



An Undergraduate Internship on Care For You Web Application

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Dissertation submitted in partial fulfillment for the degree of Bachelor of
Science in Computer Science

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Attestation

I hereby attest that this report and Project on 'Care For You' is all my work and has not been copied in part or whole from any other source except where duly acknowledged. All use of formerly posted published work like the article, journal, paper, and the internet site has been recounted in the essential record within the Bibliography chapter.

Eraj

September 11, 2021

Signature

Date

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Name

Acknowledgement

First and foremost, I desire to express my most profound sense of gratitude to Almighty Allah, and it is because of His mercy and blessing that I have come so far. It has been a great privilege to work for Techdojo as an Intern. During the internship period, I have learned and applied the knowledge gained from my university courses. I was introduced to new cutting-edge technologies like React.js, Redux, Node.js, Next.js, React Native, and so much more. I have received so much support and encouragement from the individuals of Techdojo who have years of experience in Software Development. I would like to thank the Techdojo members for their precious time and knowledge, which is so necessary to complete this report.

From the core of my heart, I want to thank my faculty advisor, **Mrs. Romasa Qasim**, Lecturer of School of Engineering and Computer Science, for her knowledge and tolerance and for giving me the chance to gain from her. Her direction and support were the most imperative resources that prompted the finish of this venture. Likewise, I might want to thank my external Supervisor and mentor, **Ms. Shama Hoque**, for allowing me to be a part of this organization. I am grateful for the unprecedented support and guidance. Without this, the project would never be possible.

Finally, I proudly acknowledge the great sacrifices, best wishes, spiritual support, good advice, inspirations, and support from my family members, relatives, and friends during my Internship.

Letter of Transmittal

September 2, 2021

Romasa Qasim
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Subject: Submission of Internship Report, Summer 2021.

Dear Ma'am,

It gives me enormous pleasure to submit the internship report on "Care For You." I am submitting this report as part of fulfilling the requirement for a Bachelor of Science degree in Computer Science from the Independent University of Bangladesh. In preparing this report, I have tried to include all the necessary information to make the report communicative and comprehensive. I finished my Internship in "Techdojo," that is a Software Company. During my internship period, I gained practical experience and understood the department's work process and its various aspects. The following report is based on my experience and the work I have done at this company. The report also includes a detailed assessment of the office and its functions. Project work that I did during my internship, especially the requirements, functions and specifications of the project.

I pray and hope that this report is very interesting and meets your expectations. I have done my best to avoid my deficiencies, and I hope that they will like my report. I would also like to thank you again for giving me the opportunity to present this report.

Sincerely yours,
S. M. Mohaiminul Islam Eraj.
ID: 1721499

Evaluation Committee

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Supervisor

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Internal Examiner

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Convener

Abstract

In recent years, a lot has happened that rendered the online platforms as "normal" and physical interactions as "unsafe." There are online platforms to share rides, take out food, shopping, and whatnot. The time is now to present a new and useful platform to aid the medical side of things. In addition, our society is very much ignorant of health affairs. Another problem that is taking over, which is, fake news is spreading from different sources off the internet.

To deal with such a situation, a specific group of developers at Techdojo, including myself, have decided to work on the Health Care Platform, a website for patients to diagnose their health problems through appointments that takes place online. The app also provides verified articles, builds awareness, and stops fake news from spreading. The background, scope, objectives, and other analytical points about this game will be discussed in detail in this report. The company Profile of Techdojo will also be addressed.

The report is based on the development of a website for a healthcare-tech company called Care For You. The site is intended to provide users with important information about health-related content and will be reviewed by doctors/healthcare professionals, and invalid articles will be asked for the review to stop fake news from spreading and this is also a platform where patients can interact with doctors and talk to specialists to diagnose their health problems. Which makes it also a telemedicine platform

The following report also details all of my work during my internship as a Software developer trainee at Tech Dojo.

Keywords— healthcare, content, platform, telemedicine

Contents

Attestation	i
Acknowledgement	ii
Letter of Transmittal	iii
Evaluation Committee	iv
Abstract	v
1 Introduction	1
1.1 Overview/Background of the Work	1
1.2 Objectives	1
1.3 Scopes	2
2 Literature Review	3
2.1 Relationship with Undergraduate Studies	3
2.2 Related works	3
3 Project Management & Financing	5
3.1 Work Breakdown Structure	5
3.2 Process/Activity wise Time Distribution	6
3.3 Gantt Chart	6
3.4 Process/Activity wise Resource Allocation	7
3.5 Estimated Costing	8
4 Methodology	10
5 Body of the Project	13
5.1 Work Description	13
5.2 System Analysis	13
5.2.1 Six Element Analysis	14
5.2.2 Feasibility Analysis	14
5.2.3 Problem Solution Analysis	15
5.3 System Design	16

5.3.1	Rich Picture	16
5.3.2	UML Diagrams	17
5.3.3	Functional and Non-Functional Requirements	17
5.4	Product Features	20
5.4.1	Architecture	20
6	Results & Analysis	21
6.1	Results	21
6.2	Analysis	28
7	Project as Engineering Problem Analysis	29
7.1	Sustainability of the Project/Work	29
7.2	Social and Environmental Effects and Analysis	30
7.3	Addressing Ethics and Ethical Issues	30
8	Lesson Learned	31
8.1	Problems Faced During this Period	31
8.2	Solution of those Problems	31
9	Future Work & Conclusion	32
9.1	Future Works	32
9.2	Conclusion	32
	Bibliography	33

List of Figures

3.1	Work Breakdown Structure of "Care For You"	5
3.2	Gantt Chart	7
4.1	Commits in Github	12
5.1	Rich Picture of "Care For You"	16
5.2	UML Diagram of "Care For You"	17
5.3	Next.js Architecture	20
6.1	Login Page of "Care For You"	22
6.2	Create article page	22
6.3	Regular Profile User View	23
6.4	Doctor's Home page view	23
6.5	Doctor's Profile view	24
6.6	Doctor Forwarding an article for revision	24
6.7	Users Home page view when they receive request for article revision	25
6.8	Doctors feedback from users-end	25
6.9	Update Article View	26
6.10	Doctor approving the article	26
6.11	Search article dynamically	27
6.12	Future Work for Doctors Profile	27
6.13	Future Work for Patients Profile	28

List of Tables

3.1	Activity wise time distribution for version	6
3.2	Activity wise time distribution	8
3.3	Estimated Costing of the project	9
5.1	Six Element Analysis	14
5.2	Functional Requirement 01- Compatibility	18
5.3	Functional Requirement 02- Add article	18
5.4	Functional Requirement 03- Update user profile	18
5.5	Functional Requirement 04- Approve pending article	19
5.6	Functional Requirement 05- Communicating with the doctor's	19
5.7	Functional Requirement 06- Delete User	19

Chapter 1

Introduction

Web application development is the processes and procedures involved in writing software for small, large, wireless computing devices. This chapter gives an overview of the project and its features. The purpose of this project is to present my experience of working on a team of developers who contribute to the development of a consumer-facing Web Application named "Care For You." In this process, I got introduced to the technologies that are used in the Software Development phase. I learned about developing a User Interface with a popular JavaScript library -React, which is created by Facebook. I also learned how to develop mobile applications using a JavaScript framework-React native and do server-side rendering with Next.js, another development framework for react.js. In this timeline, I progressively got familiarized with some of the Software Engineering processes and tools involved in taking an application from Inception to Development and production. This report provides an overview of the "Care For You" user interface design and my experience working as an intern.

1.1 Overview/Background of the Work

A Health Care platform that provides verified health-related content and doctors/medical experts will verify it, and incomplete or flawed articles will be asked for a review to stop fake news from spreading and this is also a platform where patients can interact with doctors and talk to specialists to diagnose their health problems. In the website, a patient can register themselves by providing their basic information and their medical reports. Similar steps are required by a doctor as well to register, which is the essential information which is a medical license and referral code by another doctor. Doctors are entitled to show their weekly schedules to open up appointments to the patients. The appointments are held online. The doctor will have access to the patient's medical history and will advise as per the conversation goes.

1.2 Objectives

- A platform where users can find articles or health-related content that are verified by medical experts.

- A platform should allow doctors and patients to monitor all the patient's medical reports
- A system that allows doctors to give advice to their patients from their own devices of all sizes, which are connected to the internet
- A web application with a very user-friendly UI
- A system that records patient details on a cloud database
- A system that is completely secure

1.3 Scopes

- People will be moving away to take medical advice from an inexpert like village doctor or medicine seller.
- Generally, people have to wait in a long queue to meet an expert. This service is helping people to relief from this.
- In Covid 19, social distance is being mandatory to keep safe. This service helps both patients and experts to keep them safe.
- Fake news is spreading day by day everywhere around the world. For the people, it is almost impossible to identify. Maya shop is being a solution to buy original medicine.

