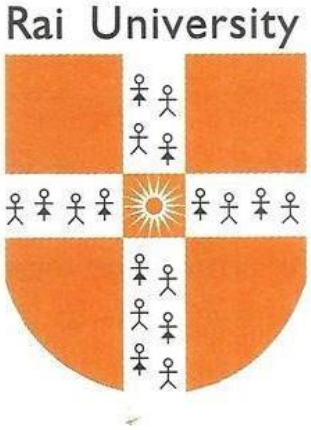


# CERTIFICATE

This is to certify that Ms. **Tejal Laxkar** of B.Tech. Semester VIII (Information Technology) has completed her project work titled **"Health Card"** satisfactorily in partial fulfillment of the requirement of **Bachelor of Technology** degree of **Information Technology, Rai University, Saroda, Ahmedabad** in the year 2020.

**Internal Guide**
Prof. Hardik Patel
**CSE/IT Department**
**Date:**

**Head of Department**
Prof. Rajdipsinh Vaghela
**CSE/IT Department**
**Date:**

# ACKNOWLEDGEMENT

Apart from the efforts of us, the success of any project depends largely on the encouragement and guidelines of many others. We take this opportunity to pen down and express my gratitude to the people who have been instrumental in the successful completion of this project.

During this Project, we gained a good experience of real work, which is completely different from the academics. Moreover, this Project can be considered as the final step towards achieving the bachelor's degree. We express our sincere thanks to many people who have helped us during our training.

We are grateful to our college, **School of Engineering & Applied Science, Rai University** for giving us this wonderful opportunity to undertake this training.

We convey our sincere thanks to **Mr. Rajdipsinh Vaghela (HOD CSE/IT Department, SEAS, Rai University)**, **Mr. Hardik Patel (our Internal Project Guide)** for providing us his time, constructive criticism and valuable guidance. The guidance and support received from all the other faculty members who contributed to this project, was vital for the success of the project. Besides this, we would like to thank all those people who helped us in one or the other way.

# CANDIDATE'S DECLARATION

We hereby declare that, the project report titled "Health Card" submitted towards the partial completion of Project in 8th semester, of the Bachelor of Technology in Computer Science & Engineering and Information Technology, in School of Engineering & Applied Sciences, Rai University, Ahmedabad, is an authentic record of our work carried out.

We further declare that the work reported in this project has not been submitted and will not be submitted, either in part or in full for the award of any other degree in this institute or any other institute.

Candidate's Signature

Candidate's Signature

| | | | |
|---|---|---|---|
| Candidate's Name | : **Bikram Prasad** | Candidate's Name | : **Tejal Laxkar** |
| Branch | : **B. Tech CS** | Branch | : **B. Tech IT** |
| Enrollment No | : **U42000000853** | Enrollment No | : **U42000000874** |

This is to certify that the above statement made by us is correct to the best of our knowledge.

Signature of Internal Guide (Prof. Hardik Patel)

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# ABSTRACT

Heath Card has been never implemented nationally in India and is used only in some countries such as USA. Most of the others never bothered with the health records stored in one safe place and can be retrieved for further medical things.

Health Card is a web application that is designed to help quality assurance and programmers keep health records of people.

Nowadays, when past health records are not available the it is sometimes dangerous to treat patients as it could lead to death without knowing their past medical records. People generally are not able to keep medical records of their own or their family medical records.

Just like, we have Aadhar Card , Pan Card, Voter ID Card, Driving License as identity proofs for our day to day transactions, but what we don't have is our health card, which manages our day to day health history like diseases, allergies, body measurements like BP, sugar level, etc. This card can be used everywhere in private as well as public hospitals and clinics, medical store, laboratory to track your health related data. This will give on-time information to health authority so that, action can be taken on right time and thus it can save many people to become victim of some viral disease.

# CHAPTER 1: INTRODUCTION

## 1.1 PROJECT SUMMARY

Health Card is a web-application which manages our day to day health history like disease, allergy etc. The same card can be use everywhere in private or public hospitals, clinics, medical store, laboratory to track your health-related data. This will give on time information to health authority so that, action can be taken on right time and thus it can save many people to become victim of some viral diseases.

## 1.2 PURPOSE

Doctor can keep record of every patient's health. Patient can manage all cases of his/her for lifetime. Concern authorities can analyze the data and take appropriate action from stored data. One doctor can easily understand past doctor's treatment and thus patient will get accurate treatment. Gradually this leads to decrease death ratio of people because of unknown data of past. Also, as it gives very potential analytics so this will reduce the threat of spreading many unwanted viral diseases in society as everything is recorded online so on time, we can get idea about such threats.

## 1.3 SCOPE

Health card can be use by anyone as a patient. Earlier patient doesn't have any records of their past health history, which can be now stored online so that patient can access it anytime for reference. If the person visited to multiple hospital's and meet different doctor's in any of his/her lifetime, now all records can be stored in a centralized data center, and in future one doctor can easily treat their patient on the basis of past records. Through this Health card everything can be synchronized and well managed.

## 1.4 TOOLS AND TECHNOLOGIES USED

### 1.4.1 Frontend

**Angular**

Angular is a TypeScript-based open-source web application framework led by the Angular Team at Google and by a community of individuals and

corporations. Angular is a complete rewrite from the same team that built AngularJS. Angular is a platform and framework for building single-page client applications using HTML and TypeScript. Angular is written in TypeScript. It implements core and optional functionality as a set of TypeScript libraries that you import into your apps.

[Fig. 1.4.1 Angular]

### 1.4.2 Backend

- **Python**

  Python is a popular programming language. It was created by Guido van Rossum, and released in 1991.Python is an interpreted, high-level, general-purpose programming language. Created by Guido van Rossum and first released in 1991, Python's design philosophy emphasizes code readability with its notable use of significant whitespace.


[Fig. 1.4.2(a) Python]

- **Flask**

  Flask is a micro web framework written in Python. It is classified as a micro framework because it does not require particular tools or libraries. It has no database abstraction layer, form validation, or any other components where pre-existing third-party libraries provide common functions. However, Flask supports extensions that can add application features as if they were implemented in Flask itself. Extensions exist for object-relational mappers,

form validation, upload handling, various open authentication technologies and several common framework related tools.


[Fig. 1.4.2(b) Flask]

- **PyMongo**

The PyMongo library allows interaction with the MongoDB database through Python. It is a native Python driver for MongoDB. Python developers can think of MongoDB as a persistent, searchable repository of Python dictionaries. Flask-PyMongo bridges Flask and PyMongo and provides some convenience helpers.

[Fig. 1.4.2(c) PyMongo]

- **MongoDB**

MongoDB is a cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB uses JSON-like documents with schema. MongoDB is developed by MongoDB Inc. and licensed under the Server Side Public License (SSPL). Ad hoc queries, indexing, and real time aggregation provide

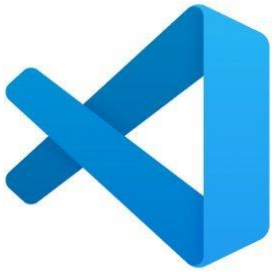
powerful ways to access and analyze your data.


[Fig. 1.4.2(d) MongoDB]

### 1.4.3 Tools

- **Visual Studio Code**

  Visual Studio Code is a source-code editor developed by Microsoft for Windows, Linux and macOS. It includes support for debugging, embedded Git control and GitHub, syntax highlighting, intelligent code completion, snippets, and code refactoring. It is highly customizable, allowing users to change the theme, keyboard shortcuts, preferences, and install extensions that add additional functionality.



[Fig. 1.4.3(a) Visual Studio Code]

- **Postman**

  Postman is an API (application programming interface) development tool which helps to build, test and modify APIs. Almost any functionality that could be needed by any developer is encapsulated in this tool. It is used by developers to make their API development easy and simple. It has the ability to make various types of HTTP requests (GET, POST, PUT, PATCH), saving environments for

later use, converting the API to code for various languages (like JavaScript, Python).

[Fig. 1.4.3(b) Postman]

## 1.5 MOTIVATION

The main motivation of this application is to learn the web application development. We were always curious to know how things work in Web Application. We chose the Angular framework because it is one of the fastest growing web application frameworks on the market and is an open source development and backed by Google Team and developers all round the world.

We have Aadhar Card , Pan Card, Voter ID Card, Driving License as identity proofs for our day to day transactions, but what we don't have is our health card, which manages our day to day health history like diseases, allergies, body measurements like BP, sugar level, etc. This card can be used everywhere in private as well as public hospitals and clinics, medical store, laboratory to track your health related data. This will give on-time information to health authority so that, action can be taken on right time and thus it can save many people to become victim of some viral disease

# CHAPTER 2: PROJECT MANAGEMENT

Project management is the discipline of initiating, planning, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria. A project is a temporary endeavor designed to produce a unique product, service or result with a defined beginning and end undertaken to meet unique goals and objectives, typically to bring about beneficial change or benefit. The primary challenge of project management is to achieve all of the project goals within the given constraints. This information is usually described in a user or project manual, which is created at the beginning of the development process. The primary constraints are scope, time, quality and budget. The secondary and more ambitious challenge is to optimize the allocation of necessary inputs and integrate them to meet pre-defined objectives. In project management, a schedule consists of a list of a project's terminal elements with intended start and finish dates.

## 2.1 PROJECT PLANNING

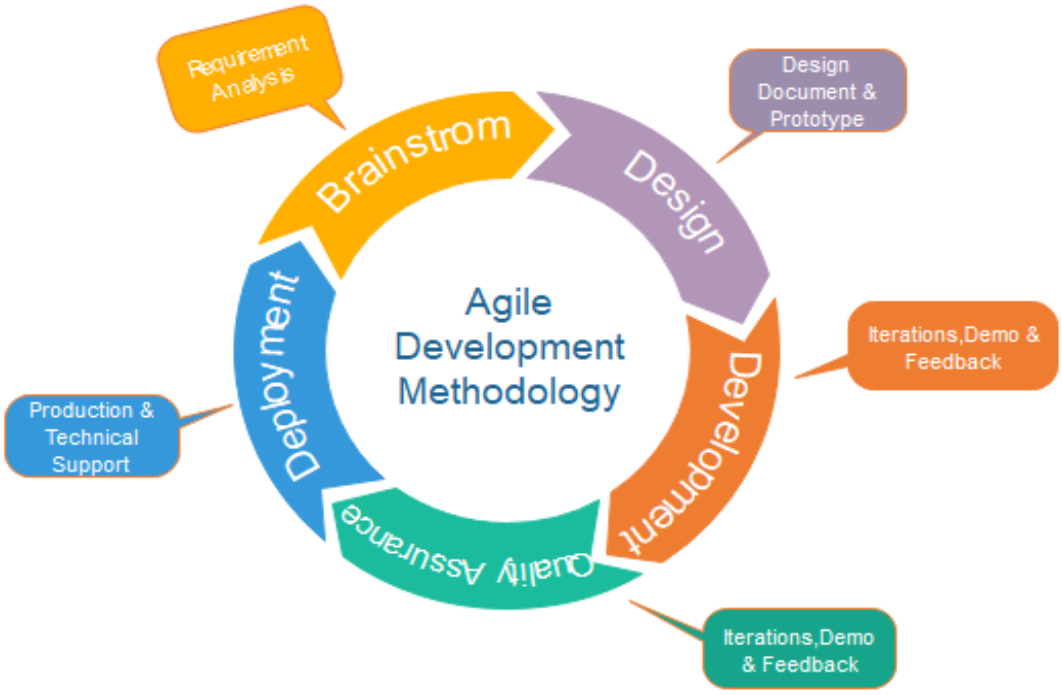
Project planning is part of project management, which relates to the use of schedules to plan and subsequently report progress within the project environment. Initially, the project scope is defined and the appropriate methods for completing the project are determined. Following this step, the durations for the various tasks necessary to complete the work are listed and grouped into a work breakdown structure.

At this stage, the project plan may be optimized to achieve the appropriate balance between resource usage and project duration to comply with the project objectives. Once established and agreed, the plan becomes what is known as the baseline. Progress will be measured against the baseline throughout the life of the project. Analyzing progress compared to the baseline is known as earned value management.

