An Undergraduate Internship Report on Website Application of Sheba24

Submitted By

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Spring, 2021

Under the guidance of

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May, 22, 2021

In consideration of the partial fulfillment of the requirement for the degree of Bachelor of Science in Computer Science and Engineering

Department of Computer Science & Engineering

Independent University, Bangladesh

Attestation

This is to inform you that this report on Trends Bird Limited's "Sheba" Hospital Management System was prepared as part of my internship requirements. Since it is an obligation of our Undergraduate Programs that we send an internship report, this is entirely my own work that has not been plagiarized in part or in whole from any other source except where credit is provided. As a result, any reference to previously published work (from books, journals, magazines, the internet, and so on) has been noted in the main report with a reference to an entry in the References list. Moreover, I was inspired and guided by my supervisor Md. Abu Sayed, Lecturer of Computer Science & Engineering at School of Engineering, Technology and Science of Independent University, Bangladesh.

22th May, 2021

_____   _____
Signature   Date

Esrat Jahan

_____
Name

Acknowledgement

Firstly, I would like to thank Almighty Allah for giving me the strength and the ability to work hard. Doing an internship during the Corona situation was a huge challenge for me. It is my privilege that I had the opportunity to do an internship at Trends Bird Limited. It was a great honor for me to be able to do an internship at Trends Bird Limited. I'd like to express my gratitude to everyone who helped me with my internship.

I express my deep gratefulness to my supervisor Md. Abu Sayed, Lecturer, Department of Computer Science and Engineering, Independent University, Bangladesh, for his support, invaluable instructions, continuous guidance, feedbacks, and thoughtful advice during pursuing this internship and preparation of this report. Without all these, I would not be able to complete this report.

I also express my gratefulness to Mr. Tanjil Abedin, CEO, for giving me the opportunity to complete my internship under Trends Bird Limited and giving me his support in this internship program. I am grateful to Al-Amin Mishu (Senior software developer), Ashikur Rahman (Associate software developer) who acted as a mentor to complete my regular task and provided me with valuable information regarding the project. Also, I express my gratefulness to all employees at Trends Bird Limited for their help and support to complete this project.

Finally, I would like to express my sincere gratitude to Independent University, Bangladesh, for providing the opportunity for this informative and wonderful internship experience, as well as my parents and family members for their immense love, encouragement, and for allowing me to complete my internship during the pandemic. I could not have come this far without their help.

Letter of Transmittal

22th May, 2021

Md. Abu Sayed

Lecturer,

Department of Computer Science & Engineering,

School of Engineering & Computer Science,

Independent University, Bangladesh

Subject: Submission of Internship Report for the completion of Graduation, Spring, 2021.

Respected Sir,

With due respect, I would like to inform you that I have completed my internship at Trends Bird Ltd. I was under the supervision of Mr. Al Amin Mishu, Senior software developer. It was a great experience for me. I got the opportunity to work with the web development team. During this internship, it has given me a great opportunity to learn about different aspects of the networking system this reputed organization closely. I have had a substantial amount of professional guidance on multiple levels. In my report, I have tried to include my experience along with some relevant information to make the report informative and comprehensive.

Therefore, I am extremely grateful for your guidance and kind cooperation on this report. I hope it would be great if you kindly go through the report and evaluate my performance. Rather, in case of any further clarification, I would appreciate the opportunity to meet with you to discuss how my findings would better meet your needs.

Yours Sincerely,

_____

Esrat Jahan
ID: 1621440

Department of Computer Science & Engineering,

School of Engineering & Computer Science

Independent University Bangladesh.

Evaluation Committee

Signature: ....

Name: ....

Supervisor: ....

Signature: ....

Name: ....

Internal Supervisor: ....

Signature: ....

Name: ....

External Supervisor: ....

Signature: ....

Name: ....

Convener:........................

Abstract

Internship is defined as obtaining practical experience from various organizations, which helps in the formation of a connection between theoretical and practical knowledge. It is very important because it is the first time for a student to acquire a keen practical knowledge from the different organizations. When I was offered an internship at Trends Bird Ltd, I got the chance to work and learn with developer team. The project's goal was to create a framework for a new organization named "Sheba24". This report covers the whole project that I learned about throughout my internship.

I had to finish my learning sessions before working on any project, and in this learning session, I was allocated to develop landing page, a dashboard, and some back-end code. It was almost like a skill test before the actual project was assigned.

I've detailed the information and experiences I've gained and the work I've done as an intern at Trends Bird Limited, in this report. I worked on a website application where the most of my tasks included developing the entire site.

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Chapter 1

Introduction

Sheba24 is a web-based hospital administration system that provides to both patients and hospital personnel (Doctors, Admin). The major goal of this project is to improve upon the present hospital experience.

Although no one likes to go to the hospital, there are instances when it is necessary. The previous hospital system is not particularly user-friendly. The first huge stem has been in line for some hours. There are other more issues that contribute to a negative hospital experience. The main purpose of this project is to make people's lives simpler in times of crisis and is to develop website that replaces the manual hospital system into automated healthcare management system.

This project is to maintain the patient details, doctor details, appointment reports. Hospital management system software can be found in a variety of hospitals in our country. They have a lot of useful capabilities for hospitals, but they don't allow patients to handle their own data. This was the original inspiration for me to create a system that would work for everyone.

1.1 Background of the Project

The Corona virus has wreaked havoc all across the world, affecting millions of people and instilling dread in the public. As a result, governments have made it illegal for anyone to gather in any form. This created an issue and put people in a bind for individuals who require frequent medical attention and checkups. People have resorted to technology to help them cope with their growing fear of disease. With digital consultations delivered straight to a patient's home, technology has entered the public eye, assisting healthcare provider companies, doctors, and patients.

The need for doctors for seasonal and infectious diseases has risen rapidly as a result of Covid-19. People are afraid of being contaminated by infected surfaces, thus they avoid visiting to the

clinic. E-health care is in high demand, and this technology has the potential to connect physicians and patients. Using technology is the only option to contact a doctor without visiting a hospital or clinic.

Trends Bird Ltd has planned to establish a web site for "Sheba24" in order to deliver services in a more efficient way. Patients will be able to consult doctors at their convenience with the help of these applications. To consult your digital doctor from the comfort of your own home, all you need is access to the internet and a laptop or phone.

1.2 Objectives

➢ You can schedule an appointment at your convenience and discuss your issues in the comfort of your own home using this portal.

➢ This web application will help patients save time and reduce the need to visit a clinic or hospital.

➢ You must examine your own body while discussing your symptoms. This will allow you to learn about your own body and what you require for good health.

➢ You can save your medical history in the website and access it anytime you need it, or show it to your doctor if necessary.

➢ Patients will be able to re-consult with the same doctor to remain updated.

➢ For a reliable service, there will be an admin portion to handle both doctors and patients.

1.3 Scope of the project

In this project, the following features are accessible to users, administrators, and doctors:

Features of this project:

▪ Landing page.
▪ Login page for patient, doctor and admin.
▪ Registration Page for Patient.
▪ Password reset page.

- Different dashboard for each user.

Admin module:

- ❖ **Dashboard:** A comprehensive overview of Patients, Doctors, Appointments, and new queries will be accessible in this section.
- ❖ **Doctors:** In this section, the administrator will be able to create and manage doctor profiles.
- ❖ **Users:** Admins will be able to see the details of users who book online appointments in this area and delete any users who are no longer needed.
- ❖ **Patients:** The admin will be able to examine the details of the patients in this section.
- ❖ **Appointment History:** In this section, patients and administrators will be able to view each patient's appointment history.
- ❖ **Contact us Queries:** In this section admin will be able to see queries send by users.
- ❖ **Doctors Session Logs:** This part will contain the history of the doctor's login and logout.
- ❖ **User Session Logs:** Admin will be able to see users' sessions in this section.
- ❖ **Reports:** Admin will be able to view patient reports for a specific time period.
- ❖ **Patients Search:** Admin will be able to search Patients with patient's name and phone number.

The admin will have the right to modify his/her own profile, user name, and password

Doctor's module:

- ❖ **Dashboard:** This section will show doctors online appointments.
- ❖ **Appointment History:** In this section, doctors will be able to view their patient's appointment history.
- ❖ **Patients:** Doctors will be able to add or update patients, in this section.
- ❖ **Search:** Doctors will be able to search his/her patients profile using patients name or number.

Doctors will be able to edit their own profiles and change their passwords.

User module:

- ❖ **Dashboard:** dashboard will show summarized version of patients' profile, Appointments and book appointment.
- ❖ **Book Appointment:** Patients will be able to book appointment in this section.
- ❖ **Appointment History:** This section will show history of patients' appointment history.
- ❖ **Medical History:** Patients will be able to see own medical history.

The patient will be allowed to change or reset their password.

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

1. **Web Application and Internet (CSE-309):** This course helped me the most in this project. When working on the frontend design & backend. I learnt fundamental HTML, CSS, PHP, JSON, JavaScript, and other skills from this course. This course was really useful during the project since it taught me how to use colors and features to design an appealing User Interface. These were extremely useful during the creation of the "Sheba24" portal.

2. **Software Engineering (CSE-451):** This course focuses on methodology and software development life cycles (SDLCs). We learned so much about cross-functional process diagrams, different types of SDLCs, WBS, and how to make a Gantt chart in this course. This course has made a huge impact in this project.

3. **System Analysis and Design (CSE-307):** This course has helped in the development of the project's general framework. This course covered all of the necessary analysis, including requirement analysis, flow diagrams, UMLs, Rich image, Functional and Non-functional requirements, methodology, WBS, Gantt Chart, and so on. This

training was extremely beneficial not only for the project but also for the report. This course has aided in the planning of the entire project from start to finish.

4. **Database Management (CSE-303):** This project's backbone is this course. We learned how to plan, rich pictures, construct process flow diagrams, normalization, requirement analysis, entity relation diagrams(ERD), business process model and notation diagrams, and finally SQL during this course.

2.2 Related works

This is a web-based project that keeps track of a patient's medical history, Doctor's list, appointments schedules, and manages data and reports. This project is used to manage hospital data that was previously maintained manually in hard copies, which was both time-consuming and hassles.

All these research paper has inspired me to make "Sheba24" moreover the current pandemic situation has also made me to build up a project like this.

Web-Based Medical Appointment Systems: A Systematic Review

The main purpose of the study was to identify the benefits and barriers to implement Web-based medical scheduling services and after reading the paper I was convinced that there was a growing trend for the adoption of Web-based appointment systems and people are looking for this kind of healthcare services.

The paper talks about the constraints of traditional appointment booking system and how people are adapting new technologies. It is stated on the paper that ''Web-based appointment scheduling has been a popular research topic. Several studies conducted satisfaction surveys and found that Web-based appointment scheduling is an extremely important feature, and most patients would use the service again.''

A web-based appointment system to reduce waiting for outpatients: A retrospective study

The main reason behind this study was conducted on the context of china it was stated that "Long waiting times for registration to see a doctor is problematic, in china especially in tertiary hospitals. To address this issue, a web-based appointment system was developed for the Xijing hospital. ''Two types of methods were used to conduct the research one was using web based appointment facility and the other was traditional way of standing in the queue. Web based service has effectively reduced registration time than the traditional queuing method. The conclusion has also helped me to gain idea on how to design and implement and execute the project.