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

Almost all undergraduate courses provided me with knowledge and skills that I have gained and the logic that I have developed over the years from these courses helped me build up this "Care for you" project much smoothly. Some courses helped me indirectly, and some are related to this project. From Object Oriented Programming course I have learned how to write modular programs, which made codes less repetitive and more reusable. It helped me design the "Care For You" project in a modular format. This modularity concept later helped me work with and design the React.js on the client-side for the "Care For You". This allowed me to avoid writing repetitive code. And for Database management I have learnt to design and plan a project before diving into the development phase. It covered popular planning and strategy practices such as System Development Life Cycle, Rich Picture, Requirement Analysis, Entity Relationship Diagram, Business Process Model and Notation Diagram and many more. These techniques helped in the development planning and strategy of "Care For You" project. In Database Management course I have learned a lot of new web technologies in a noticeably short time which left a lot of gaps in understanding all other technologies other than MySQL. But in this course, I have also got introduced with NoSQL (MongoDB) to store data. Other than that, this course also covered HTML, CSS, JavaScript, Node.js, Express.js. The tools and technologies learned from this course immensely contributed to the development of "Care For You" Project.

2.2 Related works

As Bangladeshis, we know what it means to see a doctor. The whole day will be lost. Because of Covid19, humanity is forced to come up with a solution to how to treat non-Covid patients without allowing them to mix with other patients in the hospital. , telemedicine was invented. On November 09, 2015 - Telemedicine technology first began as healthcare delivery in the late 1960s due to the needs of the Nebraska Psychology Institute and the National Aeronautics and Space Administration, according to a paper written by researchers from Saint Louis University and Bentley University and published in the Public Health [1] Since then,

it has gained popularity all over the world. Why not? This is a great alternative to going to the hospital waiting for hours to see a doctor within 10 minutes. The popularity spread to Bangladesh as well. Compare to other projects developed so far in our project users can also find verified health-related content from our platform. People who can't afford to take appointments can also get the benefit from our platform. Care For You is a healthcare-tech company and worldwide, there are many software companies who have offered healthcare-related services. Some of them are listed below:

HealthTap: Founded in 2010, HealthTap is a technology company that provides patients to ask questions and get consultancy from licensed physicians through message and video chat. They provide their services through a website (www.healthtap.com) and their smartphone app. Currently, they provide their services across 170 countries. [2]

Wellframe: Founded in 2011, Wellframe is a US-based Healthcare organization. Wellframe connects healthcare specialist with patients and provide access to vital medical data and reminders through their UX friendly smartphone app. Currently, they are successfully running their services simultaneously through their website (www.wellframe.com) and smartphone app. They have around 150 employees in their team. Their goal is to create healthcare relationships through an innovative approach that uses high-tech to deliver the high-touch. They call it Digital Health Management. This makes healthcare and vital medical data more accessible to a large scale of people. [3]

MDLIVE: Founded on 2009, MDLIVE is a healthcare company based on the USA. They provide health plans, health consultations through certified doctors, pediatricians, and licensed therapists. They provide their services through their website (www.mdlive.com) and smartphone app. Currently, the company is acquired by Evernorth. MDLIVE has managed to get 174 million USD as funding since 2009. [4]

Doctor Dekhao: Founded in 2018, Doctor Dekhao is a telehealth company based in Bangladesh. They provide doctor on-demand services like e-prescription, video consultation, among others. They provide their service through their smartphone app.

DocCure Health Tech Limited: DocCure provides expert medical advice and healthcare through online video consultation. Doc Cure Health Tech Limited is a digital healthcare industry. They provide 24- telehealth service by their in-house doctors. This project is implemented by Joy Technologies Limited. This company set its goal that provides quality health care as well as builds a community. [5]

Chapter 3

Project Management & Financing

3.1 Work Breakdown Structure

WBS is a process for completing a complex multi-step project. It's simply a way to break down and handle large projects faster, more effectively, and more efficiently. The work breakdown structure (WBS) is a hierarchical tree structure that divides a project into smaller chunks. The goal of a WBS is to make larger projects more manageable. So that the work can be done by different team members at the same time, resulting in better team productivity. Below is the WBS of the "Care For You" project.

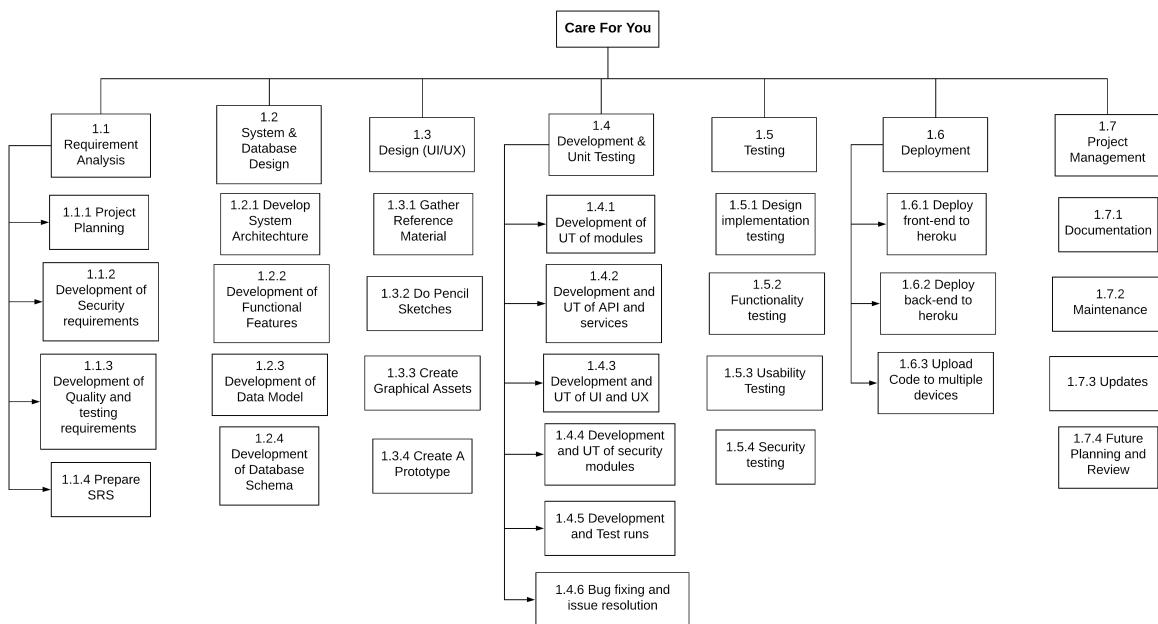


Figure 3.1: Work Breakdown Structure of "Care For You"

3.2 Process/Activity wise Time Distribution

The activity-wise time distribution sequence and estimated time are given below

Serial	Activities	Time duration (Hour)
1	Analyze and document system requirements	24
2	Risk Analysis	3
3	Feasibility Analysis	4
4	Work Breakdown Structure	2
5	Prepare Gantt Chart	3
6	Budget Preparation	48
7	Prepare Class Diagram	24
8	Prepare Use Case Diagram	4
9	Prepare Process Diagrams	2
10	Rich Picture	3
11	Prepare System Architecture Design	2
12	Prepare UI design	6
13	Implements UI design	48
14	Develop API	24
15	Prepare Test cases	48
16	Execute test cases	24
17	Risk mitigation	5
18	Quality Assurance Audit	4
19	Finalize Documentation	24
20	Total	304

Table 3.1: Activity wise time distribution for version

3.3 Gantt Chart

A Gantt chart is designed to help plan and plan project tasks. Helped estimate how long the project should take, determine the resources needed, and plan the order in which the tasks

3.4. PROCESS/ACTIVITY WISE RESOURCE ALLOCATION & FINANCING

would be completed; it also helped manage dependencies between tasks. The Gantt chart was also useful for monitoring the progress of the project after it started, it helped to have a clearer view of what should have been achieved in a given time frame, and if the project fell behind on schedule, it was then took the appropriate action to get it back. To learn. The following Gantt chart was created to manage the "CARE FOR YOU" project.

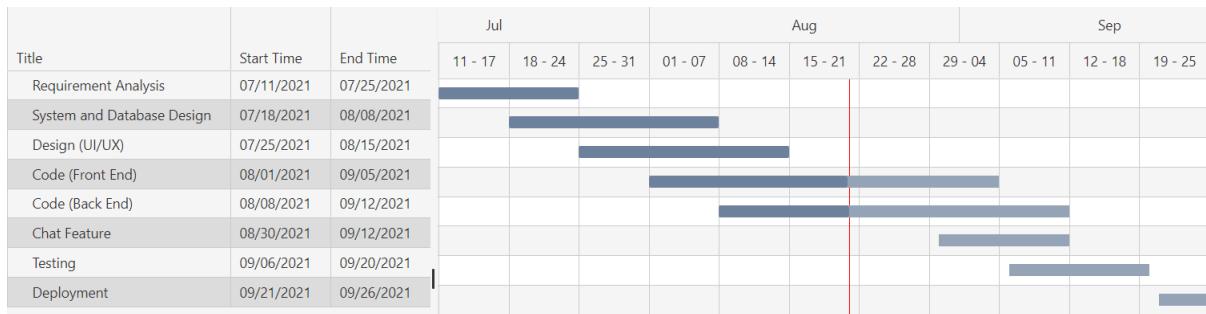


Figure 3.2: Gantt Chart

3.4 Process/Activity wise Resource Allocation

We figured out the activities that need to be done to complete the project while developing WBS. Before allocating resources per activity, we need to figure out what resources we have and how to distribute them to complete the project within the estimated time.

