



American International University-Bangladesh (AIUB)

Department of Computer Science and Engineering

Faculty of Science & Technology (FST)

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SOFTWARE ENGINEERING

Section: A

Project Title: Medi-Care

Group: 04

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Table of Contents

I.	Project Proposal	1-2
II.	Software Development Life Cycle	3-4
III.	User Characteristics	5
IV.	Functional Requirements	6-10
V.	Non-Functional Requirements	11
VI.	Diagram	12-16
VII.	User Interface and Experience (UI/UX) Design	17-22

Project Proposal

Description:

Moderns days healthcare facilities get so many improvements. But in our county, many people can't take proper treatment for their health problems, especially in rural areas, people don't know how to get treatment from hospitals and don't know which would take better health care in their nearby hospital. Sometimes they get financial problems after the appointment at the hospital without properly knowing the total cost. Many people don't know the diagnostic cost and where would be best for their nearest area. Sometimes they don't know which doctor would be best for them and their prover appointment time and doctor's fee in their nearest area. Using our software, they will know which hospital is better at curing diseases they will know the cost and the number of cabins available, and also, they know the location of the hospital. They will get the best Doctor and Diagnostic Centres in their nearby area.

Problem and Solution:

This project will solve the patient's finding hospitals for their treatment. Many patients can't find a proper hospital for their particular disease. Sometimes they go to the hospital for their treatment but they later find out they don't have any facilities for some diseases. So, the patient got hassle and lost a lot of important time. Even if they found a hospital, they also face the problems of high price cabins or low-treatment facilities. Many people don't know the diagnostic cost and where would be best for their nearest area. Many people think only Dhaka would provide all the tests. Because of that, they lose valuable time and cost after coming to Dhaka. Many people don't know which doctor would be best for them and their prover appointment time and doctor's fee in their nearest area. So, we are building a solution where the patient can easily find their particular hospital, doctor, and diagnostic centers.

Objective:

1. Reducing patient treatment costs.
2. The patient can know in advance which hospital he will get the best service.
3. Hospitals can also compare themselves with other hospitals and improve their service quality.
4. Patients can check the availability of hospital cabins online and book them.
5. Patients can tell their symptoms and know the name of their possible disease and which hospital near their home is offering the best treatment for that disease at the lowest cost.
6. Patients find Doctors and appoint them and know the total fee and appointment time.
7. Patients find a Diagnostic center and appoint them and know the total cost of the test.

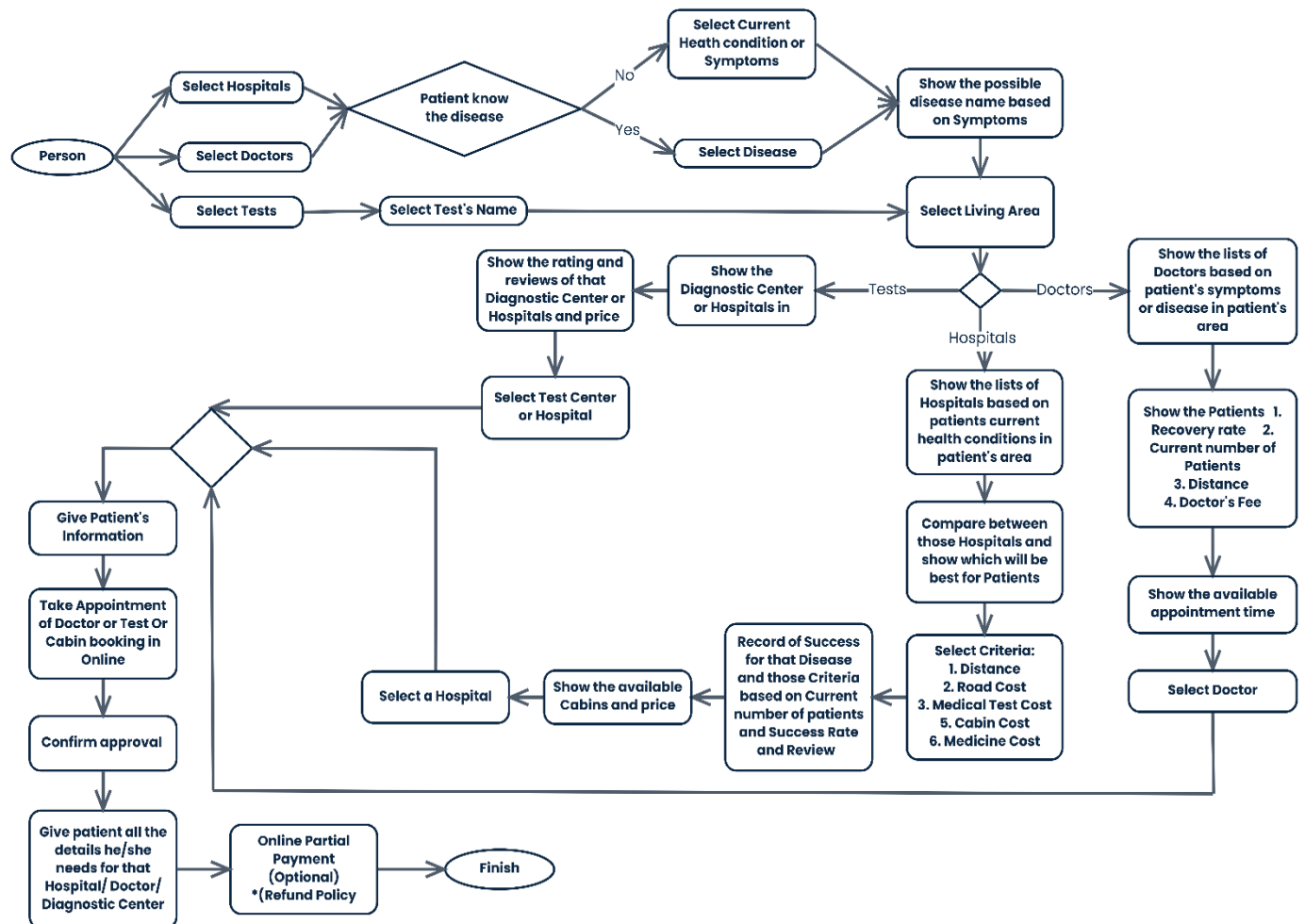
Target User:

Patients are our primary target users. So, patients will get the most benefit from this project and they easily use our software to find hospitals.

Functionalities:

1. This software allows the patient to select their location, disease or symptoms, and current condition. Then they will see a list of hospitals, doctors, and diagnostic centers in their location based on distance, road cost, medical test cost, and doctor's fee, cabin cost, medicine cost.
2. Patients can see their Hospital rating by the success of that disease. And they also see a list of doctors for that disease and fees and the number of current patients. And the best diagnostic center in their location and test cost.
3. Then the patient can see the available cabin, appointment time and test, and price.
4. Patient gives his/her information.
5. After that patients can appoint a doctor and book cabins online using our software.
6. Patients can also pay partially using this optional software.

Sample Diagram of our project



1. Software Development Life Cycle

2.1 Process Model

Extreme Programming (XP) is the most widely used software development model. This model is an Agile methodology consisting of effective development practices to achieve client satisfaction. It is a combination of iterative and incremental process models. To apply XP, there are 12 practices to follow at an extreme level. Those are:

- Practice 1: The Planning
- Practice 2: Small Releases
- Practice 3: System Metaphor
- Practice 4: Simple Design
- Practice 5: Continuous Testing
- Practice 6: Refactoring
- Practice 7: Pair Programming
- Practice 8: Collective Code Ownership
- Practice 9: Continuous Integration and Daily Build
- Practice 10: 40-Hour Work Week
- Practice 11: On-Site Customer
- Practice 12: Coding Standards

In an XP project, work happens in short iterations that can last from one to three weeks. Before each iteration, a meeting happens where developers, managers, and the customer decide how much work can be done during that iteration. The customer prioritizes the work that needs to be done, and the team members commit to the amount of work they estimate they can deliver during the iteration.

