DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VELLORE INSTITUTE OF TECHNOLOGY

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E-Health Cards

MASTER OF TECHNOLOGY

in

SOFTWARE ENGINEERING

by

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Semester: V

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Software Requirement Specification Documentation

Contents

1 Introduction

1.1 Document Purpose

The main motto of our system is to provide better ICT features in the health care system by using e-Health card in the cities and rural areas of India. Thus, an e-Health card can play a major role to save patients data record and reduce the corruptions of health care system. It also gives an understandable view of the smart card and using it's features everywhere in local hospitals and pharmacies, in the cities and the rural area of India.

1.2 Product Scope

1.The proposed software product is the e-Health cards. The E Health card system gets to performs to note downs the information of patients will to get the information from patients and storing that data in smart cards for future usages.

2.The present system that is running is completely depend up on the paper-based system. It is feeble and unable provide an updated lists of patients within given time frame.

3.The main aim of our system is get rid off the over-time paying and ensuring that services are being delivered to the maximum number of people.

4.The Statements in this system document has functional as well as Non-Functional Requirements.

1.3 Definitions, Acronyms and Abbreviations

E-Health - Electronic Health
ICT - Information and Communication Technology
CAD - Card Acceptor Device

1.4 References

1. S. Habibullayev, K. Ibadullayev and R. Hasanov, "Electronic health card system," 2009 International Conference on Application of Information and Communication Technologies, Baku, 2009, pp. 1-4, doi: 10.1109/I-CAICT.2009.5372528.
2. https://www.researchgate.net/publication/320110839 Software Requirements Specification of E-Health Architecture for Nepal
3. https://www.diva-portal.org/smash/get/diva2:428633/FULLTEXT01.pdf

2 Overall Description

2.1 Product Functionality

The electronic health-cards system compass the application of information and communication technology, especially in online network, for the aspiration of bettering and developing the health of each person .it can be stated as a system that is corresponding to the acceptable system of health services delivery; they health care system pulls out the paper based system and make sure that all of the data on the particular patient and his/her health status are notified in an electronic format and are get to access it promptly and comfortably via an app .

1.Ensuring and developing the e-health card of all aspects of our system by making decisions based on information from health professionals and consumers

2.Creating certain measures for the sustainable financing of our system and can be accessed maximum number of people in the country

3.E-health card is sensible approach. User is provided with comfortable language and proper guidance and we ensure that e-health care provides you with better understanding of your health care.

4.The card itself adds a secure identification tool by adding the user's photo and in addition anti-fraud features in E-Health card systems.

5.E- health cards has also included bio metrics to offer strong bio metric authentication ensuring that the patients are been delivered with utmost health care services.

6.This healthy technology can also assault at the heart of fraud mechanisms, often with slight investment in system.

7.The distribution of smart health cards and E-Health care IT systems rationalize the prescription process, improves the quality of care given, and addresses electronic healthcare records management through a well-being service process.

2.2 End Users And Characteristics

1. User Interface Design Practices:
Interface designing is one such significant factors of the proposed application. User constantly supposes user friendly and customized application from the designer. Through the development process, developer would use the real instances from the end users to prove how the proposed system would work eventually. Interface can be designed as such that it could perform as a translator between the user and the application.

2. End user:

In this proposed system, end users may include doctors or other accountable medical personnel, report entry workers in diagnostic centre, sales guy in the pharmacy, etc. and they should be suitably trained how to cope up with the new system. For an instance these end users must be skilled properly how to keep login information.

3. Creating awareness:
Creating awareness amongst the users of the system is one of the ways to resolution safety risks. Responsiveness can be created by conducting training sessions for users, arranging meetings after certain period.

4. Provide necessary back up system for data and information:
Actions should be taken up to back up significant data from numerous servers, for example Central Health Database Management System. In this case, normal and widely standard back up system can be organized and recognized organization can be employed or trained and experienced employees can be recruited for sustaining the system.

2.3   System Stakeholders

STAKEHOLDERS		
S.NO	STAKE HOLDERS	FUNCTIONALITY
1	Admin	To take care of the website in which e-Health card is been applied.
2	Field worker	Not all will know to apply the E-Health card, so we have used field works, who can visit all the people personally and gather their information.
3	Postal department	This department people take care of sending all the E-Health cards via post, to the proper mentioned address via post.
4	Portfolio Manager	This department people take care of sending all the E-Health cards via post, to the proper mentioned address via post.
5	Database manager	The database is been stored in the official government server database manager will take care of all the stored information.
6	Hospital manager	Hospital manager is the one who keeps the hospitals personal records and history of their patients.
7	Doctor	He's the one who checks the patient's medical history with the help of E-Health card.
8	Operations team	The Operation team takes care of the entire feasibility on this system.
9	Product manager/Card maker	This person takes care of making the card using the right quality of plastic.
10	Card printer	He/she is responsible for printing the information and number of the patient without any errors on the card.
11	Government	All the database server of the health information is saved in the government server as a citizen's information's are kept to be confidential.
12	Receptionist	He/she is the person who updates the medical history of the patient must be put under the instructions given by our beloved doctor.
13	HR manager	The HR manager is responsible for recruiting the technical persons involved in the project.
14	Financial Administrator	It's the person who takes care of all financial activities, that occur while purchasing the cards and while building website.