Figure 1 Flow chart of outpatient registration methods. "*": WAS refers to web-based appointment system.
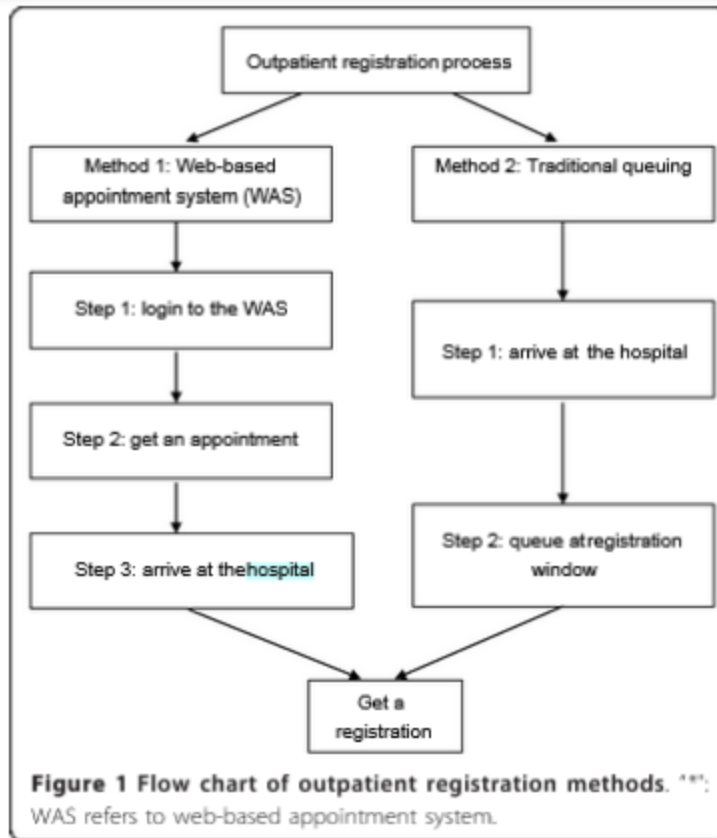
Chapter 3

Project Management and Financing

3.1 Work Breakdown Structure (WBS)

A project work breakdown structure (WBS) is a graphical representation of a deliverable or product-oriented grouping of project work parts used to organize and subdivide a project's entire work scope.

The work breakdown structure (WBS) is a plan defines strategy. Its creation and execution should be given careful consideration and preparation in order to minimize further adjustments.

Due to its relevance to a wide range of project activities, major adjustments to a WBS necessitate a significant amount of time and resources. Other usage of WBS-like systems should not be confused with project WBS, which are driven by the scope of a project. On WBS, MIL-HDBK-881 is the approved standard.
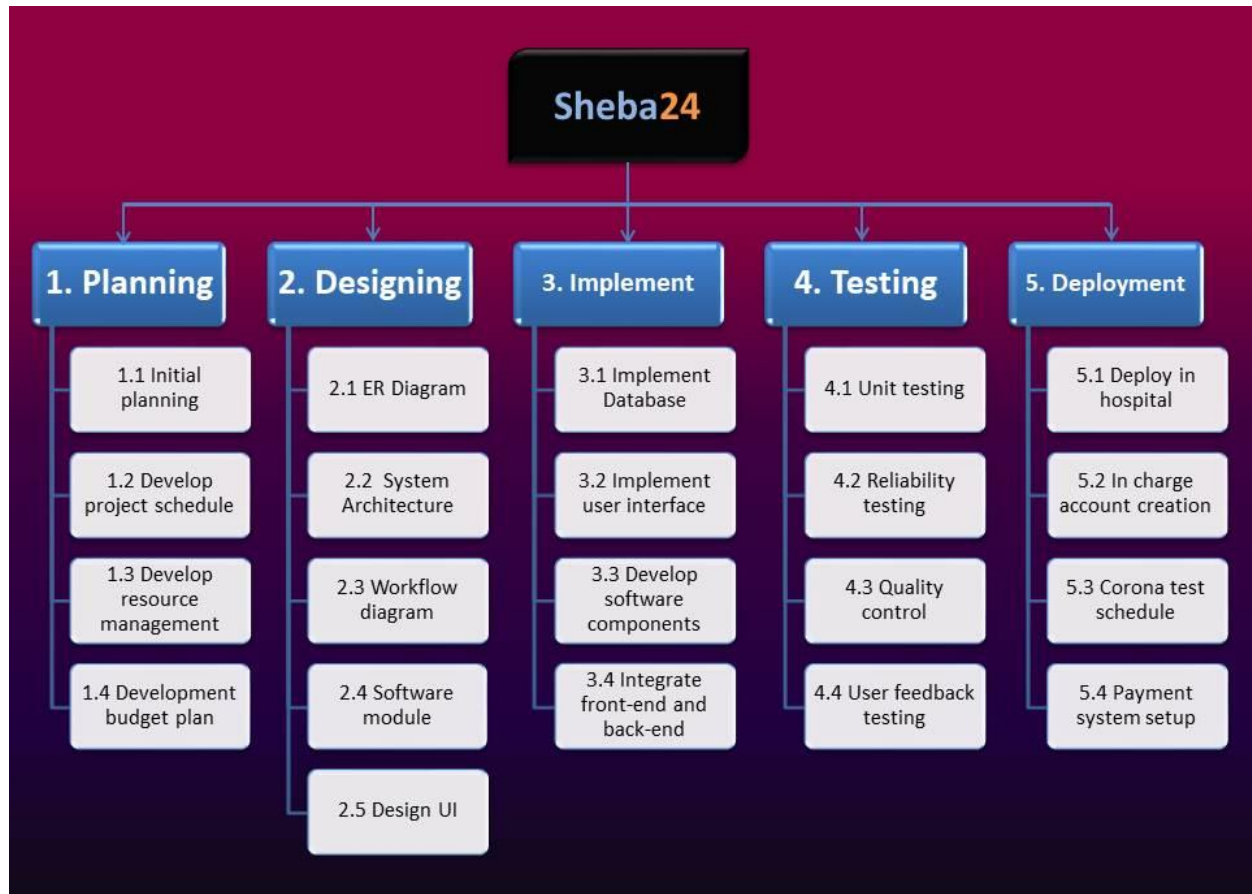
Figure 3.1: Work Breakdown Structure (WBS).

3.2 Process/Activity wise Time Distribution

All project activities are included in the Work Breakdown Structure. To create balance with other developers, we work in a flow with a specific time scale to complete those activities. My project manager works out the schedule with the other developers in the team. For the current activities or tasks, days of time have been allotted to the table.

Activity	Days	Work Percentage
Planning	11	12.64%
Designing	13	22.03%
Implementation	12	20.34%
Testing	11	18.64%
Deployment	12	26.34%
Total	**59**	**100%**

Table 3.2: Table for Activity wise Time Distribution.

The pie graph shows the amount of work time distribution for each activity.
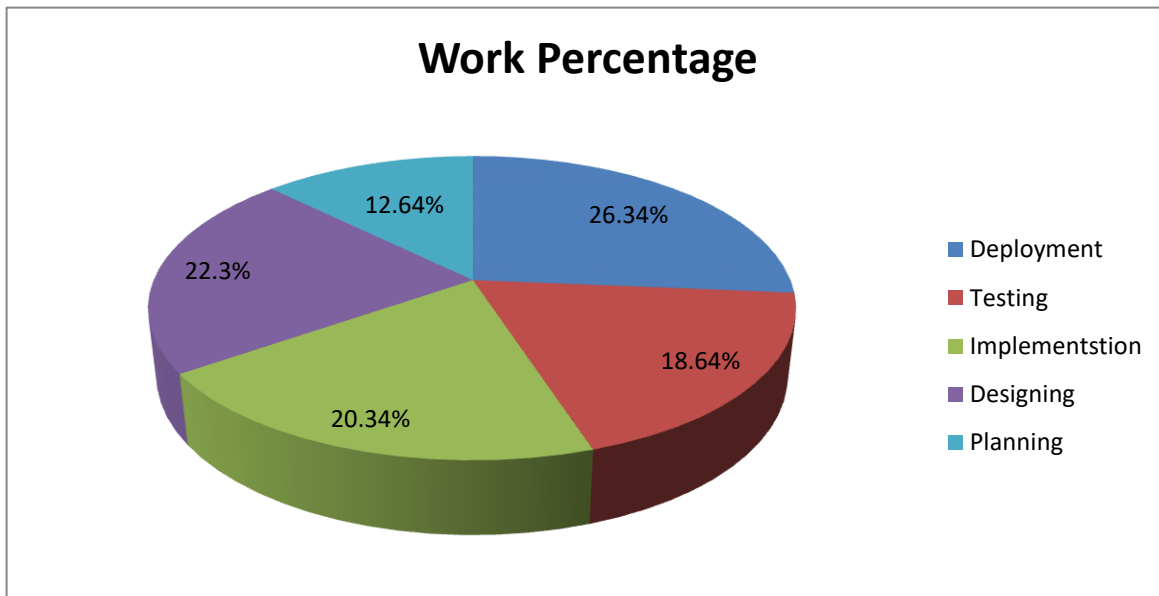
Figure 3.2: Work Percentage of Process Wise Time Distribution (Pie Graph).

