Curative Care Management system for Diabetes Patient

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FINAL YEAR DESIGN PROJECT REPORT

This Report Presented in Partial Fulfillment of the Requirements for the **Degree of Bachelor of Science in Computer Science and Engineering**

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APPROVAL

This Project titled **"Curative care Management System for Diabetic Patients"**, submitted by Tanveer Hasan Rafi, ID No: **181-15-11087** to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on **14 May, 2025**.

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We hereby declare that this project has been done by us under the supervision of **Mezbaul Islam Zion, Lecturer,** Department of Computer Science and Engineering, Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

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ABSTRACT

The Curative Care Management system is a web based platform which is specified for diabetics patients. This system gives personalized health portal, AI based Diet plan, blog page to seek knowledge about diabetes and their issues. This system also gives a individual database to patients to maintain their early prescription and medication and documents also. A patients can make a appointment by filling up some basic questions. Doctors also prescribe a patients very easily. Patients and doctors are record their information and prescription etc. There are many health care management app or websites are available in the market. But there is no specified platform for diabetics patients. This curative care managements system is a platform which is specified for diabetes patients. This system is developed by many programming languages like HTML , CSS , Java script , react JS, PHP, MySql, pocket Base etc. My primary aim to create a website which is very user friendly for diabetes patients and they should manage their early diabetes by using my system. They should save their clinical records for a long time and the could make a appointment for specialist doctor easly.

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Chapter 1

Introduction

1.1 Introduction

Diabetes is a common health care problem in modern days. The changed lifestyle, poor diets and lack of exercise and physical activities are the main reason of diabetes. The critical risk of diabetes is hypoglycaemia or low blood sugar. A diabetes patients become senseless on that time and its become a medical emergency. Diabetes patients faces many difficulties due to lack of knowledge. So I decided to make a website which is specified for diabetes patients. This platform contains a system called Diabetes management system (DMS) . which is use full to patients and doctors for managing the clinical records of patients and appointment system and also a individual database for patients.

1.2 Motivation

There are many health care management app or websites are available in the market. But there is no specified platform for diabetics patients. This curative care managements system is a platform which is specified for diabetes patients. The critical risk of diabetes is hypoglycaemia or low blood sugar. A diabetes patients become senseless on that time and its become a medical emergency. Diabetes patients faces many difficulties due to lack of knowledge. So I decided to make a website which is specified for diabetes patients. This platform contains a system called Diabetes management system (DMS) . which is use full to patients and doctors for managing the clinical records of patients and appointment system and also a individual database for patients.

1.3 Objectives

- Planning for a website specified for Diabetic Patients.
- Analyze clinical data, and diet plans for this website.
- Setting up the necessary Software like Visual Studio, atom(note pad), xampp .
- creating a website with HTML , CSS, JavaScript, Pocket Base, PHP and MySQL.

- ❖ Enhance the efficiency, quality, and accessibility of curative healthcare service.

1.4 Methodology

This system is developed by many programming languages like HTML , CSS , Java script , react JS, PHP, MySql, pocket Base etc. My primary aim to create a website which is very user friendly for diabetes patients and they should manage their early diabetes by using my system. They should save their clinical records for a long time and the could make a appointment for specialist doctor easly.

I would like to use HTML, CSS, java sript and react js for frontend and php, MySQL, PocketBase for backend.

1.4 Project Outcome

This project introduce a managemements system for diabetes patients . They Could Manage their Diabetes, Medication Plan, appointments very easily. This management system reduce the manual data entry. Boost patients and doctors productivity, lower mistakes rate and patients saves the money.

Chapter 2

Background

2.1 Introduction

Diabetes is a common health care problem in modern days. The changed lifestyle, poor diets and lack of exercise and physical activities are the main reason of diabetes. The critical risk of diabetes is hypoglycaemia or low blood sugar. A diabetes patients become senseless on that time and its become a medical emergency. Diabetes patients faces many difficulties due to lack of knowledge.

There are many healthcare systems , health portal ar available in the market. Some are given bellow:

A hospital management system is Archhms. They assisted with doctor's appointments, billing systems, and patient registration [1].

For personal health care, Healthxbd offers a one-stop shop for digital health care solutions. Online doctor booking, telemedicine, nursing services, and medication delivery are all provided by this website [2].

Another website that offers online consultations, medication ordering, health plans, and home tests is called Doc Time [3].

One of the most popular websites for health and wellness information is WebMD, which offers quizzes, medication information, and a symptom checker [4].

One of the best medical websites in the US, Mayo Clinic provides information about illnesses, symptoms, tests, medications, and supplements. [5]

My Diabetes My Way is an interactive website created in Scotland that supports those with diabetes. diabetes-related pamphlets, films, teaching resources, and games [6].

An organisation called My Diabetes offers diabetes education classes [7].

All of these are not specified for diabetes patinets , it may make it quite difficult to learn about diabetes. I thus went to a website designed just for people with diabetes.

2.2 Literature Review

Table 2.1: Summary of Literature Reviewed.

Author (s)	Year	Title	Methodology	Key Findings
H.-S. Kwon	2004	Development of web-based diabetic patient management system using short message service (SMS)	Survey-based	This study find how to control diabetes and HDL cholesterol by web based patients management system,
I. M. Baggili, K. Chang, K. D. Lutes	2006	Diabetic e-Management System (DEMS)	Qualitatively interviewed	patients with diabetes could assist through diabetes management system.
Dr. Ulrike Rothe	2008	Evaluation of a Diabetes Management System Based on Practice Guidelines, Integrated Care, and Continuous Quality Management in a Federal State of Germany	Quantitative Analysis	Better understanings about SDMP .
R. Bose	2003	Knowledge management-enabled health	Data Analysis	Knowledge management system is very essential for healthacare industry

		care management systems: capabilities, infrastructure, and decision-support		
Diana Isaacs, Carla Cox, Joanne Rinker	2020	Technology Integration: The Role of the Diabetes Care and Education Specialist in Practice.	Survey Based	Technology gives the rapid improvements to cure

2.2.1 Similar Applications

Many Health Care Management Systems are available in the market. Some are hospital management systems and some are patients.