We are choosing this model because:

1. The client and Developer always communicate with each other to develop the product. So, Product failure risk going to be low.
2. It is also cost efficiency.
3. Teams implement exactly what was asked—and nothing more—striving for a simple design and clean code.
4. Using this model, we can get early and frequent feedback from the automated unit tests, feedback from team members, and feedback from the client itself.
5. Using this model, we can use pair programming, where two developer work side by side.
6. This model highly emphasizes teamwork.
7. Because it emphasizes teamwork, we can share our ideas.
8. This model is aim to be programmer-friendly. It respects the developer's balance of work and life.
9. We get 1 to 6 weeks to develop the project. So, as we programmers get more time to develop the software in parallel with teammates.

10. It promotes informal daily meetings with teams' mates.
11. Using this model, we can change requirements when it would need.
12. Using this model, we can get a good environment between the developer and the customer.
13. In this model, developers get higher flexibility. At crunch time, up to 1 week of overtime is allowed.
14. Using this model, we can adopt collective ownership of code.
15. Gain the support, trust, and motivation of the people involved.
16. Frequent delivery of working software.
17. Get regular reflections on how to become more effective.
18. It is more versatile and less prone to rigidity, thus allowing programmers to respond to shifting demands as needed.
19. Easy to understand the customer and get proper knowledge about the project.

That's the reason why we chose this model.

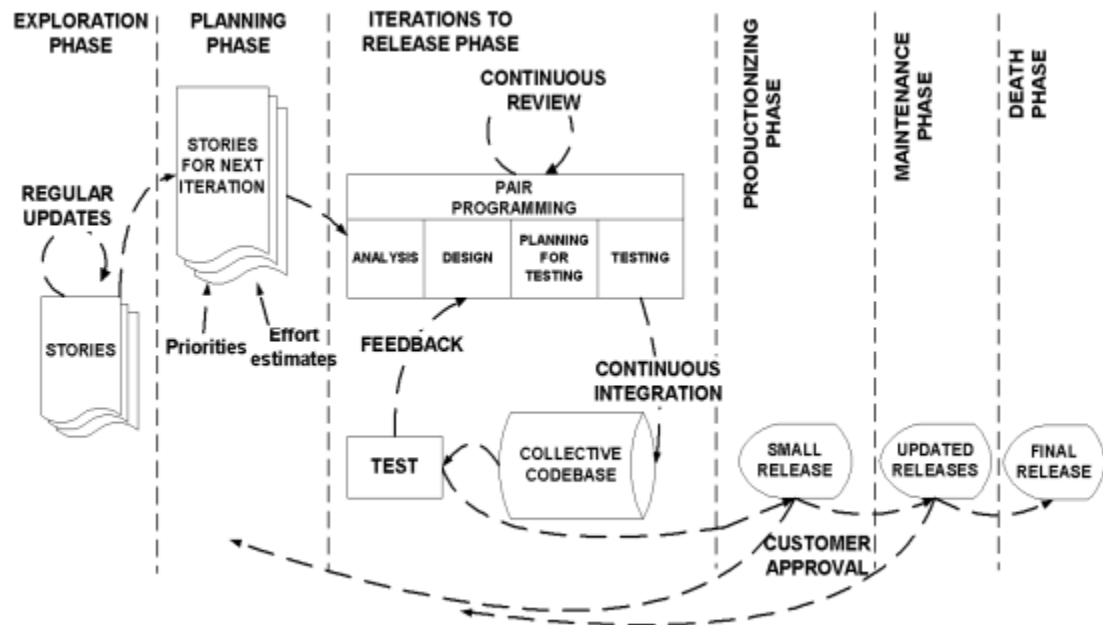
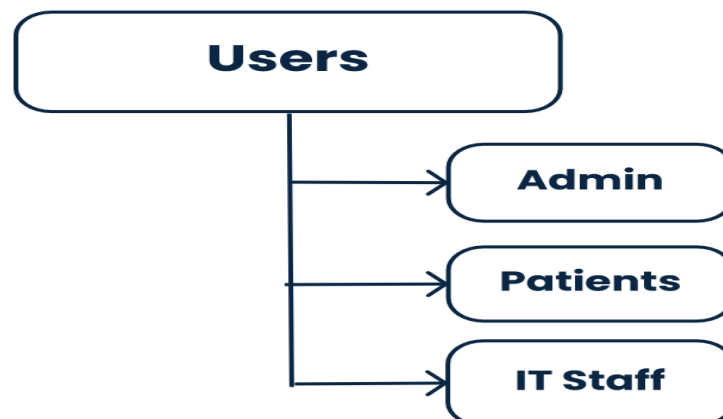


Fig.: Extreme Programming Model (XP Model)

3. User Characteristics

There are 3 types of roles in this software.

1. **Admin:** The administration is the main owner of this Medi-Care software. One must understand computers and the internet as well as prior knowledge of operating this software. The administration is responsible for maintaining the software and its requirements. The administration can perform the following functions:
 - Add or change the price of the cost, fees, cabin no., doctor/hospital/ diogenitic canter name, test name, etc. And can delete those if needed.
2. **Patients:** The patient is the main user of this software. They must have the minimum knowledge of the internet. The users/patients should be able to perform the following functions:
 - View, browse, and select a category on the home page.
 - View, add, and update min/max cost, fees, and other requirements.
 - Create a profile, and be able to update it whenever users want to.
 - Check out the list of Hospitals/Doctors/Diagnostic Centres and chose whatever users want.
 - Can Sing-in/log in using username and password.
 - Can comment and review listed hospitals/doctors/Diagnostic Centres.
3. **Hospital/Diogenitic canter IT Staff:** This role is basically from the listed hospital, doctor chamber, and diagnostic centers, Staff must understand computers and the internet as well as prior knowledge of operating this software. This role should be able to perform the following functions:
 - View the patient's appointment, confirm it, and list it in their database.
 - View and reply to Users'/Patients' comments.
 - Give basic information to patients.
 - Can inform to change their requirement to the administration.



4. Functional Requirements

This section contains the requirements for Medi-Care software. The functional requirements, as collected from the users, have been categorized as follows to support the types of user interactions that the system shall have.

1. Patients: View Categories and Search:

The users/patients can see the home page of the online Medi-Care application when they first visit the program. The users will be able to view the different categories e.g. Users can visit the Doctor list by searching doctor's names. And user can understand our application by reading features documents. Users can select categories for searching. And it will show the result of the search.

Functional Requirement:

- 1.1 Users/Patients can view categories on the home page.
- 1.2 Can be able to view different categories.
- 1.3 Select one of the categories.
- 1.4 Can be able to search the hospital/doctor/diagnostic center's name by selecting categories.
- 1.5 View the search items in the list.

Priority Level: High

Precondition: The system database must have a List of hospitals/Doctors/ Diagnostic center names.

Cross-Reference: None.

2 Patients: Select Living Area:

Before selecting the living area user must select the test name he/she chose Diagnostic Center, or select and fill up the current health condition if he/she selects Hospital/Doctor and if he/she knows the disease select the disease. If he/she fill-up current health condition then will show up as a possible disease and can select a living area. In selecting the test, the living area will show directly. Then fill up the user's living area details.