### 2.1.1 Project Development Approach

Project development approach or software development models are the various processes or methodologies that are being selected for the development of the

project depending on the project's aims and goals. Many development life cycle models have been developed in order to achieve different required objectives. The models specify the various stages of the process and the order in which they are carried out. The selection of model has very high impact on the testing. It will define the what, where and when of our planned testing, influence regression testing and largely determines which test techniques to use.




[Fig. 2.1.1 Agile Model]

- **Advantage of Agile Method:**
  - Frequent Delivery
  - Face-to-Face Communication with clients.
  - Efficient design and fulfils the business requirement.
  - Anytime changes are acceptable.
  - It reduces total development time.

- **Disadvantages of Incremental Model**
  - Due to the shortage of formal documents, it creates confusion and

crucial decisions taken throughout various phases can be misinterpreted at any time by different team members.

- Due to the lack of proper documentation, once the project completes and the developers allotted to another project, maintenance of the finished project can become a difficulty.

### 2.1.2 Justification

Breaking down the project into manageable units, the project can be mainly focused on high-quality development, testing, and collaboration. Also, by producing frequent builds and conducting testing and reviews during each iteration, quality is improved by finding and fixing defects quickly and identifying expectation mismatches early. Therefore, I chose Agile model, as an approach to develop my project.

## 2.2 PROJECT SCHEDULING

Project Scheduling consists of identifying the tasks needed to complete the project, determine the dependency among different tasks, plan the starting and ending dates for various tasks and determine the chain of tasks that determine the duration of the project. In Project scheduling, we decide the order in which to do the tasks.

Proper Scheduling Requires:

- All tasks appear in network and dependent on some of other.
- Effort and timing are intelligently allocated to each task.
- Interdependencies between tasks are properly indicated.
- Resources are allocated for the work to be done.

# CHAPTER 3: SYSTEM REQUIREMENT STUDY

To be used efficiently, all software needs certain hardware components or other software resources to be present on a device on which the software runs. These prerequisites are known as system requirements and are often used as a guideline as opposed to an absolute rule. Most software defines two sets of system requirements: minimum and recommended. With increasing demand for higher processing power and resources in newer versions of software, system requirements tend to increase over time. Industry analysts suggest that this trend plays a bigger part in driving upgrades to existing computer systems than technological advancements.

## 3.1 USER CHARACTERISTICS

**Admin**: This module has the entire access to all other modules, admin can go through the all the modules. Admin can create users of different types with all the details.

**Patient:** Patient is defined user/patient in here. Such that they can see and check their profile with the help of login credentials and unique ID and check cases listed in their profile database. They can contact enrollment center if any error occurred or if changes are to be made. They can access all their past medical records.

**Doctor:** Doctor can see the medical history of any patient with the unique ID of patients. Doctor can view cases list and view case details of any case listed in the patient records. Doctor can also check the medicines provided in their cases.

**Hospital:** Hospital can see the medical history of any patient with the unique ID of patients. Hospital can view cases list and view case details of any case listed in the patient records. Hospital can also check the medicines provided in their cases.

**Clinic:** Clinic can see the medical history of any patient with the unique ID of patients. Clinic can view cases list and view case details of any case listed in the patient records. Clinic can also check the medicines provided in their cases.

**Laboratory:** Laboratory can see patient details as well as case details in order to get lab testing requirements and after lab tests, they will upload test results into their patient's case details.

**Medical Store:** Medical Store can only see patient details as well as medicine details in case details in order and give medicines and after providing the listed medicines, they will update the medicine status into their patient's medicine case details.

## 3.2 HARDWARE AND SOFTWARE REQUIREMENTS

- **Software Requirement**

| Software | Recommended System Requirements |
|---|---|
| Front End | Angular 9 |
| Back End | Flask |
| Database | MongoDB |
| OS | Windows XP and above |
| IDE | Visual Studio Code 2019 |

[Table 3.2.1 Software Requirement]

- **Hardware Requirement**

| Hardware | Recommended System Requirements |
|---|---|
| Processor Minimum | Pentium 4 CPU & above,2.40 GHz. |
| RAM | 4 GB of Ram |
| Hard Disk | 160 GB |

[Table 3.2.2 Hardware Requirement]

# CHAPTER 4: SYSTEM ANALYSIS

## 4.1 STUDY OF CURRENT SYSTEM

In the present situation, the system follows the sequence of steps described below to develop software. First, when the project comes to the company, it is the responsibility of the project manager to assign the works to his team members. After the completion of the analysis, design and the coding phase the software is send to the tester. The tester is responsible for identifying bugs and reporting them to his project manager. He has to list out all the bugs in a paper and forward the report to his manager. Then the project manager sorts all the bugs according to their priorities and assigns the programmers to fix the bugs. The programmer fixes the bugs and gives report to the project manager.

1) Medical records whether past ones or the present ones are not useful and handy as generally people forget their medical records.
2) Currently no such system exists which can store a patient records in a centralized database in India.
4) Although some system exists but are limited to their hospitals and clinics only and is used for their use only.
5) Proper maintenance and details of patients has to take great care.

## 4.2 FEASIBILITY STUDY

A Feasibility study is undertaken to determine the possibility or portability of either improving the existing system or developing a completely new system. Feasibility is the measure of how beneficial or practical the development of information system will be to an organization. The feasibility study involves following criteria.

- Whether the identified user needs may be satisfied using current software and hardware technologies.
- The study will decide if the proposed system will be cost-effective and if it can be developed given existing budgetary constraints.
- The result should inform the decision of whether to go ahead with a more detailed analysis.

There are three methods of feasibility study.

1. **Technical Feasibility Study**

   In this type of study, the current technology used in an organization is checked such as the existing software, hardware, and personnel staff to determine whether it will work for the proposed system or completely new ones is to be used. The technology that was important in developing a new system such as Development tools, back-end database system was available from within the organization. The proposed system is capable of adding, changing, enhancing the functionality, features etc. The proposed system is capable of handling large storage of data.

2. **Economical Feasibility Study**

   For proving that system developed is economical, the economic feasibility study takes place to check the cost of developing a system against the benefits that it provides. If the cost is less and benefits are more than we can define our system to be economically developed.

3. **Operational Feasibility Study**

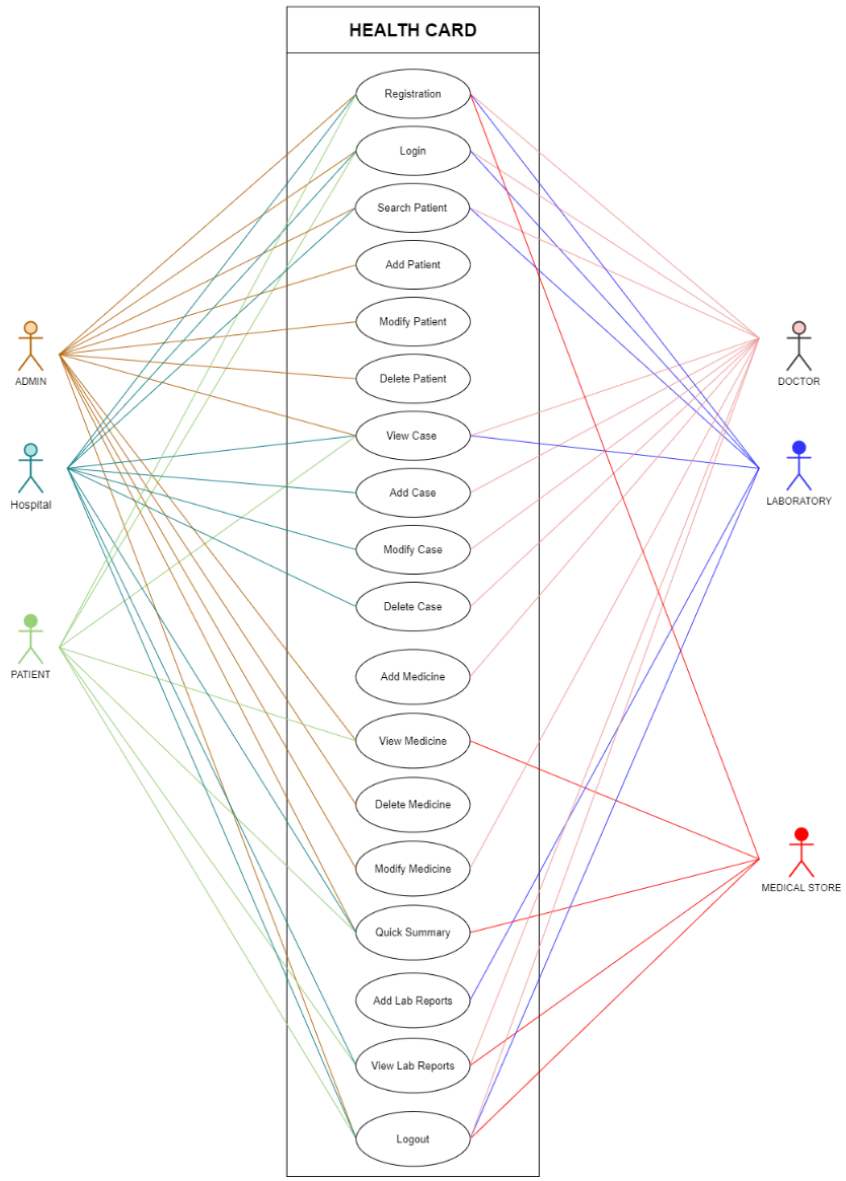
   The operational feasibility is concerned with the operability of the system after it has been installed. That is, some programmer may not like changes in their routine method of work or has fear that they will lose their peer group.

## 4.3 FEATURES OF NEW SYSTEM

- Easy to store any patient's medical history
- Easy to find any patient's medical history
- Time Saving
- Best quality product release
- Better accessibility
- Quick understanding of medical records and reports

## 4.4 USE CASE DIAGRAM

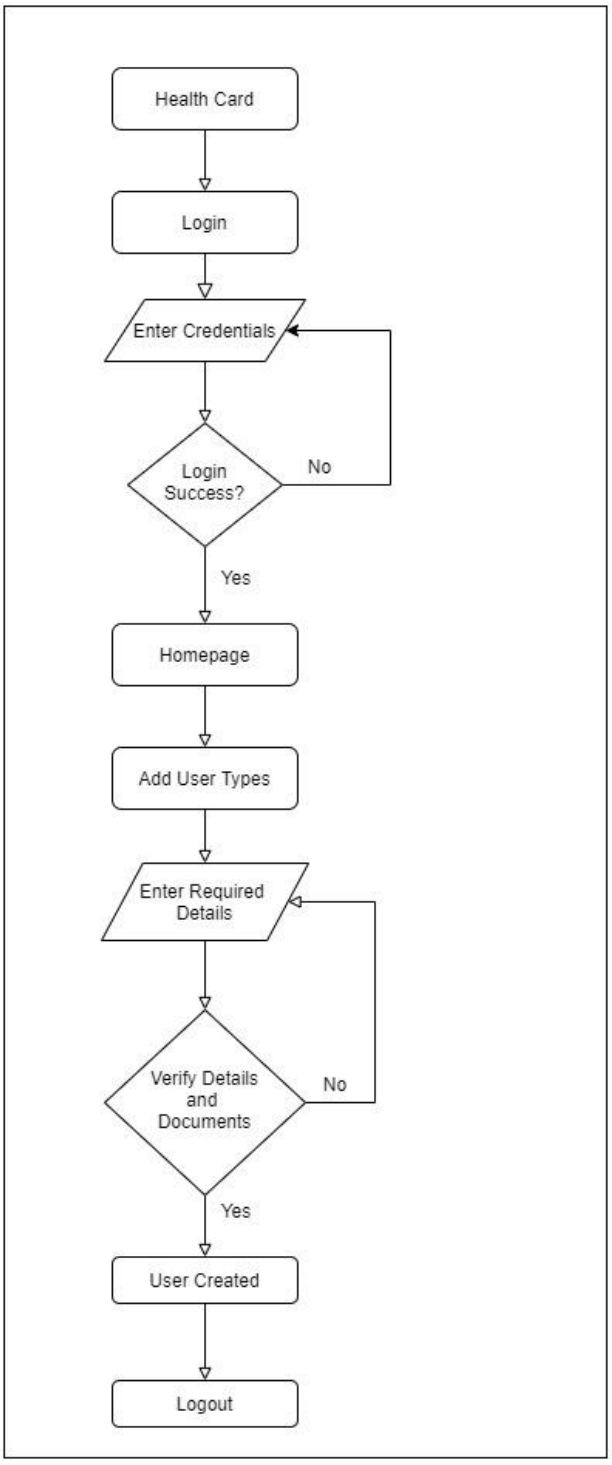
In software and system engineering, a use case is a list of action or event steps, typically define the interaction between a role and system, to achieve a goal. The actor can be a human, an external system, or time. In systems engineering, use case diagrams are used at a higher level than within software engineering, often-representing missions or stakeholders goal