STAKEHOLDERS		
S.NO	STAKE HOLDERS	FUNCTIONALITY
15	Website designer	This person is responsible for designing the website, and to make the user interface much easier.
16	Coder	He/she is the person responsible for coning and connecting the back-end as well as front-end which works fine and also part of the website.
17	Tester	Tester is the person who tests and debugs the coding, to make it error free.
18	Customer service provider	Any quires related to the website or if the information is not updated, or any other doubts can be clarified by the customer service.

2.4   Operating Environment

Patient records

E-Health Cards regulate connections between patients and health professionals, from ID to medical record access. Only official physicians, dentists, and pharmacists can contact patient-card data. To perform that, they require an appropriate key – their Health Professional Card.
Many issuers also make use of patient data cards in health upgrade projects. Using bonus-scheme requests installed on the card chip, they propose encouragements to patients who suffer with bad health habits or positively complete specific treatments.

1. E-prescriptions
2. Digital signatures
3. Emergency data and Organ donor ID
4. Cost tracking and bonus schemes
5. Medication history for interaction check
6. Electronic patient file
7. Vaccination and pregnancy records

Card-controlled access for more patient safety

The Electronic Health Professional Card (HPC) is main factor that let the doctors, dentists, and pharmacists contact both the data stored on patient health cards and the records in the telematics structure. Certificates installed on the photo identification card determine who may access the patient's data. However, access still needs the patient's express approval. PIN-based authentication, encryption, and digital signature guard the communication between the health professional card and the telematics structure.

100 Percent back-end control for card issuers

The Card Management System of any device Security is possible performed in a highly based back-end with 24 hours data centre accessibility for issuers of healthcare cards. They use the above system to manage the life cycle of their smart cards end¬-to¬ end – from early personalization to the return of the card. Construction on a complete and innovative security construction, the platform features physical mechanisms, such as cards, card readers, and servers. It also lets you display cards usage and inform their contents.

2.5   Design and Implementation Constraints

The Electronic Health Professional Card (HPC) is main factor that let the doctors, dentists, and pharmacists contact both the data stored on patient health cards and the records in the telematics structure. Certificates installed on the photo identification card determine who may access the patient's data. However, access still needs the patient's express approval. PIN-based authentication, encryption, and digital signature guard the communication between the health professional card and the telematics structure.

3 Specific Requirements

3.1 User Interfaces

Dashboard: The dashboard has done to make accessible to all user types. Here, system will do respective tasks according to their approval level.
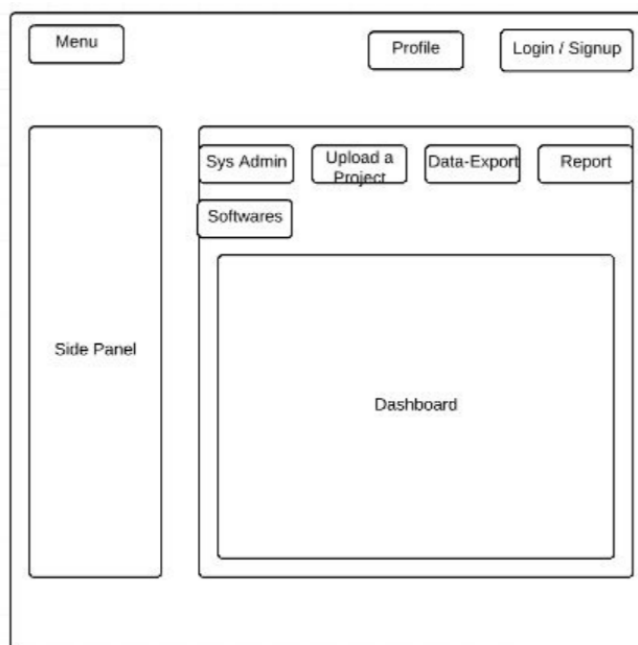

Interfaces such as UploadSoftware(), ViewSoftware(), GenerateReport(), DataExport(), SysAdmin() are performed in dashboard .it's the system administrator of e-health cards who made to access to each type of users. Dashboard helps all users to perform the software. System Administrator will modify a project, data engineers will extract the data and come up with the report and the system professionals will view them. That's how, the e health cards interfaces done under the dashboard.

UploadSofware(): The system administrator uploads the E-Health Card Data interface which is accessible.

ViewSoftware(): The Users view the application when it is assigned to them. Where, all the software upgraded by system administrator is composed. Users will view application only assigned to them.