Archhms serves as a hospital management system. They served patient registration, billing system, and doctor appointments [1].

Healthxbd is a one-stop digital health Care solution for personal health care solution. This website serves online doctor Booking, telehealth, nursing services, and medicine delivery [2].

Doc time is another platform that serves online consultation, orders medicines, health plans, and home diagnostics [3].

WebMD is a top visited website for health and Wellness information including symptoms checker, drug and quizzes [4].

Mayo Clinic a top-rank medical website in the United States that offer information about diseases, symptoms, medical tests, drugs, and supplements [5]

My diabetes my way the Scotland based interactive website to help support people who have diabetes. leaflets, videos, educational tools and games containing information about diabetes [6].

My Diabetes is an organizational website that provides courses about diabetes [7].

2.2.2 Related Research

The research under consideration about health care technology is very important and usefull for patients for treatmets and medication process from the above research. After the related research review patients satisfaction and clinical outcomes are improved. Accordinng the related research the technology become a essential part about diabetes teaching and care.

2.3 Gap Analysis

Features	Archhms	Healthxbd	webmd	doctime	Mayo clinic	My Diabets
Health Portal	No	No	No	No	No	No
Online appointment	Yes	Yes	No	Yes	No	No
Individual Database	No	Yes	No	Yes	No	No
Regionality	Yes	Yes	Yes	Yes	Yes	Yes
Online consultation	Yes	Yes	No	Yes	No	No
Insuarance	No	No	No	Yes	No	No
Emergecy service	No	No	No	No	No	No
Online medicine	No	No	No	Yes	No	No
Education	No	Yes	Yes	No	No	Yes
Specified for Diabetes	No	No	No	No	No	No

2.4 Summary

A diabetes management system designed specifically for diabetic patients. there is no specialised digital platform designed for managing diabetes. This website gives a unity for physicians and diabetic patients on a single platform. This curative care management system gives personal database, patients keep track of their prescriptions, treatment plans, and medical advice.

Chapter 3

Research Methodology

3.1 Methodology/Requirement Analysis & Design Specification

- Front-end was developed using HTML , CSS, Java-script, react JS.
- Back-end was developed using Pocket Base and PHP.
- Database integration was completed using Pocket Base abd MySQL.

3.1.1 Overview

Features and description of this website:

Department: a patient or user may discover the details of over 40 clinical departments here, with the doctors' names.

Locate a doctor: this page includes comprehensive details about physicians that are registered in the database. when a patient schedules a direct appointment with a desierd doctor.

Diabetes Management System (DMS): visit the website to online appointments, consultations, health portals, emergencies, and personalised diabetes treatment plans, among many other features.

Blog/Health Portal: This website offers news, articles, and treatment plans from medical professionals with diabetic qualifications. supplying a diabetic management checklist.

Health plan: For diabetes patients, this website offers a health insurance plan that is necessary in an emergency.

Patient record: A patient's prescriptions, medical information, and other files can be stored in a database. This is a patient-specific record system.

Diet Plan: In order to effectively control their diabetes, diabetic patients require a suitable nutrition plan. a suitable food plan based on each patient's age, needs, and degree of diabetes. The user will see a graphical chart in this part.

3.1.2 Proposed Methodology/ System Design

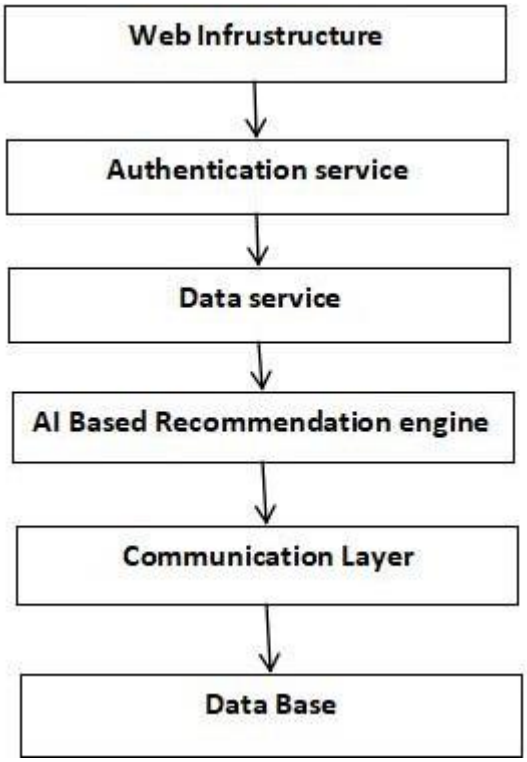

Figure 3.1: system design diagram

3.1.3 Functional and Nonfunctional Requirements

Functional Requirements:

Content Management: Admins should be create, update, delete blog posts

User Friendly Design

Nonfunctional Requirements:

Perfomance: Page Must load in 3 seconds in normal condition.

Security: All data must be transmitted over https.

Usability: very easy to use .

Scalibilty: this system is very much scalable in future consideration.