[Fig. 4.4 Use Case Diagram]

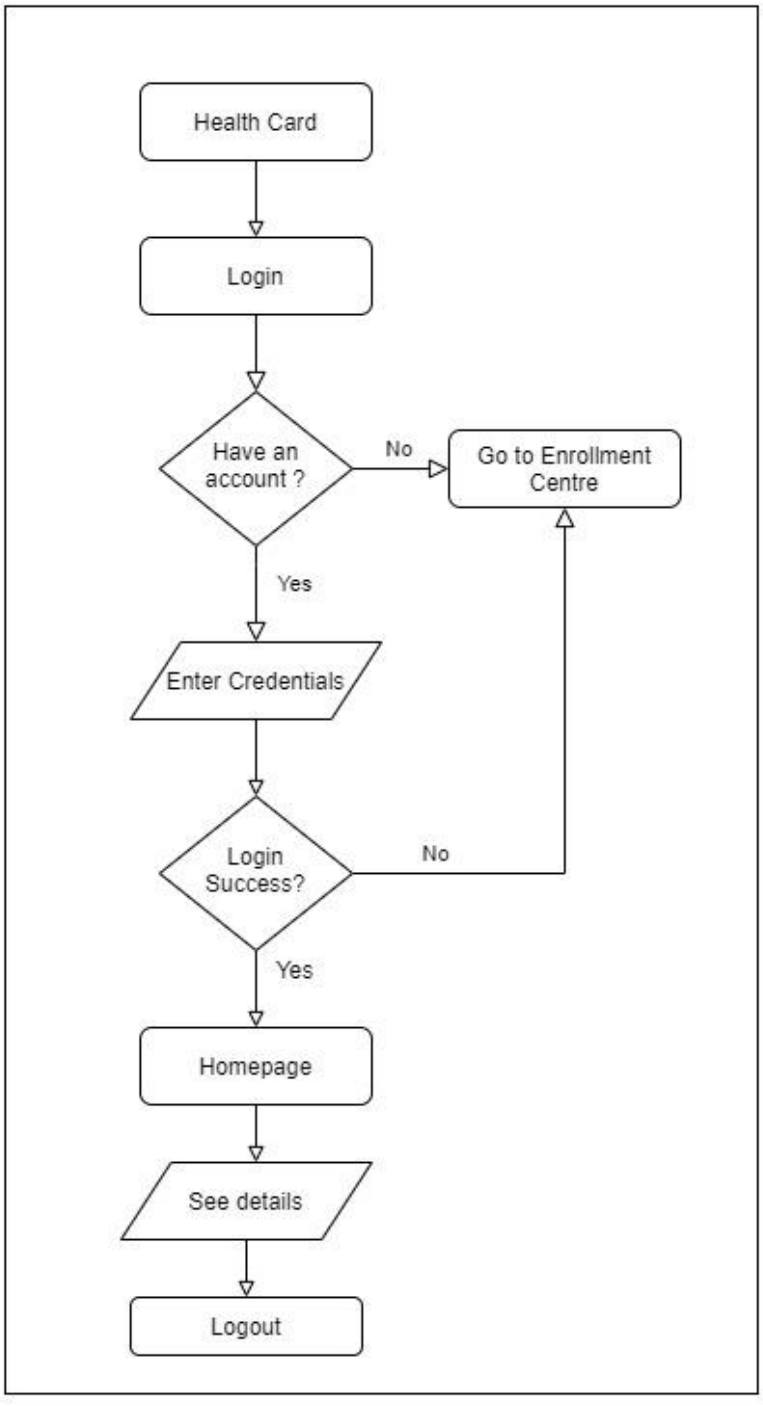
## 4.5 FLOWCHART

### 1. Admin Flowchart



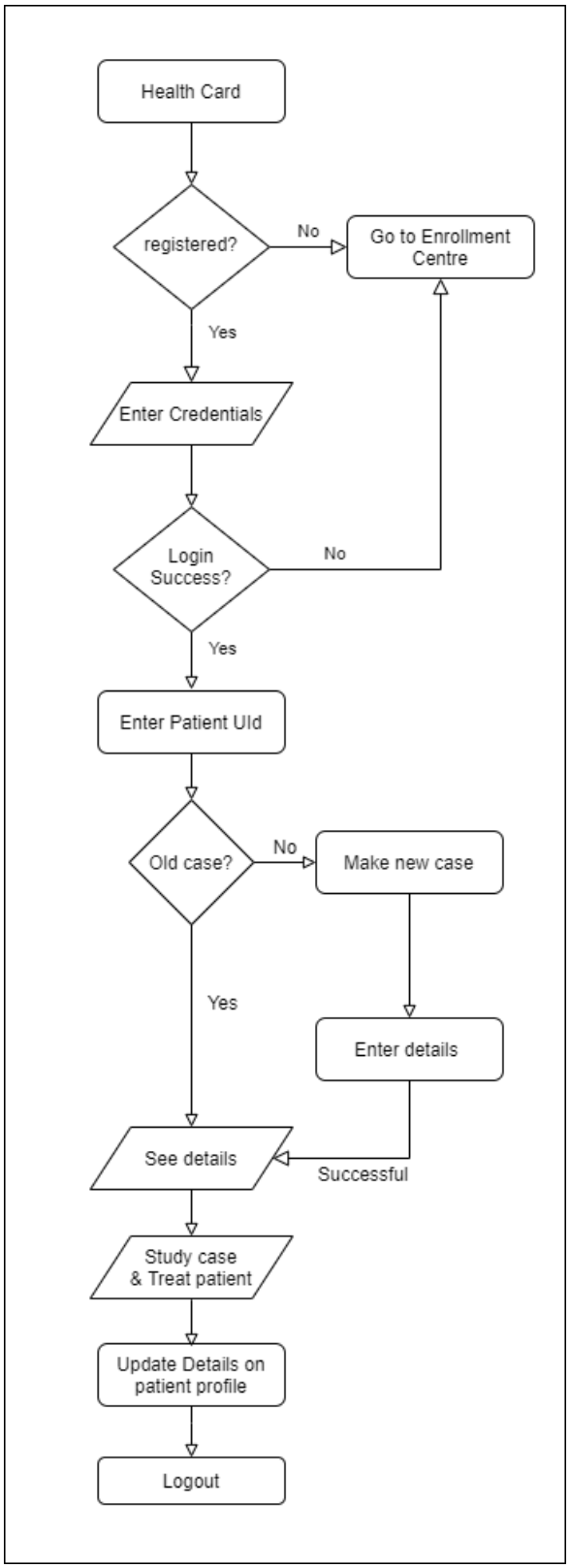

[Fig. 4.5.1 Admin Flowchart]

## 2. User Flowchart



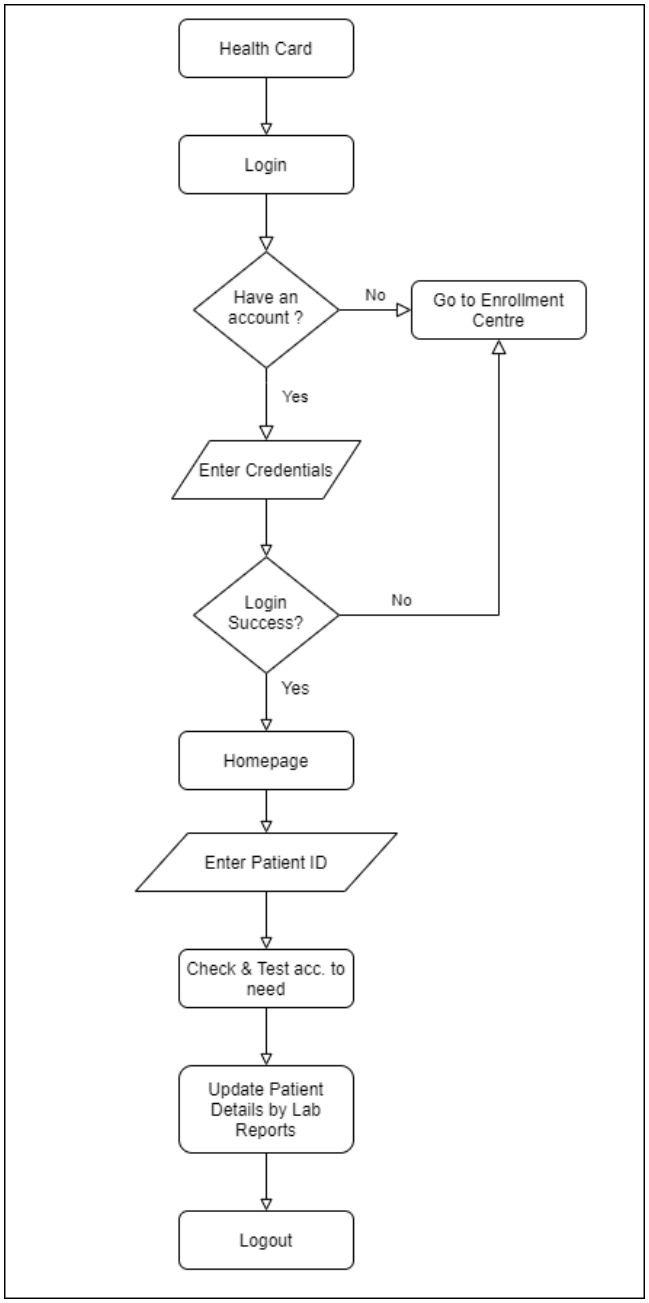

[Fig 4.5.2 User Flowchart]

## 3. Doctor Flowchart



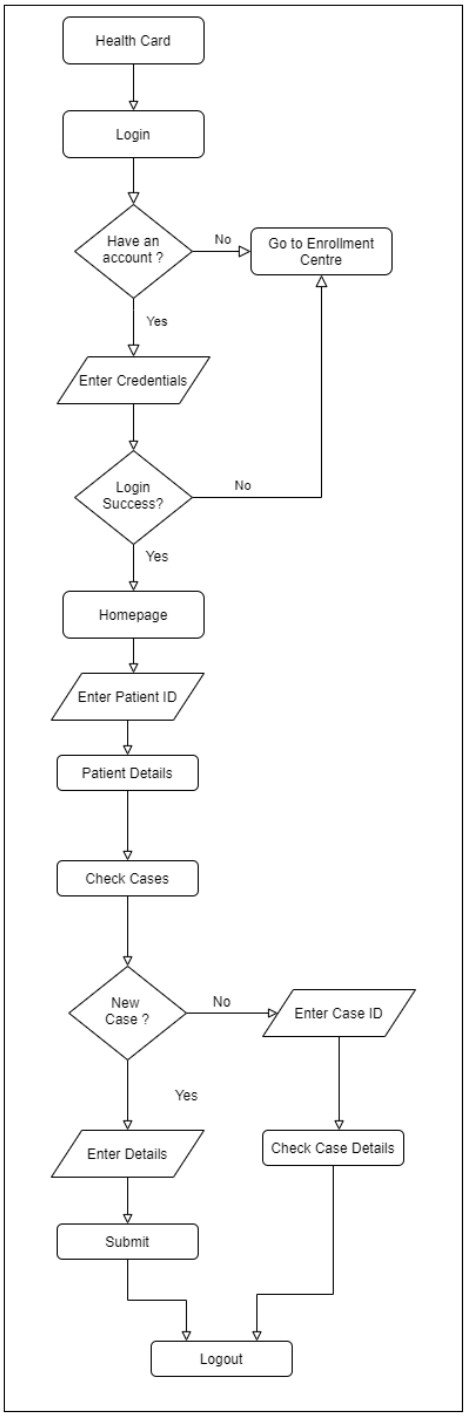

[Fig 4.5.3 Doctor Flowchart]