Functional Requirement:

- 2.1 User will write his /her disease name
- 2.2 Application will suggest a disease name whether the user types the disease name.
- 2.3 It is not mandatory to write the disease name if user does not know his current disease.
- 2.4 Then it allows users to select their area.
- 2.5 All post-office names and local area names are displayed when the user clicks the drop-down menu named "Select Your Living Area".

Priority Level: High.

Precondition: System database must have all area names and disease names.

Cross-Reference: None.

3 Patients: Hospital Comparison:

In this section, Medi-Care will provide a suitable hospital for the user. But the users can search hospitals by completing his/her living area. Then the application will provide a list of the hospital to the user(patient) and also shows the best suitable hospital based on the user's filter's cost, distance, cabin fees, etc. there will have a list of how many patients are cured from that particular hospital. There also have reviews and comments from previous patients. So, the user can understand which will be the best.

Functional Requirements:

3.1 Application can provide suitable hospitals based on the user's health condition.

3.2 There will be a search option where users can search hospitals. And able to search it based on cost, distance, medicine fees, cabin fees, and medical test costs.

3.3 Then it will provide a list of the hospitals from the users required.

3.4 A list will show the user the number of patients who were cured.

3.5 There also have a review and comment portion where patients account for rating hospitals.

Priority Level: High.

Precondition: No prediction.

Cross-Reference: None.

4 Patients: Select Hospital:

In this section, the user can select his/her required hospital to understand which will be good for him/her.

Functional Requirements:

4.1 User can select a hospital.

Priority Level: High

Precondition: Result must be shown.

Cross-Reference: None.

5 Patients: Select Cabin and Confirm:

A list of cabins of that hospital can able to see users. So, they understand how many cabins are available, and the cost of the cabin also show to the users. Users also see the categories of cabins. Then users can select the required and confirm the cabin booking.

There is also the color of the cabin number on site. Greed means the cabin is available and Red means not.

Functional Requirements:

- 5.1 Cabin list will show the users with its categories and price.
- 5.2 Users can book a selected cabin.
- 5.3 There is also have to color in the cabin number where Green is available and Red is not.

Priority Level: High.

Precondition: System must have information about the cabin and save the confirmation of booking.

Cross-Reference: None.

6 Patients: Doctor Comparison:

In this section, Medi-Care will provide suitable Doctors for the user. But the users can search for Doctors by completing his/her living area. Then the application will provide a list of the doctor to the user and also shows the best suitable doctor based on the user's filter's cost, distance, appointment fees, etc. There also have reviews and comments from previous patients. So, the user can understand which will be the best.

Functional Requirements:

- 6.1 Provide suitable doctors based on the user's health condition or disease.
- 6.2 There will be a search option where users can search for Doctors. And able to search it based on cost, distance, and appointment fees.
- 6.3 Then will provide a list of the doctors from the users required.
- 6.4 There also have a review and comment portion where patients account for rating hospitals.

Priority Level: High.

Precondition: No prediction.

Cross-Reference: None.

7 Patients: Select Doctor:

In this section, the user can select his/her required doctor to understand which will be good for him/her.

Functional Requirements:

- 7.1 User can select a Doctor.

Priority Level: High

Precondition: Result must be shown.

Cross-Reference: None.

8 Patients: Diagnostic Center Comparison:

Users can search for Diagnostic Center by completing his/her living area. Then the application will provide a list of the Diagnostic Center to the user and also shows the best suitable Diagnostic Center based on the user's filter's cost, distance, etc. There also have reviews and comments from previous patients. So, the user can understand which will be the best.

Functional Requirements:

- 8.1 There will be a search option where users can search Diagnostic Center. And able to search it based on cost, distance, and fees.
- 8.2 Then it will provide a list of the Diagnostic Center from the users required.
- 8.3 There also have a review and comment portion where patients account for rating hospitals.

Priority Level: High.

Precondition: No prediction.

Cross-Reference: None.

9 Patients: Select Diagnostic Center:

In this section, the user can select his/her required Diagnostic Center to understand which will be good for him/her.

Functional Requirements:

- 9.1 User can select a Diagnostic Center.

Priority Level: High

Precondition: Result must be shown.

Cross-Reference: None.

10 Patients: Information Given and Confirmation:

After confirming Booking Cabin, Doctor Appointments, or Diagnostic Center, the patient must give his information. Users can create an account for avoiding further filling up the information. In giving information part user must have to fill-up Name, Gender, Blood Group, and NID, User can payment with a credit card or mobile banking system.

Functional Requirements:

- 10.1 Patient has to give his/her Name, Gender, NID, and Blood Group.
- 10.2 Can create an account.
- 10.3 Users can pay with a credit card or mobile banking.

Priority Level: High

Precondition: Result must be shown.

Cross-Reference: None.

11 Admin: View, Update, Delete, and Response:

The administration has a big role in this application. Here admin can update, view, delete or add any Hospital/ Doctor/Diagnostic center or add cost, appointment time, etc. to the web page. And able to respond to both patients' and IT staff's complaints or other information via chat systems.

Functional Requirements:

11.1 Can update, view, delete and add hospital/doctor/diagnostic center list.

11.2 Can update, view, delete and add hospital/doctor/diagnostic center costs and others things.

11.3 Able to respond to both patient and IT staff messages via the chat system.

Priority Level: High.

Precondition: System database to restore account and categories' information.

Cross-Reference: None.

12 IT Staff: View, Reply and Confirm:

IT staff main from that particular listed Hospital, Doctor, and Diagnostic Center. Staff can view patient information, his/her request, booking, or appointment in their database system. And also, able to reply to any information via the chat system.

Functional Requirements:

12.1 View patients' information and add it to their database.

12.2 Reply to any information via the chat system.

Priority Level: High.

Precondition: System database has account information.

Cross-Reference: None.

13 Login/ User Authentication:

Selected those 3-types of users who can log in to this platform. The Patient can create an account.

Functional Requirement:

13.1 The users can log in or register using the user authentication form.

13.2 The users cannot log in or register if the information is incomplete or invalid.

13.3 The patient can create an account.

Priority Level: High.

Precondition: System database to restore account information.