Maintainability: this website manual is documented for further precedure

3.1.4 Context Diagram

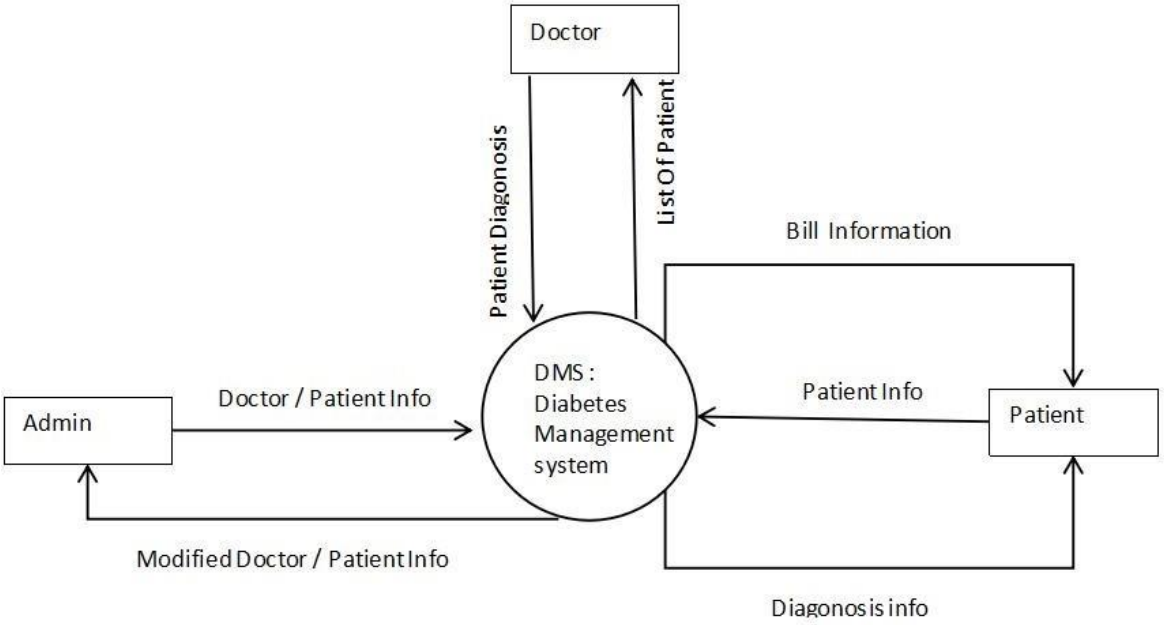

Figure 3.1.4 : Context Diagram

3.1.5 Data Flow Diagram Level 1

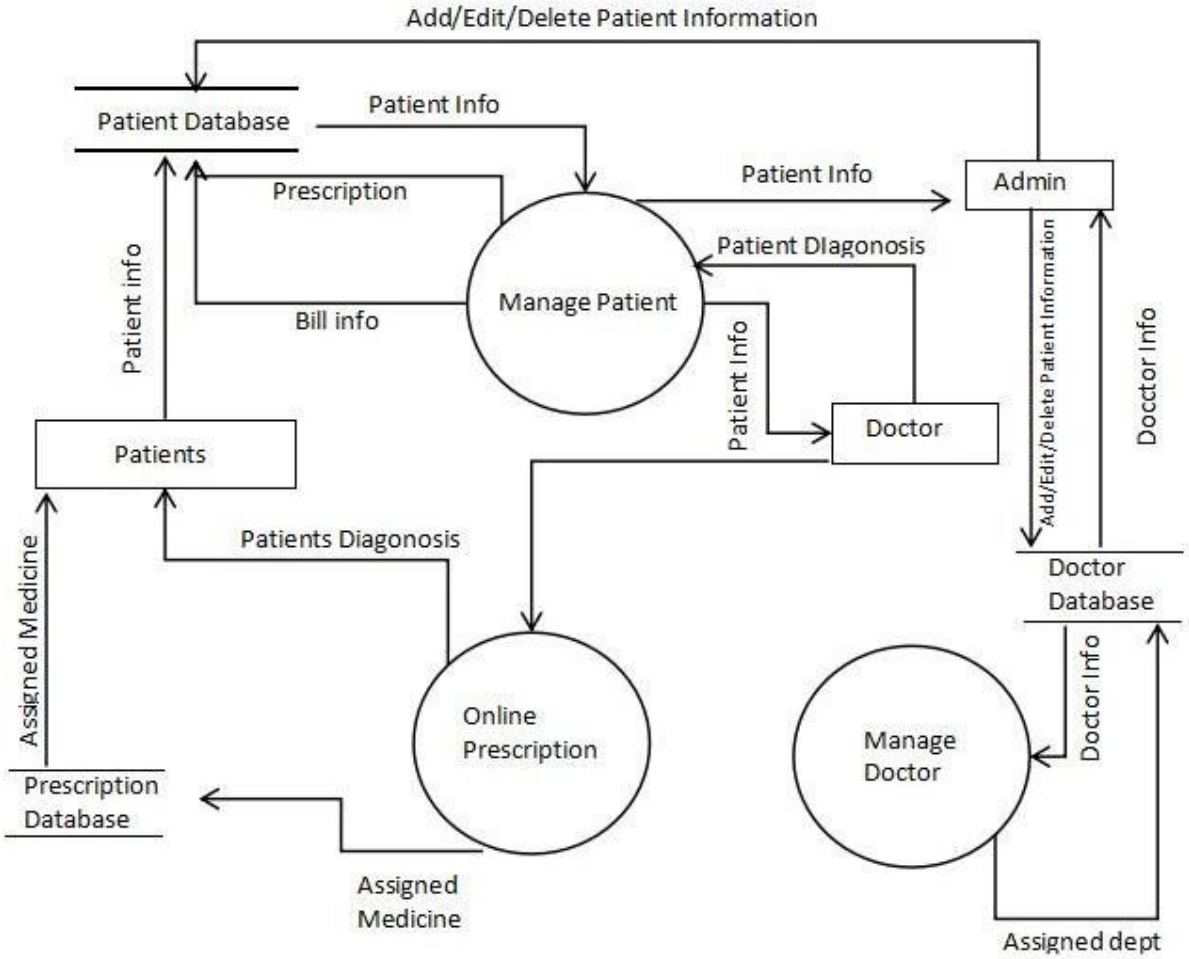

Figure 3.1.5 : DFD Level 1

3.1.6 UI Design

This system supports:

1. Doctors

2. Patients

3. Admin

Core Modules and features breakdown of the UI:

Dash Board : (Role based)

1. Doctors View: patients Overview, Appointment

2. Patients view: Consultation from Doctor, online appointments, Prescription

3. Admin View: Management, adding or dropping a doctor. Create a post on portal

Patients Management:

1. Patients Profile (Medical history, allergies, treatment plan)

2. Book a appointment a doctor online

3. Treatment

4. Store the prescription

Doctor (Medication and Prescription)

1. Doses Instrustion

2. Prescribe a patient directly

3.2 Detailed Methodology and Design

Typical elements of a methodology include the following:

Process: It outlines the order how this project should completed. Which programming languages are used during the development period of this project

Roles and Responsibilities: it list up the people who are defined for the specific task in this project

Tools and Techniques: It outlines the resources, tools, and methods needed to complete the tasks efficiently.