GenerateReport(): This interface will be used priorly by Data Engineer to address data and obtain report. In Addition to that, high level managers will check this interface.
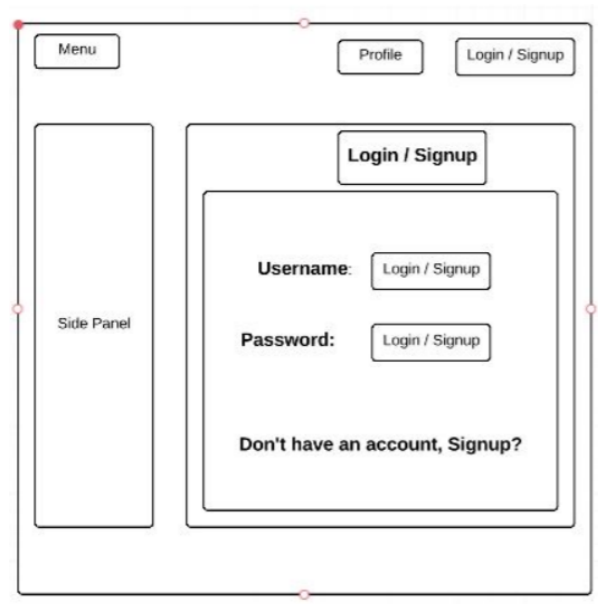
As shown in the above diagram, the four major level of Users system administrator, lower level users, data engineers and decision makers are showed. With all users the method they contact their own modified dashboard is displayed.

Hardware Interfaces:
This management is hardware-software combined web construction; we will not be scheming any specific hardware interface to track the system. Our structure is a web-based system, so we launch it in numerous computers online.

3.2   Functional Requirements

Patients have e-health cards. Doctors use these cards to access health data of patient with database. We use Smart cards as mobile health data carrier.

User registration:
Any user who wants the E-health card can easily register their personal details and few proofs to get the card home, directly via post.

User Login:
As the user is once registered, they may login via the web portal which has the users personal and health related information.

Data Entry:
If the patient approaches a doctor for any treatment, the doctor must also update the patient's E-health card system with the treatment and medicines he has used to treat the patient. This process would either be finished by the doctor directly or any worker present in the hospital.

User Identification:
The system must be in a position to identify the type of users who have modified the health card.

Patient e-health card:
In patient card, personal and patient health information is stored. In personal information patient ID, name, address, blood type, date of birth, gender, mobile number. In personal health information previous diseases with diagnosis dates, permanently used medications with doses, surgical operations along with dates and clinic name, and some summary information.

CAD systems:
Each system has connected card acceptance devices for using smart cards and it should connect to databases.

Report updating on card:
When a doctor inserted a card in devices the information about the patient should display on the screen. After consultancy, doctor should update the inspection and prescription information in smart card of patient.

Database:
The administration of the particular hospital are supposed to verify the records of patients that are inspected and prescribed in the smart card. He/she manages hospital database as well as other responsibilities of administration is to record new patients to system and smart card preparation for new users and data update from smart cards to database and vice versa.

Acquisition:
This system must be in a position to find is there is any funding or help done by the government for a specific kind of user or for a specific kind of disease. This must also check if the treatment done will be covered in insurance or not.

Filtering:
The E-health card should avoid having all the duplication's. And the health card should show all the health records to the doctor in a priority wise. Say for instance, a patient would have undergone a major surgery or he /she might be allergic to some medicines. These comes under high priority and these should be put in the list 1st.

Maintenance:
The system will keep receiving new modified health information, and also constantly removes what are duplicated and outdated.

4 Non-Functional Requirements

4.1 Software Quality Attributes

1.Security

• Modifications: Any modifications like insert, delete, update for the database can be done by doctors or administrators only.

• Smart card Pin: Every patient who make use of system need to hold pin number.

2.Performance

• Response time: The smart card provides acknowledgment in just one second once the patient information is checked.

• Capacity: It supports at least 5000 people.

• User-Interface: it should acknowledge within a minute second.

3.Maintainability

• Back-up: small card offers the efficiency for data back up.

• Error: system should track every mistakes or errors and also keep a log of it.

4.Reliability

• Availability: The system should available all the time.

5.Usability

• The system must be simple to use and learn in every single aspect. The new users must get used to in the system soon as possible.

6.Scalability

• System should deliver choice to spread hardware and other facilities in future.

5 Other Requirements

5.1 Hardware requirements

Devices Requirements:
Currently hand-held devices are one of the finest tools for fresh data entry. With the aid of end devices patient's and other connected medical data can be arrived on the go. The web entries can be opened through various smart phone platform like.

i) IOS
ii) Android
iii) Blackberry

Server Requirements:
The server hardware requirement depends on the quantity of data to be handled and the number of users opening the server database. The requirement of server usually rises with increase in the number of end users.

Error Rate:
The system should deliver good value and be error free. The quality is enough if there are few mistakes per week in first issue and few errors per month and so on. The system should deliver log info about procedure and errors to the users.

5.2 Performance Requirements

A performance requirement includes functions such as quantity, accuracy, coverage, timeliness, or readiness of E-health Cards System. And All those must be executed. These requirements cope with the operational functions. The statement of other performance requirements usually needs to get thorough systems engineering. Performance requirements comprises the speed of response, throughput, execution time and the storage capacity which is based on the end-user tasks.