Serial	Activities	Assigned
1	Analyze and document system requirements	Project Manager, Business Analyst, Tech Lead
2	Risk Analysis	Project Manager, Tech Lead
3	Feasibility Analysis	Project Manager
4	Work Breakdown Structure	Project Manager
5	Prepare Gantt Chart	Project Manager
6	Budget Preparation	Project Manager, Business Analyst
7	Prepare Class Diagram	Project Manager
8	Prepare Use Case Diagram	Project Manager
9	Prepare Process Diagrams	Project Manager
10	Rich Picture	Project Manager, Business Analyst
11	Prepare System Architecture Design	Tech Lead
12	Prepare UI design	UI Designer
13	Implements UI design	Engineer
14	Develop API	Project Manager, Business Analyst
15	Prepare Test cases	Business Analyst
16	Execute test cases	Business Analyst
17	Risk mitigation	Business Analyst
18	Quality Assurance Audit	Business Analyst
19	Finalize Documentation	Tech Lead

Table 3.2: Activity wise time distribution

3.5 Estimated Costing

The cost is calculated considering many factors, such as the duration of the project, the number of modules that will be added to the website, the modules are the interface and UX design, the web module, the integration, Domain, and Deployment. The total cost of the site

is Taka One Lac Seventy Thousand only.

Work Distribution	Costing (BDT)
UX/UI	25,000.00
Front-end Design	50,000.00
Back-end	60,000.00
Domain and Deployment	35,000.00
Total	170,000.00

Table 3.3: Estimated Costing of the project

Chapter 4

Methodology

All methodologies have their pros and cons, however the one that works very well for us is the Agile method, because in software development, the Agile method is a kind of project management process. A project in which software is developed jointly. self-organizing team. The Agile SDLC model divides the product into cycles and delivers a functional product very quickly. Agile takes a faster approach to development and accelerates the development process efficiently and effectively. This methodology is an incremental and iterative development process instead of a direct approach. It does not build an entire system at once but develops incrementally. Agile is a flexible software development methodology, The most widely used Agile methodologies are:

1. Agile scrum methodology
2. Lean Software Development
3. Extreme Programming (XP)
4. Crystal
5. Kanban
6. Feature Driven Development (FDD)
7. Dynamic Systems Development Method (DSDM)

Software Development Process of Techdojo:

- Tech Exploration: Getting acquainted with modern technology and implementing a demo. In my case, I have learned to React, Redux, React Native, React Design Patterns, Understanding Mobile App architecture, and clean code.
- Team Collaboration: Getting familiar with Version control systems like Git, using communication tools like Discord.
- SDLC practices: Getting familiar with agile/ XP practices.

- Effective Teamwork: Learning practices that make teams work effectively and efficiently, like pair programming and code reviews. Attending regular feedback meetings.
- Storyboarding/Estimation: For software development projects, Using Trello and Discord as a tool on a regular basis.
- Customer Feedback Cycle: Weekly iterations of development and delivery.
- CI/CD: Push-merge and Test on a regular basis. Giving APK to client.
- Documentation: Documenting Learning progress by writing blog articles for the company.

Development Tools Used:

In the development of the web application, "Care For You!" several modern applications development tools were used.

React.js: React is an open source external JavaScript library for building user interfaces specifically for single page applications. Facebook supports this. React can also be used to create a page or mobile app like React Native. reload the page. The main goal of React is to be fast, extensible, and simple. React.js implemented in the front-end of our "Care For You" Application

Next.js: Next.js is a JavaScript framework built by Zeit. It is taken from React.js and allows you to create static and server-side web applications using React.js. It's also a great SEO tool. It has many great features and benefits. and improves development workflow, improves productivity and is useful for higher indexing. Next.js implemented in our front-end of "Care For You" Application to create a static website and it also helps to do server-side rendering.

Node.js: Node.js is an open-source development platform for running JavaScript code on the server-side. Node helps develop applications that require a permanent connection from the browser to the server. Node.js uses a single thread, meaning one process at a time. Node.js runs asynchronously. communicate with the server. Node.js is implemented in our back-end of "Care For You" Application to make the client-server communication.

GitHub:

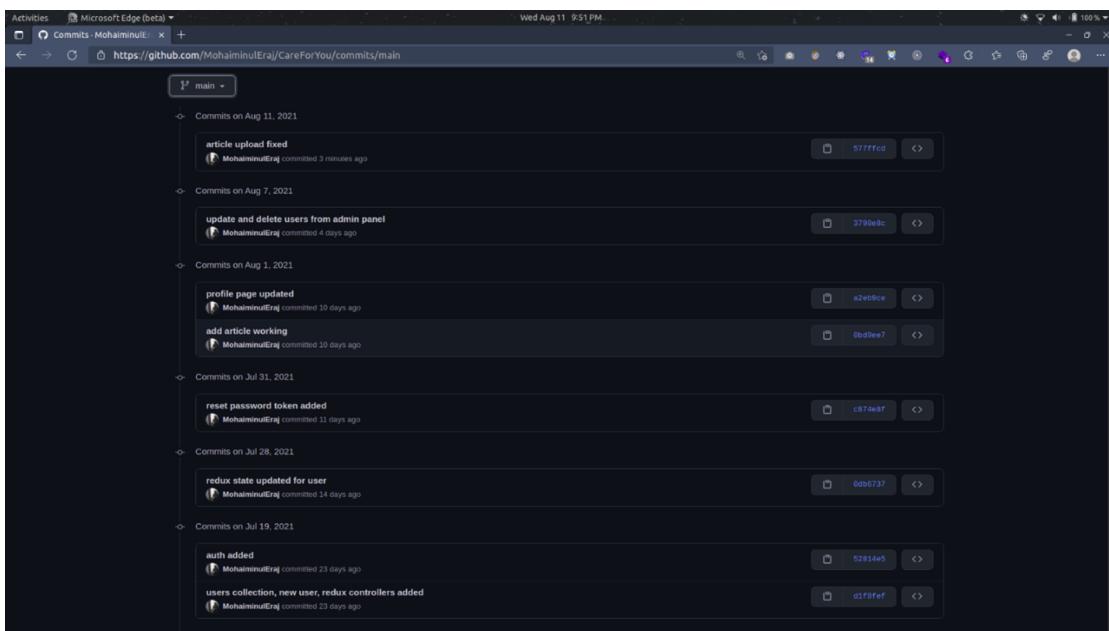


Figure 4.1: Commits in Github

For code review and merge, we used GitHub. Here developers created branches to keep their working tasks and pushed the code into GitHub after completing the everyday task. The developer team members of Techdojo have access to show other's code, and if they want to pull any branch, they can do it.

Chapter 5

Body of the Project

5.1 Work Description

A Health Care platform that provides verified health-related content. The doctors and patients or regular users can search for published articles related to any disease, remedies, and other health-related content. Any user can upload health-related content to our website, and it will be verified by the medical experts if the articles are incomplete or flawed. It will be asked for the review to stop the fake news from spreading, and this is also a platform where patients can interact with doctors and talk to specialists to diagnose their health problems and get prescribed, etc. this sort of communication will be done using Socket.io, which is a JavaScript library that allows for real-time, bi-directional communication with a server. And for the video chat feature, we will use WebRTC. The open-source server used for the software integration of the "Care For You" application in Node.js. The server will also upload and arrange the patient data into a cloud database, created using MongoDB Atlas. The end result allows for all "Care For You" data to be continuously updated and stored in a cloud-based system and allows any changes to be viewed in real-time through a web application

5.2 System Analysis

System Analysis is [6] conducted to study a system or its parts to determine its objectives. It is a problem-solving technique that improves the system and ensures that all the design components work efficiently to accomplish their purpose. It is a process used to collect and interpret facts by identifying the problems and decomposing a system into its components. Analysis specifies what the system should do. This chapter contains parts of System Analysis that will help understand the project better.