## 4. Lab Flowchart



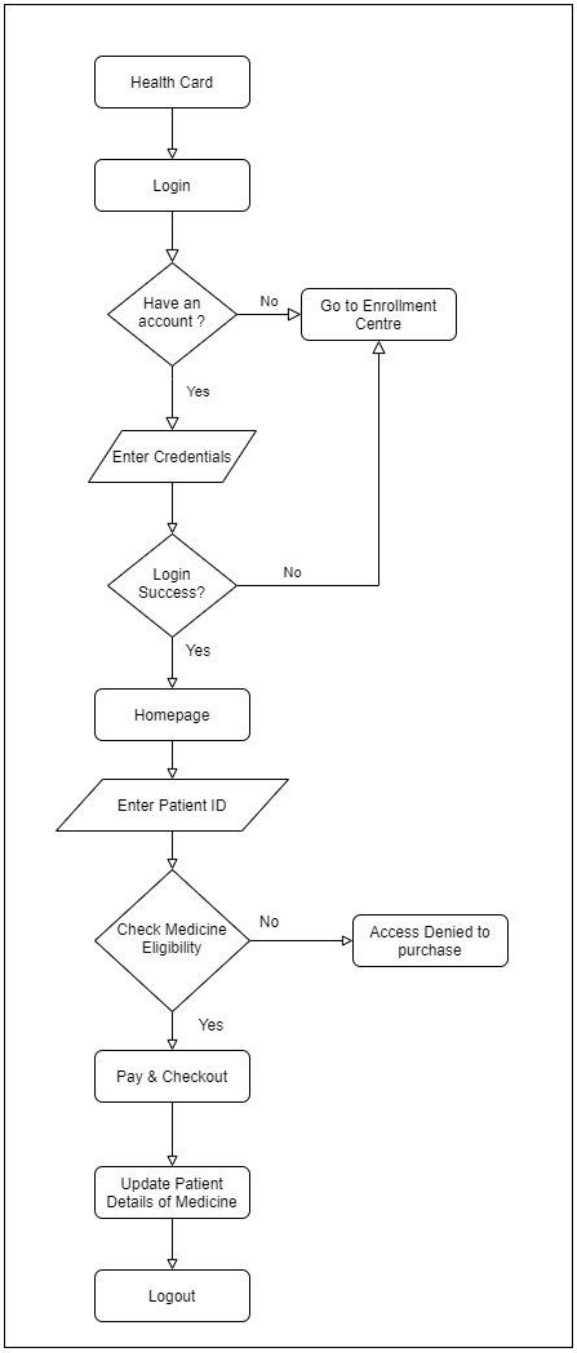

[Fig 4.5.4 Lab Flowchart]

## 5. Hospital Flowchart



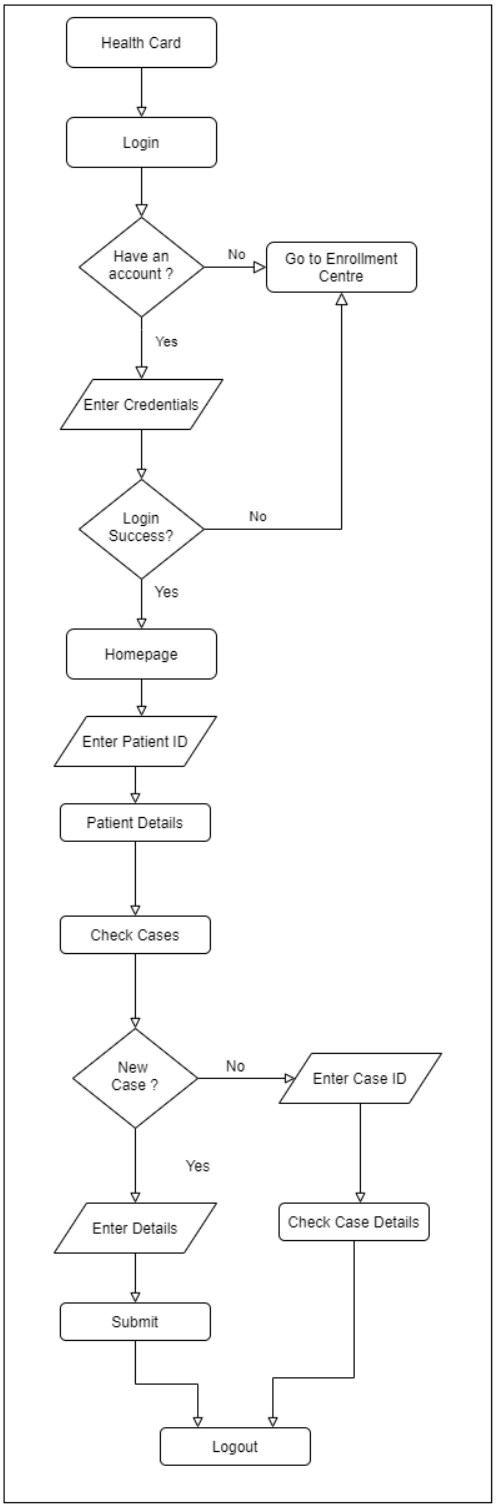

[Fig 4.5.5 Hospital Flowchart]

## 6. Medical Flowchart




[Fig 4.5.6 Medical Flowchart]

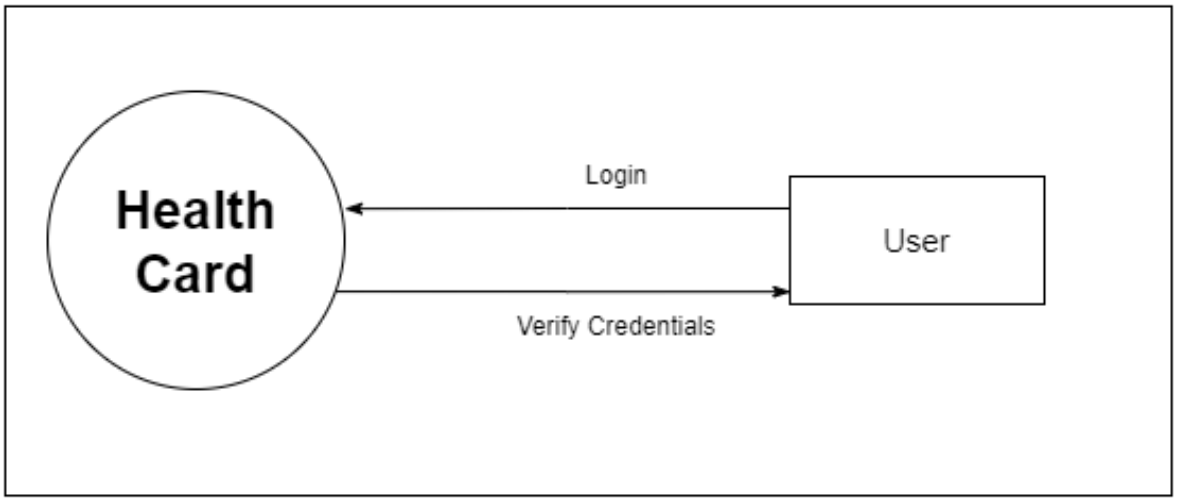
## 7. Clinic Flowchart




[Fig 4.5.6 Clinic Flowchart]

## 4.6 DATA FLOW DIAGRAM

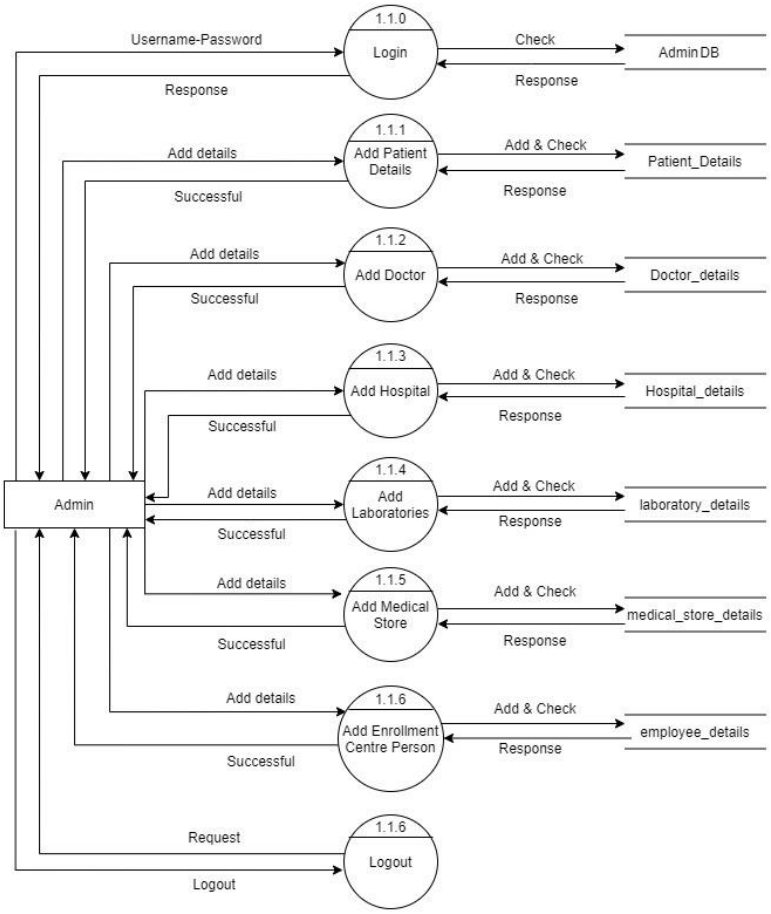
### 4.6.1 Context Level DFD




[Fig 4.6.1 Context Level DFD]