5.3 System Technical Requirements

Allocated Requirements: the requirements that has been allocated flows directly through the elements of the system. Versions of operating system, the type of the processor, memory size and the available disk space.

Derived Requirements: These include internal constraints. The information brought from the patient's health card recorded. this has to satisfy the end use. It displays the details derived from the user.

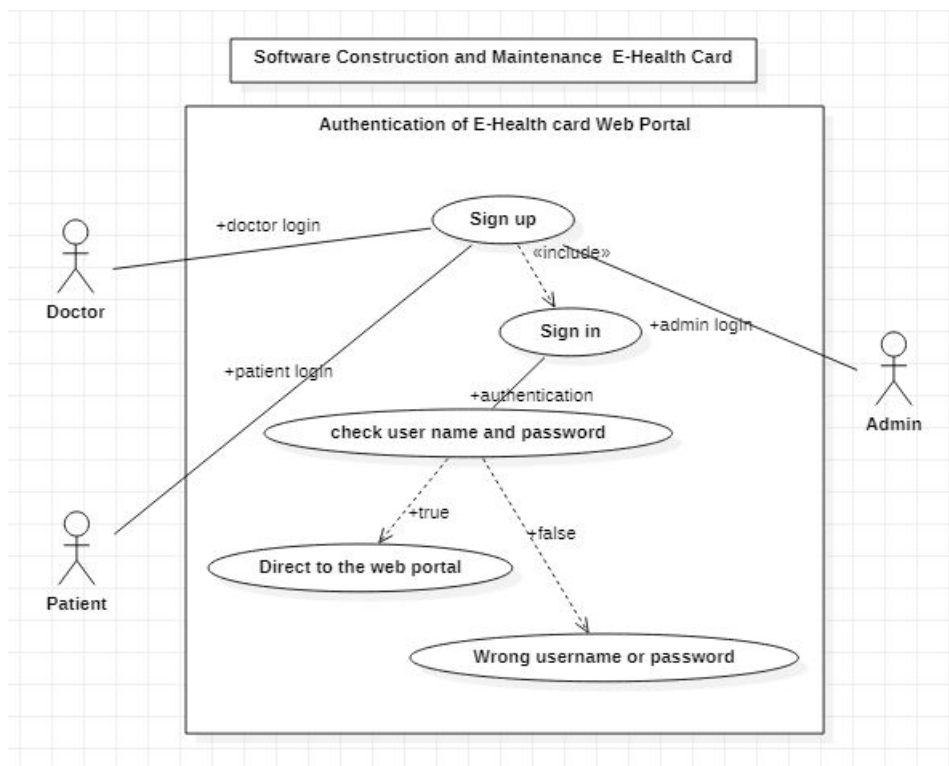# 2 UML Diagrams

2.1 Authentication of E-Health card Web Portal

Figure 2.1

Description

The E-Health card system consists of a web portal via which the doctors can upload or modify a patients health details. Also, Patient has a login via which they can Check their Health History.