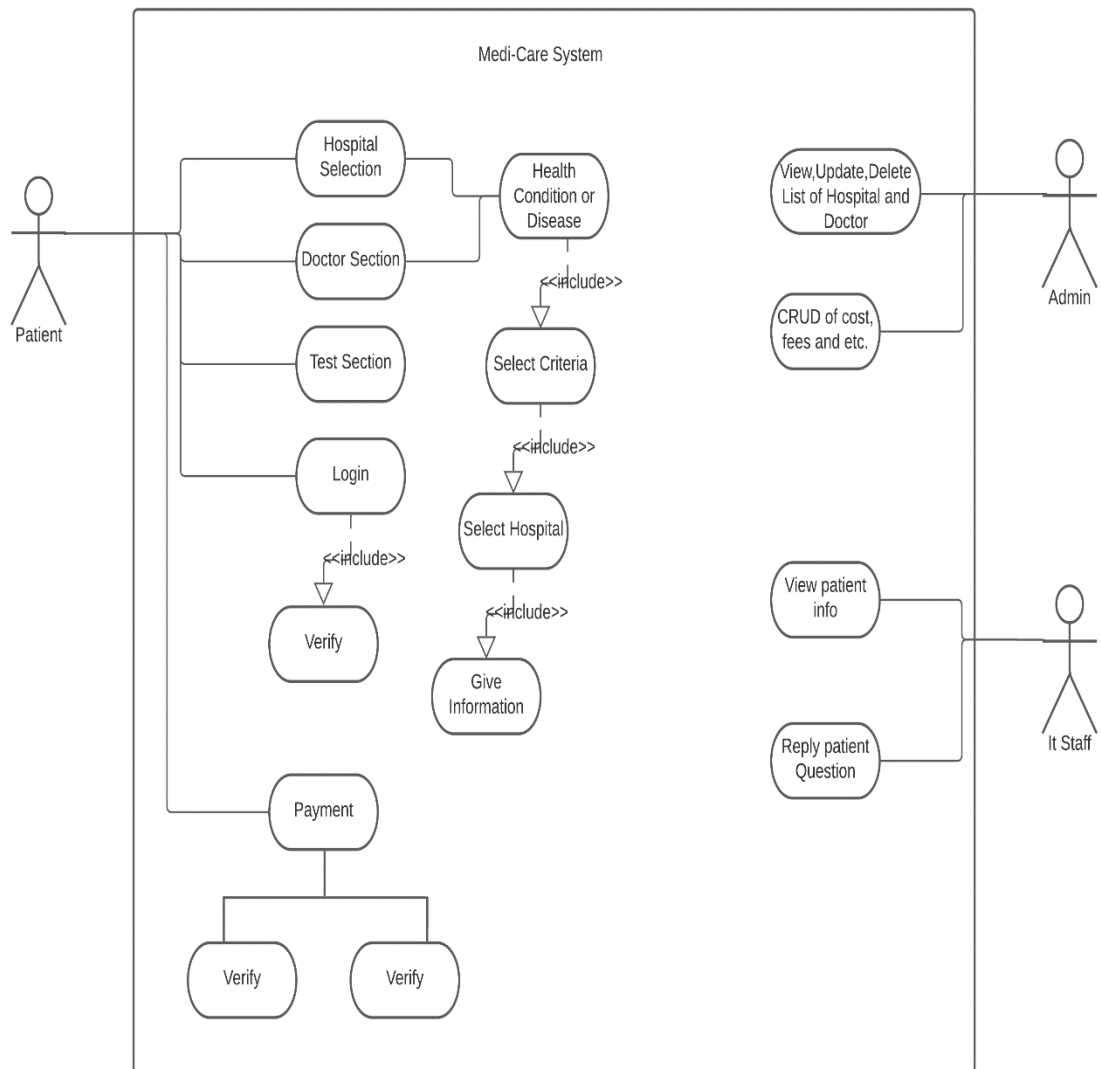
Cross-Reference: None.

5. Non-Functional Requirements:

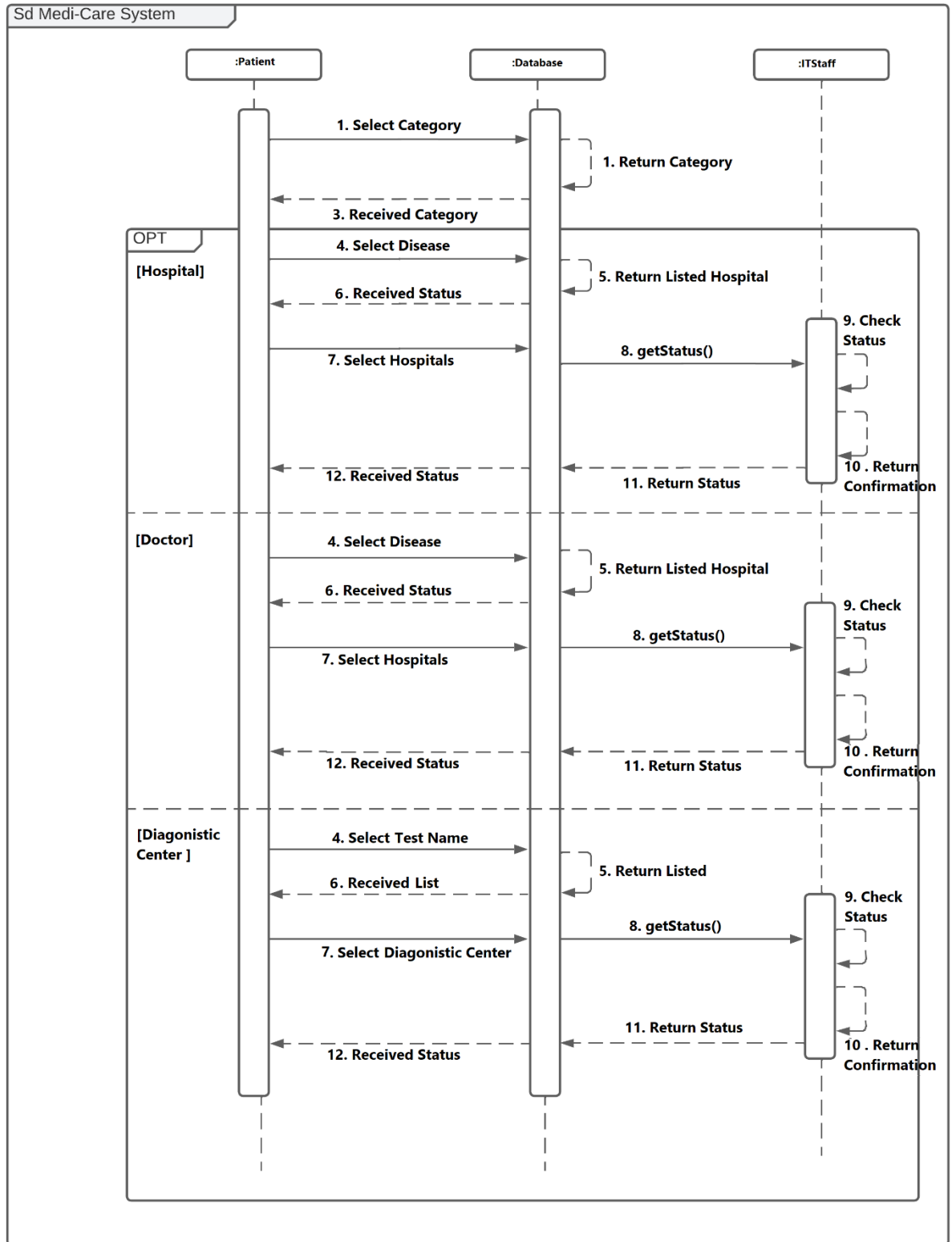
- **Performance:** The website's load time should not be more than one second for users.
- **Reliability:** Applicants can access their search results 98% of the time without failure.
- **Availability:** Users can search for anything from those categories every week at any time during the day. So, users can get huge benefits from using this application.
- **Maintainability:** If any problem faces from using this application, we can solve it in a few hours.
- **Recoverability:** If a major incident happens on the website, the business must take measures to go back to being fully operational within three days.
- **Capacity:** Up to 100 users can request at a time in the current state. And store 100,000 users' data can store.
- **Serviceability:** Users can request any problem and get any solution they need.
- **Security:** Only the users with the role "admin" can view the patient's request, their profiles, and their verified phone number. And users in the role of "patient" can log in with is username or phone number. If staff can log in with the given account.
- **Data integrity:** The system shall maintain data integrity by keeping backups of all updates to the database for every record transaction.
- **Interoperability:** The website must follow a service-oriented architecture.
- **Usability:** The website's interface has to be user-friendly and easy to use.