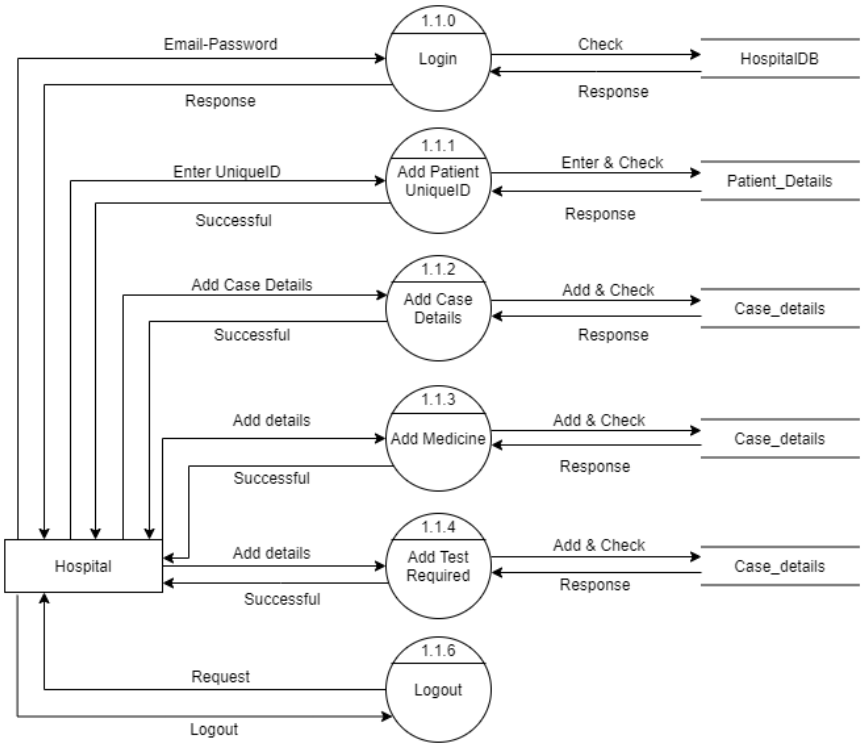
### 4.6.2 1st Level DFD

- **Admin 1st Level DFD**



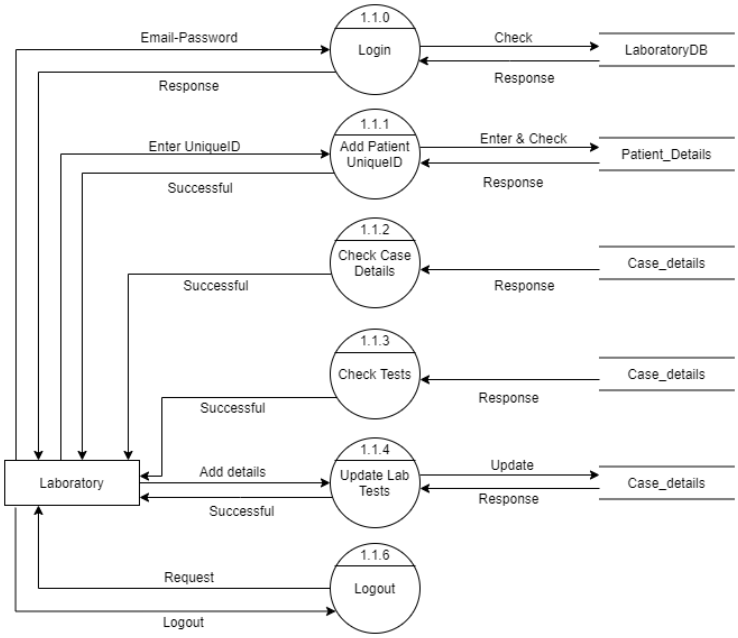

[Fig 4.6.2(a) Admin 1st Level DFD]

- **Hospital 1st Level DFD**



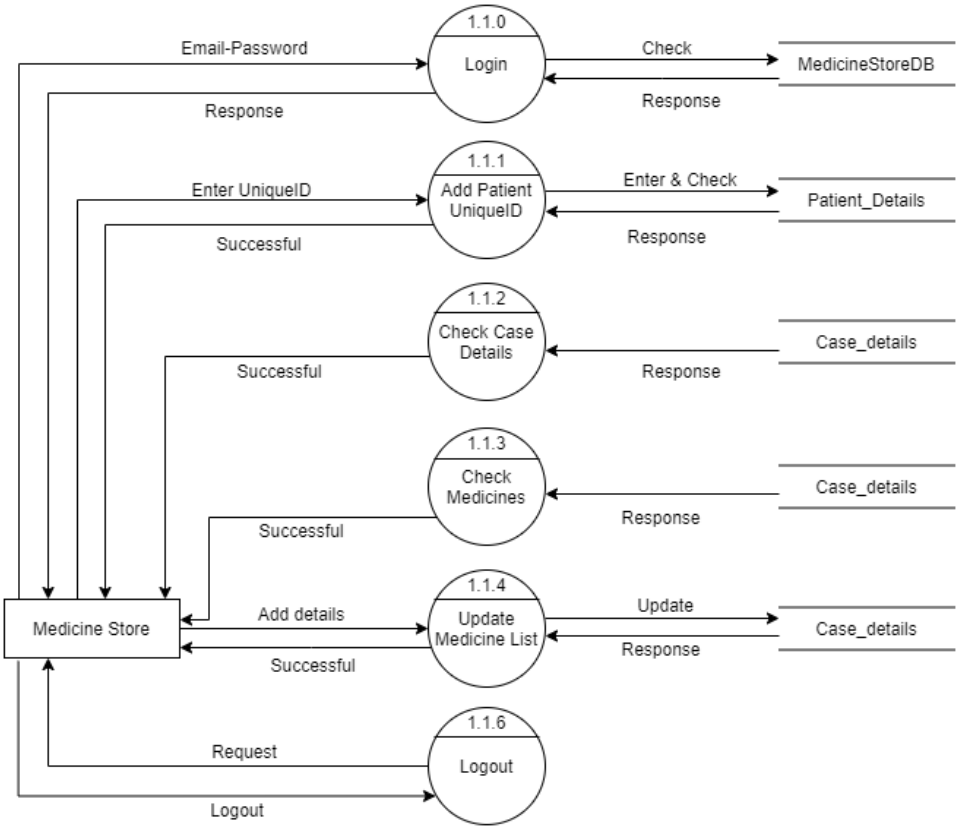

[Fig 4.6.2(b) Hospital 1st Level DFD]

- **Laboratory 1st Level DFD**



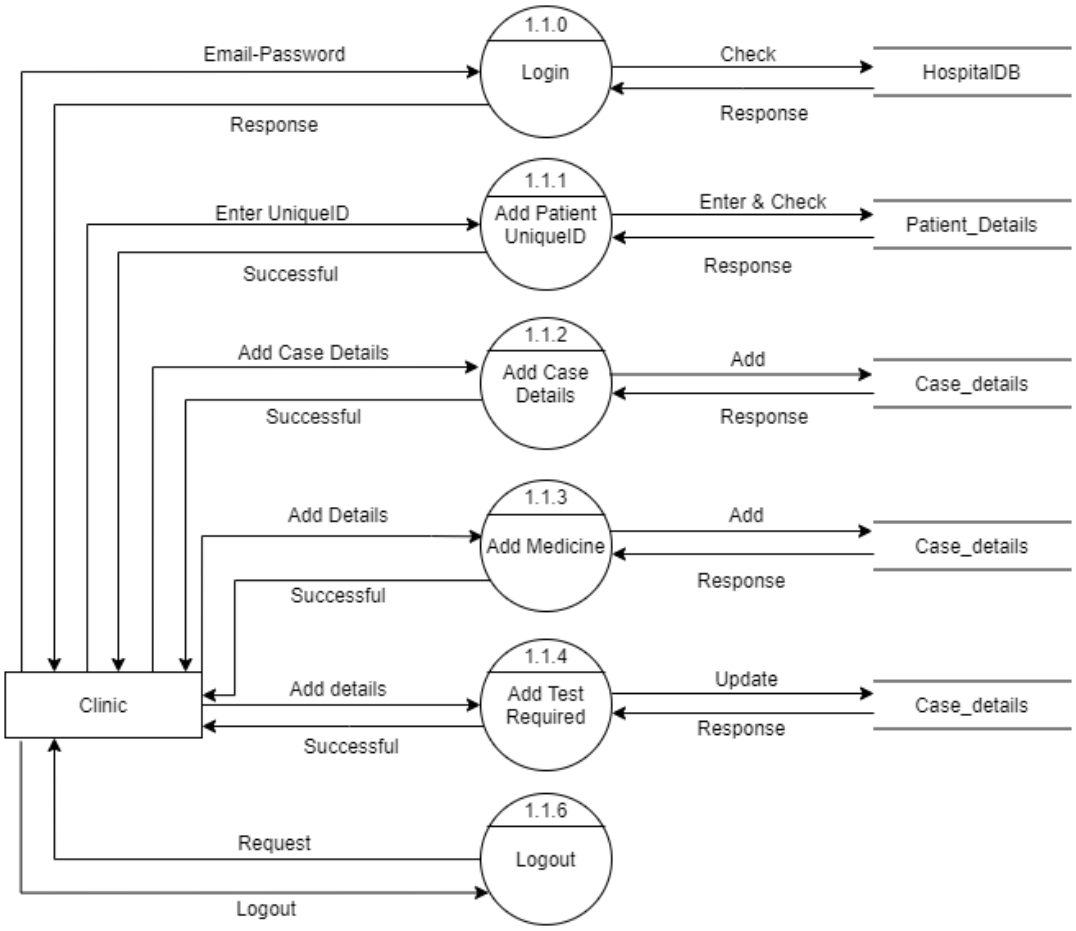

[Fig 4.6.2(c) Laboratory 1st Level DFD]

- **Medicine 1st Level DFD**



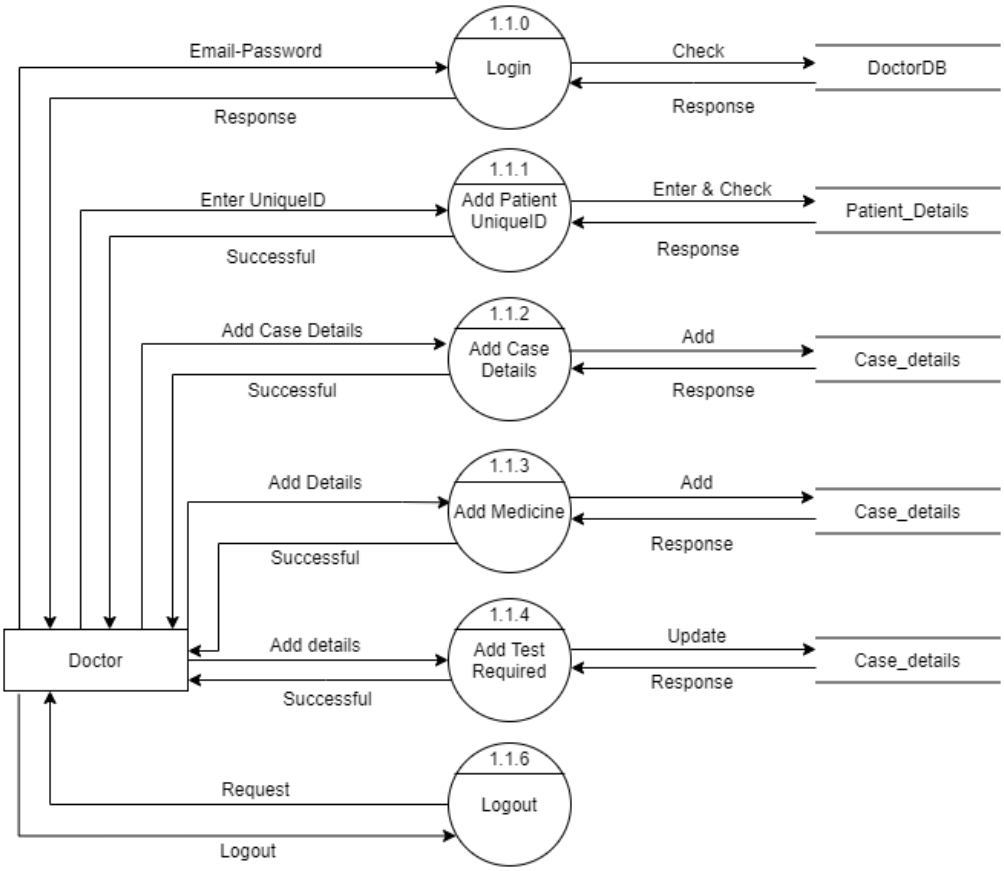

[Fig 4.6.2(d) Medicine 1st Level DFD]

- **Clinic 1st Level DFD**



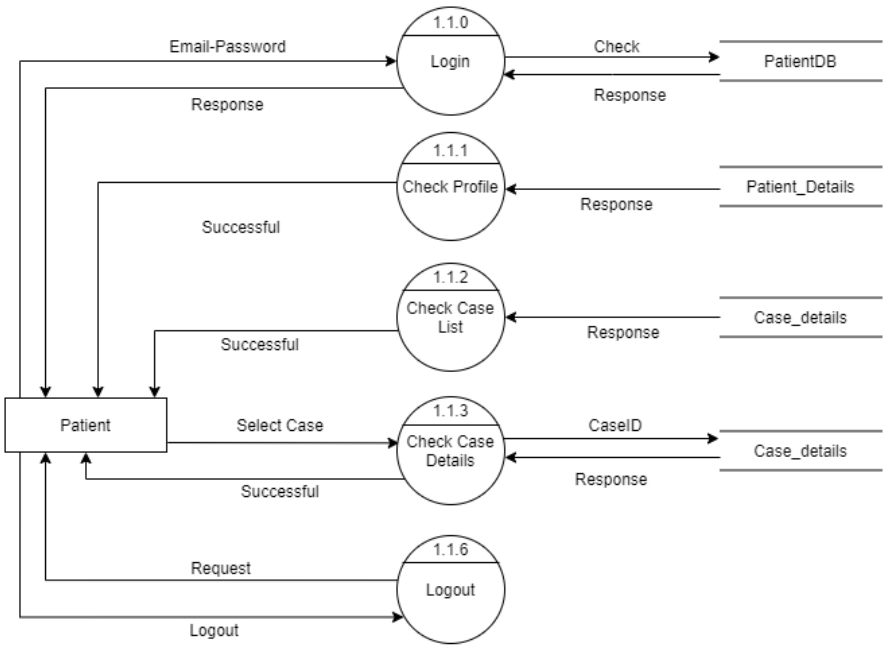

[Fig 4.6.2(e) Clinic 1st Level DFD]