3.3 Gantt Chart

A Gantt chart is a project management tool helpful in the planning and scheduling of projects of all sizes, however they are particularly beneficial for simplifying complex tasks. Project management timelines and tasks are turned into a horizontal bar chart, indicating start and finish dates, as well as dependencies, scheduling and deadlines, including how much of the job is accomplished each stage and who is the task owner. When there is a big team and various stakeholders involved, this might help keep work on schedule.
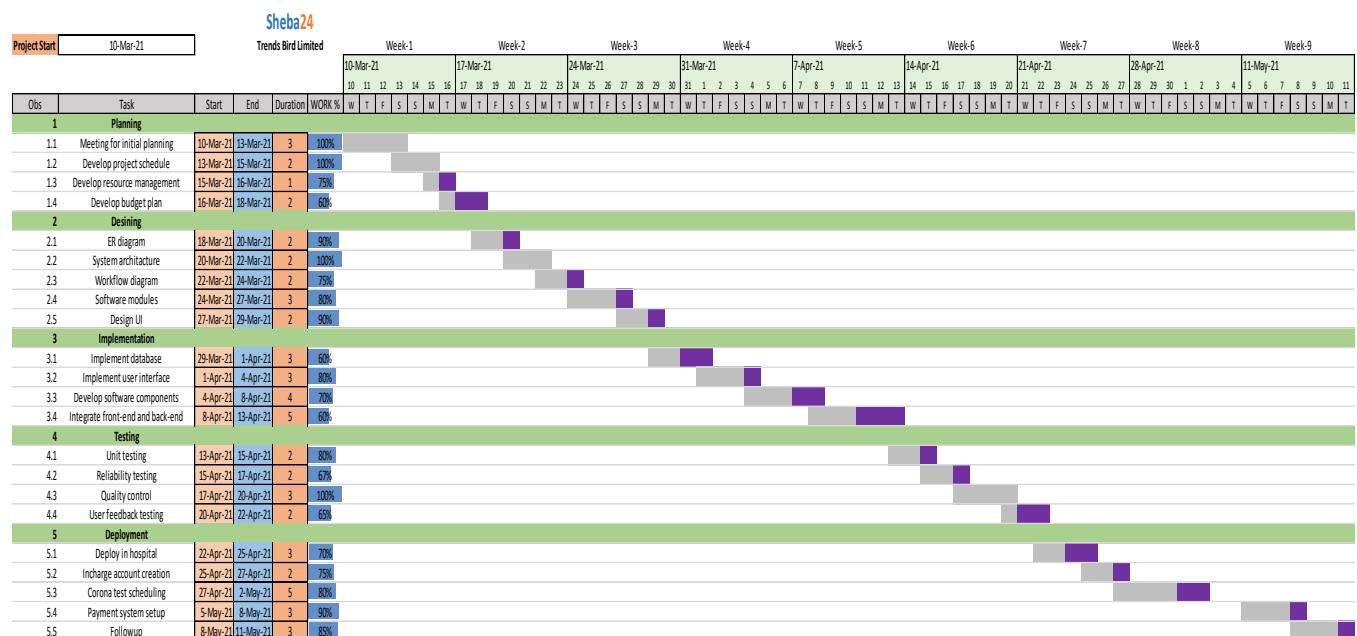
Figure 3.3: Gantt Chart

3.4 Process/Activity wise Resource Allocation

The activity of assigning and scheduling resources to project tasks is known as resource allocation. The backbone of a project management is resources. Resources are used to complete the project, and if they are not utilized, they are returned to their owners. The activity wise resource allocation of this project are detailed below,

1. **Requirement Analysis:** The process of defining the expectations of users for an application that is to be developed or modified is known as requirements analysis. It includes all of the tasks that are carried out in order to determine the demands of various customers. So requirements analysis is defined as the process of analyzing, documenting, validating, and managing software or system requirements. The requirement analysis for "sheba24" takes about 11 days and counts for 12.64 percent of the entire effort.

2. **Designing:** The way we arrange the elements on a page that make up the content of a design is referred to as graphic design layout. The goal of layout is to deliver the message accurately as well as to show information in a logical, logical way that highlights the most essential parts. We used Figma, a vector-based user experience design tool for web apps and mobile apps, for the visual design layout of the Sheba24 project. This takes about 13 days and counts for 22.03 percent of the overall project.

3. **Implementation:** The implementation phase is where the project team actually does the project work to produce the deliverables. The word "deliverable" means anything that project delivers. The deliverables for the project include all of the products or services that a team performing for the client, customer, or sponsor, including all the project management documents that put together. This takes around 12 days and considered 20.34% of the total work.

4. **Testing:** Software Testing is a method to check whether the actual software product matches expected requirements and to ensure that software product is Defect free. It involves execution of software/system components using manual or automated tools to evaluate one or more properties of interest. The purpose of software testing is to identify errors, gaps or missing requirements in contrast to actual requirements. This testing method took around 11 days and considered 18.64% of the total work.

5. **Deployment:** Finally, after the approval from the client, the project is hosted on the client's domain and hosting and the sheba24 is handed over to the clients and necessary training is provided to the client. This takes around 12 days and considered 26.34% of the total work.

Activity	Days	Estimated Cost	Work Percentage
Planning	11	5670	12.64%
Designing	13	13700	22.03%
Implementation	12	27360	20.34%
Testing	11	10720	18.64%
Deployment	12	6890	26.34%
Total	**59**	**65,000**	**100%**

Table 3.4: Table for Activity wise Resource Allocation.

3.5 Estimated Costing

The price was computed based on the characteristics that the client requested for the website. It depends on the website's size, requirements, functionality, and design. This includes the cost of pre-designed themes, logo design, home page sliders, search engine optimization, social network integration, SSL certificates, and a variety of other tools used to create this website. The cost of the developer and the resources employed were also considered. The anticipated cost is Tk.65,000. If service assistance is necessary after one year of deployment, a fee for hosting and domain will be charged.
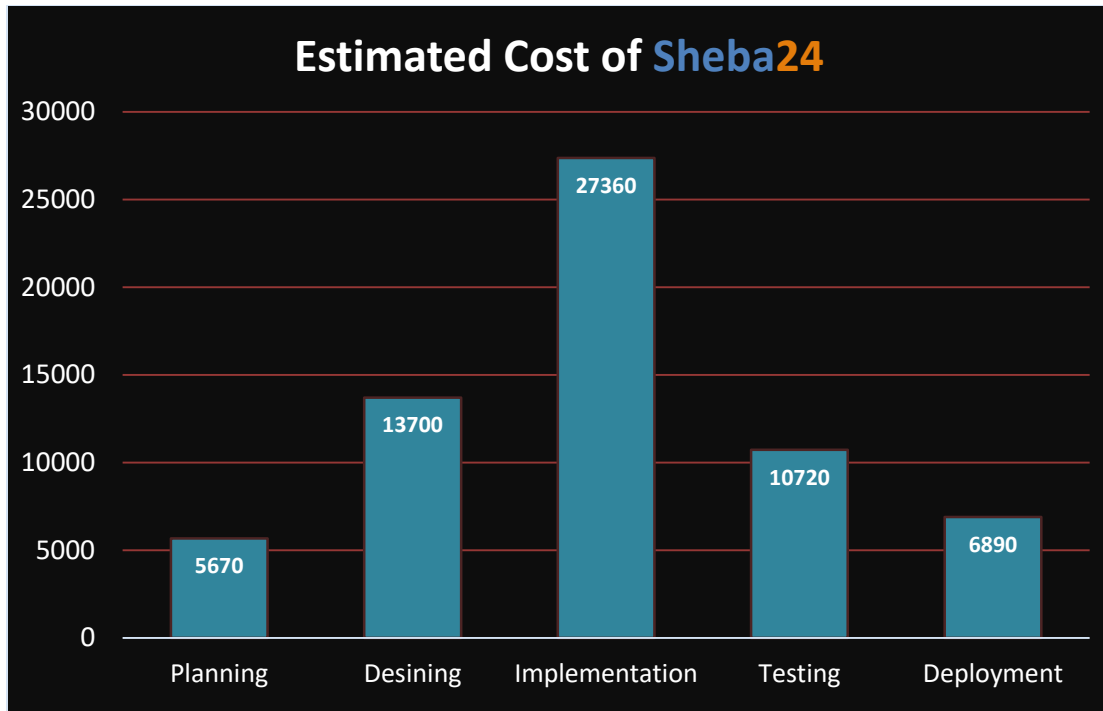
Figure 3.5: Estimated Costing (Bar Graph)

Activity	Estimated Cost	Work Percentage
Planning	5670	12.64%
Designing	13700	22.03%
Implementation	27360	20.34%
Testing	10720	18.64%
Deployment	6890	26.34%
Total	65,000	**100%**

Table 3.5: Table for Estimated Costing.

Chapter 4

Methodology

Developers believe that they are only impacted by one of the seven stages of the system development life cycle. However, in order to perform at their best, every member of a software development team should be familiar with all levels of the SDLC.

We'll go through each stage and how it ties into the bigger picture in the sections below.

1) Planning stage
2) Feasibility or Requirements analysis Stage
3) Design and Prototyping Stage
4) Software Development Stage
5) Software Testing Stage
6) Implementation and Integration
7) Operation and Maintenance

4.1 Why Agile

Agile software development lifecycle methodology was used to create the project Sheba24. One of the easiest and most successful ways to transform an idea for a company requirement into software solutions is to use the agile software development method. Agile is a term used to describe software development approaches that employ continual planning, learning, improvement, team collaboration, evolutionary development, and early delivery.   It increases adaptability in the face of change.

Agile Development Ensures Success

As agile development is incremental, features are supplied in stages, resulting in immediate advantages as the product is being developed.

➢ Early and rapid development.
➢ A functional, ready-to-market product is achieved after a few revisions.
➢ First Mover Advantage.

Agile means being able to provide products quickly and adapting work methods to meet customer needs.
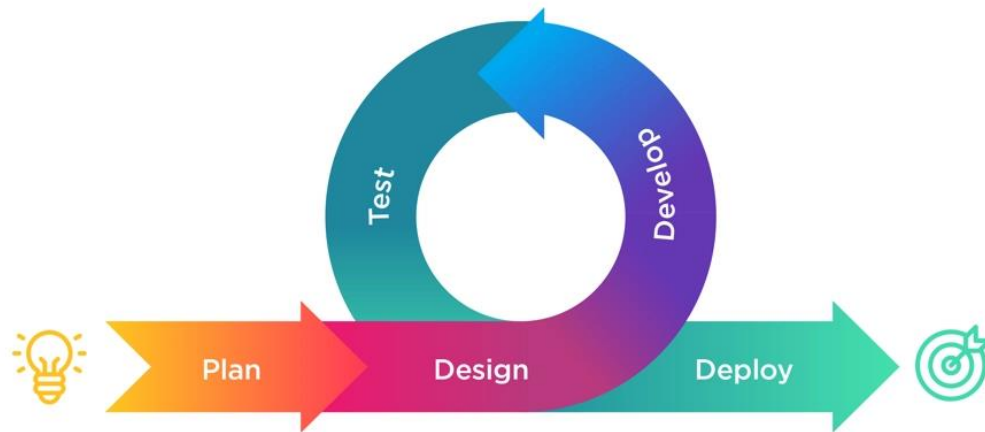
Figure 4.1: Agile Software Development Methodology Model

4.2 Data Table

Patient Data Table:

Name	Data Type	Size
ID	int	10
Docid	int	10
ParientName	varchar	200
PatientContno	bigint	10
PatientEmail	varchar	200
PatientGender	varchar	50
PatientAdd	mediumtext	-
PatientAge	Int	10
creationDate	timestamp	-

Name	Data Type	Size
PatientMedhis	mediumtext	-
updationDate	timestamp	-

Table 4.2.1: Table for Patient data table.

Doctor Data Table:

Name	Data Type	Size
id	int	11
specializiation	varchar	255
docName	varchar	255
address	longtext	-
docFees	varchar	255
contactno	bigint	11
docEmail	varchar	255
password	varchar	255
creationDate	timestamp	-
updationDate	timestamp	-

Table 4.2.2: Table for Doctor data table.

Admin Data Table:

Name	Data Type	Size
ID	int	11
username	varchar	255
password	varchar	255

updationDate	varchar	255

Table 4.2.3: Table for Admin data table.

Chapter 5

Body of the Project

5.1 Work Description

This website will benefit both doctors and patients in situations like Covid-19. Team Trends Bird Limited planned a platform that made healthcare available from anywhere in the country, keeping in mind the difficulties we're going through due to the lockdown. Using technology, specialists can analyze, diagnose and treat patients while staying at home on the "Sheba24" website. Patients and doctors can communicate in both directions.