Documentation: this demonestrate the documentation or manual of this project.

3.3 Project Plan

The project plan are described as follows:

Project Overview: the plan start with the overview the whole idea and motivation of this project.

Project Goals: project goals gives the clear understanding of difining the idea or implementation plan of this project.

Project Timeline: create a scedules for defined task

Project Requirements : needs many functionl and non functional requiements for developing a website.

3.4 Task Allocation

Task Name	Duration	Resource
Project planning	04-jan-25	Analyst, User
Project related study	05- jan-25 To 07-Jan-2025	Analyst
Project analysis	08-jan-2025 To 10-jan-2025	Analyst
Methodology	12-Jan-2025 To 18-Jan-2025	Analyst, User
Project Development	22-jan-2025- 28-jan-2025	Analyst, designer, developer
Deployment	02-feb-2025	Designer , developer
Testing	03-feb-2025	Developer, tester, user
Implementation	04-feb-2025	Analyst, developer,user

3.5 Summary

During the developmet period of this curative care managements sytems are process clinical question to collect the functional and non functional data for website. This ensured that the system handles practical needs like monitoring treatments, keeping medical records, and setting up appointments.

A user friendly methodology are desigened. The first farme work and prototypes were improved using usability testing sessions to collect user feedback.

Chapter 4

Implementation and Results

4.1 Environment Setup

Hardware:

1. Laptop (Configuration)

2. Wi-fi Router(Tp-link)

Software:

1. Visual Studio Code

2. Xampp

3. browser

4. MySQL

UI/UX Design:

1. Figma

2. Html

3. CSS

4. Java Script

5. Bootstrap

4.2 Testing and Evaluation/Performance/ Comparative Analysis

Functional Testing

All links and buttons are work properly. All form input are validate and and submitted properly. User login registration are working properly. Data operation into database functioning correctly.

Usability Testing

The design of the website is well performed . The content is easy to read and understand.

Performance testing

Load time of the website is quick. Image, scripts, style-sheets are properly optimized.

Evaluation

All goals and features deliver correctly in project requirement.

4.3 Results and Discussion

The web application was created and implemented with successfully. All primary objectives outlined in the project proposal were met. Every feature functioned as planned, with no issues.