6. Diagram

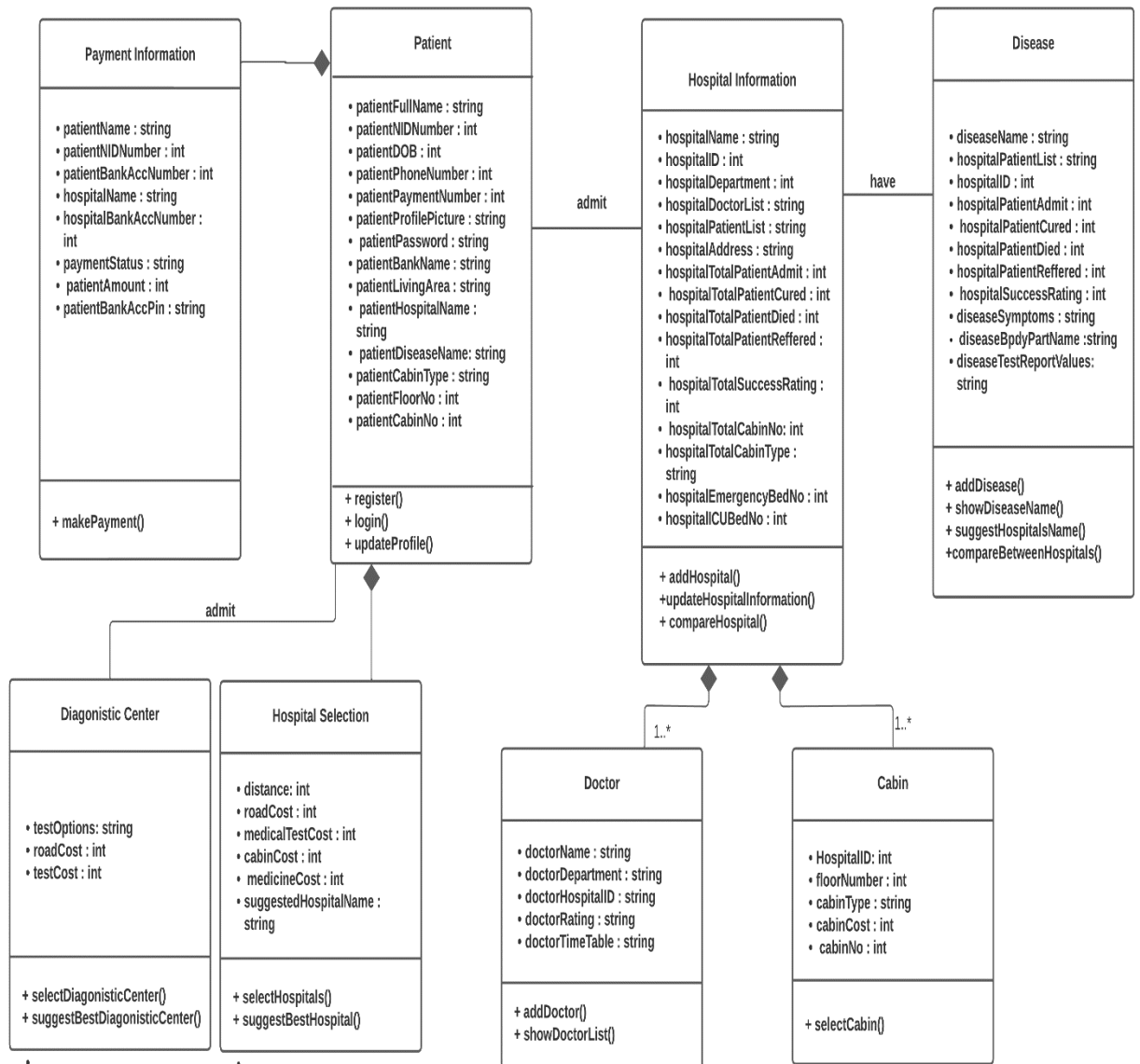
Use Case Diagram



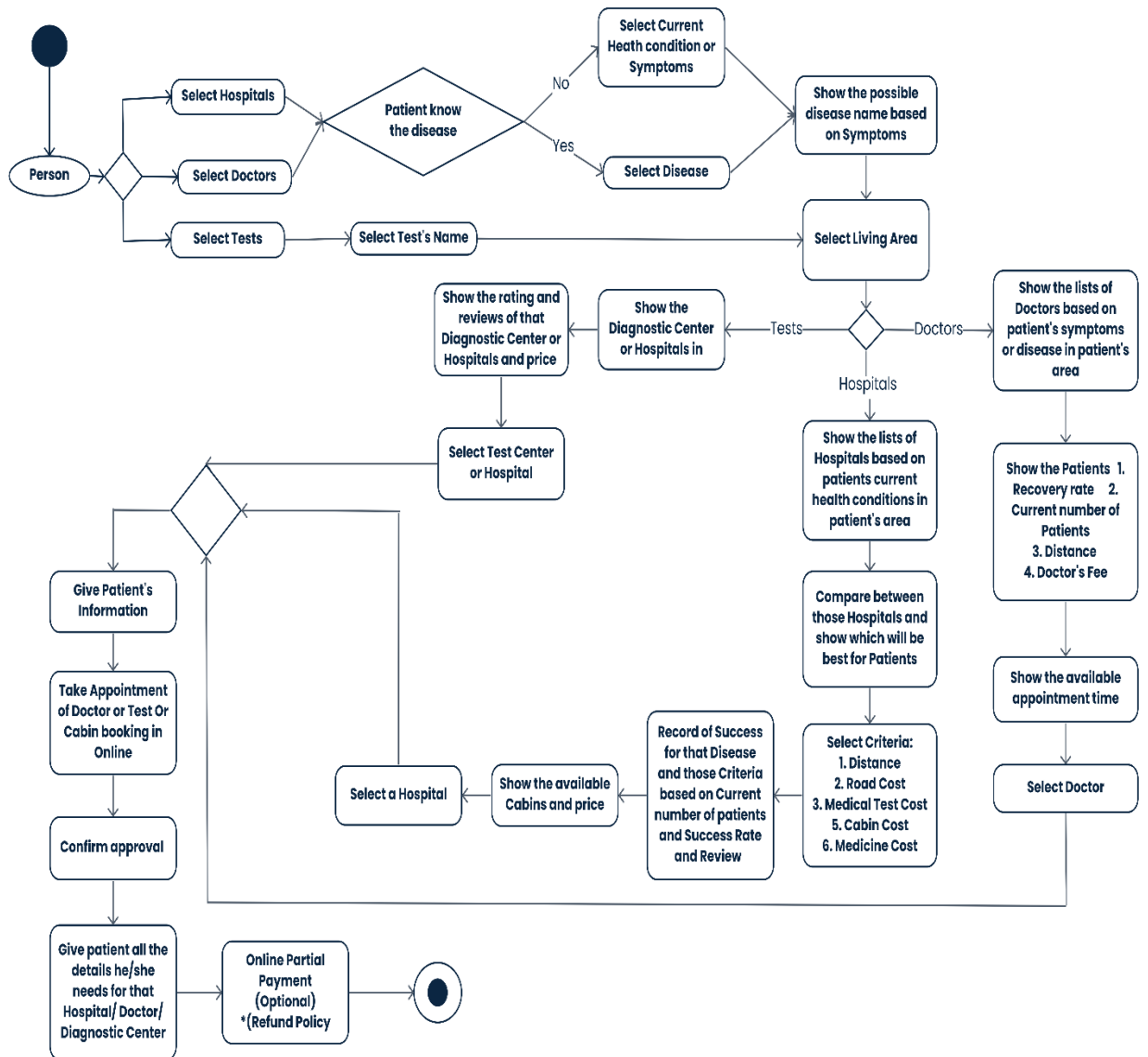
Sequence Diagram



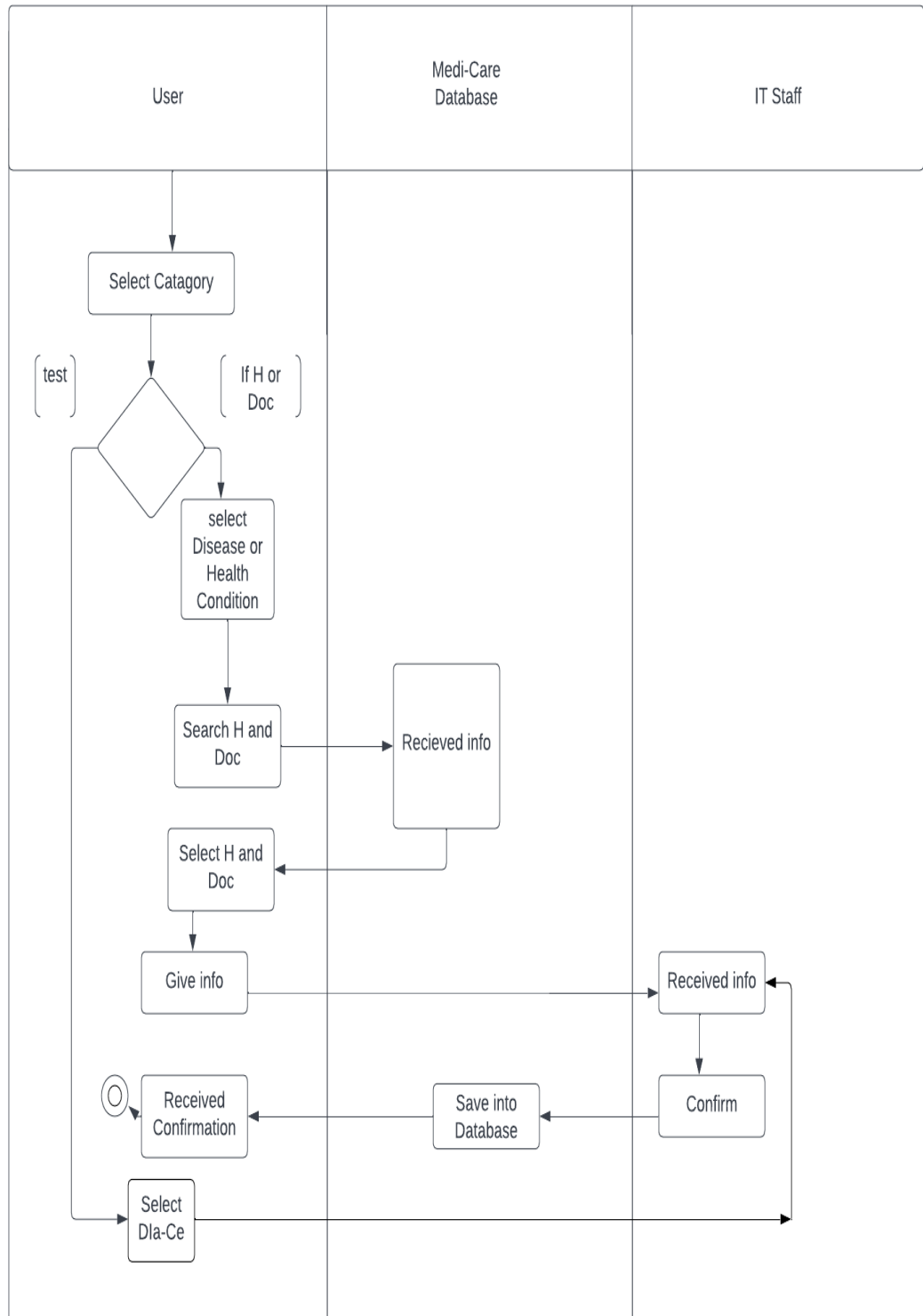
Class Diagram



State Diagram

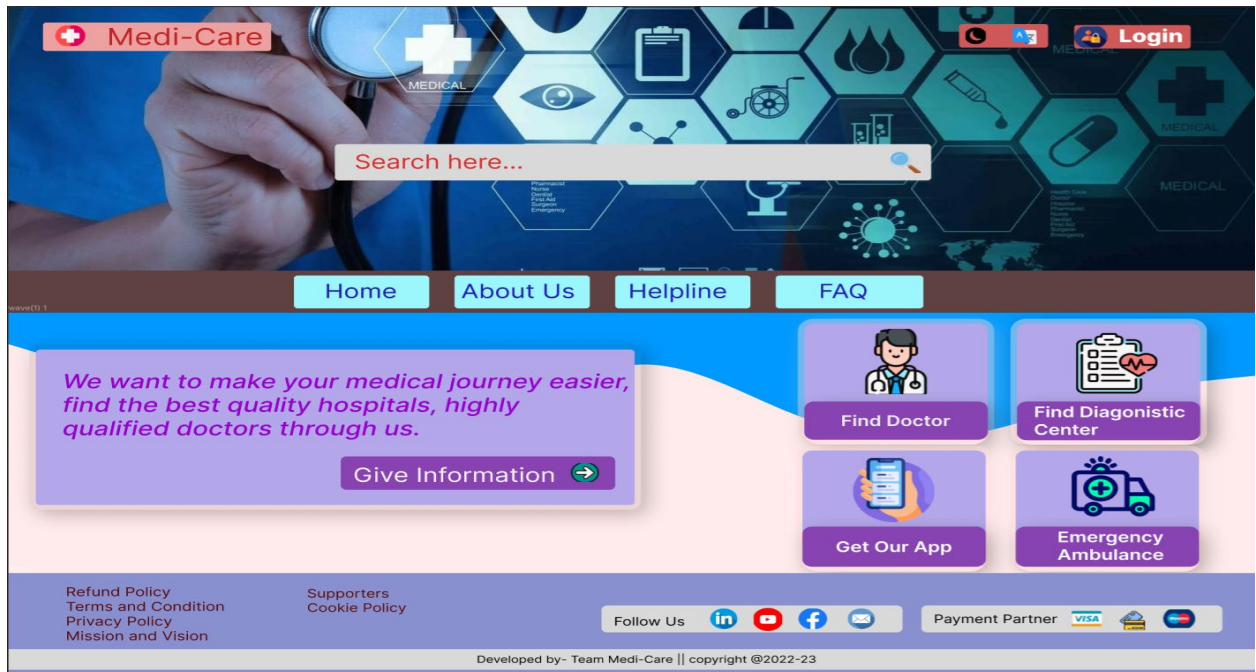


Activity Diagram

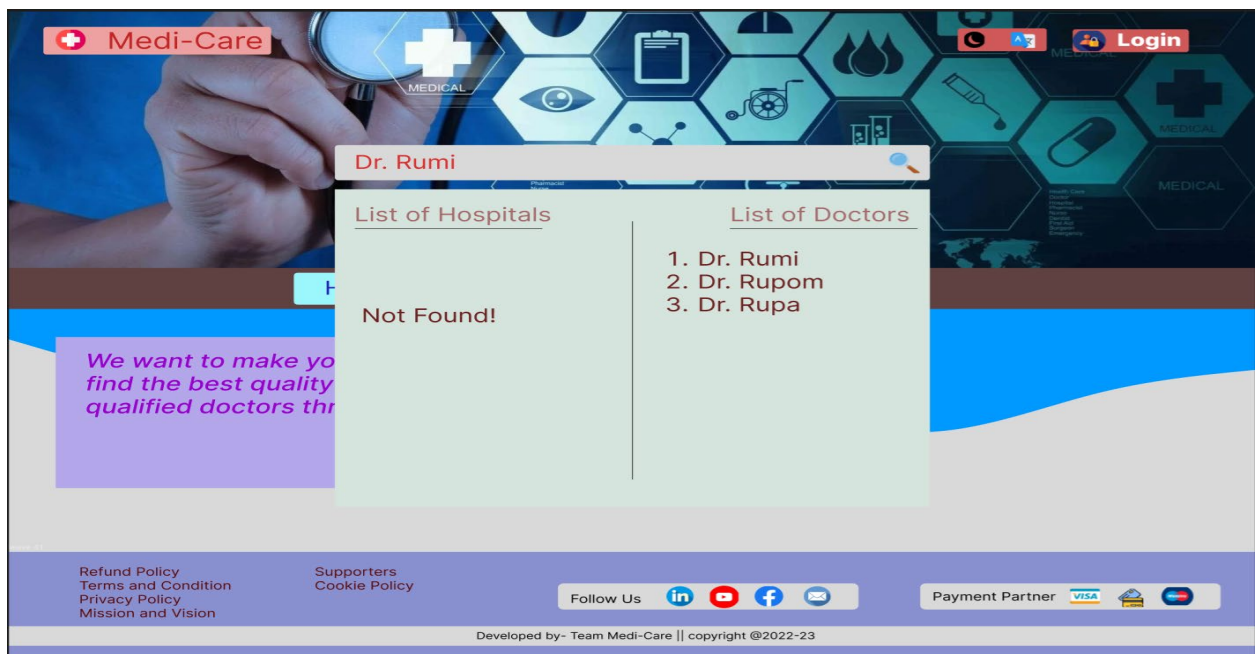


7. User Interface and Experience (UI / UX) Design

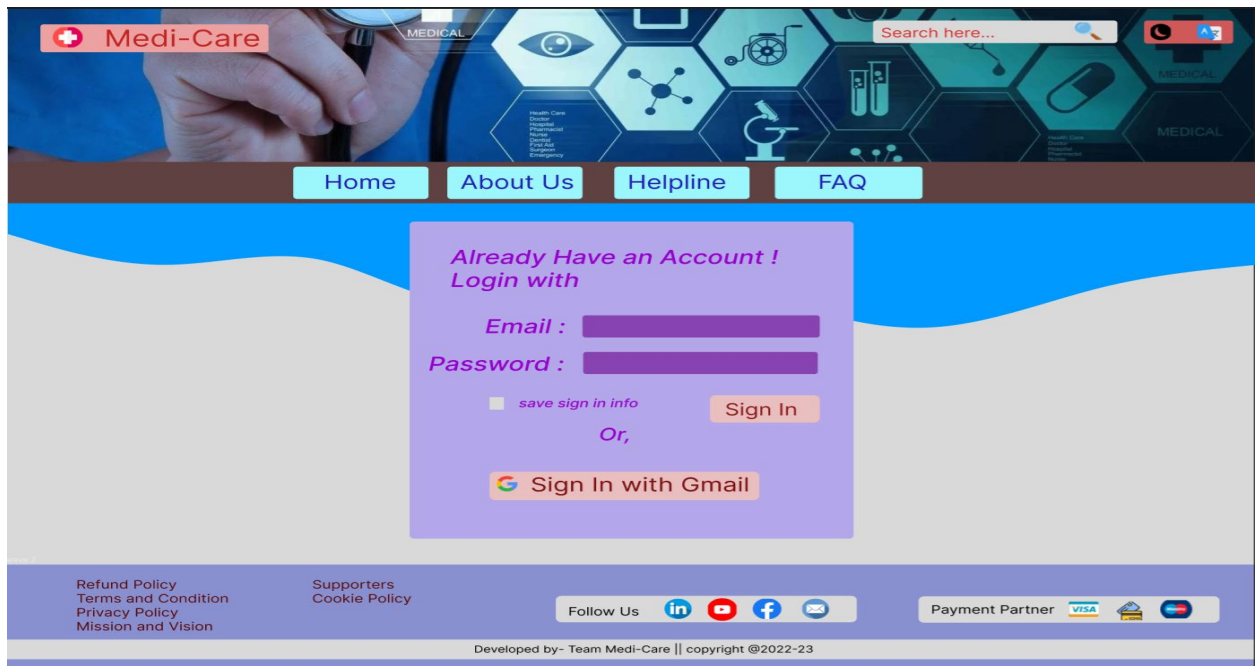
1. Home Page



2. Home Search



3. Login