So, this Authentication Page makes sure that the login id of Doctor and Patient Is Authenticated well before getting inside the Web-Portal(**Fig. 2.1**).
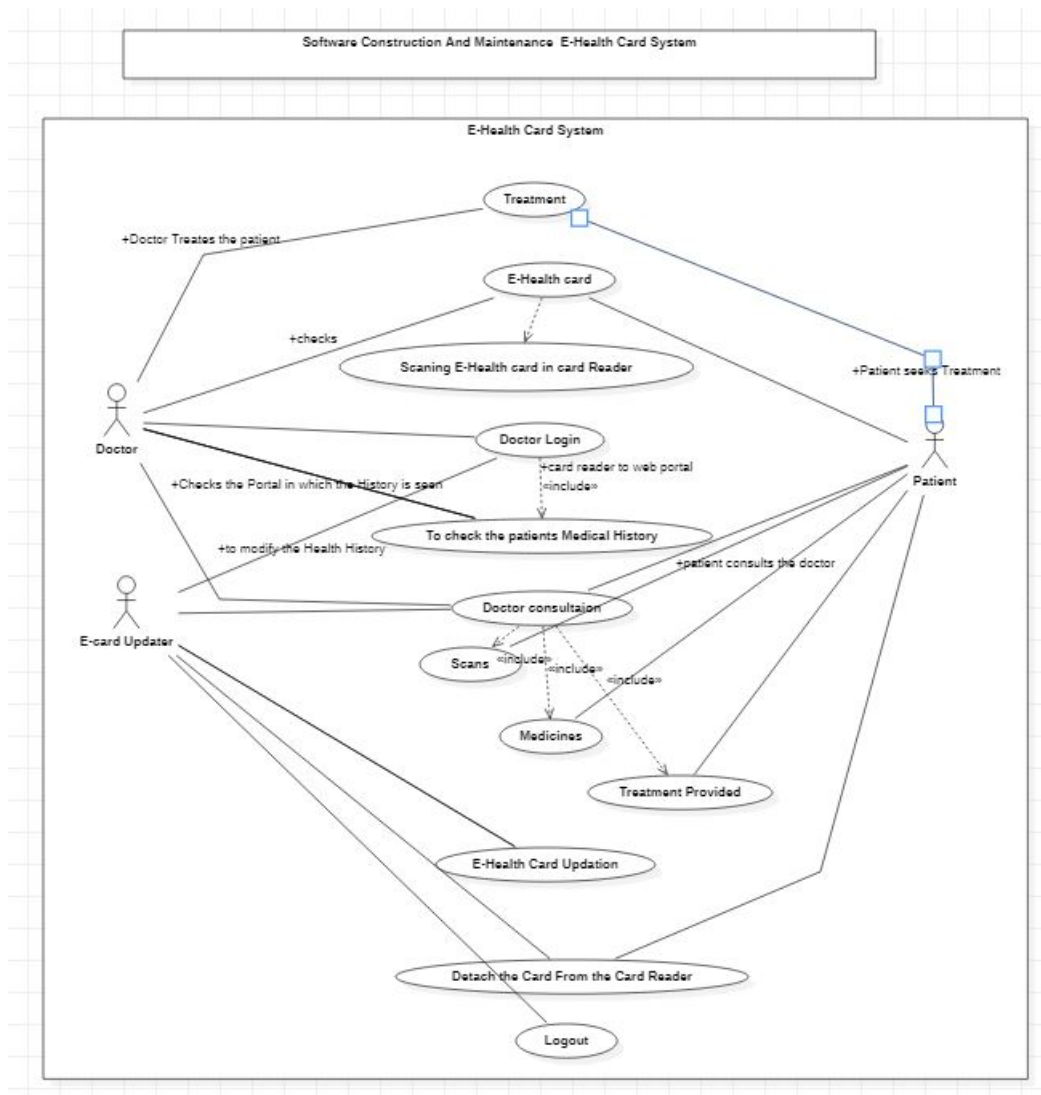
2.2 E-Health Card System

Figure 2.2

Description

The patient comes to doctors for treatment, before treating the patient and prescribing any medicines. The doctor just sees the patients medical history with the help of E-Health card. later the doctor must login into his id to modify a patients record, this can either be done by a doctor or any other worker who works for the hospital. The E-Health card is read by a Card Reader(**Fig. 2.2**).