- **Doctor 1st Level DFD**



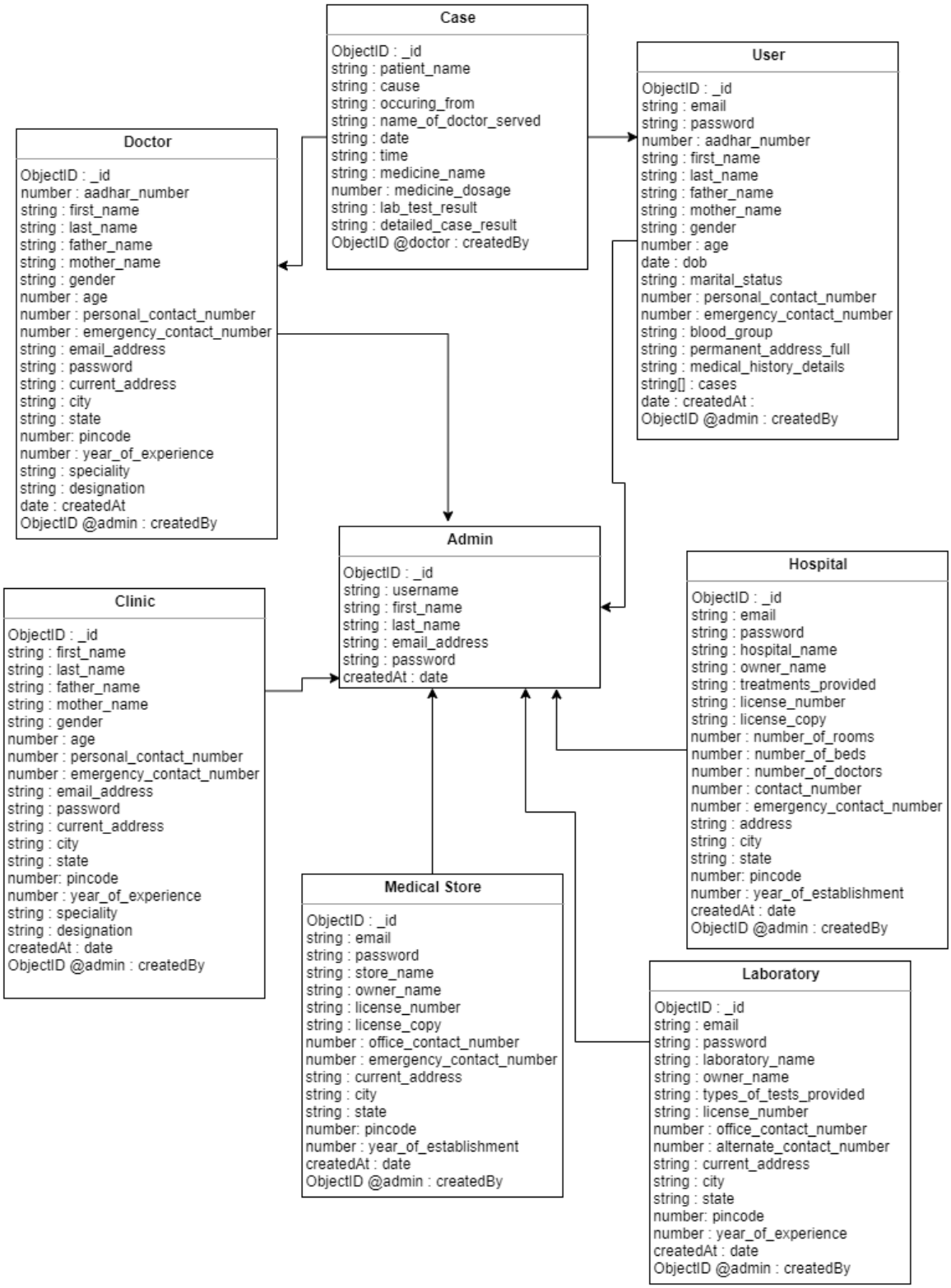

[Fig 4.6.2(f) Doctor 1st Level DFD]

- **Patient 1st Level DFD**




[Fig 4.6.2(g) Patient 1st Level DFD]

## 4.7 CLASS DIAGRAM




[Fig. 4.6 Class Diagram]

# CHAPTER 5: SYSTEM DESIGN

## 5.1 MAIN PROJECT MODULES

Health Card consists of six modules as follows:

### 5.1.1 Admin

Admin is the first module of the web application “Health Card”. Admin can have access to all the modules as compared to rest user types. Admin can enroll new patient to the system, view details of patient, view cases and case details. Admin can also appoint new user types, such that admin can add new doctors, hospitals, clinics, laboratory, medical stores.

### 5.1.2 Patient

Patient is the second main module of the web application. One can get enrolled by visiting nearest enrollment center. He/she will be given a Unique ID which by the enrollment center. After successfully enrolled to system, Patient can login to the Health Card and can see their Profile, cases, case details, etc.

### 5.1.3 Doctor

Doctor can login to the system after successfully registered to the Health Card. One can get themselves registered by visiting nearest enrollment center with all the required documents and papers. Doctor can create in new case in a patient’s case history and can also access patient’s past medical records. They can prescribe medicines and write up lab test requirements.

### 5.1.4 Hospital

Hospital can login to the system after successfully registered to the Health Card. One can get themselves registered by visiting nearest enrollment center with all the required documents and papers. Hospital can create in new case in a patient’s case history and can also access patient’s past medical records. They can prescribe medicines and write up lab test requirements.

### 5.1.5 Clinic

Clinic can login to the system after successfully registered to the Health Card. One can get themselves registered by visiting nearest enrollment center with all the required documents and papers. Clinic can create in new case in a patient's case history and can also access patient's past medical records. They can prescribe medicines and write up lab test requirements.

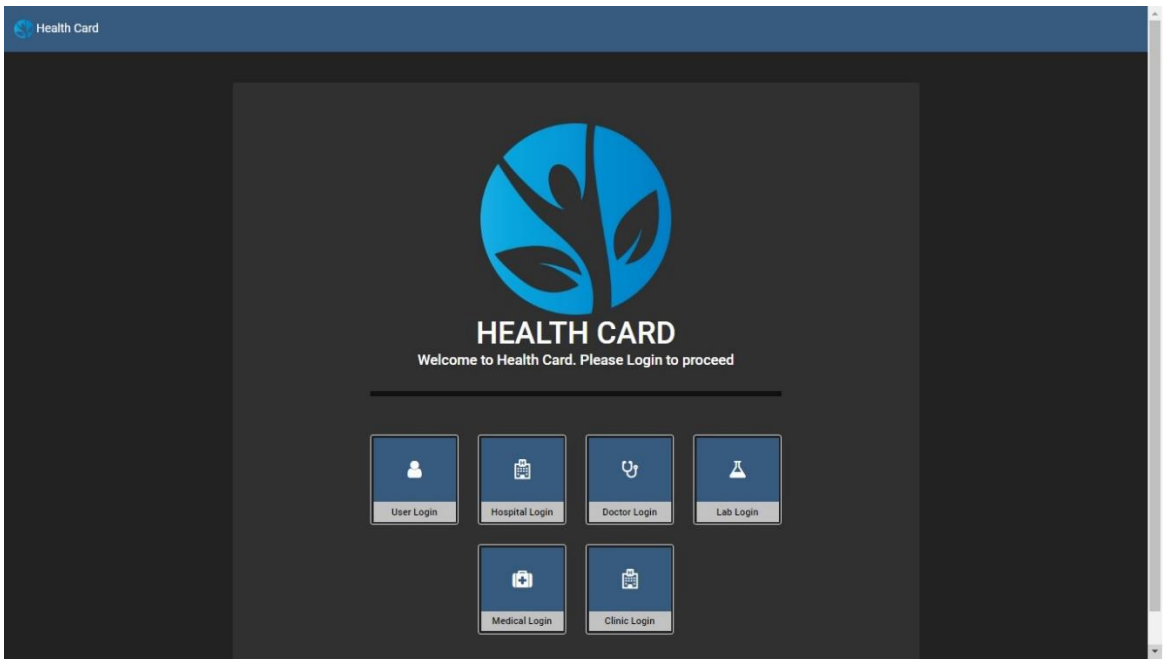
### 5.1.6 Medical Store

Medical Store can login to the system after successfully registered to the Health Card. One can get themselves registered by visiting nearest enrollment center with all the required documents and papers. Medical Stores can only view medicines prescribed in a patient's case and can also access patient's past medicine records. Once medicines allotted, they can update the medicine history in patient's details.

### 5.1.7 Laboratory

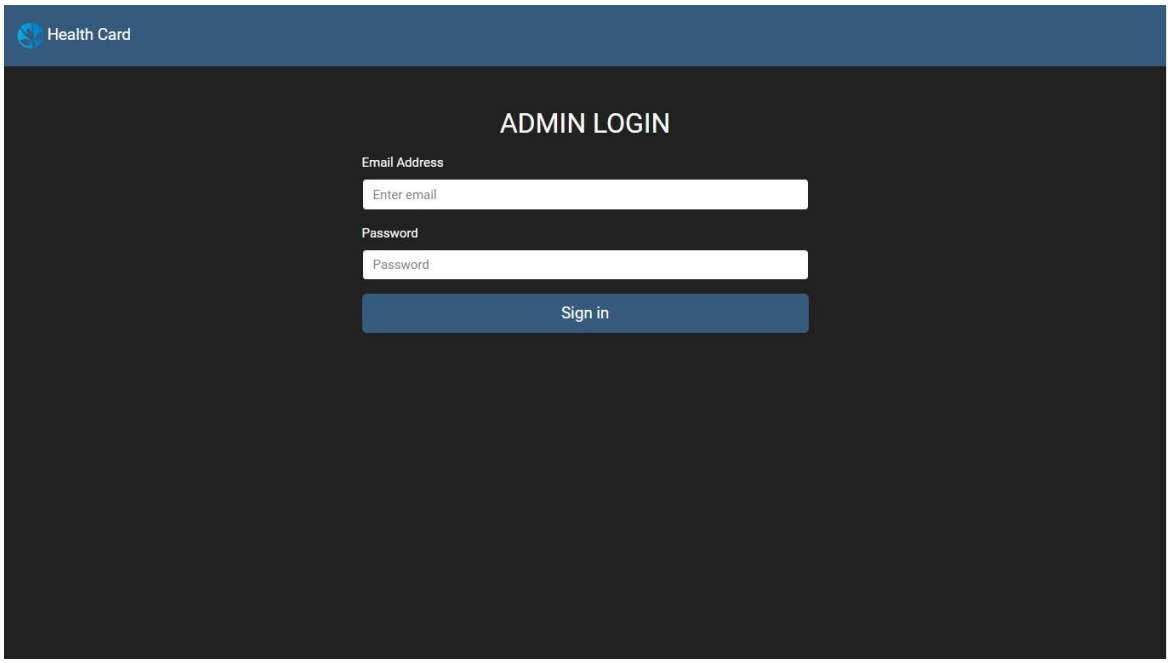
Laboratory can login to the system after successfully registered to the Health Card. One can get themselves registered by visiting nearest enrollment center with all the required documents and papers. Laboratory can only view lab tests written in a patient's case and can also access patient's past lab test records. Once lab tests are done, they can update and upload the lab test results in patient's case details.