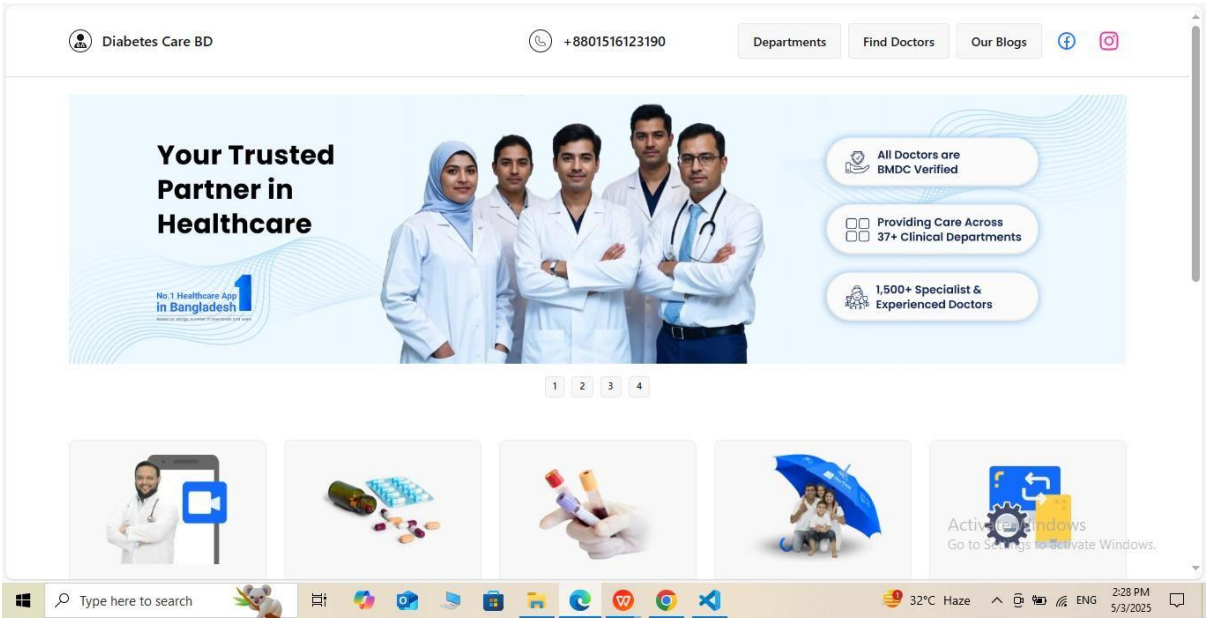

Figure 4.3.1: Home Page

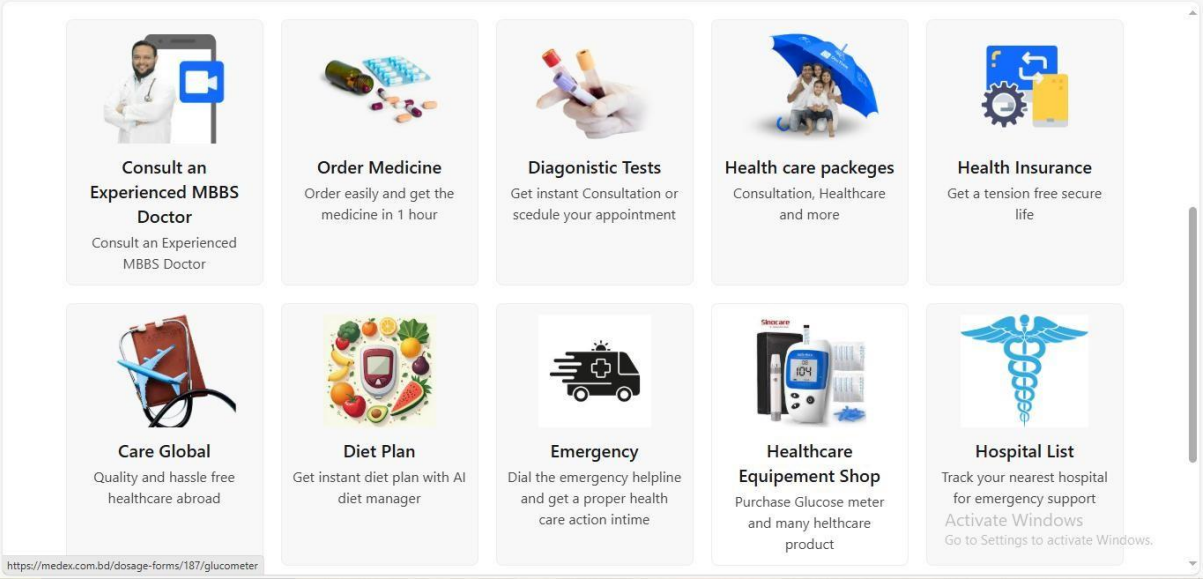

Figure 4.3.2 : Home page

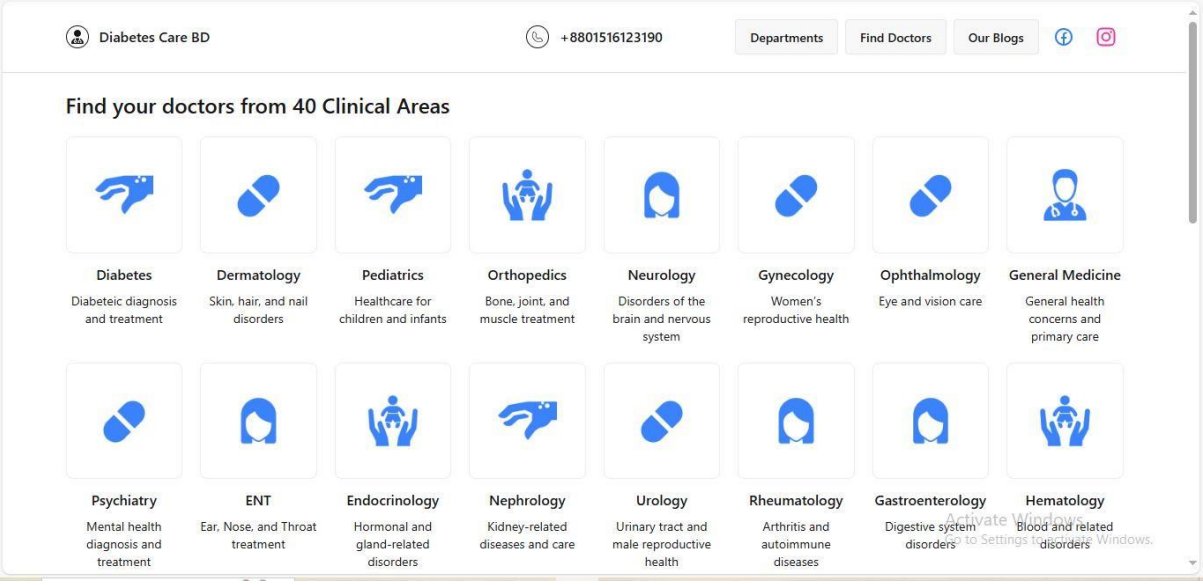

Figure 4.3.3: Department Page

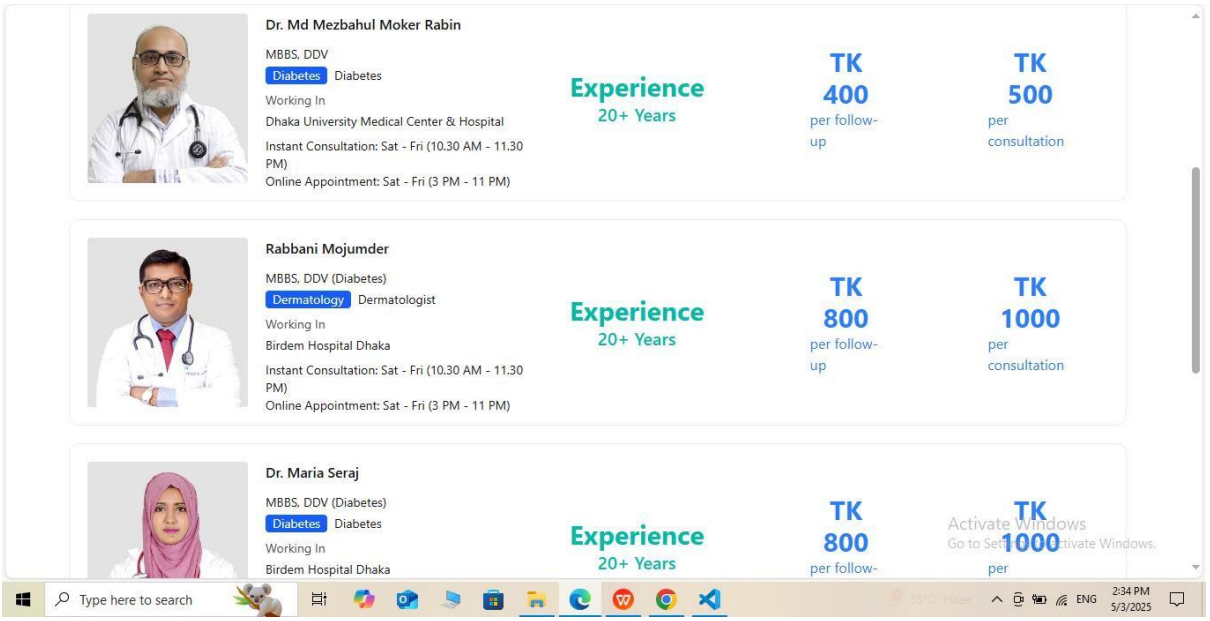

Figure 4.3.4: Find doctors page

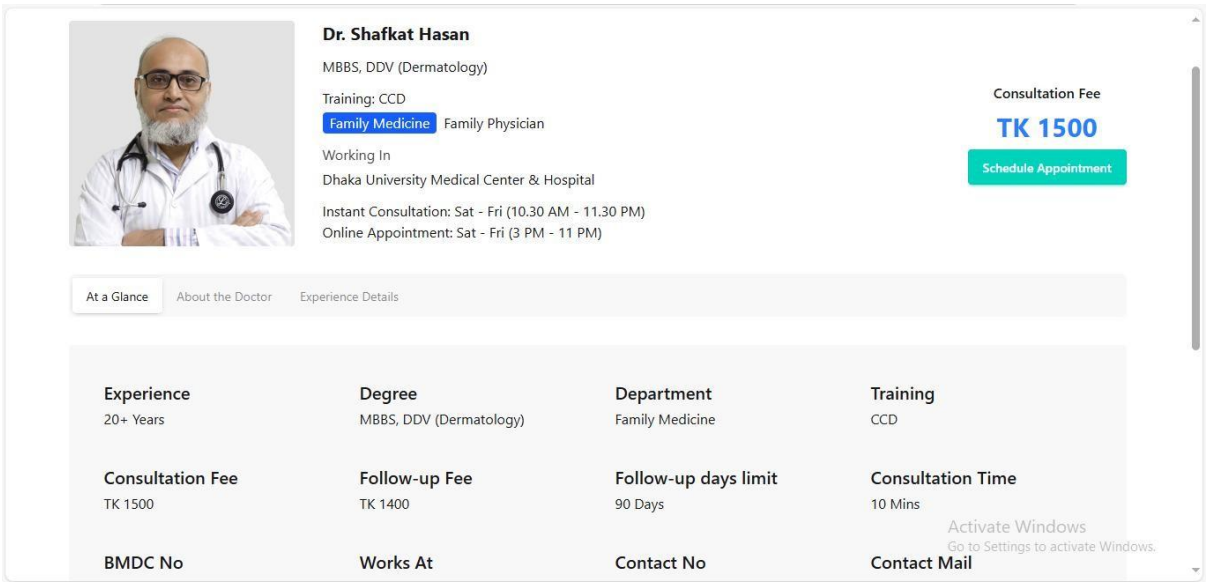

Figure 4.3.5: Doctor's Information page