The image shows the login page of the Medi-Care website. The header features the Medi-Care logo, a search bar, and navigation links for Home, About Us, Helpline, and FAQ. The main content area is a purple box with the text "Already Have an Account ! Login with". It contains input fields for Email and Password, a checkbox for "save sign in info", a "Sign In" button, and a "Sign In with Gmail" button. The footer includes links to Refund Policy, Terms and Condition, Privacy Policy, and Mission and Vision, as well as social media icons and payment partner logos.

Medi-Care

Search here...

Home About Us Helpline FAQ

Already Have an Account !
Login with

Email :

Password :

☐ save sign in info

Or,

Refund Policy
Terms and Condition
Privacy Policy
Mission and Vision

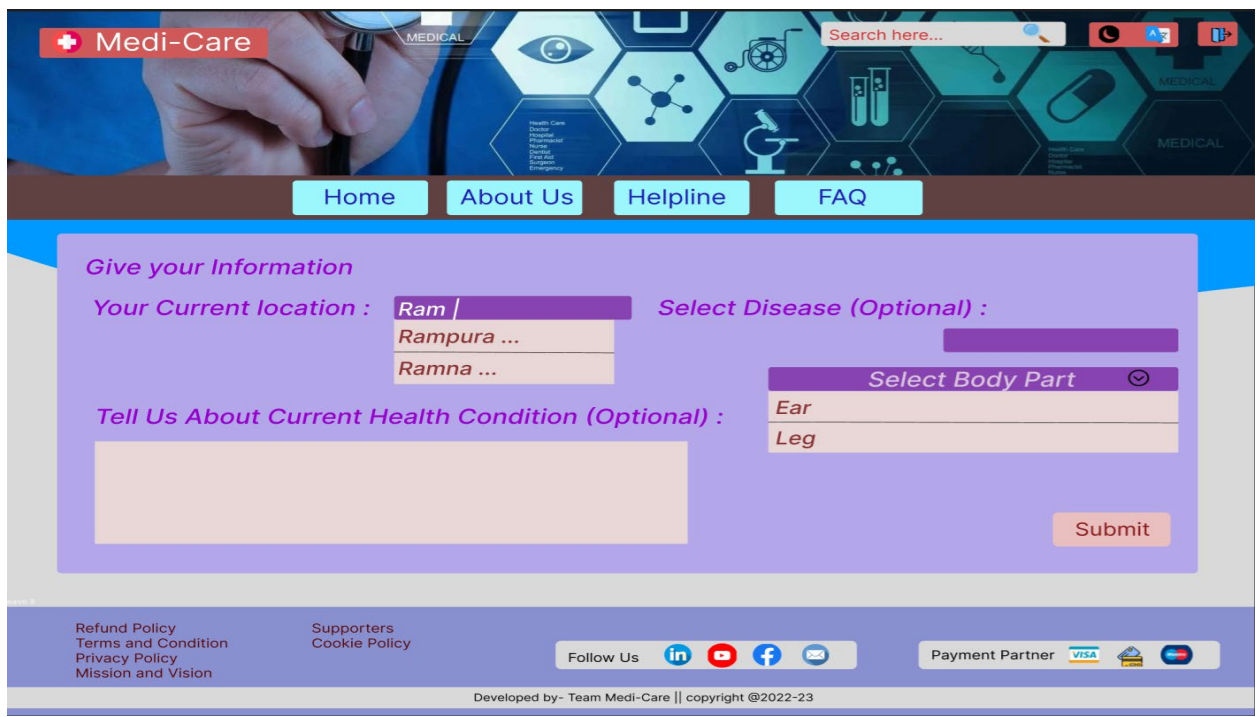
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4. Give Information to Search for Item