2.3   Appointment and billing
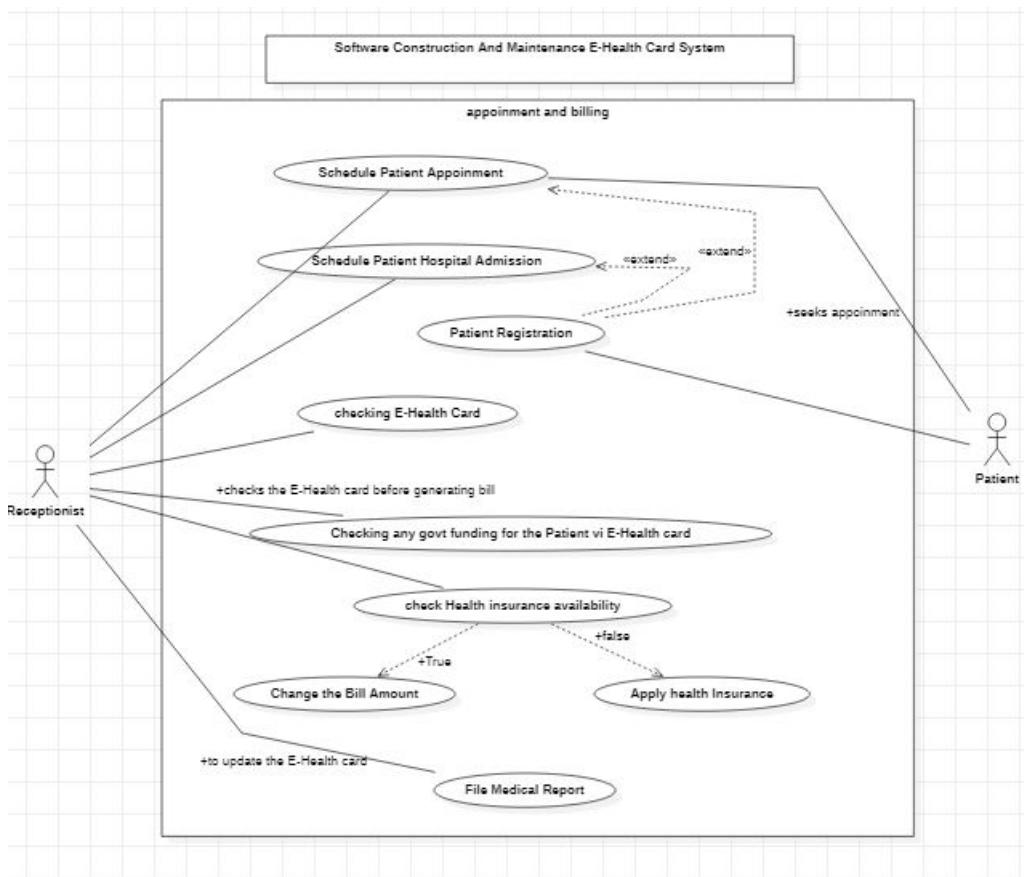
Figure 2.3

Description

Before the patient comes to the hospital, an appointment is been booked by the patient. After treatment and modifying the E-Health card, when it comes to billing, again the E-Health card is been checked just in case to see if the Medical expenses is been covered under insurance(**Fig. 2.3**).
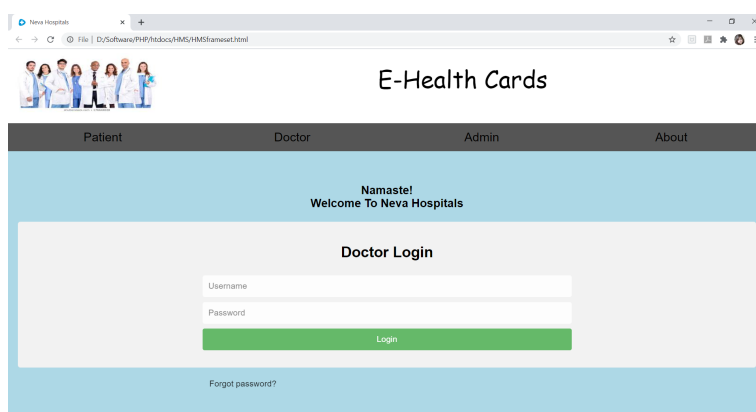
3   Sample Screenshots
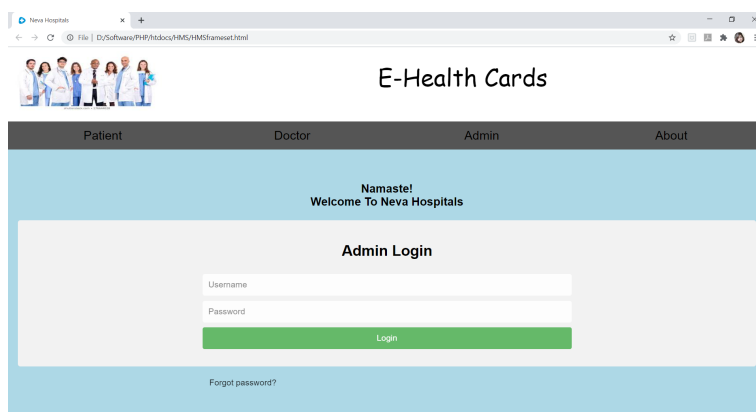
Figure 3.1: Admin Login Page