5.2 System Analysis

5.2.1 Six Element Analysis

Process	System Roles					
	Human	Non-computing hardware	Computing hardware	Software	Database	Communication
Landing	User	N/A	Computer /	Chrome, Firefox,	MySQL	WAN/LAN

Page			Smart Phone	Microsoft Edge, Opera etc.		
Login/Signup	User	N/A	Computer / Smart Phone	Chrome, Firefox, Microsoft Edge, Opera etc.	MySQL	WAN/LAN
Add Doctor	Admin	N/A	Computer / Smart Phone	Chrome, Firefox, Microsoft Edge, Opera etc.	MySQL	WAN/LAN
Add Patient	Admin / Patient	N/A	Computer / Smart Phone	Chrome, Firefox, Microsoft Edge, Opera etc.	MySQL	WAN/LAN
View Appointment History	User	N/A	Computer / Smart Phone	Chrome, Firefox, Microsoft Edge, Opera etc.	MySQL	WAN/LAN
View report	Admin	N/A	Computer / Smart Phone	Chrome, Firefox, Microsoft Edge, Opera etc.	MySQL	WAN/LAN
Patient search	Admin / Doctor	N/A	Computer / Smart Phone	Chrome, Firefox, Microsoft Edge, Opera etc.	MySQL	WAN/LAN
Book Appointment	Patient	N/A	Computer / Smart Phone	Chrome, Firefox, Microsoft	MySQL	WAN/LAN

				Edge, Opera etc.		
View Medical History	Patient	N/A	Computer / Smart Phone	Chrome, Firefox, Microsoft Edge, Opera etc.	MySQL	WAN/LAN
Change password or user name	Admin	N/A	Computer / Smart Phone	Chrome, Firefox, Microsoft Edge, Opera etc.	MySQL	WAN/LAN

Table 5.2.1: Six Elements Analysis of "Sheba24"

5.2.2 Feasibility Analysis

The feasibility study is the test of the proposed system inside the light of its workability, get together of the user's prerequisites, compelling utilize of resources, and of course, cost-effectiveness. The foremost objective of the feasibility considers is not to comprehend the issue but to realize the scope. Feasibility thinks about is carried out based on numerous purposes to analyze whether software items will be right in terms of advancement, implantation, the commitment of project to the organization, beneficial items, and costly upkeep. This as well characterizes the resources required to total the point-by-point examination. The result may be a possibility report submitted to the organization. This may be recognized or recognized with modifications or rejected. The feasibility study itself examines the technical, economic, and financial.

5.2.3 Problem Solution Analysis

The main problem that a web developer has to deal with during the web development process is that the requirements are always changing. According to a poll done by Stack Overflow Developer, 33% of respondents contemplate developing a website with no specified requirements. Gathering requirements is critical before beginning to create any product.

The following is a solution to this problem:

- ❖ Describe the project's scope.
- ❖ Make no assumptions about what is required.
- ❖ Communication between teams is essential.
- ❖ Make a list of requirements.
- ❖ Clients should be involved from the start.

Project Management: Multitasking can sometimes lead to more problems than it is worth. As a result, a skilled planner is necessary to make the work flow smooth and structured. It was tough for me to follow the entire procedure, and on top of that, we were dealing with a pandemic, so everyone had to adapt to a new method, which caused the project to take longer than usual.

Adapting to current market trends: As technology improves, so does the number of users; nowadays, everyone is addicted to their phones, so being mobile-first or mobile-only is a challenge. The solution is to keep up with market developments.

5.2.4 Effect and Constraints Analysis

Effect:

As before when the software was not present. It was difficult for the hospital to keep track of the history. The old system was to keep all details in a documented file. So, finding old histories and records about each hospital was hard and needed a lot of employers. For this reason, software is built to solve this issue. As the data is stored in the database, everything can be queried from the newly built software in a cloud. There will be no more shortages of manpower to go through all of the documents and keep track of everything the process in software.

Constraint:

There are many difficulties while finding a solution for this software. The old system was tried for a while, but the manual process takes longer. The cost for the overall process was higher and the amount was not fixed. But for the current software, a certain amount of money has to be spent on the hosting, domain, etc. At first, the budget of the software was a problem for the

software but later there were some changes that took place and minimized a few functions and workload for the software to meet up with the budget. This software was effective for the company. It saves time and extra money.

5.3 System Design

5.3.1 Rich Pictures:

The rich picture illustration depicts the most important elements and interconnections to consider. It enhances dialogue and leads to a broad, mutual understanding of a situation. It describes a situation's richness and difficulty.

Admin Module:
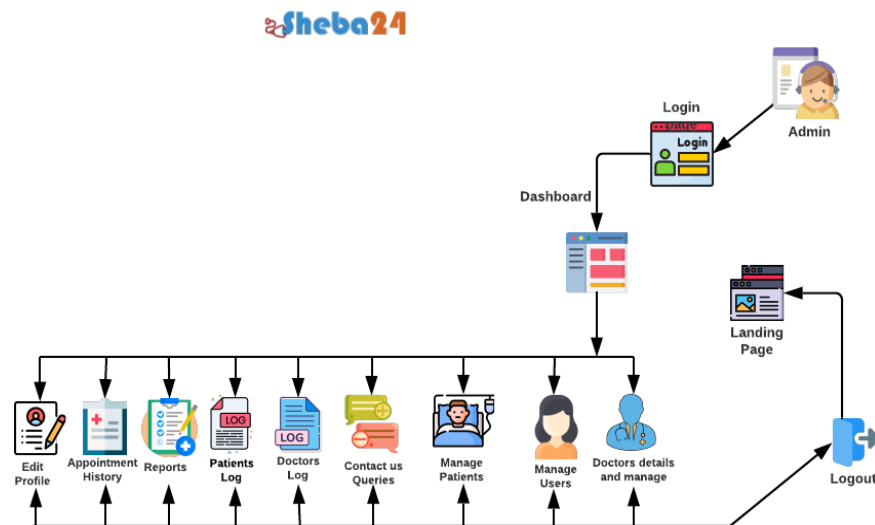
Figure 5.3.1: Admin Rich Picture

Doctor Module:
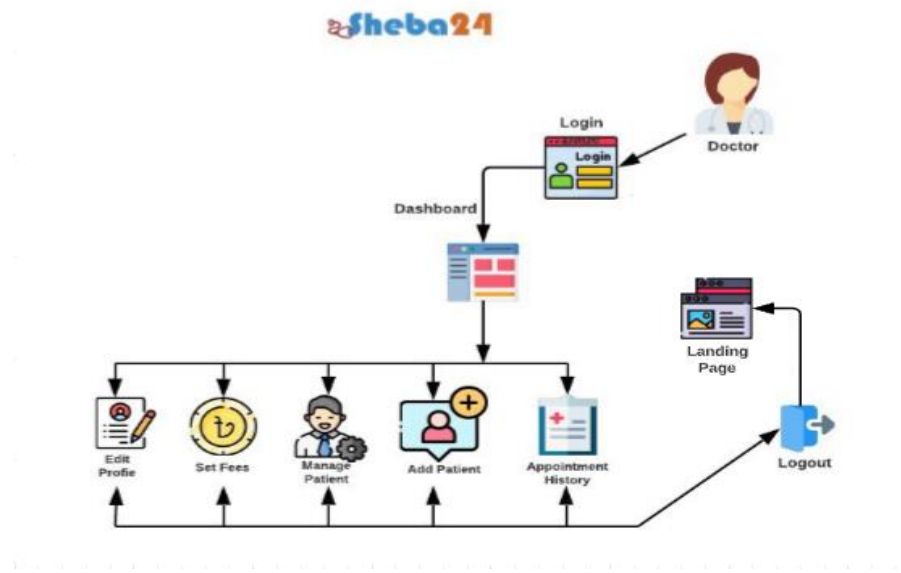
Figure 5.3.1: Doctor Rich Picture

Patient Module:
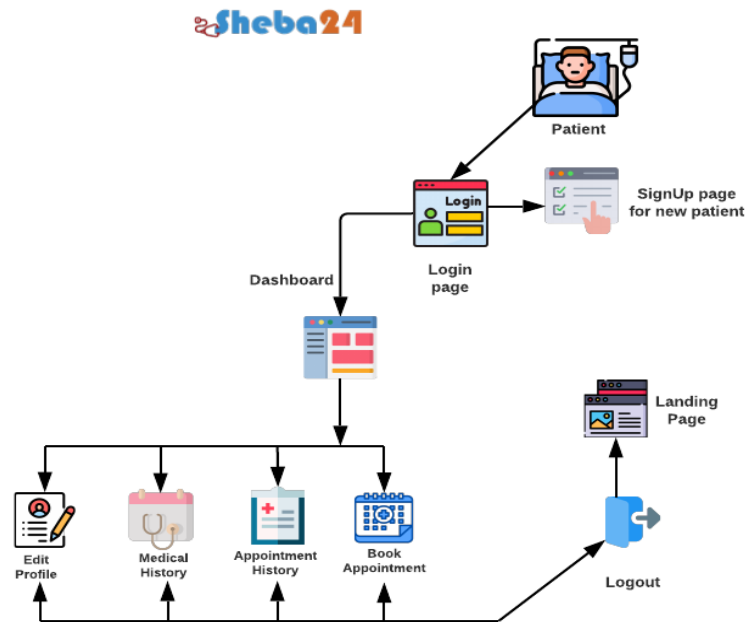
Figure 5.3.1: Patient Rich Picture

5.3.2 UML Diagrams

UML is a system of diagrams which can be used to visualize a software system. Class, activity, object, use case, sequence, package, state, component, communication, composite structure, interaction overview, timing, and deployment are all included in the current UML standards.

There are two types of diagrams in this collection: structural diagrams and behavioral or interaction diagrams.

Use Case Diagram:

The use case diagram shows the system's functional requirements. The actors, cases, communication lines, systems, and relationships are all depicted. The user and the admin are the two actors in this project. This use case diagram depicts the user and admin's activities, as well as the typical behavior from the included use case and optional behavior from the exclusion use case.
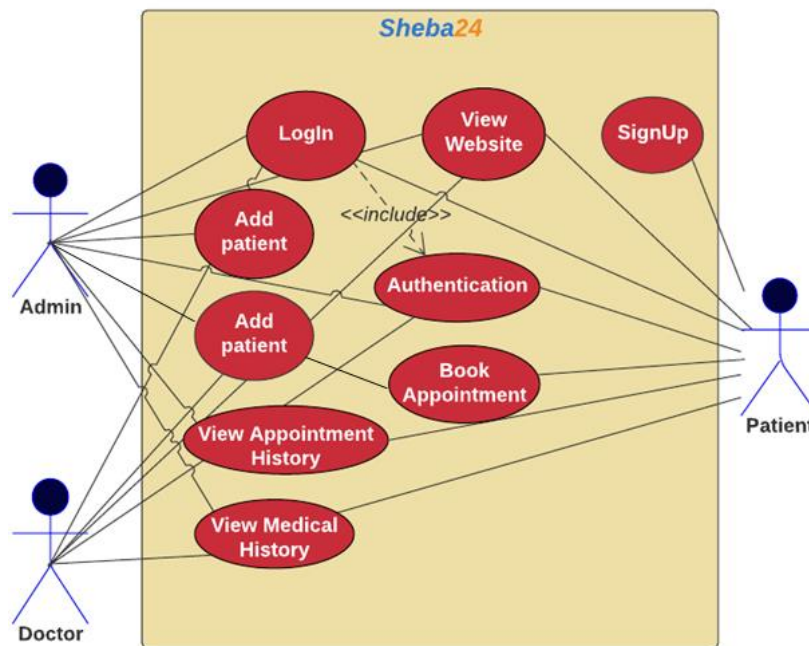
Figure 5.3.2: Use Case Diagram

Activity Diagrams:

An activity diagram is a behavioral diagram i.e. it depicts the behavior of a system. An activity diagram portrays the control flow from a start point to a finish point showing the various decision paths that exist while the activity is being executed.