5.2.1 Six Element Analysis

Process	System Roles					
	Human	Non computing hardware	Computing hardware	Software	Database	Comm. & Network
Create New Article	User / Doctor	N/A	Desktop/ Laptop/ Phone/ etc	Web Browsers, Chrome, Firefox, etc	MongoDB	WAN
Review Article and Ask for Revision	Doctor	N/A	Desktop/ Laptop/ Phone/ etc	Web Browsers, Chrome, Firefox, etc	MongoDB	WAN
Add New Doctor to the system	admin / Doctor	N/A	Desktop/ Laptop/ Phone/ etc	Web Browsers, Chrome, Firefox, etc	MongoDB	WAN
Get Prescribed/ Take Appointment with Doctor	User / Doctor	N/A	Desktop/ Laptop/ Phone/ etc	Web Browsers, Chrome, Firefox, etc	MongoDB	WAN
Online Check Up	Doctor	N/A	Desktop/ Laptop/ Phone/ etc	Web Browsers, Chrome, Firefox, etc	MongoDB	WAN
View Published Article	User / Doctor	N/A	Desktop/ Laptop/ Phone/ etc	Web Browsers, Chrome, Firefox, etc	MongoDB	WAN
Search Published Articles	User / Doctor	N/A	Desktop/ Laptop/ Phone/ etc	Web Browsers, Chrome, Firefox, etc	MongoDB	WAN

Table 5.1: Six Element Analysis

5.2.2 Feasibility Analysis

A feasibility study is one of the most important steps in any requirements analysis model. A feasibility study is used to decide if the proposed system is worth it. This is a concise and focused study designed to test whether a system is serving the organization's goals. Designed

with modern technology and within budget, and whether the system can be integrated with other systems they use. These are categorized as Technical Feasibility, Operational Feasibility, and Economic Feasibility. The primary purpose of a feasibility study is not to solve a problem but to achieve scope. In short, the following decisions are taken in the different feasibility studies:

- **Technical Feasibility:** Technical Feasibility analyzes or evaluates current resources, both hardware and software, and the technology required to develop the project. This technical feasibility study will inform whether there are the correct resources and technologies required to develop the project. The feasibility study also analyzes the technical skills and abilities of the technical team; existing technology may or may not be used, maintenance and upgrade may or may not be available for the selected technology, etc. "Care For You!" is built using React, Redux, Node.js, Next.js, WebSocket's, and MongoDB. These are the technologies that are very popular in the modern industry, and everyone involved in the making of this project had the skills to work with at least one of the technologies mentioned. Hence, it can be concluded that the project is Technically Feasible.
- **Operational Feasibility:** Operational Feasibility analyzes the provision of services as required and the ease of use and maintenance of the product after implementation. Along with this, other areas of activity determine the usability of the product and the acceptability of the solution proposed by the software development team. etc. "Care For You!" is a healthcare platform made with complex logic and technology, but it is pretty self-explanatory for any end-user. Thus, the project can be determined as Operationally Feasible.
- **Economic Feasibility:** In the Economic Feasibility study, the costs and benefits of the project are analyzed; a detailed analysis of the project costs for development, including all costs necessary for the final development such as hardware and software resources required, design and development costs, operating costs, etc. It is then analyzed whether the project is financially beneficial to the organization or not. In the development of "Care For You!" the services that needed to be paid were Cloud Server, Domain, and Hosting. Since the cost of these services had to be paid yearly, it can be easily covered from the estimated revenue gained from users and paid subscriptions. In conclusion, it can we can say that the project is Economically Feasible.

5.2.3 Problem Solution Analysis

Problem: A lot has happened in recent years that rendered the online platforms as "normal" and physical interactions as "unsafe." In addition, our society is very much ignorant of health affairs. It is well-established news that the news we scroll down every day is not entirely true. Lots of fake news and rumors are spreading from various sources off the internet.

Solution: The time is now to present a new and useful platform to aid the medical side of things. The aim of this health care platform is to stop the spreading of fake news and to

aware people of what is going on. Our website offers an article section in which articles can be uploaded but will be verified before being publicly published. Each and every article will be verified by medical experts.

5.3 System Design

5.3.1 Rich Picture

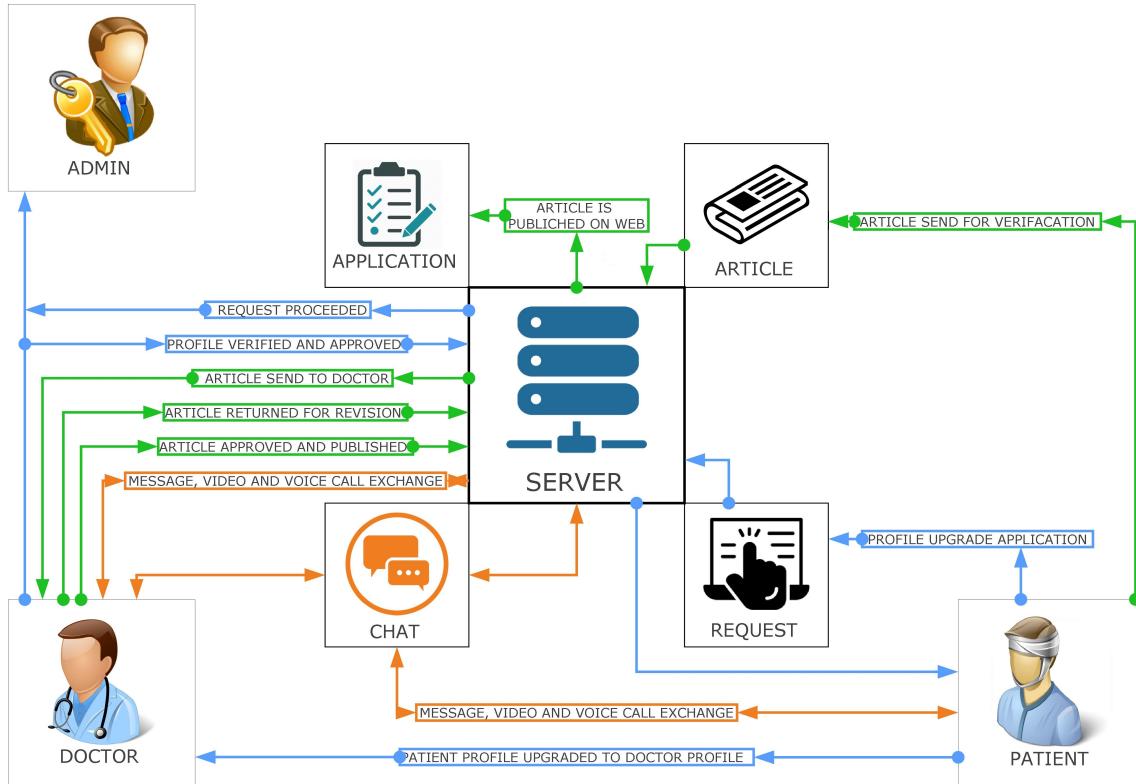


Figure 5.1: Rich Picture of "Care For You"

5.3.2 UML Diagrams

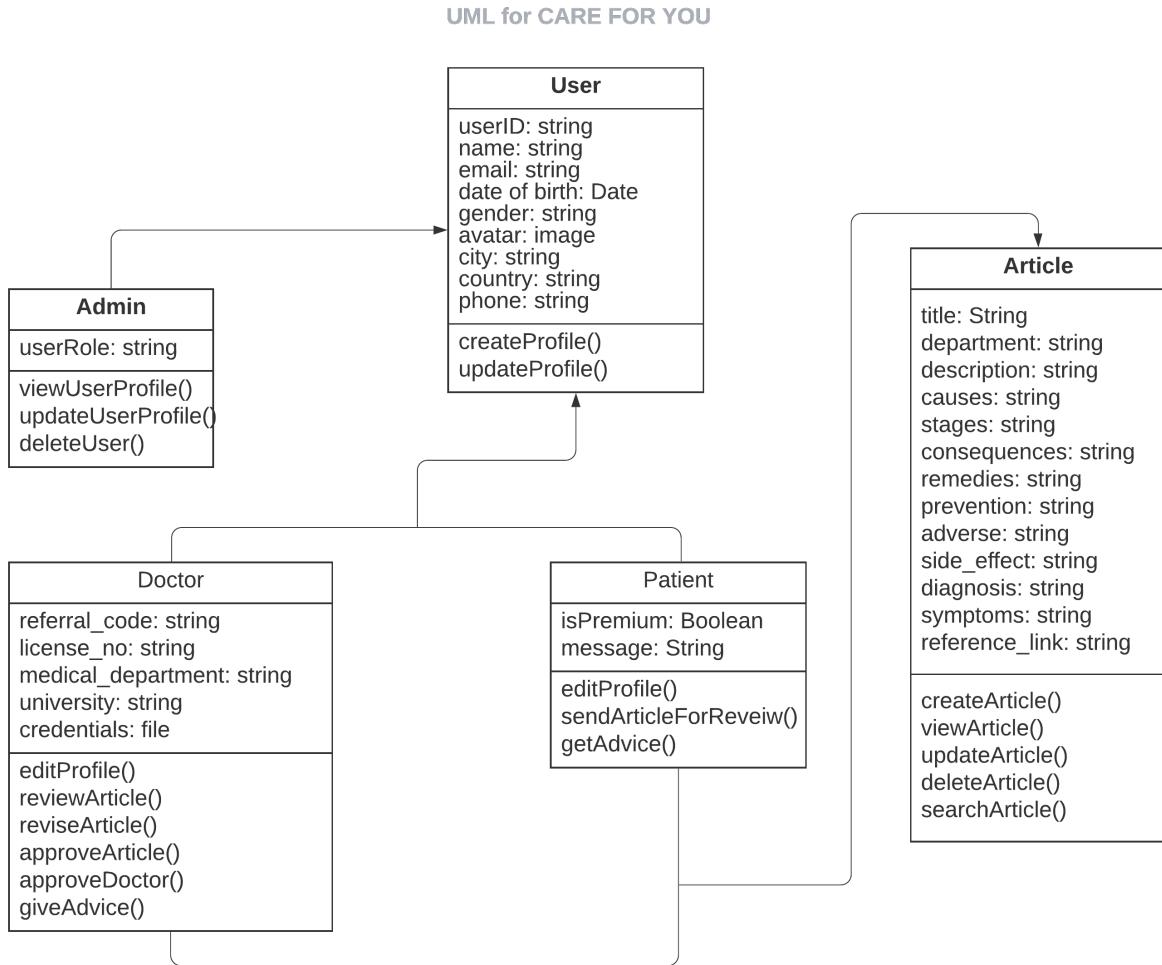


Figure 5.2: UML Diagram of "Care For You"