Figure 3.2: Doctor Login Page

Figure 3.3: Patient Login Page

Figure 3.4: Patient Signup Page

4   Sample Code

```html
<!DOCTYPE html>
<html>
<head>
<link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0
/css/font-awesome.min.css">
<style>
* {box-sizing: border-box}

.container {
  position: relative;
  border-radius: 5px;
  background-color: #f2f2f2;
  padding: 20px 0 30px 0;
}

input,
.btn {
  width: 50%;
  padding: 12px;
  border: none;
  border-radius: 4px;
  margin: 5px 0;
  opacity: 0.85;
  display: inline-block;
  font-size: 17px;
  line-height: 20px;
  text-decoration: none;
}

input:hover,
.btn:hover {
  opacity: 1;
}

.fb {
  background-color: #3B5998;
  color: white;
}

.twitter {
  background-color: #55ACEE;
  color: white;
}
```

```css
.google {
  background-color: #dd4b39;
  color: white;
}

input[type=submit] {
  background-color: #4CAF50;
  color: white;
  cursor: pointer;
}

input[type=submit]:hover {
  background-color: #45a049;
}

.col {
  float: left;
  width: 50%;
  margin: auto;
  padding: 0 50px;
  margin-top: 6px;
}
.row:after {
  content: "";
  display: table;
  clear: both;
}

.vl {
  position: absolute;
  left: 50%;
  transform: translate(-50%);
  border: 2px solid #ddd;
  height: 175px;
}

.vl-innertext {
  position: absolute;
  top: 50%;
  transform: translate(-50%, -50%);
  background-color: #f1f1f1;
  border: 1px solid #ccc;
  border-radius: 50%;
  padding: 8px 10px;
}

.hide-md-lg {
  display: none;
}

.bottom-container {
  text-align: center;
  background-color: #666;
  border-radius: 0px 0px 2px 2px;
  border-color: white;
}
```

```
@media screen and (max−width: 650px) {
  .col {
    width: 100%;
    margin−top: 0;
  }

.vl {
    display: none;
  }

.hide−md−lg {
    display: block;
    text−align: center;
  }}

body, html {
  height: 100%;
  margin: 0;
  font−family: Arial;
  font−size: 20px;
}
.tablink {
  background−color: #555;
  color: black;
  float: left;
  border: none;
  outline: none;
  cursor: pointer;
  padding: 14px 16px;
  font−size: 25px;
  width: 25%;
}

.tablink:hover {
  background−color: #777;
}

.tabcontent {
  color: black;
  display: none;
  padding: 100px 20px;
  height: 100%;
}

#patient {background−color: lightblue;}
#doctor {background−color: lightblue;}
#admin {background−color: lightblue;}
#About {background−color: lightblue;}
</style>
</head>
<body align="center">

<button class="tablink" onclick="openPage('patient',this,'#555')">Patient</button>
<button class="tablink" onclick="openPage('doctor', this, '#555')" id="defaultOpen">
Doctor</button>
```

```html
<button class="tablink" onclick="openPage('admin', this, '#555')">Admin</button>
<button class="tablink" onclick="openPage('About', this, '#555')">About</button>

<div id="patient" class="tabcontent">
  <h3>Namaste!<br>Welcome To Neva Hospitals</h3>
  <div class="container">
  <form action="patientlogin.php" method="post">
    <div class="row">
      <h2 style="text-align:center">Patient Login</h2>
      <div class="vl">
        <span class="vl-innertext">or</span>
      </div>

      <div class="col">
        <a href="#" class="fb btn">
          <i class="fa fa-facebook fa-fw"></i> Login with Facebook
         </a>
        <a href="#" class="twitter btn">
          <i class="fa fa-twitter fa-fw"></i> Login with Twitter
        </a>
        <a href="#" class="google btn"><i class="fa fa-google fa-fw">
          </i> Login with Google+
        </a>
      </div>

      <div class="col">
        <div class="hide-md-lg">
          <p>Or sign in manually:</p>
        </div>

        <input type="text" name="username1" placeholder="Username" required>
        <input type="password" name="password1" placeholder="Password" required>
        <input type="submit" value="Login" name="submit1">
      </div>

    </div>
  </form>
</div>

<div class="bottom-container">
  <div class="row">
    <div class="col">
      <a href="patientsignup.html" style="color:white" class="btn">Sign up</a>
    </div>
    <div class="col">
      <a href="#" style="color:white" class="btn">Forgot password?</a>
    </div>
  </div>
</div>
</div>

<div id="doctor" class="tabcontent">
  <h3>Namaste!<br>Welcome To Neva Hospitals</h3>
  <div class="container">
  <form action="doctorlogin.php" method="post">
    <div class="row">
```

```html
        <h2 style="text-align:center">Doctor Login</h2>


        <div align="center">
          <input type="text" name="username2" placeholder="Username" required>
          <input type="password" name="password2" placeholder="Password" required>
          <input type="submit" value="Login" name="submit2">
        </div>

    </div>
  </form>
</div>

<div class="bottom-container">
    <div class="col">
      <a href="#" style="color:black;text-align:right;" class="btn">Forgot password?</a>
    </div>
</div>
</div>

<div id="admin" class="tabcontent">
  <h3>Namaste!<br>Welcome To Neva Hospitals</h3>
  <div class="container">
  <form action="Adminlogin.php" method="post">
    <div class="row">
      <h2 style="text-align:center">Admin Login</h2>


      <div align="center">
        <input type="text" name="username3" placeholder="Username" required>
        <input type="password" name="password3" placeholder="Password" required>
        <a href="Adminpage.html"><input type="submit" value="Login" name="submit3"></a>
      </div>

    </div>
  </form>
</div>

<div class="bottom-container">
    <div class="col">
      <a href="#" style="color:black;text-align:right;" class="btn">Forgot password?</a>
    </div>
</div>
</div>
</div>

<div id="About" class="tabcontent">
  <h3>About</h3>
  <div>
  A hospital management system, integrated information system design to manage the
  administrative, financial and clinical aspect of a hospital.
  This encompasses paper-based information processing as well as data processing system.
  Managing the patient flow effectively is a real time requirement.
  We have made this tricky process simple.Hospital information management system gives
  you user interface in all languages, easy to use by one click switch between languages,
  ideal for managing Hospital Chains all around the world.
```

Reduces waiting time and enhances patient care by providing staff with accurate
and timely patient information.</div>
</div>

```
<script>
function openPage(pageName,elmnt,color) {
  var i, tabcontent, tablinks;
  tabcontent = document.getElementsByClassName("tabcontent");
  for (i = 0; i < tabcontent.length; i++) {
    tabcontent[i].style.display = "none";
  }
  tablinks = document.getElementsByClassName("tablink");
  for (i = 0; i < tablinks.length; i++) {
    tablinks[i].style.backgroundColor = "";
  }
  document.getElementById(pageName).style.display = "block";
  elmnt.style.backgroundColor = color;
}
document.getElementById("defaultOpen").click();
function adminpage(){

}
</script>

</body>
</html>
```

5 Maintenance

5.1 Operational Maintenance

The E-health cards system operations have significant period of time which has to be maintained. The many organization name this as preventive maintenance approach. When it is compared to IT organization such as E-health cards systems, the assignments that are assigned have been issued less preference when you got to do much more activity. The main purpose of utilizing the operation maintenance is that to grow the strength of the activities to be delivered to the commercial by achieving the required agreed level. And make sure of calculating the amount resources to be obtained in the present E- health card systems. It also contains the works and e-health cards systems components should be included in our environment.