Activity Diagram of Patient:
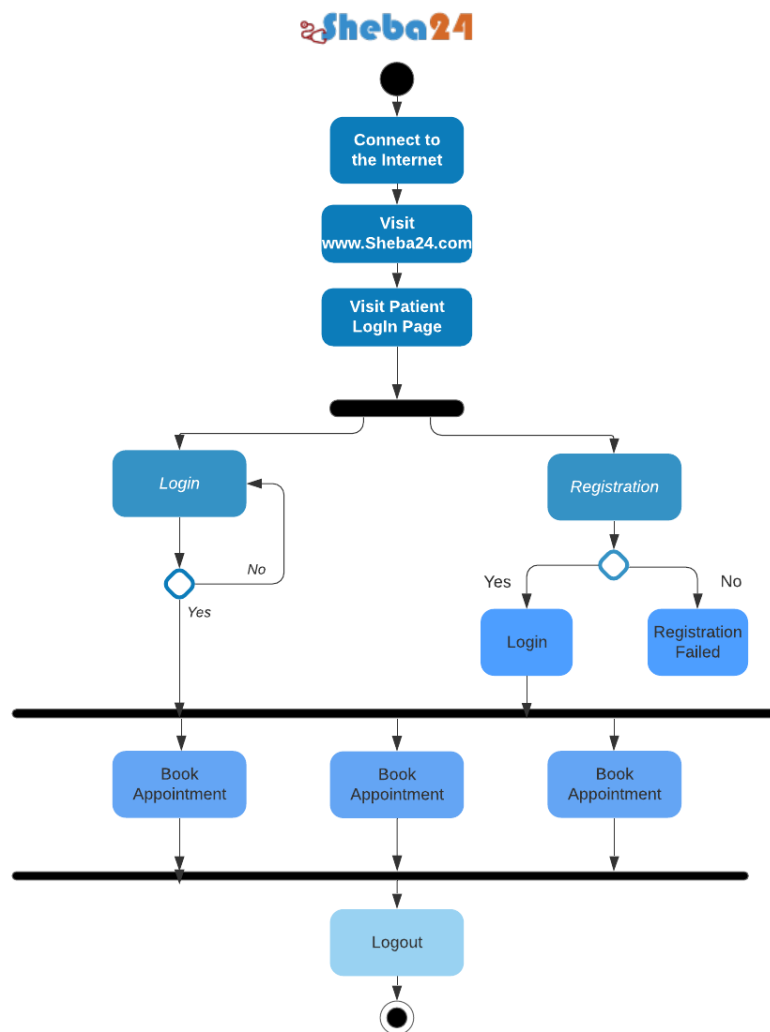
Figure 5.3.2: Patient Activity Diagram

Activity Diagram of Doctor:
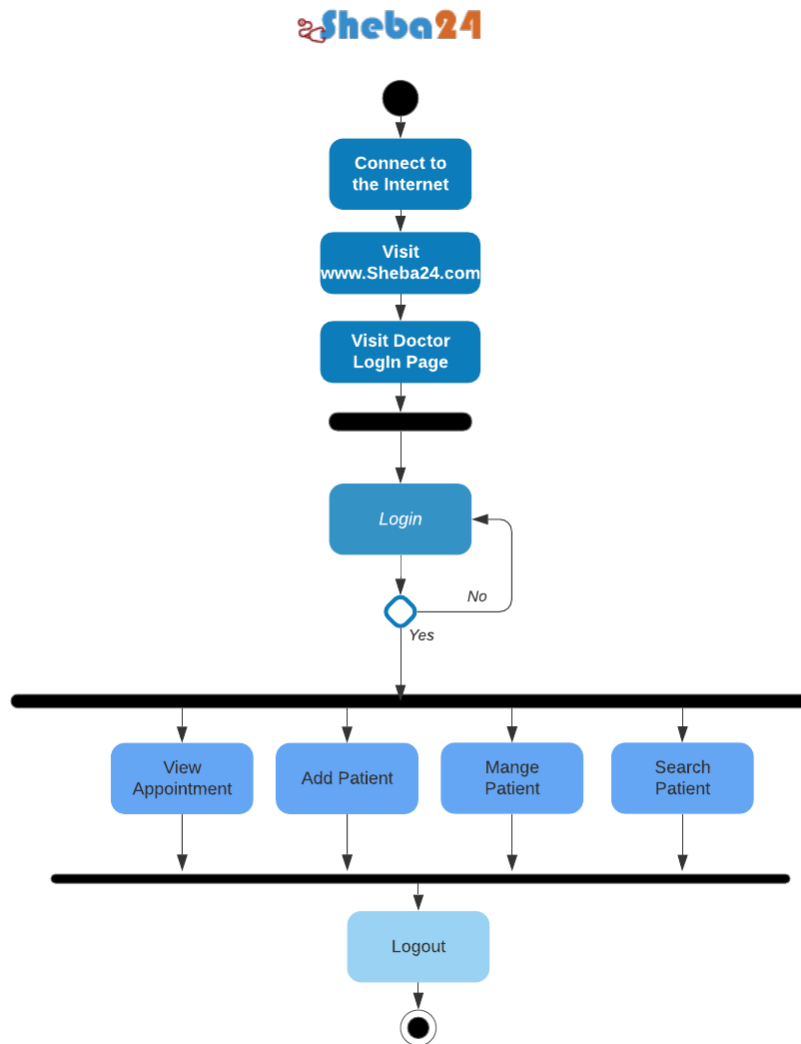
Figure 5.3.2: Doctor Activity Diagram

Activity Diagram of Admin:
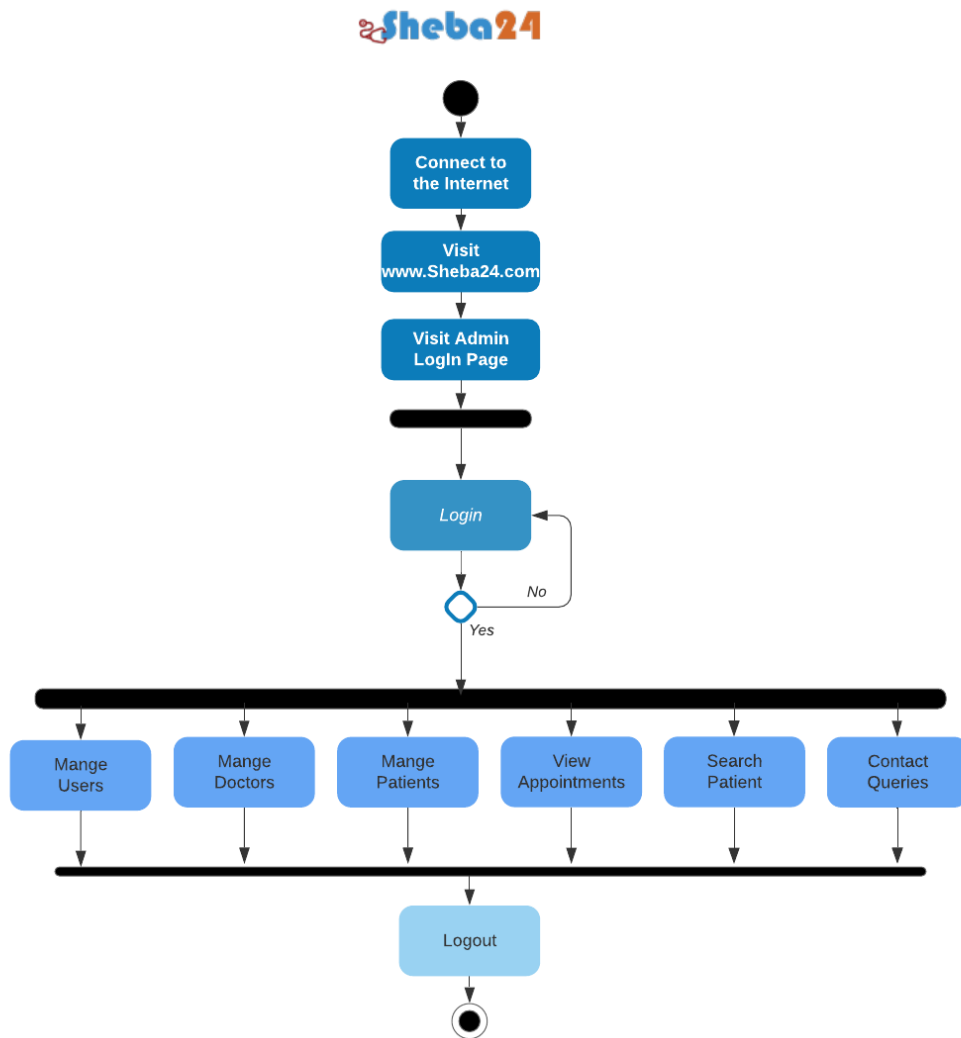
Figure 5.3.2: Admin Activity Diagram

5.3.3 Functional and Non-Functional Requirements

Functional Requirement:

Function Name: Patient sign up		
Input: Provide User information	**Process:** Save sign up details to database.	**Output:** New user created and added to database
Pre-condition: Must be connected to the internet and have devices like computer or mobile. Unique Email		
Post-condition: User visits user Login Page.		
Alternative Options: N/A		
Side Effects: N\A		

Function Name: Contact Us Query		
Input: Provide information and queries.	**Process:** Save query to database.	**Output:** New query will be generated, and the administrator will be alerted.
Pre-condition: Must be connected to the internet and have devices like computer or mobile. Unique Email		
Post-condition: User visits user Login Page.		
Alternative Options: N/A		
Side Effects: N\A		

Function Name: Contact Us Query		
Input: Provide information and queries.	**Process:** Save query to database.	**Output:** New query will be generated, and the administrator will be alerted.
Pre-condition: Must be connected to the internet and have devices like computer or mobile. Unique Email		

Post-condition: Notification of new query created will be given.
Alternative Options: N/A
Side Effects: N\A

Function Name: Book Appointment		
Input: Provide information and queries.	**Process:** Save details of the patient in database.	**Output:** Appointment will be created and doctor will contact patient soon.
Pre-condition: Must be connected to the internet and have devices like computer or mobile.		
Post-condition: Notification of new query created will be given.		
Alternative Options: N/A		
Side Effects: N\A		

Function Name: Change Password		
Input: User email address and new password.	**Process:** Replace old password with new one.	**Output:** New password will be updated and added to database.
Pre-condition: Must be connected to the internet and have devices like computer or mobile.		
Post-condition: User will get notification of password reset successfully.		
Alternative Options: N/A		
Side Effects: N\A		

Function Name: Add Doctor		
Input: Provide doctors information	**Process:** Save details of the doctor in database.	**Output:** New doctor will be created and add to database.