5.3.3 Functional and Non-Functional Requirements

Functional Requirements: The main objective of Functional Requirements is to verify the software's functionality. It tells the features of the product. Functional Requirements are mandatory. Functional Requirement captures easily focus on Use Case of main Product. Functional Requirements mainly focus on the requirements of users. A functional requirement defines what an application and its components are and what they are supposed to accomplish. The following functional requirements were gathered with our decided requirements gathering methods. The inputs, processes, and output are discussed below:

Function: Must be compatible with all types of PC/ Laptop or Mobile Devices.		
Input: N/A	Process: The application must be developed in a standard development environment	Output: The application can be accessed from all sorts of devices
Precondition: The user must have a working PC/Laptop/Mobile device.		
Postcondition: Everyone can use this application		

Table 5.2: Functional Requirement 01- Compatibility

Function: Every user can create a new article		
Input: Have to provide all the article-related details.	Process: Go to the "Create new article" page and Add article information.	Output: A new article will be added to the publications list.
Precondition: The user must have to be logged in.		
Postcondition: Show the publications pending list where the user can view their submitted article waiting for approval.		

Table 5.3: Functional Requirement 02- Add article

Function: Update user profile to doctors profile		
Input: Have to provide all the doctor-related details.	Process: Go to the "My Profile >> Edit Profile" page and Add doctor's information.	Output: Wait for approval once the profile is approved. This user can verify any articles that asked for the review.
Precondition: The user must have to be logged in.		
Postcondition: Show the publications pending list where the user can view their submitted article waiting for approval.		

Table 5.4: Functional Requirement 03- Update user profile

Function: Approve or ask for a review of a pending article		
Input: Give feedback if any changes are needed to the article to make it publicly accessible.	Process: Go to the "Home" page and view the pending article.	Output: If the doctor approved the article, it will be publicly accessible or will be sent for review.
Precondition: The user must have to be logged in as a doctor.		
Postcondition: The user will get a notification based on the doctor's action.		

Table 5.5: Functional Requirement 04- Approve pending article

Function: Communicate with the doctors		
Input: Get advice from the doctor	Process: Go to the "Chat" and talk to the specialist.	Output: The doctor will give advice based on the user's needs.
Precondition: The user must have to be logged in.		
Postcondition: The user will get a notification based on the doctor's action.		

Table 5.6: Functional Requirement 05- Communicating with the doctor's

Function: Delete Users		
Input: Delete users by clicking the delete button	Process: Go to the "Users" page and delete.	Output: User and their articles will be deleted from the platform
Precondition: The user must have to be logged in as an admin.		
Postcondition: Admin will be shown Updated User List		

Table 5.7: Functional Requirement 06- Delete User

Non-Functional Requirements

Non Functional requirements are those requirements that a customer does not specifically outline, but the customer expects them to be present in the developed and delivered software. These requirements are necessary to be realized because they help improve the system's functionality while providing additional features such as robustness, security, performance, maintainability, efficiency etc. The customer expects these requirements to be present in the system,

and the presence of these requirements ensures the goodwill of the customer. Hence these requirements are necessary to be identified and implemented in the system. For a patient record system, one of the non-functional requirements can be security. The system will ensure:

1. Only doctors can update patients' health condition and their drug requirements.
2. One patient cannot view or modify the records of other patients.
3. Patients can only keep track of his/her profile and can only change basic information such as address and contact number. No other modifications rights should be allowed to patients.

5.4 Product Features

5.4.1 Architecture

Next.js [7] is a JavaScript framework. It comes from React.js and allows you to build static web applications and server rendering with React.js. It's also a great tool for SEO. It has many great features and benefits. , improves the development process, improves performance, and is useful for greater indexability. Next.js uses API Server to render the data on the server side or to generate simple static websites. Next.js architecture image shown below

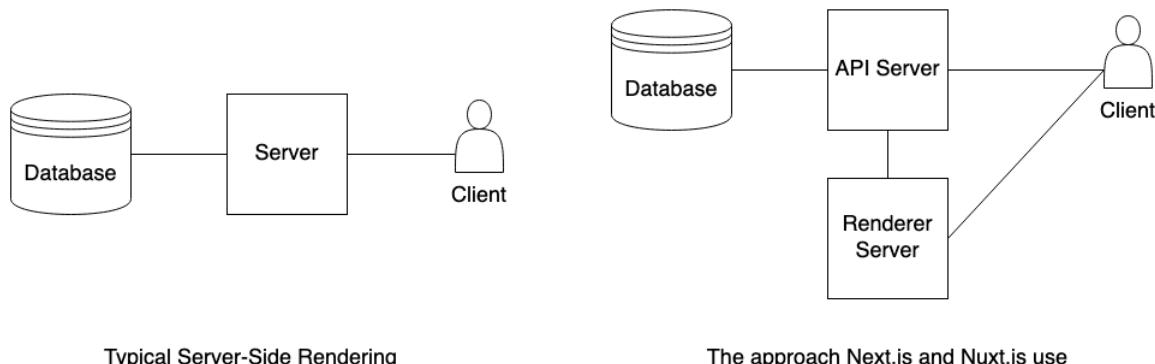


Figure 5.3: Next.js Architecture

Chapter 6

Results & Analysis

6.1 Results

For developing the app "Care For You," In our front-end, we have used React.js, Redux, Next.js for pre-rendered react app on the client-side that users can view and interact. In our back-end, we have used Node.js, MongoDB for Database, and for accessing our API routes and server-side rendering, we are using Next.js. This platform provides verified health-related content verified by doctors/medical experts, and invalid articles are asked for review to stop fake news from spreading and this is also a platform where patients can interact with doctors and talk to specialists to diagnose their health problems. Screenshots of the application that done so far are given below with short descriptions:

This is the login page of our platform, where users can log in after they sign up as regular users. After they have successfully logged in, users will be redirected to the home page, where users can search for published articles.

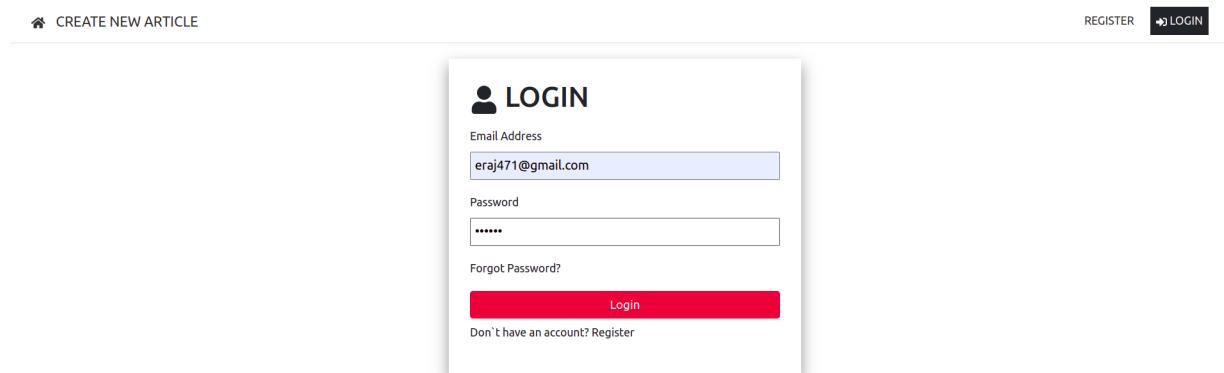


Figure 6.1: Login Page of "Care For You"

This is the "Create New Article" page, where users can create a new article and submit it for review. User has to put a registered doctor's username before they submit it for review.