# CHAPTER 6: PROJECT SCREENSHOTS

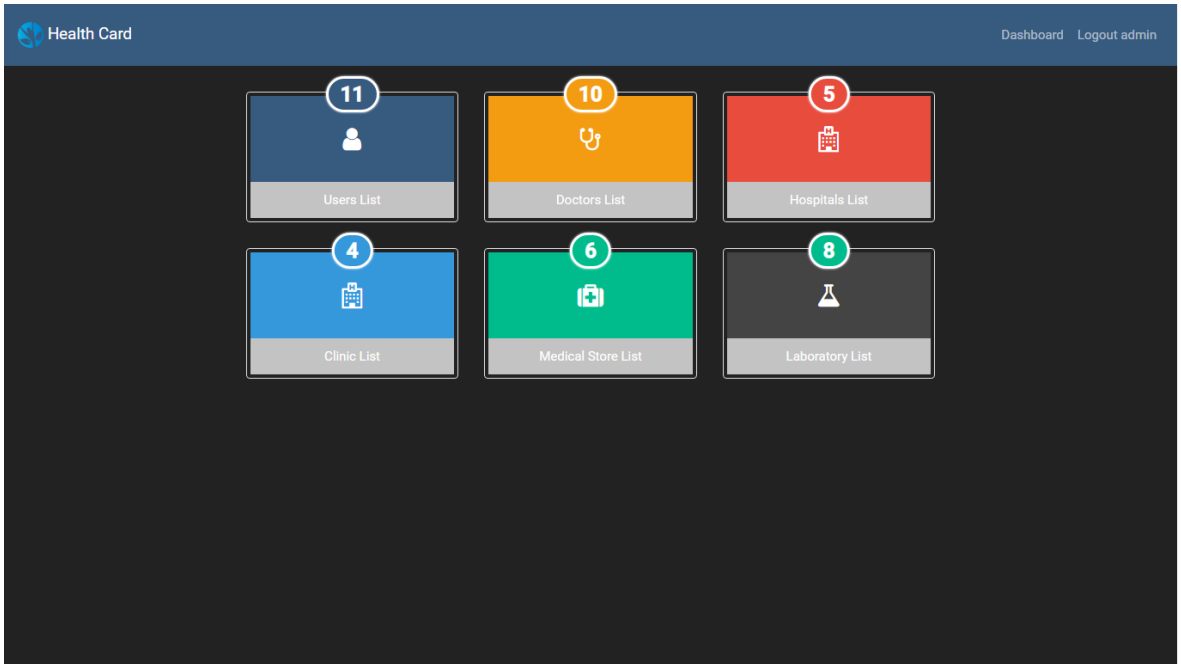



[Fig 6 Home Page]

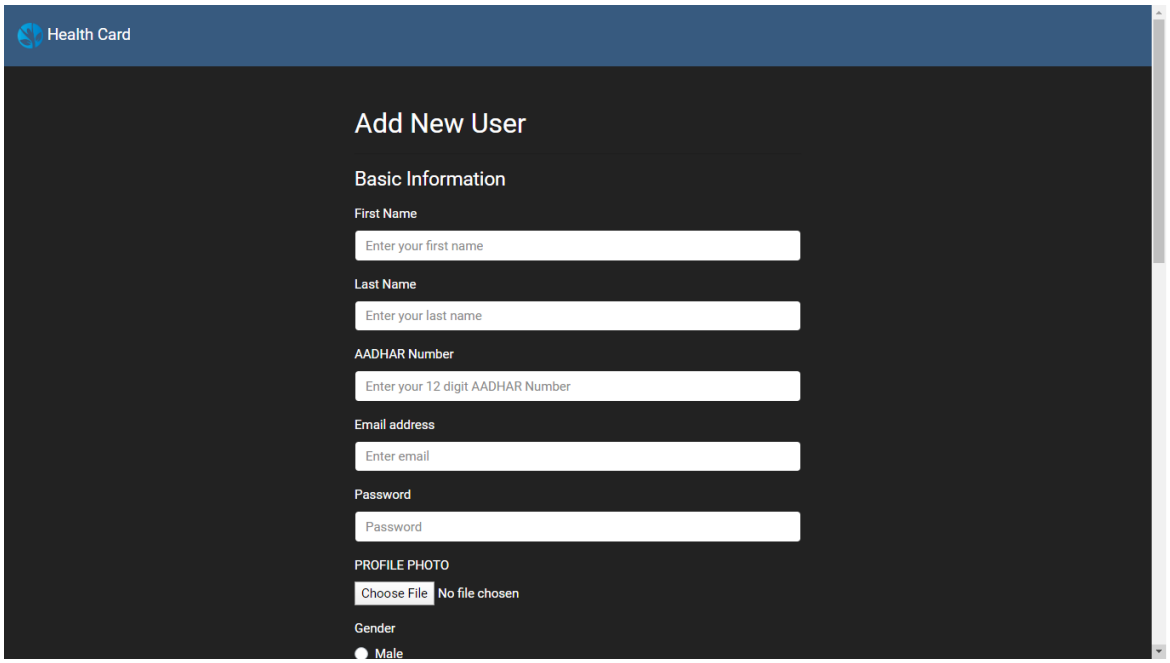
## 6.1 ADMIN



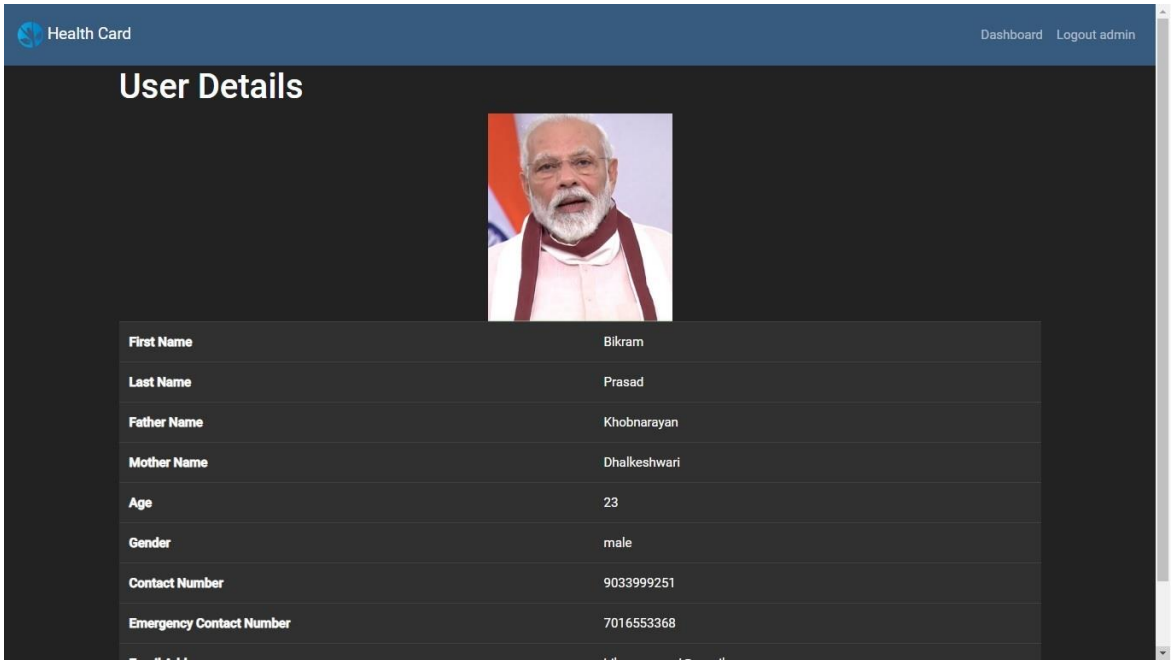

[Fig 6.1.1 Login Page]



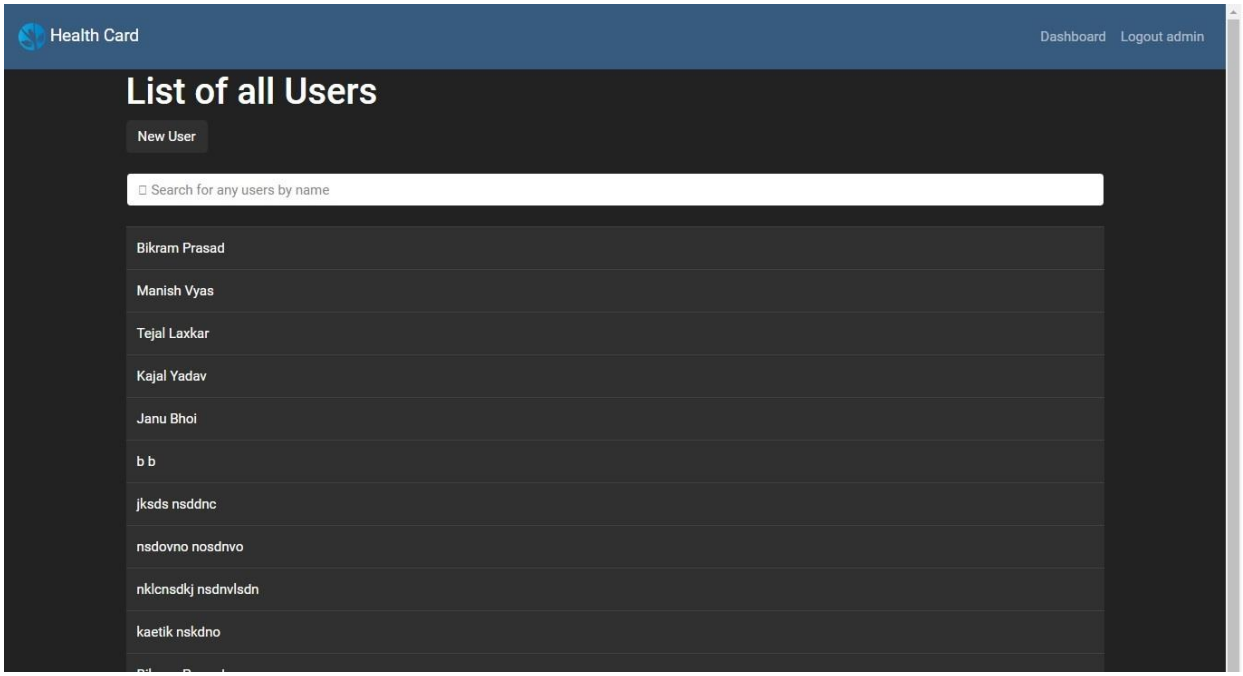

[Fig 6.1.2 Admin - Dashboard]




[Fig 6.1.3 Admin – Add User]

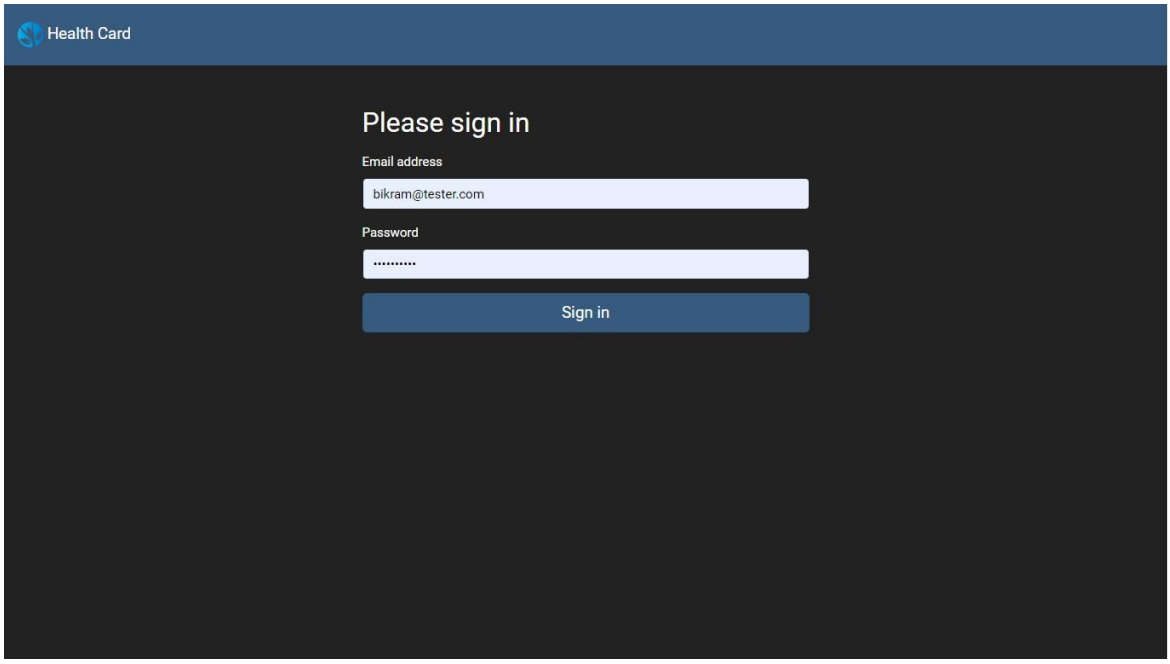



[Fig 6.1.4 Admin - User Details]