Pre-condition: Must be connected to the internet and have devices like computer or mobile.
Post-condition: Notification of new doctor created will be given
Alternative Options: N/A
Side Effects: N\A

Function Name: Add Patient		
Input: Provide patients information	**Process:** Save details of the patient in database.	**Output:** New patient will be created and add to database.
Pre-condition: Must be connected to the internet and have devices like computer or mobile.		
Post-condition: Notification of new patient created will be given		
Alternative Options: N/A		
Side Effects: N\A		

Function Name: Search patient		
Input: Enter patient name or phone number	**Process:** Call function to go through patient database and find the match.	**Output:** Searched patient will be shown on the screen.
Pre-condition: Must be connected to the internet and have devices like computer or mobile.		
Post-condition: Notification of found patient will be given.		
Alternative Options: N/A		
Side Effects: N\A		

Function Name: Generate Report		
Input: Enter date.	**Process:** Call function to go through that database and generate	**Output:** Creates table and shows

	an automated report within the given date.	report.

Pre-condition: Must be connected to the internet and have devices like computer or mobile.

Post-condition: Notification of new patient created will be given

Alternative Options: N/A

Side Effects: N\A

Function Name: Generate Report		
Input: Enter date.	**Process:** Call function to go through that database and generate an automated report within the given date.	**Output:** Creates table and shows report.

Pre-condition: Must be connected to the internet and have devices like computer or mobile.

Post-condition: Notification of found patient will be given.

Alternative Options: N/A

Side Effects: N\A

Function Name: View doctor session logs		
Input: N/A	**Process:** Call function to go through doctor's session logs database retrieve information.	**Output:** Shows Logs

Pre-condition: Must be connected to the internet and have devices like computer or mobile.

Post-condition: Shows doctors log on screen.

Alternative Options: N/A

Side Effects: N\A

Function Name: Medical History		
Input: N/A	**Process:** Call function to go through patient database obtains information.	**Output:** Shows patients medical history.
Pre-condition: Must be connected to the internet and have devices like computer or mobile.		
Post-condition: Shows medical history on screen.		
Alternative Options: N/A		
Side Effects: N\A		

Non Functional Requirement:

Non-functional requirements specify "what a system should be." It describes the system's quality before it is implemented. It is not concerned with the website's operations, but rather with criteria such as performance, usability, dependability, reaction time, and so on. The following are this website's non-functional requirements.

1. **Portability and Compatibility:** It is not necessary to have high-end devices or equipment to use this portal, any web browser will suffice, but internet connectivity is essential. The portal works on a phone, a table, a laptop, and a desktop computer. It works with any browser or operating system.

2. **Reliability, availability and maintainability:** The site has gone through various performance tests, and the results indicate that the system will function properly for a long time. Maintenance is very simple; the portal has backups, so if the main portal is unavailable, the backup portal may be accessed.

3. **Performance and Scalability:** You won't have to wait long because this system responds quickly. The login procedure is simple and quick, allowing users to access their accounts immediately. Other services, such as making appointments, adding patients, and adding physicians, are equally quick and easy. Every device may access the site since it is responsive. It may be accessed without sacrificing functionality from a phone, tablet, or laptop.

4. **Usability Requirements:** This online application has been designed to be highly user-friendly in order to make it as accessible as possible. The primary goal is to serve patients with proper treatment in time so that patients can quickly communicate their problems and receive assistance. This website does not require a user manual. Even the Admin and doctor panels have been designed to make it simple for them to perform their duties.

5.4 Product Features

5.4.1 Input and Outputs

I have added all the features a user will receive from this project below,

Figure 5.4.1: Landing Page

Contact Us Page: In case of emergency need the user can directly contact to the authority without registration.

Figure: Contact Us Page

Admin Panel:

Admin Login Page: The Admin logs in to their account.

Figure: Admin Login Page

Admin Dashboard:
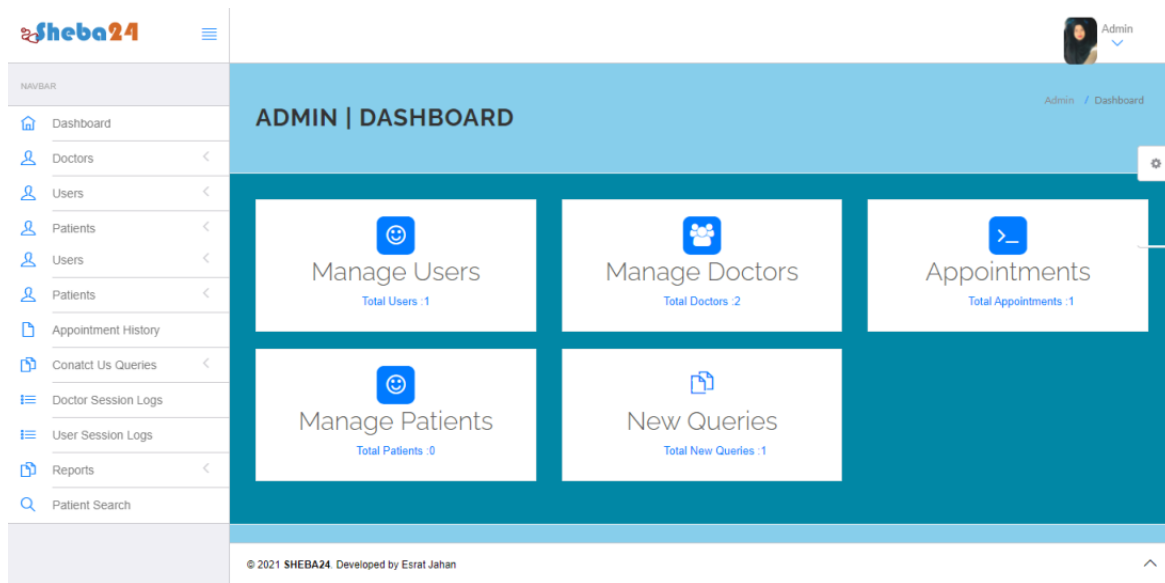
Figure: Admin Dashboard

Figure: Admin Add doctor Specialization

Figure: Admin Add Doctor

Figure: Admin Manage Doctors

Figure: Admin Edit Doctors Details

Figure: Admin Manage Users

Figure: Admin View Patients

Figure: Admin Patients Appointment history

Figure: Admin Contact Us Queries

Figure: Admin Doctors Logs

Figure: Admin User Logs

Doctor Panel:

View Appointment history: The user can view the appointment history.
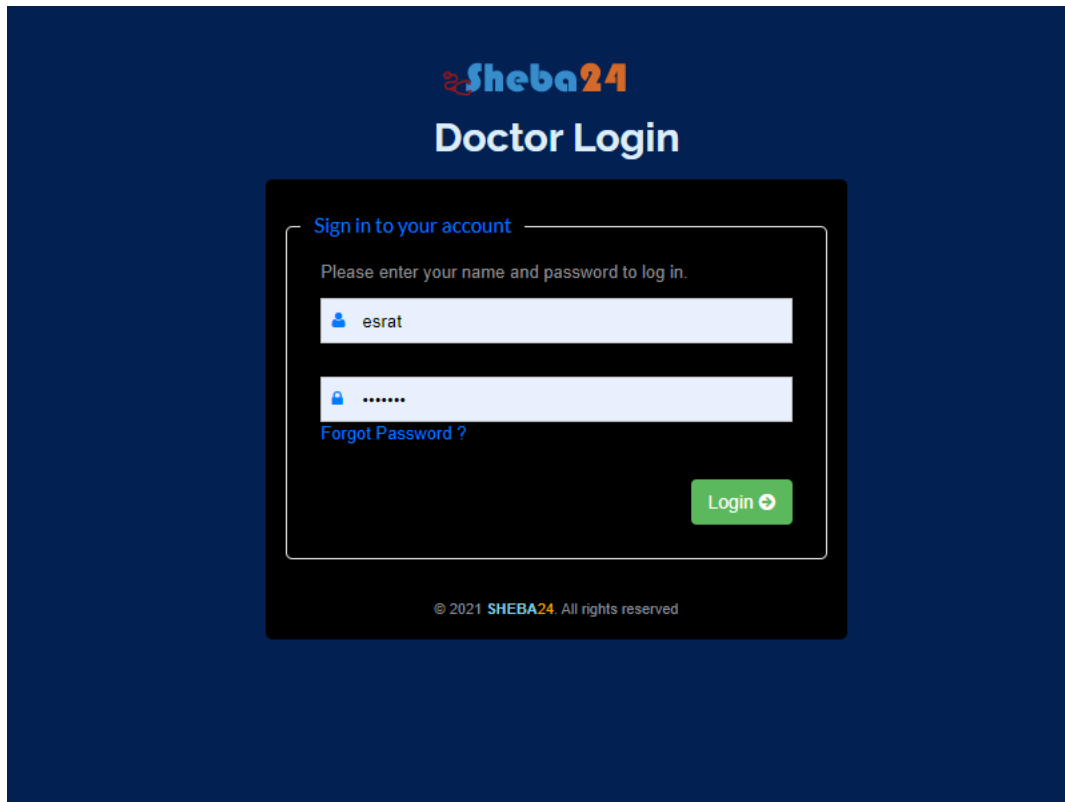
Figure: Doctor Login Page