As the title says that operational maintenance is done by the operator of the particular organization and it has three purposes

1. The system of e-health card systems should be known by the operator and the state of the willingness.
2. In order to reduce the delays from the organized technician every time for a simple modification when we needed.
3. To allow the technicians in our systems for more risk-based activities.

5.2 Corrective Maintenance

Corrective Maintenance is done to take corrective action when an equipment like smart card reader is damaged or breakdown. The equipment is repaired and calibrated. It also takes action when a problem in web page or database is triggered.

5.2.1 Knowledge Repository:

If there exist any problem with the website or with the E-Health card the customer can report their problem to the call centres. but, before reaching out to the product organization, the customer has to check out their problem with the customer organization to solve the problem.

So, if a problem occurs the customer checks out for the solution in the knowledge repository. Thus, knowledge repository is just like any repository which has many solutions that are stored for the previously occurred problems. So before reaching out to any step, to solve the problem the customer has to check out the knowledge repository just in case to make sure, if that problem has occurred earlier or if there are any ready made solutions to solve the problem immediately.

So, repository is basically like a database which stores or retrieves all the solutions and problems that are faced earlier and which are pre-existing, just in case to solve the future problems.

Problem-1: Login Failure

Solution:

1. There are many chances that users will login before registering so, the user should make sure that they have registered first.
2. Second solution would be incorrect password or user id, to overcome this issue the user must authenticate again by clicking the "password forget button".

Problem-2: The user just register their name, address proof and few other personal details to get E-health card. While registering, if they have uploaded the wrong document, the website rejects their request.

Solution:

1. As its so very common for anyone to make mistake, there's a option like update profile, where in any changes can be made as we go with update profile, but this option is available only for 2 weeks from the day of form submission.
2. If the user found the mistake after 2 weeks, he/she might simply delete the form and they can re-do the process from first.

Problem-3: The doctors work is to constantly update the health card of a patient after providing treatment. What if the changes made by the doctor did not reflect in patients e-health card?

Solution:

As its quite difficult for anyone to repeat their work, we have specially made a bin folder for all the doctor's login, wherein if the customer reports like if the changes have not reflected in their card, the doctors can just re-send their entry by just copy pasting from bin folder. So, any work done by the doctor is not wasted.

Problem-4: card not detected by the card reader when the doctor scans the card.

Solution:

1. There are chance of the chip getting damage, so if the card reader doesn't detect the card, then the doctor has to change the card reader mode to deep check, and the doctor has to scan the card again to see the patient's medical history.
2. Even if deep check doesn't work the doctor has to manually type the E-Health card number in the website.

Problem-5: Server down for a long hour.

Solution:

1. Check WIFI connection
2. Give a call to toll-free. Just to inform that the website is not working for a long time now.

5.3   Preventive Maintenance

The main motto of the preventive maintenance is to enhance the error quickly and doesn't get repeated again in system failure. Here the preventive maintenance suitable for less failures and the procedure of operation make sure of following proper abusing methods. This is a simple and well-known approach which would be useful for financial asset, helps to increase the productivity of our system and reduces the effort that we put on maintenance.

5.3.1   The preventive maintenance activities as follows:

1. Verifying the re-establish and idleness.
2. Testing the involuntary implementation of our system.
3. Preparing the documentation.
4. Creating reports.
5. Takes care of security components and updating the OS.

5.4   Adaptive Maintenance

Adaptive maintenance mostly concentrates on the environment part. That is the environment which supports the software. The E-health card system software might be built on a specific operating system. In case, if the user uses the software from different operating system also the software must work perfectly. We make sure that the user doesn't face any issues due to the environment in which they use the website, the E-health card system will work perfectly on windows, mac, Linux and android systems. The software should also be constructed in a way that it supports new or upcoming operating systems and technology.
But, the external issues like lack of WIFI or charge or any other personal environment issue will also lead to errors while using the website, but those issues are to be solved by the users themselves.

5.5   Design For Maintenance

Always while creating the design for a project, we should always foresee the design for maintenance as well. It is important for designers to consider a wide range of perspectives when designing our E-Health card system website and to consider the many cases that affect the E-Health card reader and detector's life.

Design for disassembly is a concept that when a product has reached the end of its life it can be taken apart and parts reused or recycled. In our scenario if the card reader's life gets over also, still we can recycle the plastic and few circuit boards.

The performance of production systems is expressed in terms of how capable the systems are in performing its jobs, producing value-added products or providing services. It may be expressed in terms of the system's cost-effectiveness. This performance indicator relates the technical factors, which determine how effective the system is in performing the functions it is designed for, to the total life cycle costs. It can be expressed in various ways, depending on what one wishes to evaluate.