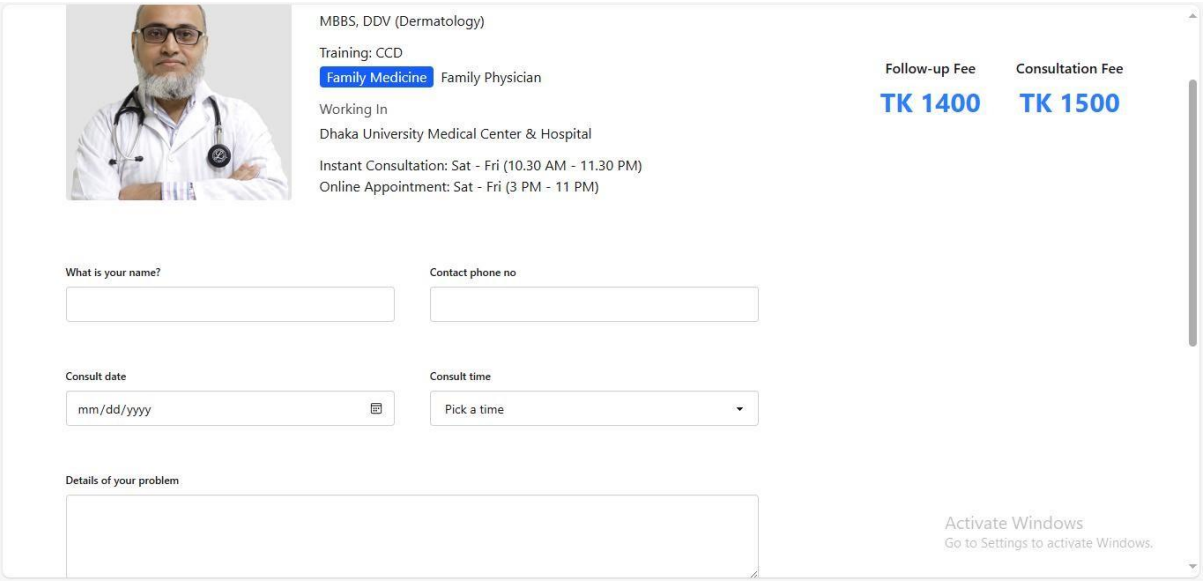

Figure 4.3.6: Appointment page

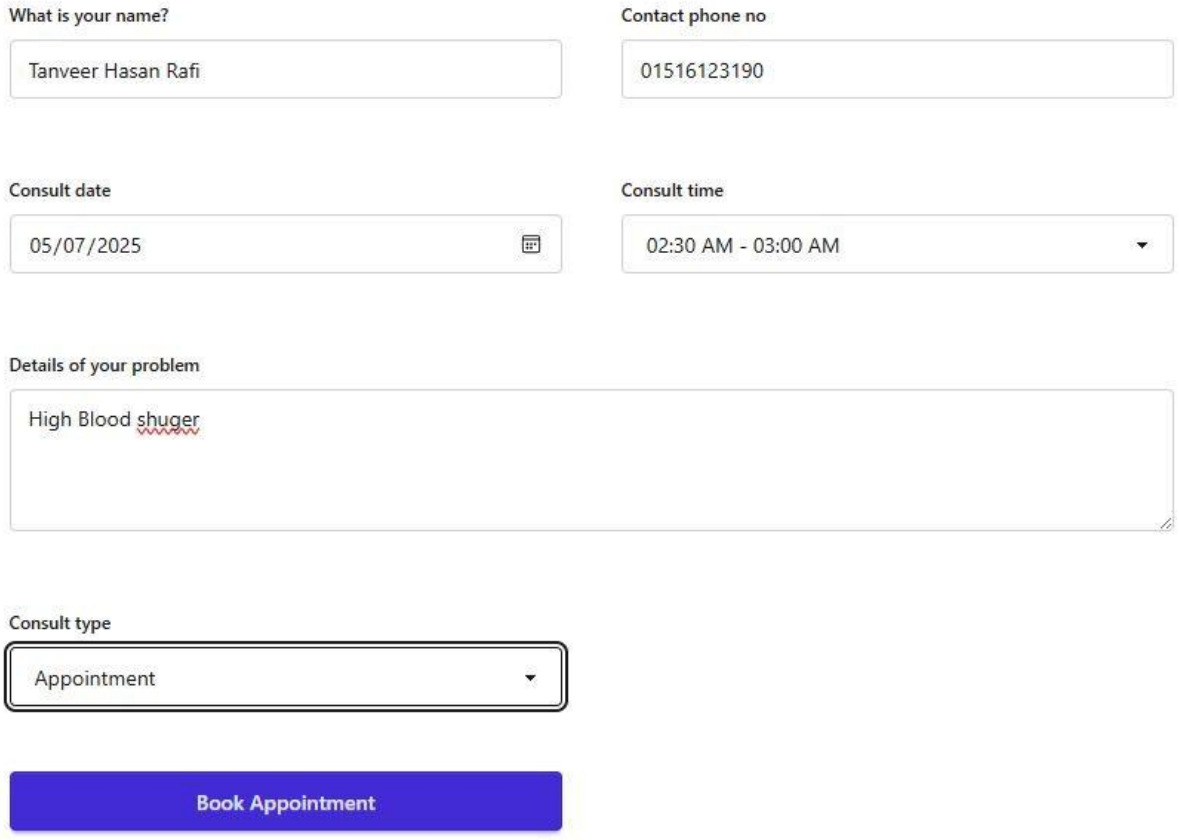

Figure 4.3.7: Appointment booking details

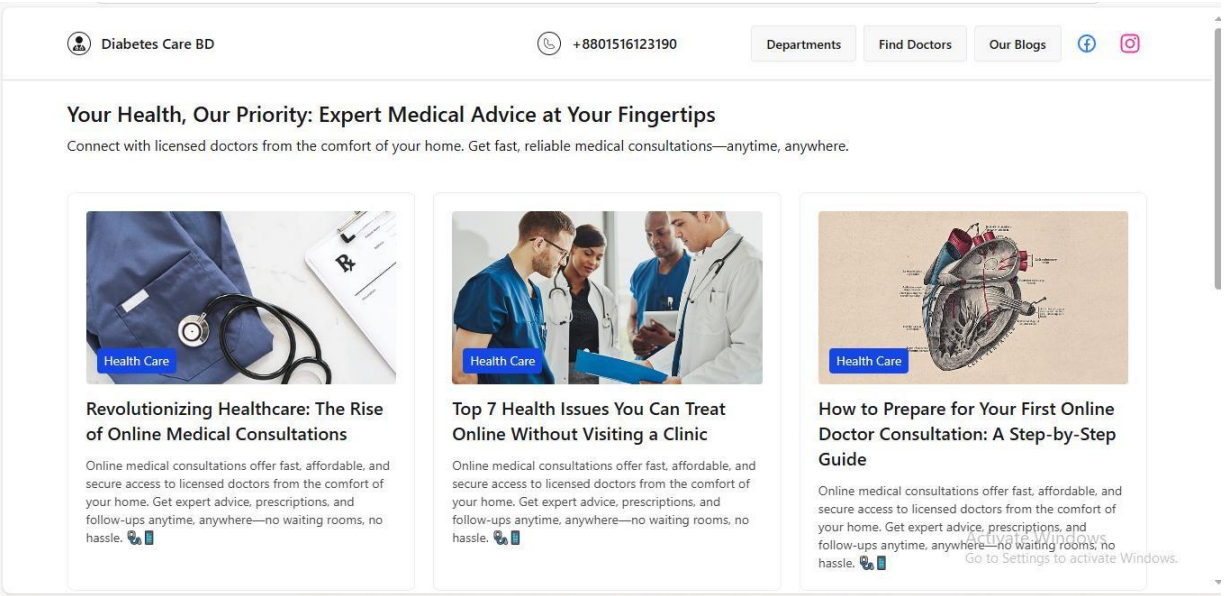

Figure 4.3.8: Blog page / Health portal

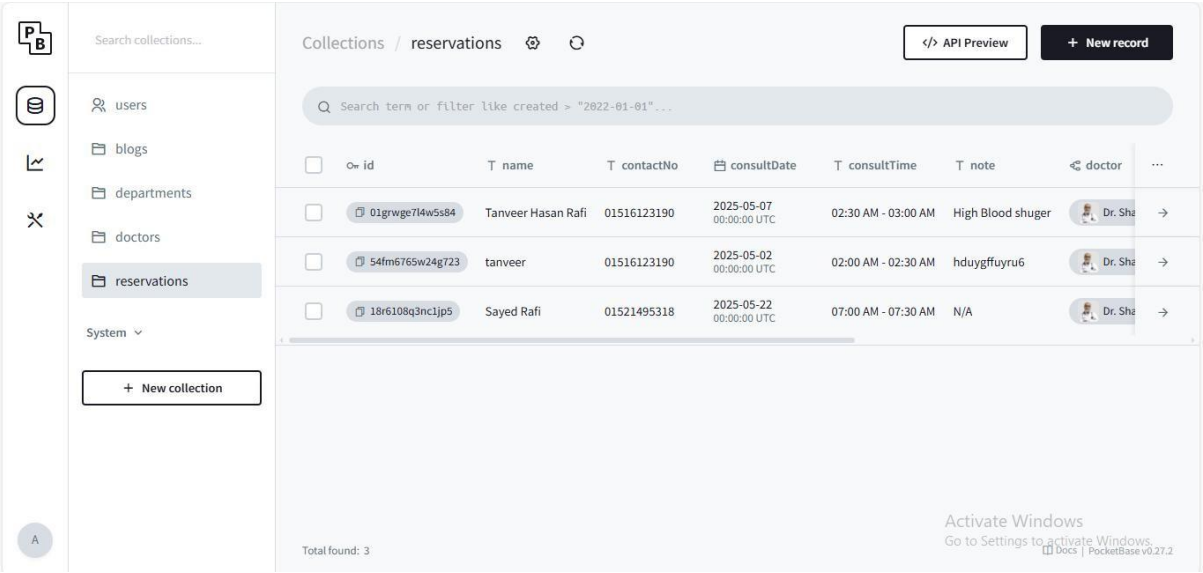

Figure 4.3.9: Admin Panel

4.4 Summary

Starting with the planning of the Curative care management system for diabets patients. The developmemts , planning and outcomes are met properly . The functional and non functional requiremnets are met durings the results. The users could use the system very easily because of the easy and clear user interface of the website. Testing and perfomance analysis are done. All features are operational according to the plan.