Figure: Doctor Dashboard

Figure: Doctor Appointment History

Figure: Doctor Add Patients
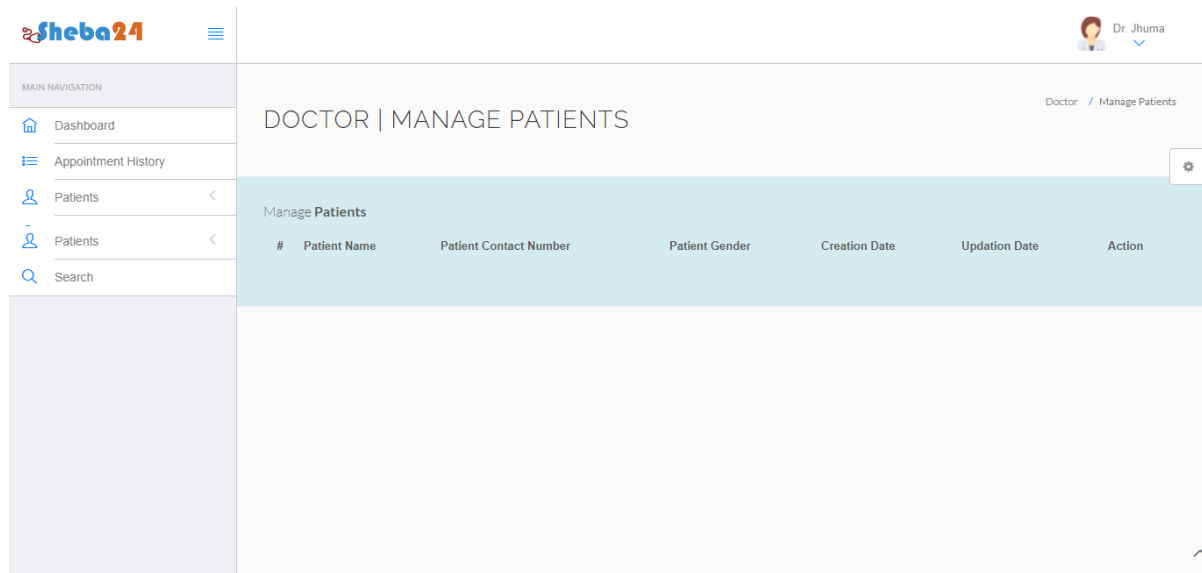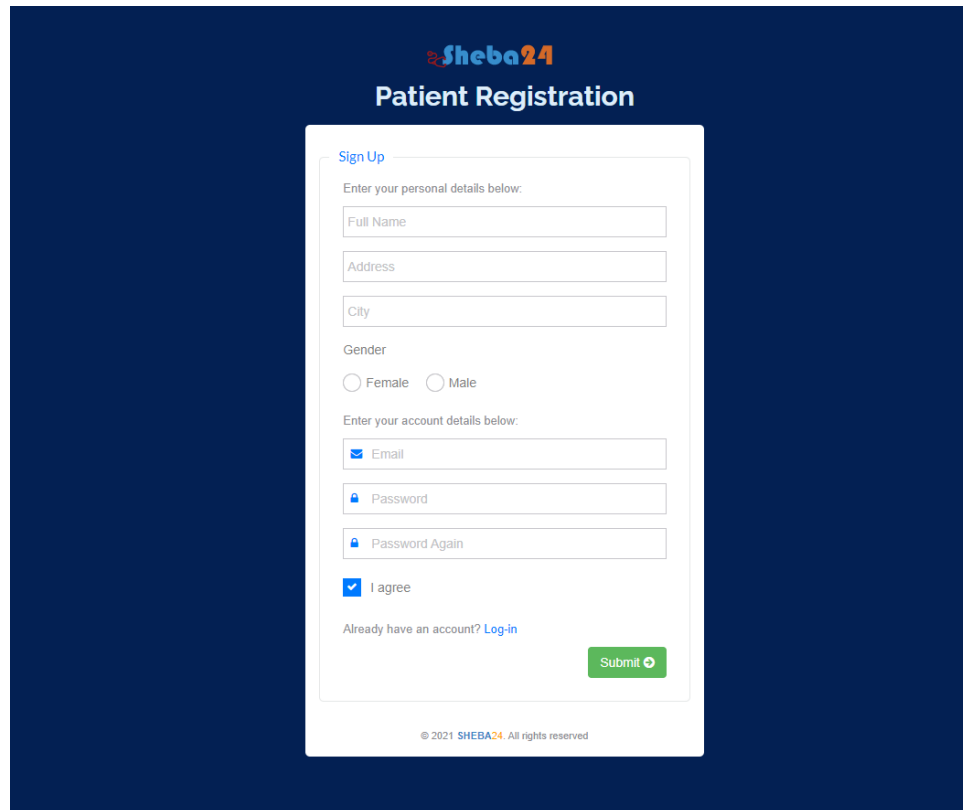
Figure: Doctor Manage Patients
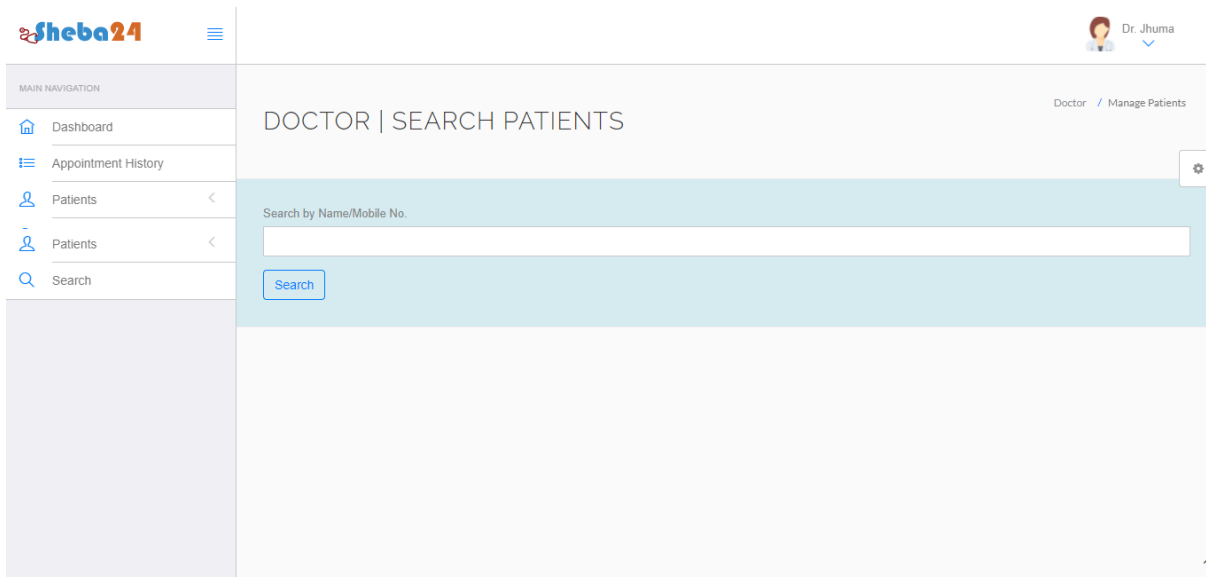
Figure: Doctor Search Patients

Patient Panel:

Registration Page: The user registers to create an account to book appointment.

Figure: Patient Registration Page

Login Page: The user logs in to their account.
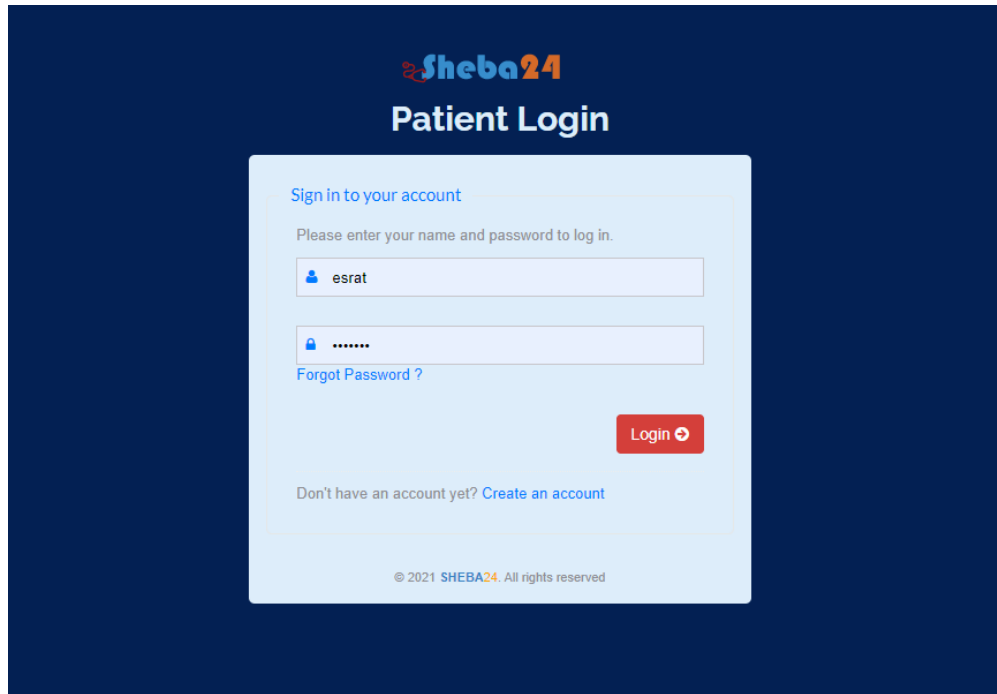
Figure: Patient Login Page

Dashboard: This is user dashboard. They can choose any option what they need.
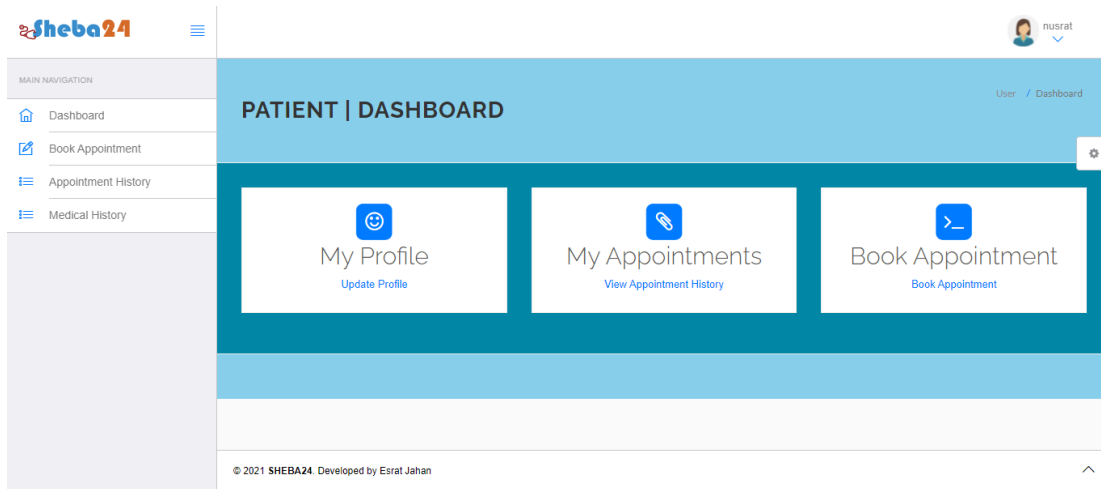
Figure: Patient Dashboard

Book Appointment: The user inputs information about their issue and book appointment.

Figure: Patient Book Appointment

View Appointment history: The user can view their appointment history for their medical purpose.