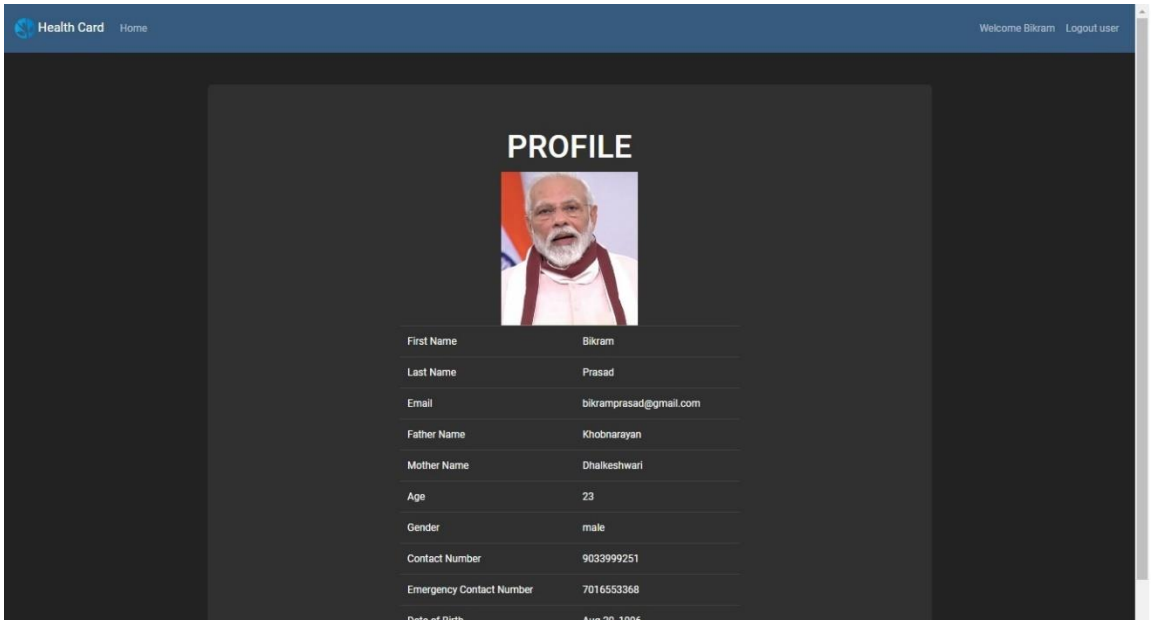



[Fig 6.1.5 Admin – Users List]

## 6.2 USER

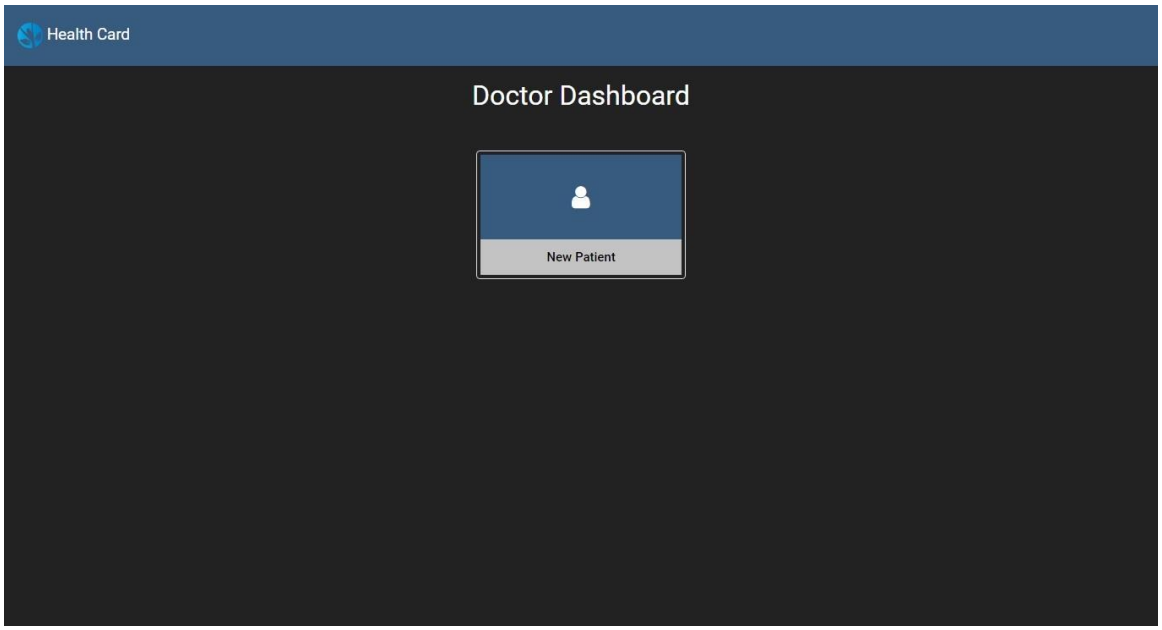



[Fig 6.2.1 User - Login]

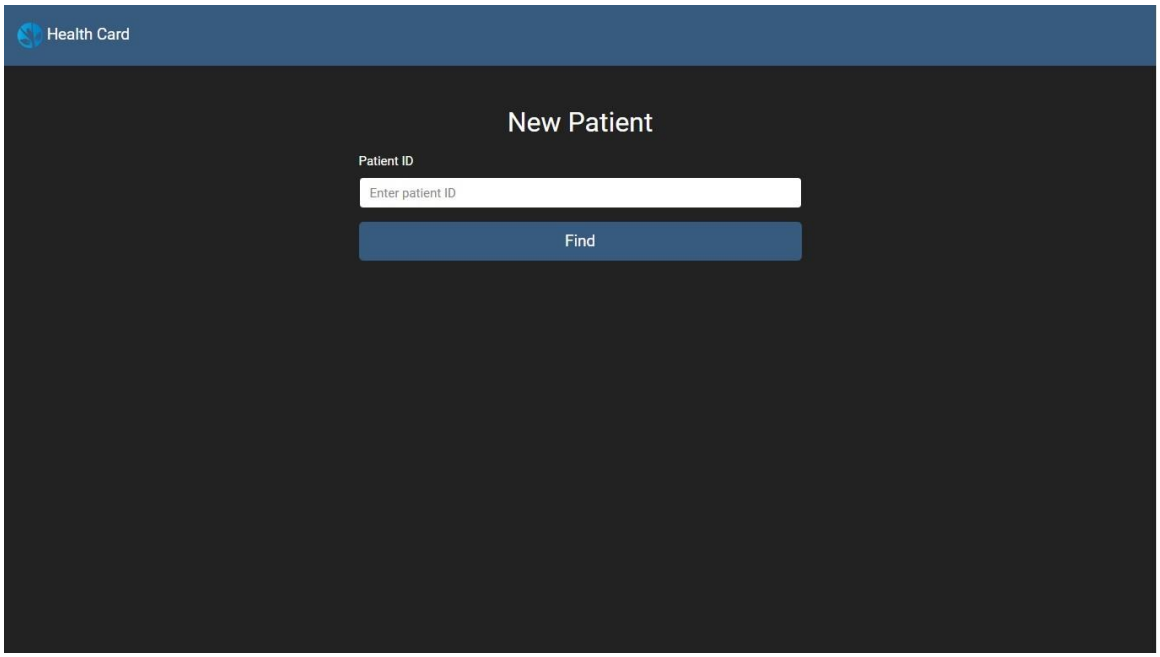



[Fig 6.2.2 User - Profile]

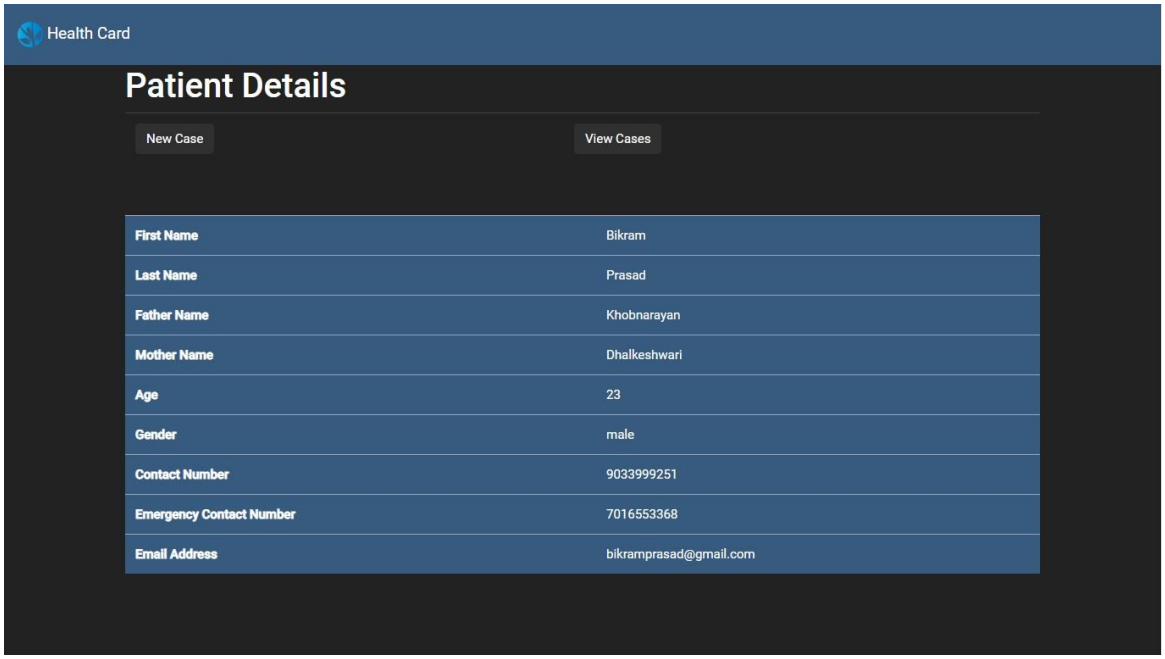
## 6.3 DOCTOR




[Fig 6.3.1 Doctor - Dashboard]




[Fig 6.3.2 Doctor – Search Patient]




[Fig 6.3.2 Doctor – Patient Details]

# CHAPTER 7: CONCLUSION AND DISCUSSION

Health Card System Project facilitates the storing of medical records of the patient throughout their lifetime. The project can be implemented in any country, hospital chains or in a nationalized manner. This being an online software and the growing use of internet confirm the bright future and scope of this project. Further more data collected through this app can be used in Machine Learning and Artificial Intelligence and can reports can be generated of any disease and which particular areas are being infected more of which diseases and can be helpful for governments to lower the risk of spreading.

## 7.1 SUMMARY OF PROJECT WORK

A Health Card is a software application that keeps medical records of all the patients. The main aim of a Health Card is to provide a keep a centralized data of all the medical records and can be used to provide better health care to patients.

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