The 'Create Article' page for 'Migraine Headache' is shown. At the top, there are 'CREATE NEW ARTICLE' and 'LOGOUT' buttons. The user 'MOHAIMINUL ERAJ' is logged in. The main content area is titled 'Create Article' and contains several input fields:

- Migraine Headache**: A text box containing the title.
- Migraine | Cephalgia | Vascular headache**: A text box containing related terms.
- Symptom Description**: A text area with placeholder text about migraine symptoms like dull or severe headache, nausea, and vomiting.
- Image Upload**: A file input field labeled 'Choose Files' with a note 'No file chosen'.
- Causes**: A text area with placeholder text about triggers like certain foods, stress, or factors.
- Development**: A text area with placeholder text stating 'This disease has no further development'.
- Prevention**: A text area with placeholder text about increasing stroke risk in both women and men.
- Medication**: A text area with placeholder text about reducing pain or stopping migraines.
- FAQ**: A text area with placeholder text about how long symptoms last and what can be done to prevent them.
- Strikes**: A text area with placeholder text about tips for once a migraine strikes, such as resting in a dark room and drinking water.
- Diagnosis**: A text area with placeholder text about what a doctor will do during diagnosis.
- Conclusion**: A text area with placeholder text from 'webmd'.
- Submit Button**: A large red 'SUBMIT FOR REVIEW' button at the bottom.

Figure 6.2: Create article page

After Submitting the article, users can go to their profile and view the list of pending articles, revised articles, and published articles. If users want, they can edit or delete articles from the publication page.

The screenshot shows a user profile page for 'MOHAIMINUL ERAJ'. At the top, there are links for 'CREATE NEW ARTICLE', 'About', 'Advises', and a 'LOGOUT' button. Below the header, the user's name 'Mohaiminul Eraj' is displayed with a 'Edit Profile' button. A navigation bar includes 'PUBLICATIONS', 'DIAGNOSTIC REPORTS', 'PRESCRIPTION', and 'CONSULTANT'. The main content area is titled 'Pending Articles' and displays a table with one entry:

Title	Visibility	Submitted To	Actions
Migraine Headache	private	doctor	

Below the table, it says 'Showing 1 to 1 of 1 entries' and includes 'Previous', '1(current)', and 'Next' buttons.

Figure 6.3: Regular Profile User View

Home page view from doctor's profile. The doctor will get notified of every new article that has been submitted for review.

The screenshot shows the doctor's home page. At the top, there are links for 'CREATE NEW ARTICLE', a profile picture for 'MR. DOCTOR', and a 'LOGOUT' button. A prominent blue banner at the top states 'Hello Mr. Doctor! you have 1 article left for review!'. Below the banner is a search bar with the placeholder 'Search Articles...'. The rest of the page is mostly blank white space.

Figure 6.4: Doctor's Home page view

Doctors profile view where doctors can review posted articles, and the doctor can also view patients diagnostics reports, give prescriptions, take appointments from their profile.

6.1. RESULTS

CHAPTER 6. RESULTS & ANALYSIS

The screenshot shows a web-based application interface for a doctor's profile. At the top, there are navigation links: 'CREATE NEW ARTICLE' (with a house icon), 'MR. DOCTOR' (with a doctor icon), and 'LOGOUT'. Below the header, there are sections for 'About' (with a doctor profile picture) and 'Advises'. A 'Mr. Doctor' button with an edit profile link is also present. The main content area includes a navigation bar with 'PUBLICATIONS', 'DIAGNOSTIC REPORTS', 'PRESCRIPTION', 'CHECK UP', and 'CONSULTANT' tabs. The 'PUBLICATIONS' tab is selected. Below this, a section titled 'Articles for Review' displays a table of entries. The table has columns for 'Title', 'Visibility', 'Submitted By', and 'Actions'. One entry is visible: 'Migraine Headache' (private, submitted by eraj). A search bar is located at the top right of the table. At the bottom of the table, it says 'Showing 1 to 1 of 1 entries' and includes 'Previous', '1(current)', and 'Next' buttons.

Figure 6.5: Doctor's Profile view

Doctor Reviewing user's article and forwarding it for revision if any changes need to be made.

The screenshot shows a detailed view of a user's article titled 'Migraine Headache'. The article includes sections for 'Department' (Migraine | Cephalgia | Vascular headache), 'Uploaded' (2021-08-30T18:35:14.459Z), 'Symptoms' (severe headache, throbbing, pulsating, pounding), 'Description' (the most common symptoms of migraine include a dull or severe headache that may be worse on one side of the head, and a throbbing, pulsating or pounding in the head. Other symptoms may include loss of appetite, nausea and vomiting, sensitivity to sound or light, chills, sweating, numbness or tingling, and increased urination.), 'Diagnosis' (To diagnose migraine, your doctor will take a medical history and do a physical exam. You may also need a CT scan, MRI, or other tests to rule out other problems.), 'Remedies & Treatment' (There is no cure for migraines, but medications can help reduce pain or stop migraines from occurring.), 'Adverse Effect' (Movement, bright lights and loud sounds, smoking, and alcohol.), 'Prevention' (Once a migraine strikes, try these tips: Rest in a dark, quiet room Drink water, especially if you have vomited Put a cool cloth on your forehead.), 'Causes' (Migraines are caused by abnormal brain activity that is triggered by certain foods, stress, or other factors.), 'Stages' (This disease has no further development.), 'Medication and its side effect' (Some migraines can be treated at home with over-the-counter pain relievers. Severe migraines are usually treated with prescription medicines called triptans, anti-nausea medicine, or sedatives. Pain-relieving medications usually work best when taken at the first sign of a migraine. Frequent migraines can sometimes be prevented by taking medications such as beta-blockers, antidepressants, antiseizure drugs, or by getting a Botox injection in the muscles of the forehead and neck.), 'Consequences' (Migraine increases stroke risk in both women and men.), 'Frequently asked questions and answers' (How long will my symptoms last? What can I do to have migraines less often? How should I take migraine medications? What can I do to prevent another migraine? Could this be something other than a migraine?), and 'Reference Links' (webmd). To the right of the article, there is a 'Remarks' section with the text 'Please remove throbbing and pounding from the symptoms everything else looks good.' Below this, a 'Forward for revision' button is shown. At the bottom, there is a large blue 'Submit' button.

Figure 6.6: Doctor Forwarding an article for revision

Once the doctor submits the article for revision user who posted the article will get notified

6.1. RESULTS

CHAPTER 6. RESULTS & ANALYSIS

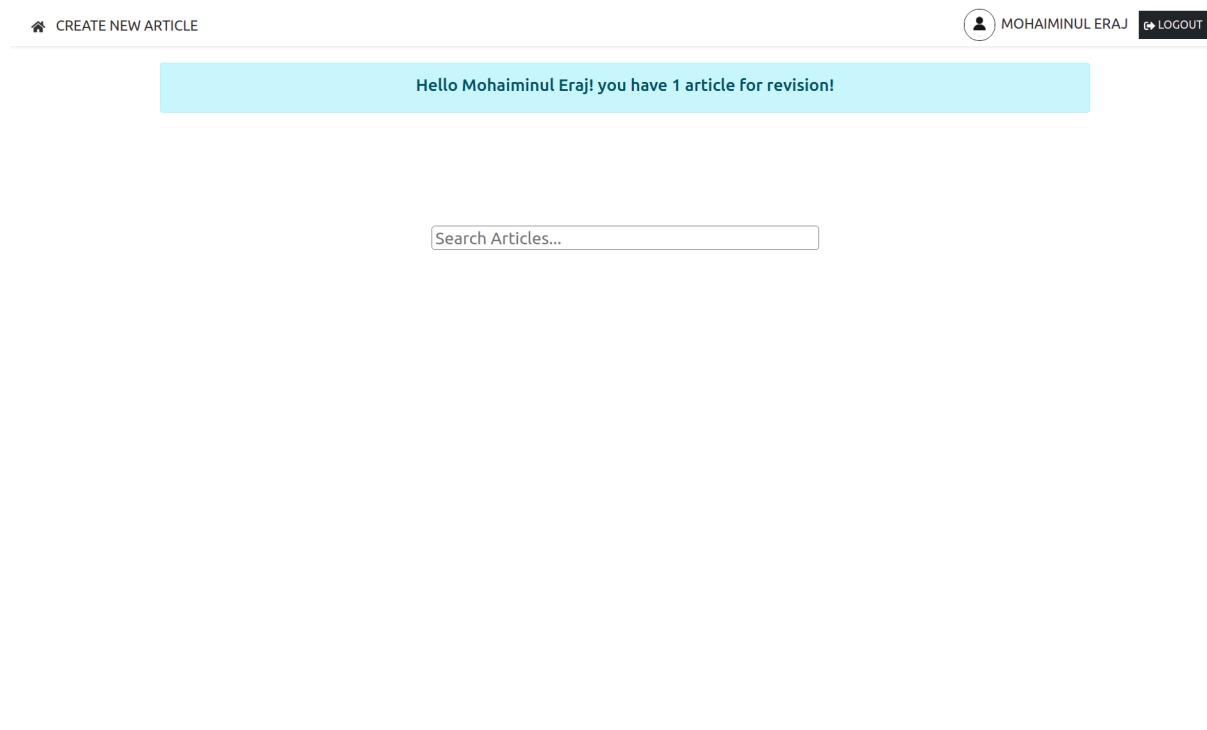


Figure 6.7: Users Home page view when they receive request for article revision

Users can see the doctor's feedback and update the article by going to the update article page.