Figure: Patient Appointment History

View Medical history: The user can view the medical history.
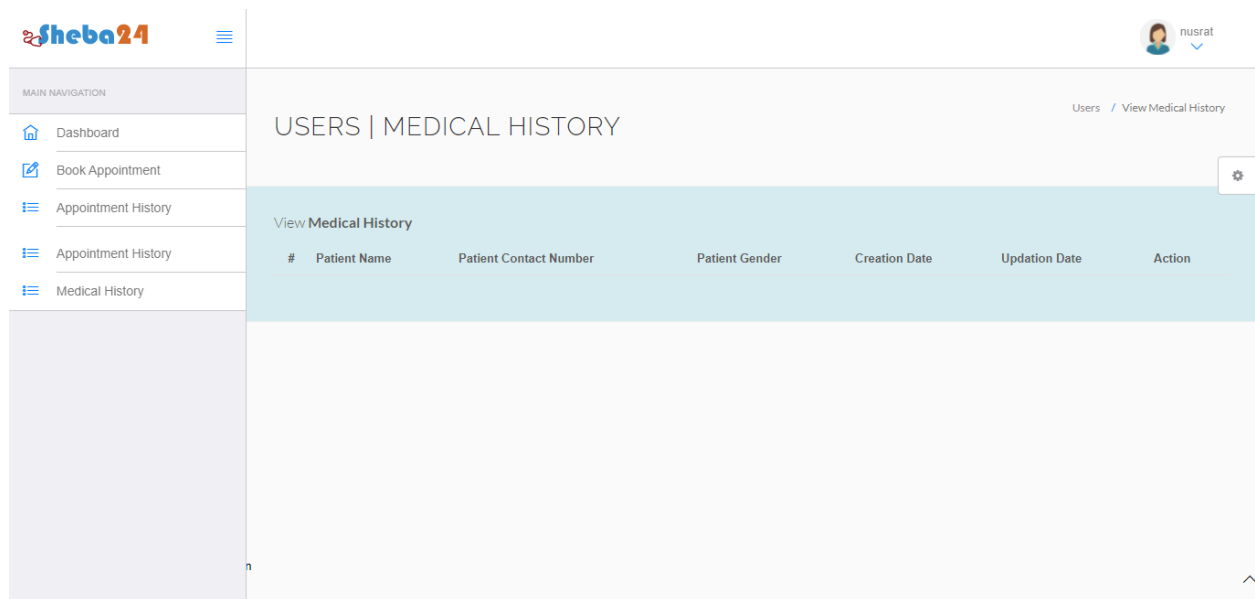
Figure: Patient Medical History

5.4.2 Architecture

This gateway is built using the model view controller pattern, which is divided into three parts: model, view, and controller. All data-related logics are executed in the model view, all UI logics are done in the view model (for example, text boxes and buttons that the user interacts with), and finally, the controller model connects the model and view models
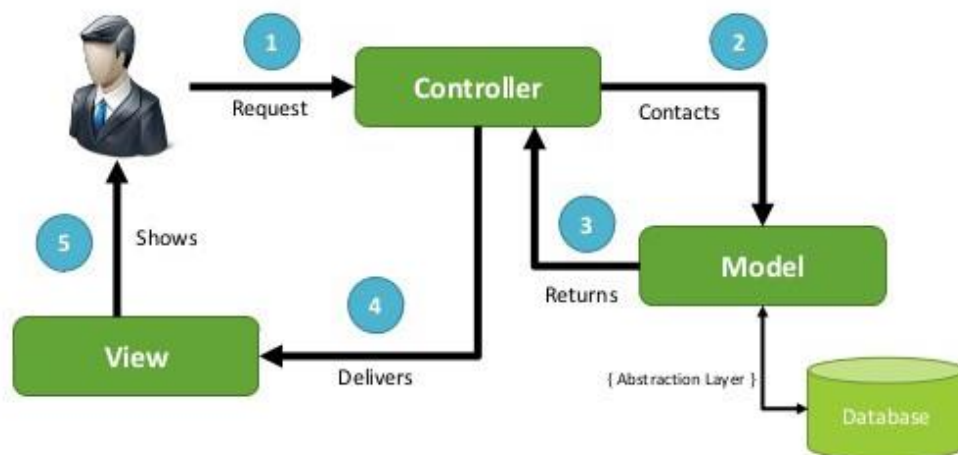
Chapter 6

Result and Analysis

While testing the program, there were several issues. This was a minor issue that we were able to resolve. After the resolving of these issues, test cases were documented. Testing methodologies have been used to justify all test cases. We did our testing on a local server. We'll test everything on the hosting again after it goes online. As a result, various modifications may occur at that time. There are few integrations possible. But it will be added in the future. So, all the tastings are not done. But up to the current feature available, all the testing is done, and it is running fine. But live testing with users is not done. Due to the pandemic, it was not possible.

Software Testing

Software testing determines the safety, accuracy, and quality of new software. Approval refers to the process of verifying that the generated computer software fits the clients' requirements. The main goal of software testing is to find bugs in the program.

The table below shows the results of tasks that I have worked on. Each of the tasks is only provided if and only if it meets the requirements successfully.

Task	Description	Conditions	Success Rate	Error Rate	Shortcomings	Status

			100			Working
Patient Signup	User needs to successfully register in order to Book Appointment	User needs to have a computer, laptop or smart phone connected to an internet. User needs to enter an unique email address in order to Complete the registration.	100			Working
Book Appointment	User can Book Appointment	User needs to login.	100			Working
View Appointment History	User Can View Appointment History	User needs to login.	100			Working
View Medical History	User Can View Medical History	User needs to login.	100			Working
Update Profile	User can update/modify their profile and reset password	User needs to login.	100			Working

Table 6.1: Result Table for Patient

Task	Description	Conditions	Success Rate	Error Rate	Shortcomings	Status
Doctor Login	Doctor needs to successfully login in order to check Appointment.	Doctor needs to have a computer, laptop or smart phone connected to an internet. Engineer needs to enter an unique email address in order to login.	100			Working
Add Patient	Doctor can add Patient.	Doctor needs to login.	100			Working
Manage Patient	Doctor Can Manage Patient	Doctor needs to login.	100			Working
Update Profile	Doctor can update/modify/reset their profile	Doctor needs to login.	100			Working

Table 6.2: Result Table for Doctor

Task	Description	Conditions	Success Rate	Error Rate	Shortcomings	Status
Appointment List	Admin can view Appointment history till date	Admin needs to login with verified username and password	100			Working
Add doctor	Admin can add doctor whenever need	Admin needs to login with verified username and password.	100			Working
Manage doctors	Admin can edit or delete doctors	Admin needs to login with verified username and password	100			Working
Manage users	Admin can delete users	Admin needs to login with verified username and password	100			Working

Manage patients	Admin can delete patients	Admin needs to login with verified username and password	100			Working
Contact Queries	Admin can check read/unread queries	Admin needs to login with verified username and password	100			Working
Doctors log	Admin can view doctors session log	Admin needs to login with verified username and password	100			Working
Users log	Admin can view users session log	Admin needs to login with verified username and password	100			Working
Change Password	Admin can change password	Admin needs to login with verified username and password	100			Working

Table 6.3: Result Table for Admin

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project

One of the most significant issues in the world of web application software development has been the development of long-term software. Goals for sustainable development are to meet current demands while protecting the viability of shared systems and the environment, so that future generations' ability to satisfy their own needs is not compromised. Maintenance of the system is done on a regular basis to keep the program more long-lasting. Everything has become more digital in their method, from ordering food to reserving aircraft tickets.

During this difficult Covid period, most of the people are concerned about their health and sacred to visit hospital physically. So they're becoming dependent on virtual environment and want to get treatment staying at home. It is a hint that the use would increase even further in the future. Considering, the current risky situation and online dependency of people, it is easily understandable that "Sheba24" is highly sustainable.

7.2 Social and Environmental Effects and Analysis

Social Effect:

Health-care problems are becoming more common by the day, and in order to satisfy the demand, a platform is required. Tele-health care is redefining the healthcare system's environment. Many new organizations are offering healthcare services via social media and web portals, and the number of these businesses is growing as people enjoy and adapt to this service. Local hospital treatments are being supplemented by telemedicine. Mainly the most important effect of the Hospital Management System on a social level is its time saving and hassle free quality.

Environmental Effects:

The virtual health care system aided so many patients during this pandemic that they are considering consulting a doctor online for post-pandemic treatment. This became the standard for seeing a doctor. This technology is also incredibly eco-friendly since it reduces carbon

emissions. For example, individuals generally drive to the hospital or clinic to see a doctor, but now they get consulted from a doctor while at home, they don't need to visit hospital. It also helps to reduce medical office waste. For example, when a patient leaves a doctor's room, the room must be cleaned for the next appointment, which generates trash.

7.3 Addressing Ethics and Ethical issues:

Ethics is the consider of esteem concepts such as 'good,' 'bad,' 'right,' 'wrong', 'ought', connected to activities in connection to bunch standards and rules. In this digital world, imitating someone has become quite easy. Without your knowledge, someone can try to mimic you and use your identities to do something unlawful or commit a crime. It became critical to protect user data; otherwise, a hacker might simply get access to the system and steal personal information. But this website does not hold any ethical hazard.

- **Data security:** The server and database system will be accessible only to the lead developer. The database is protected by a user name and password; without this logging information, no one else will be able to access the data.
- **No Discrimination:** There has no discrimination based on race, sexuality, gender, religious beliefs, color, language, political or other perspectives, national or social origin, property, birth, or other status.
- **Fraud and Identity Theft:** The website does not provide access to the database by any third-party programs. No other data is saved other than what the user submits. Users will not need to provide any bank account or card information because this system does not have a payment gateway.

Chapter 8

Lesson Learned

8.1 Problems Faced During this Period

Internship is completely a new experience for me. I faced some challenges and problem during my internship period. But this experience is completely a new learning for me and I have enjoyed it.

- ➢ It was unfortunate that my internship was at covid pandemic so we had to continue work from home so i did not get the chance to directly work and communicate with my seniors and there I had some issues understanding some problems. As an intern I had to adopt with the fast pace of my seniors and it was a tough challenge.
- ➢ It's taken a lot of time to learn and collect and study all the documentation for my project.
- ➢ At the beginning the 10am to 7pm work life was so tiring for me. I was not habituate with this situation before. So it was a difficult situation for me. But after some days I habituate with the entire situation with the cooperation and support of seniors.
- ➢ Communication was also a big issue.

8.2 Solution of those Problems

- I need to take initiative and make communication happen.
- Maintaining a whatsapp group helped to ease communication gaps.
- Having daily scrum meeting can bring everyone in one place and knowledge sharing sessions can be conducted.

Chapter 9

Future Works & Conclusion

9.1 Future Works

In the future, we are planning to add more features to "Sheba24" to make it more user-friendly and for better user experience and faster response in the system; they can change the UI and UX design and maintain it. Then the user experience will get faster. In my opinion, Trends Bird Limited can include features such as a payment gateway, premium features, instant messaging, video consultancy, and a new user Nurse to improve the user experience and response time in the system. In the future, the system could be enhanced to be more user-friendly and dynamic.

9.2 Conclusion

This was an amazing project to work on, considering the current pandemic situation, and I learnt a lot about the process. I have obtained a lot of experience and knowledge from Trends Bird Limited. An internship is a great opportunity to achieve this experience. The internship was also good to find out what my strengths and weaknesses are. This helped me to define what skills and knowledge. Now I have the knowledge of how to design a website from scratch. A lot of new ideas have come to mind, as well as various difficulties that could develop in a system. I'm not going to promise that this program has all of the features you're looking for. It has incredible functionality, but when working on it, I discovered how we can make it even better for us. This project has been a lot of fun for me, and I want to keep working on it to improve it.

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