The image shows the "Give Information" form on the Medi-Care website. The header is the same as the login page. The main content area is a purple box with the text "Give your Information". It contains input fields for "Your Current location" (with a dropdown menu showing "Ram / Rampura ...", "Rampura ...", and "Ramna ..."), "Select Disease (Optional)" (with a dropdown menu), "Select Body Part" (with a dropdown menu showing "Ear" and "Leg"), and "Tell Us About Current Health Condition (Optional)" (with a text area). A "Submit" button is at the bottom right. The footer is the same as the login page.

Medi-Care

Search here...

Home About Us Helpline FAQ

Give your Information

Your Current location :

Select Disease (Optional) :

Select Body Part

Tell Us About Current Health Condition (Optional) :

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5. Result to Suggest Hospital Name

Medi-Care MEDICAL

Home About Us Helpline FAQ

Possible Disease Name :

to ensure that .. if you have test report , please upload it .

Select an Option that you Search :

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6. Criteria to Compare

Medi-Care MEDICAL

Home About Us Helpline FAQ

List of Hospitals based on patients current location :

To compare, please select some criteria which is important to you.

Criteria	Range
Distance	<input type="text"/>
Road Cost	500 - 800
Medical Test Cost	<input type="text"/> - <input type="text"/>
Cabin Cost	<input type="text"/> - <input type="text"/>
Medicine Cost	<input type="text"/>

Based on your criteria, best hospital for you is

To see record of success for that disease and those criteria based on current number of patients and success rate and review

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7. Record of Susses

The screenshot displays the Medi-Care website interface. At the top, there is a navigation bar with a search bar and icons for Home, About Us, Helpline, and FAQ. Below this, the 'Record of Success' section for 'Abc Hospital' is shown, featuring a table with criteria and records for three hospitals. The 'Available Cabin' section follows, showing a table of cabin types, quantities, and prices for the same three hospitals. A 'See Doctor List' button is located below the success records table. The footer contains links to Refund Policy, Terms and Condition, Privacy Policy, Mission and Vision, Supporters, and Cookie Policy, along with social media icons and payment partner logos.

Abc Hospital record of success

Criteria	Abc Hospital	Next Hospital	People Hospital
Patient Admit	300	200	280
Patient Cured	270	100	210
Patient Died	10	20	40
Patient Referred	0	80	30
Success Rating	90%	50%	75%

Available Cabin

Cabin	Abc Hospital	Next Hospital	People Hospital
Qt.	Price	Qt.	Price
AC	30	25	12
Non- AC	30	55	25
Emergency Bed	10	12	4
ICU	5	7	1

Click the details button to see specific hospitals cabin details

See Doctor List

8. Doctor List

The screenshot displays the Medi-Care website interface, specifically the 'Doctor List of your Disease in ABC hospital' section. It features a table with doctor names, departments, and ratings. Each row includes a 'Timetable' button. A 'Go back' button is located at the bottom right of the section. The footer is identical to the previous screenshot, containing links to Refund Policy, Terms and Condition, Privacy Policy, Mission and Vision, Supporters, and Cookie Policy, along with social media icons and payment partner logos.

Doctor List of your Disease in ABC hospital

Doctor Name	Department	Rating
MOHAMMAD BIN AB. JALIL SHEAKH	Medicine	2.5
SARJAT AZIZ RUMI	Medicine	2.6
MD.MOHIMENUL ISLAM TALUKDER	Medicine	2.7
MD. SAJIDUL ISLAM KHAN	Medicine	2.8

Go back

9. Cabin Selection

The screenshot displays the 'Cabin Selection' page on the Medi-Care website. The header includes the Medi-Care logo, a search bar, and navigation links: Home, About Us, Helpline, and FAQ. The main content area is divided into three sections:

- Abc Hospital**: A placeholder for the hospital name.
- See Current Empty Cabin Option**: A grid of 12 numbered buttons (1-12) representing available cabins. Below the grid is a table showing cabin details:

Cabin Type	AC	Non Ac
Floor	1 6 3 5 11	7
Amount	5 6 7	7

- Your Selected Cabin**: A summary of the selected cabin with the following details:
 - Cabin Type: AC
 - Floor: 6
 - Cabin No.: 3

Below the selected cabin details, there is a message: "Click NEXT to payment and cabin confirmation, before that you have to give all your information" and a "NEXT" button with a right arrow.

The footer contains links to Refund Policy, Terms and Condition, Privacy Policy, and Mission and Vision, as well as Supporter and Cookie Policy. It also features social media links (Follow Us) and payment partner logos (VISA, MasterCard, etc.). The footer text reads: "Developed by- Team Medi-Care || copyright @2022-23".

10. Patient Information for Booking

The screenshot displays the 'Patient Information for Booking' page on the Medi-Care website. The header is identical to the previous page. The main content area is a form titled "To book that cabin, first you have to create an account ! Please give your information ..". The form fields are:

- Full Name
- NID Number
- Date of Birth
- Phone Number
- Payment Number
- Upload Profile Picture (with an Upload button)
- Password

There are also buttons for "Tap to send otp to mobile" and "Verify". Below the Payment Number field, there are checkboxes for "Nagad", "Bkash", and "Card". A "Submit" button is located at the bottom right of the form.

The footer is identical to the previous page, containing links to Refund Policy, Terms and Condition, Privacy Policy, and Mission and Vision, as well as Supporter and Cookie Policy. It also features social media links (Follow Us) and payment partner logos (VISA, MasterCard, etc.). The footer text reads: "Developed by- Team Medi-Care || copyright @2022-23".

11. Show All Information

Medi-Care MEDICAL Search here...

Home About Us Helpline FAQ

Information

Full Name	:	Mohammad	Your Living Area	:	Rampura
NID Number	:	56456165465165	Hospital Name	:	ABC Hospital
Date of Birth	:	13/09/2000	Disease Name	:	Fever
Phone Number	:	1518419801	Cabin Information	:	Cabin Type - AC
Bkash Number	:	1790583345			Floor - 6
Profile Picture	:				Cabin No. - 3
Password	:	@#@543	cabin price(per 24 hours) :		2000 /=

Confirm

Refund Policy Terms and Condition Privacy Policy Mission and Vision Supporters Cookie Policy Follow Us Payment Partner VISA

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12. Payment

Medi-Care MEDICAL Search here...

Home About Us Helpline FAQ

Payment

Patient Name	:	Mohammad
NID Number	:	56456165465165
Bank Acc No.	:	1790583345
Receiver	:	ABC Hospital
<input type="checkbox"/> Full Payment <input type="checkbox"/> Partial Payment		
Amount for partial payment	:	
Bank Account PIN	:	

Confirm

Refund Policy Terms and Condition Privacy Policy Mission and Vision Supporters Cookie Policy Follow Us Payment Partner VISA

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