A screenshot of a web-based application interface for updating an article. On the left, there is a sidebar with a 'CREATE NEW ARTICLE' button. The main content area shows an article titled 'Title: Migraine Headache'. The article details include: Department: Migraine | Cephalgia | Vascular headache; Uploaded: 2021-08-30T18:35:14.459Z; Symptoms: severe headache, throbbing, pulsating, pounding; Description: The most common symptoms of migraine include a dull or severe headache that may be worse on one side of the head, and a throbbing, pulsating or pounding in the head. Other symptoms may include loss of appetite, nausea and vomiting, sensitivity to sound or light, chills, sweating, numbness or tingling, and increased urination; Diagnosis: To diagnose migraine, your doctor will take a medical history and do a physical exam. You may also need a CT scan, MRI, or other tests to rule out other problems; Remedies & Treatment: There is no cure for migraines, but medications can help reduce pain or stop migraines from occurring; Adverse Effect: Movement, bright lights and loud sounds, smoking, and alcohol; Prevention: Once a migraine strikes, try these tips: Rest in a dark, quiet room Drink water, especially if you have vomited Put a cool cloth on your forehead; Causes: Migraines are caused by abnormal brain activity that is triggered by certain foods, stress, or other factors; Stages: This disease has no further development; Medication and its side effect: Some migraines can be treated at home with over-the-counter pain relievers. Severe migraines are usually treated with prescription medicines called triptans, anti-nausea medicine, or sedatives. Pain-relieving medications usually work best when taken at the first sign of a migraine. Frequent migraines can sometimes be prevented by taking medications such as beta-blockers, antidepressants, antiseizure drugs, or by getting a Botox injection in the muscles of the forehead and neck; Consequences: Migraine increases stroke risk in both women and men; Frequently asked questions and answers: How long will my symptoms last? What can I do to have migraines less often? How should I take migraine medications? What can I do to prevent another migraine? Could this be something other than a migraine? Reference Links: webmd. On the right, there is a 'Feedback from doctor' section containing the message: 'Please remove throbbing and pounding from the symptoms everything else looks good.' At the bottom is a yellow 'Update Article' button.

Figure 6.8: Doctors feedback from users-end

After updating the article user will resend it for review

6.1. RESULTS

CHAPTER 6. RESULTS & ANALYSIS

[CREATE NEW ARTICLE](#)

[MOHAIMINUL ERAJ](#) [LOGOUT](#)

Update Article

Migraine Headache	Migraine Cephalgia Vascular headache	
The most common symptoms of migraine include a dull or severe headache that may be worse on one side of the head, and a throbbing, pulsating or pounding in the head. Other symptoms may include loss of appetite, nausea and vomiting, sensitivity to sound or light, chills, sweating, numbness or tingling, and increased urination.	Choose Files No file chosen	Migraines are caused by abnormal brain activity that is triggered by certain foods, stress, or other factors.
This disease has no further development	Choose Files No file chosen	Migraine increases stroke risk in both women and men.
There is no cure for migraines, but medications can help reduce pain or stop migraines from occurring.	Choose Files No file chosen	How long will my symptoms last? What can I do to have migraines less often? How should I take migraine medications? What can I do to prevent another migraine? Could this be something other than a migraine?
Once a migraine strikes, try these tips: Rest in a dark, quiet room Drink water, especially if you have vomited Put a cool cloth on your forehead	Movement, bright lights and loud sounds, smoking, and alcohol.	Some migraines can be treated at home with over-the-counter pain relievers. Severe migraines are usually treated with prescription medicines called triptans, anti-nausea medicine, or sedatives. Pain-relieving medications usually work .
To diagnose migraine, your doctor will take a medical history and do a physical exam. You may also need a CT scan, MRI, or other tests to rule out other problems.	severe headache, pulsating	webmd
eraj	doctor	
UPDATE & SUBMIT FOR REVIEW		

Figure 6.9: Update Article View

After reviewing the article, if the doctor wants, they can approve the article, and it will become publicly accessible from the website.

[CREATE NEW ARTICLE](#)

[MR. DOCTOR](#) [LOGOUT](#)

Title: Migraine Headache

Department: Migraine | Cephalgia | Vascular headache
Uploaded: 2021-08-30T18:35:14.459Z

Symptoms
 severe headache, pulsating

Description
 The most common symptoms of migraine include a dull or severe headache that may be worse on one side of the head, and a throbbing, pulsating or pounding in the head. Other symptoms may include loss of appetite, nausea and vomiting, sensitivity to sound or light, chills, sweating, numbness or tingling, and increased urination.

Diagnosis
 To diagnose migraine, your doctor will take a medical history and do a physical exam. You may also need a CT scan, MRI, or other tests to rule out other problems.

Remedies & Treatment
 There is no cure for migraines, but medications can help reduce pain or stop migraines from occurring.

Adverse Effect
 Movement, bright lights and loud sounds, smoking, and alcohol.

Prevention
 Once a migraine strikes, try these tips: Rest in a dark, quiet room Drink water, especially if you have vomited Put a cool cloth on your forehead

Causes
 Migraines are caused by abnormal brain activity that is triggered by certain foods, stress, or other factors.

Stages
 This disease has no further development

Medication and its side effect
 Some migraines can be treated at home with over-the-counter pain relievers. Severe migraines are usually treated with prescription medicines called triptans, anti-nausea medicine, or sedatives. Pain-relieving medications usually work best when taken at the first sign of a migraine. Frequent migraines can sometimes be prevented by taking medications such as beta-blockers, antidepressants, antiseizure drugs, or by getting a Botox injection in the muscles of the forehead and neck.

Consequences
 Migraine increases stroke risk in both women and men.

Frequently asked questions and answers
 How long will my symptoms last? What can I do to have migraines less often? How should I take migraine medications? What can I do to prevent another migraine? Could this be something other than a migraine?

Reference Links
 webmd

Remarks
 looks good.

Approve

Submit

Figure 6.10: Doctor approving the article

Once the article is approved, anyone can search for the article and view it.

6.1. RESULTS

CHAPTER 6. RESULTS & ANALYSIS

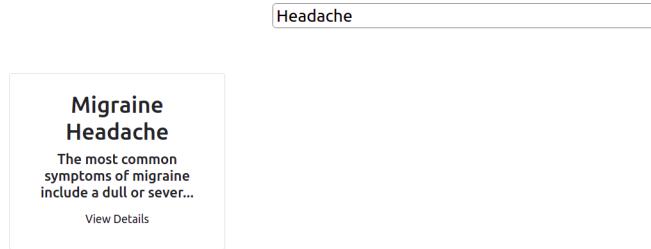


Figure 6.11: Search article dynamically

Remaining tasks Mockup of the project that we are still working on for the doctor's profile. A doctor can take appointments, give advice and prescriptions, and view their transaction history for every checkup.

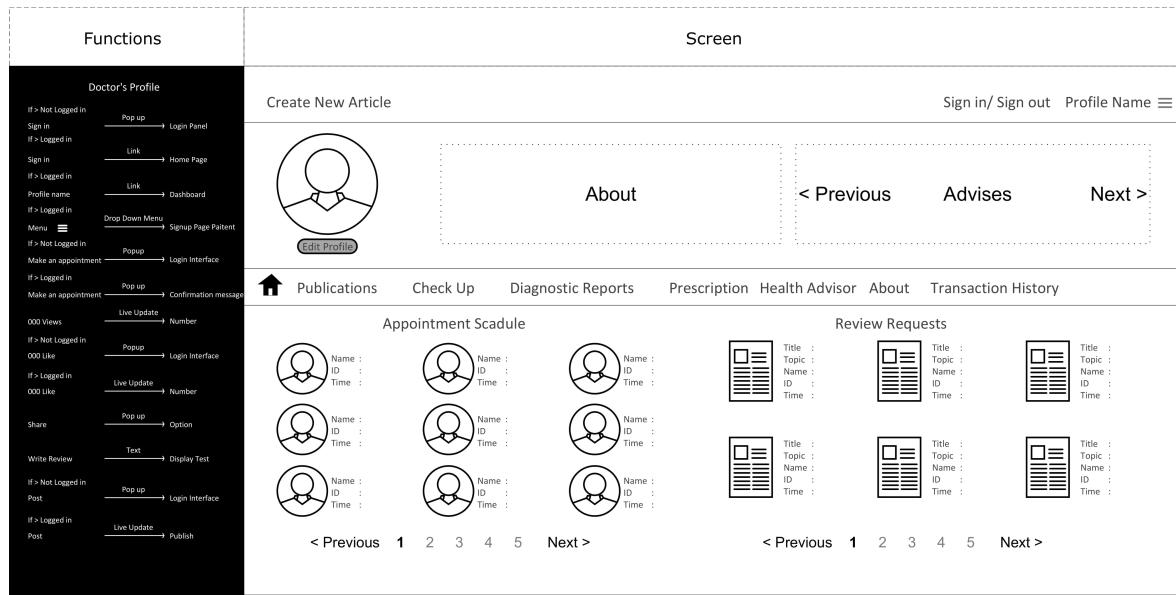


Figure 6.12: Future Work for Doctors Profile

Mockup of the project that we are still working on for the user's profile. A user can make appointments, get advice and get prescribed, and view their transaction history for every checkup.