Chapter 5

Engineering Standards and DesignChallenges

5.1 Compliance with the Standards

5.1.1 Software Standards

Xampp
Visual Studio codes
Atom(Text editor)
Pocket Base (Database)
MySQL(Database)
Figma(UI/UX Design)
React JS
HTML
CSS
Bootstrap
PHP

5.1.2 Hardware Standards

A laptop which have core i5 processor and 8 GB of ram is used to run local servers, compilers, code editors (VS Code, atom), databases (pocket base, MySQL), and browser testing tools.

5.2 Impact on Society, Environment and Sustainability

5.2.1 Impact on Life

Diabetes patients are aware about their diabetes after using this website. This websites is giving the managemenet system, portal and easy doctor access to slove the patients diabetes

issue. So after usings this website patinets should aware about their health condition and they could manage their diabetes properly and It reduce the cost and doctors fee.

5.2.2 Impact on Society & Environment

If a diabetes patients are successful to manage their diabetes by the help of curative care management system , they could save their hospital expenses, hospital stays, expensive surgeries, so this is a huge relief for patients and their family.

5.2.3 Ethical Aspects

Patients data is very sensitive. Such as they provide many health related information with doctor. So patients data must kept in private.

Compliance with data protection laws like HIPPA, GDPR, PDPA.

Patients must know how their data is collected, stored and shared. This managements system will protect patients data with encryption algorithm process, secure server and clear policies. This management website should be present transparent to explain how the system works.

5.2.4 Sustainability Plan

Using cloud services like (AWS, Azure, Google Cloud) that can grow as user number grow. Update all the information regularly. Beacuause health related information is very senstive. Always keep the system sucure and fast.maintaining the patients turst and avoinding the legal trouble.

5.3 Project Management and Financial Analysis

Total Cost for five years:

Seri al No.	Equipment	First Year	Second Year	Third Year	Fourth Year	Five Year	Total
1	Web application	150000	-	-	-	-	150000
2	Desktop Application	120000	-	-	-	-	120000
3	domain and hosting cost	50000	50000	50000	50000	50000	250000
4	Expenses for Employees	50000	50000	50000	50000	50000	250000
5	Other Cost	30000	30000	30000	30000	30000	150000
6	Total Cost	400000	130000	130000	130000	130000	**920000**

Table 5.3.1: Total Cost Estimation for Curative care managements system for diabetes patients.

Total revenue of this project for five years

Seri al No.	Equipment	First Year	Second Year	Third Year	Fourth Year	Five Year	Total
1	Estimated earning	500000	600000	700000	800000	900000	3500000
2	Total cost	400000	130000	130000	130000	130000	920000
	Total Revenue	100000	470000	570000	670000	770000	258000

Table 5.3.2: Total revenue Estimation for Curative care managements system for diabetes patients

5.4 Complex Engineering Problem

5.4.1 Complex Problem Solving

Table 5.4.1: Mapping with complex problem solving.

EP1 Dept of Knowledge	EP2 Range Of Conflicting Requirements	EP3 Depth of Analysis	EP4 Familiarity of Issues	EP5 Extent of Applicable Codes	EP6 Extent Of Stake-holder Involvement	EP7 Interdependence
☑	☑	☑	☑	☑	☑	☑

Mapping with Knowledge Profile for EP1

Table 5.4.2: Mapping with knowledge Profile.

K3 Engineering Fundamentals	K4 Specialist Knowledge	K5 Engineering Design	K6 Engineering Practice	K8 Research Literature
☑	☑	☑	☑	☑

5.4.2 Engineering Activities

Starting with the planning of the Curative care management system for diabets patients. The developmemts , planning and outcomes are met properly . The functional and non functional requiremnets are met durings the results. Data security are developed from end to end encription. To create the managements system, study the healthcare regulations. Data flow modelings is used during development period. The users could use the system very easily because of the easy and clear user interface of the website. Testing and perfomance analysis are done. All features are operational according to the plan.

5.5 Summary

The developments of the system is very is hard. Because the health related measurement are very sensetive. High level of perticipation form patients, doctor and healthcare professionals is nesseary to build this website.

Table 5.5.1: Mapping with complex engineering activities.

EA1 Range of re-sources	EA2 Level of Interaction	EA3 Innovation	EA4 Consequences for society and environment	EA5 Familiarity
☑	☑	☑	☑	☑

Chapter 6

Conclusion

6.1 Summary

The Curative Care Management system is a web based platform which is specified for diabetics patients. This system gives personalized health portal, AI based Diet plan, blog page to seek knowledge about diabetes and their issues. This system also gives a individual database to patients to maintain their early prescription and medication and documents also. A patients can make a appointment by filling up some basic questions. Doctors also prescribe a patients very easily. Patients and doctors are record their information and prescription etc. There are many health care management app or websites are available in the market. But there is no specified platform for diabetics patients. This curative care managements system is a platform which is specified for diabetes patients. This system is developed by many programming languages like HTML , CSS , Java script , react JS, PHP, MySql, pocket Base etc. My primary aim to create a website which is very user friendly for diabetes patients and they should manage their early diabetes by using my system. They should save their clinical records for a long time and the could make a appointment for specialist doctor easly.

6.2 Limitation

Patients should limited access to health information. Medication and lifestyle response to treat symptom based treatment plan. Rather then preventing them.

6.3 Future Work

My objective is to turn this platform into a business, which means figuring out what the market requires, setting up value proportion, and organising income streams. The approach will be viable with sponsorship and a subscription-based business plan. The primary parties from whom we may collect the income will be patients, government health agencies, insurance companies, pharmaceutical firms, and hospitals and clinics. Long-term, we include the health care industry, which includes chronic illness management and mental health.

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