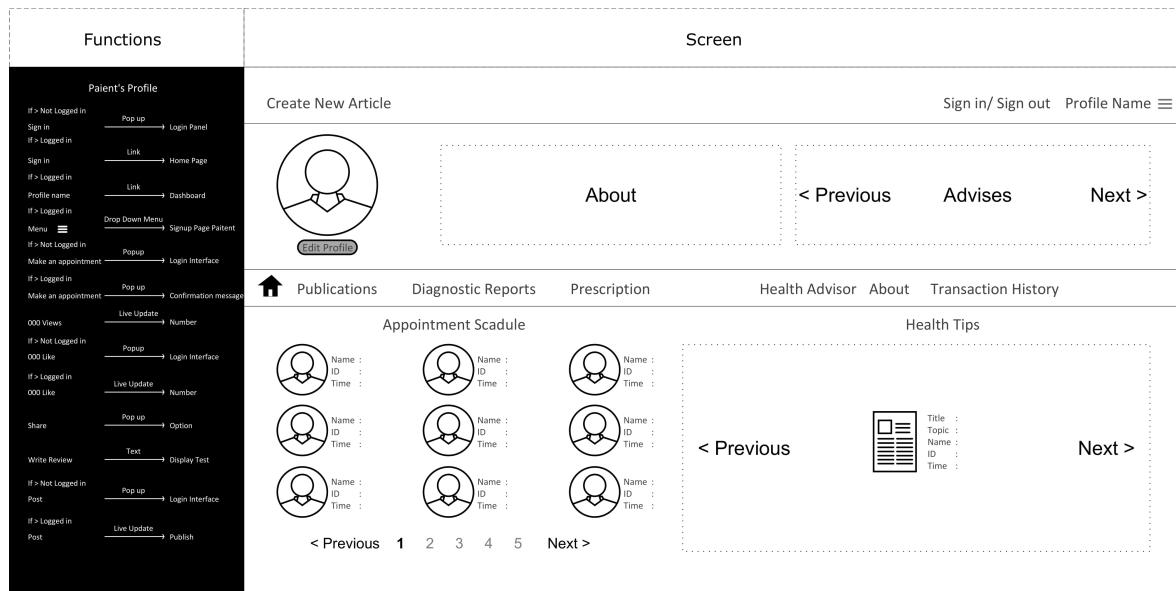


Figure 6.13: Future Work for Patients Profile

6.2 Analysis

- Customer requirements.
- Article Source.
- Friendly User Interface.
- Responsiveness.
- Less occupancy in hospitals, more people healing from home.

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

Sustainability maintains a certain level of growth. A product can be sustainable in three categories: organization, financial, and community sustainability. The details about the sustainability of a product are given below:

Community Sustainability: Community sustainability is how the community carries out the product. In this application, "Care For You," community sustainability will be achieved after deploying it and releasing its beta version. When the people will use it and realize its need, they will suggest this application to the people they think can be helped by using it. For example, after the beta version realizes when users will use it and understand how helpful it is to access verified health-related content from the internet. Pharmaceutical companies that will sponsor from this platform can save lots of money because they can directly chat with a doctor from our platform. So by that time, we will release our application, people will be acknowledged about this application, and everyone can take benefit from this application. Thus, "Care For You" has community sustainability.

Financial Sustainability: Financial sustainability is how the financial support for a project or organization will continue after the grant of the project gets ended. For "Care For You," the organization will get revenue by running ads in the app. From user subscriptions, sponsorships from pharmaceutical companies, Therefore, "Care For You" is financially sustainable.

Organization Sustainability: Organizational sustainability means how the organization itself will continue to function after the project ends. After the project ends, the organization will keep updating the code base and maintains it by adding new features or fixing bugs. Also, the marketing team will promote the product on social media by advertising. So, we can say that "Care For You" has organizational sustainability.

7.2 Social and Environmental Effects and Analysis

Social Effect: The "Care For You" application aims to get more users interested in finding verified health-related content from the internet. Which will help reduce lots of fake news from spreading. This is also a platform where doctors can speed up the paperwork process and focus more on the treatment side of things.

Environmental effect: The hospitals here in Bangladesh still have a long way to go in regards to getting with the time and using technology to their advantage. Due to COVID-19, everything becomes online except for physical checkups. Less paper will be used for diagnostics reports, and the e-prescription will be saved in the platform, which the user can access anytime, which will decrease the demand for trees.

7.3 Addressing Ethics and Ethical Issues

Consumers has to put their trust in app developers as they are sharing their data in the applications. That is why security is our first priority. Many Data Mining companies collect user's data for advertisement purposes, but we are collecting data that is strictly relevant to the application. The developers are creating the "Care For You" Application in such a way that it should not have any security breaches. Some ethical guidelines that will be followed are:

- **Collecting only relevant User data:** This application does collect some user data, but those are strictly and only relevant for the app. The only data that is being collected are the user's primary information that is needed to validate a real user.
- **Not Sharing or Selling any User data:** Even though the data collected may not be of any privacy concern for most users, the app does not let any service, application, or third party access the data collected.
- **Data Storage Security:** Only the lead developer and the "Care For You" platform owner have access to the server and the database. Since they will be hosted in the cloud and can only be accessed via the lead developer's and the owner's login credentials, the stored data can be deemed safe and secure.
- **Proper use of third-party services and API:** the "Care For You" software does not violate any rules of the third-party services or the APIs that have been used in its development

Chapter 8

Lesson Learned

8.1 Problems Faced During this Period

- **Adapting to New Technologies:** Since this was the first time I learned to use react, redux, and next.js. This has been my first hands-on experience creating a scalable web application. Being new in this field, I had to learn and adapt to these new technologies. The first month has been quite challenging to understand the process. For this reason, initially, my learning curve has been substantially low. Despite this, I think I was able to keep up because of the proper guideline from my Supervisor.
- **Keeping up to Speed:** Learning new technologies and applying them in my project was a slow process. Hence, it was difficult for me to meet the weekly deadlines, which slowed down the overall task of developing the application.
- **Understanding the requirements:** Since I was new to this field, it was difficult for me to understand the requirements. Though I suffered initially, I have successfully managed to overcome this problem with the help of my mentors.

8.2 Solution of those Problems

Got Familiar with the Development Tools. Learned about Extreme Programming Methodology. Leaned about Gantt Chart, UML Diagrams, Rich Pictures. Learned about Git/GitHub, collaborating with senior engineers. Learned about React Core Concept, React Lifecycle's. Learned how to build a basic Mobile application using react-native. Built a simple CRUD App with an authentication feature and navigation features. Learned how to use state management with React using Context API's. Later I Learned about Redux for state management. Learned to collaborate with senior engineers.

Chapter 9

Future Work & Conclusion

9.1 Future Works

Since the project "Care For You" is still in the development phase, many features are planned to be added in the future if the proper advantage is taken into consideration. The following technologies can be applied for future work:

In the homepage design we have to add Appointment Schedule section, in Check-up we have to add Patients List (View Patient's Profile/History), Advice Patient's, Remove Patient's from the profile. In Diagnostic Report Section we have to let user include Personal Medical Report (X-Ray, UCG, Blood Test). In Prescription we have to add Medicine Time Schedule, Check Prescriptions, Get Drugs. In Health Advisor section we have to include doctor list and finally in the Transactions History we have to include Make Transaction, Payment Report, Billing Report.

9.2 Conclusion

It was a great pleasure and a wonderful experience to be a part of the Tech-dojo family as an intern. During the internship period, I have learned and applied the knowledge that I have gained from my university courses. I was introduced to new cutting-edge technologies like React.js, Redux, Node.js, Next.js, React Native, and so much more. I have learned how to develop cross-platform mobile applications in react native. Learned about version control using git and Github, Learned about software engineering best practices. Learned to collaborate with my senior developers on a weekly basis. During my project, I cooperated with my mentors and seniors to solve the challenges faced. Despite their workload, my Supervisor, shama miss, was always there to answer any queries and help me settle nicely. The activities that I had learned during training are useful for me in the future to face challenges in a working environment. I would like to appreciate once again everyone who has made my life as an intern such a great experience.

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