Bangladesh Army University of Science and Technology,
Saidpur Cantonment, Nilphamari

HEALTH MANAGEMENT SYSTEM

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE CODE: CSE 2206

PRESENTED BY:

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ASSISTANT PROFESSOR

(DEPT. OF CSE)

Introduction:

This project aims to develop a comprehensive database management system for an online health management system. The system is designed to efficiently manage information related to tools, medicines, nursing, diet plans, diseases, doctors, disease statistics, and users. With the increasing demand for accessible and reliable healthcare services, this database system can contribute significantly to streamlining healthcare operations and enhancing patient care.

Problem Definition:

The healthcare sector often faces challenges in maintaining organized and easily accessible patient data, medical records, and treatment plans. The primary objective is to create a robust platform that facilitates seamless interactions and transactions between various entities involved in the healthcare domain, including doctors, medicines, tools, diet plans, workout routines, nursing steps, disease information, and disease statistics. Specifically, the following issues are targeted for resolution:

Information Accessibility: Ensuring that healthcare professionals have quick access to accurate and updated information about medicines, tools, and disease statistics to facilitate timely and effective treatment.

Patient Care Management: Streamlining the process of creating and managing personalized diet plans, workout routines, and nursing steps for patients to improve.

Data Integration and Analysis: Establishing a system that can integrate and analyze data related to disease information and statistics for research purposes and to identify trends and patterns for effective healthcare decision-making.

User Interface and Experience: Designing an intuitive and user-friendly interface that caters to the diverse needs of healthcare professionals, patients, and administrators, ensuring a seamless experience throughout the healthcare service process.

Available Applications:

During the initial phase of the project, we extensively studied several existing healthcare management applications, including but not limited to such as:

- Epic Systems
- Cerner Corporation
- Allscripts Healthcare Solutions
- MEDITECH

These applications provided valuable insights into the essential features and functionalities necessary for an efficient healthcare database management system.

Stakeholders:

The stakeholders involved in the development and implementation of this project includes:

Users: Individuals accessing the online healthcare database to seek medical advice, information on medicines, tools, diet plans, workout routines, nursing steps, and disease information, and who rely on the platform for managing their health and wellness such as patients, elderly and disabled persons.

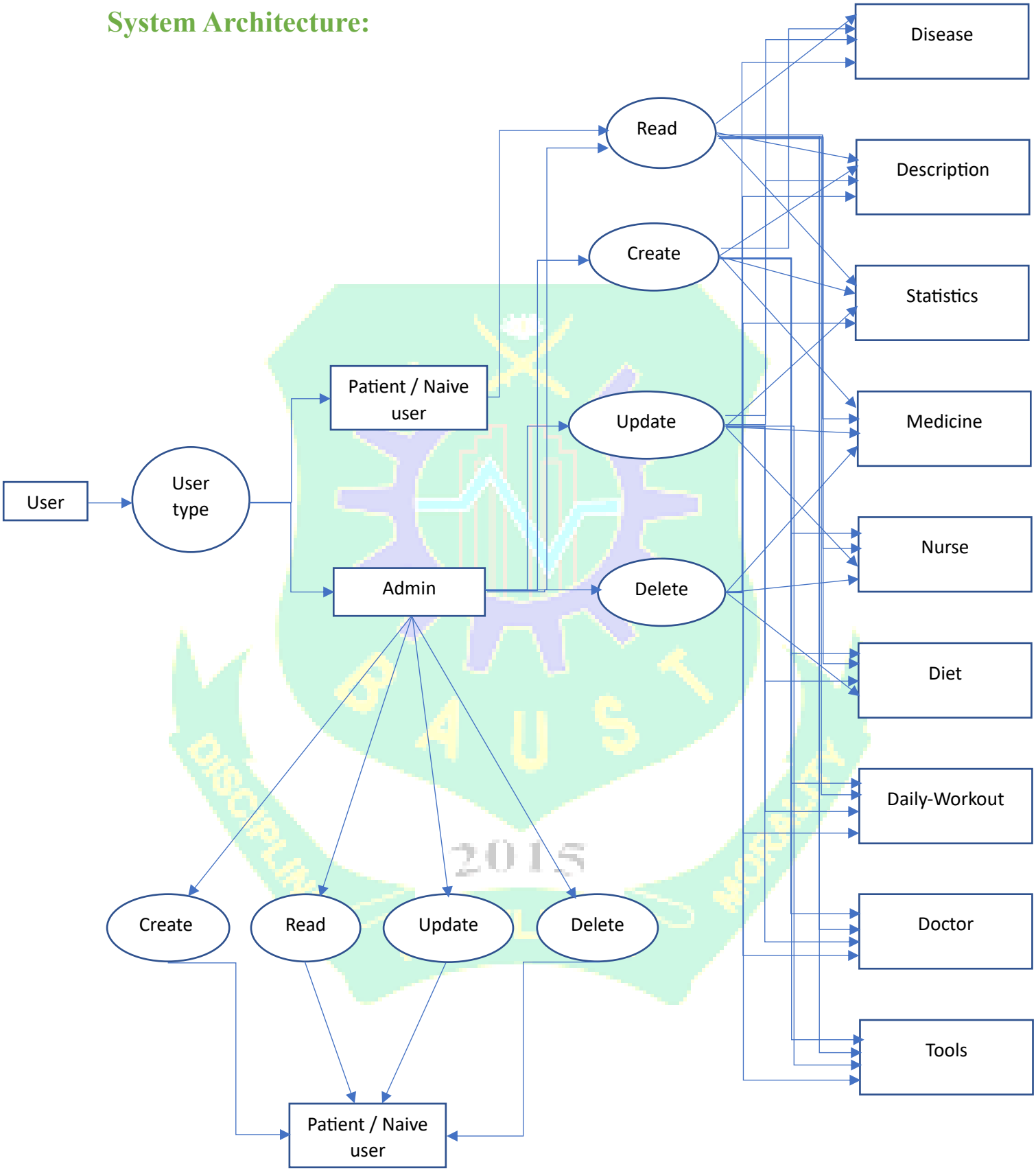
Doctors and Healthcare Professionals: Utilizing the database to access patient records, prescribe medicines, create diet plans, recommend workout routines, and record nursing steps, aiming to provide accurate and effective healthcare services to patients.

Pharmaceutical Companies: Providing information about medicines and tools, and relying on the database for accurate data related to disease statistics and information, which aids in research, development, and distribution of pharmaceutical products.

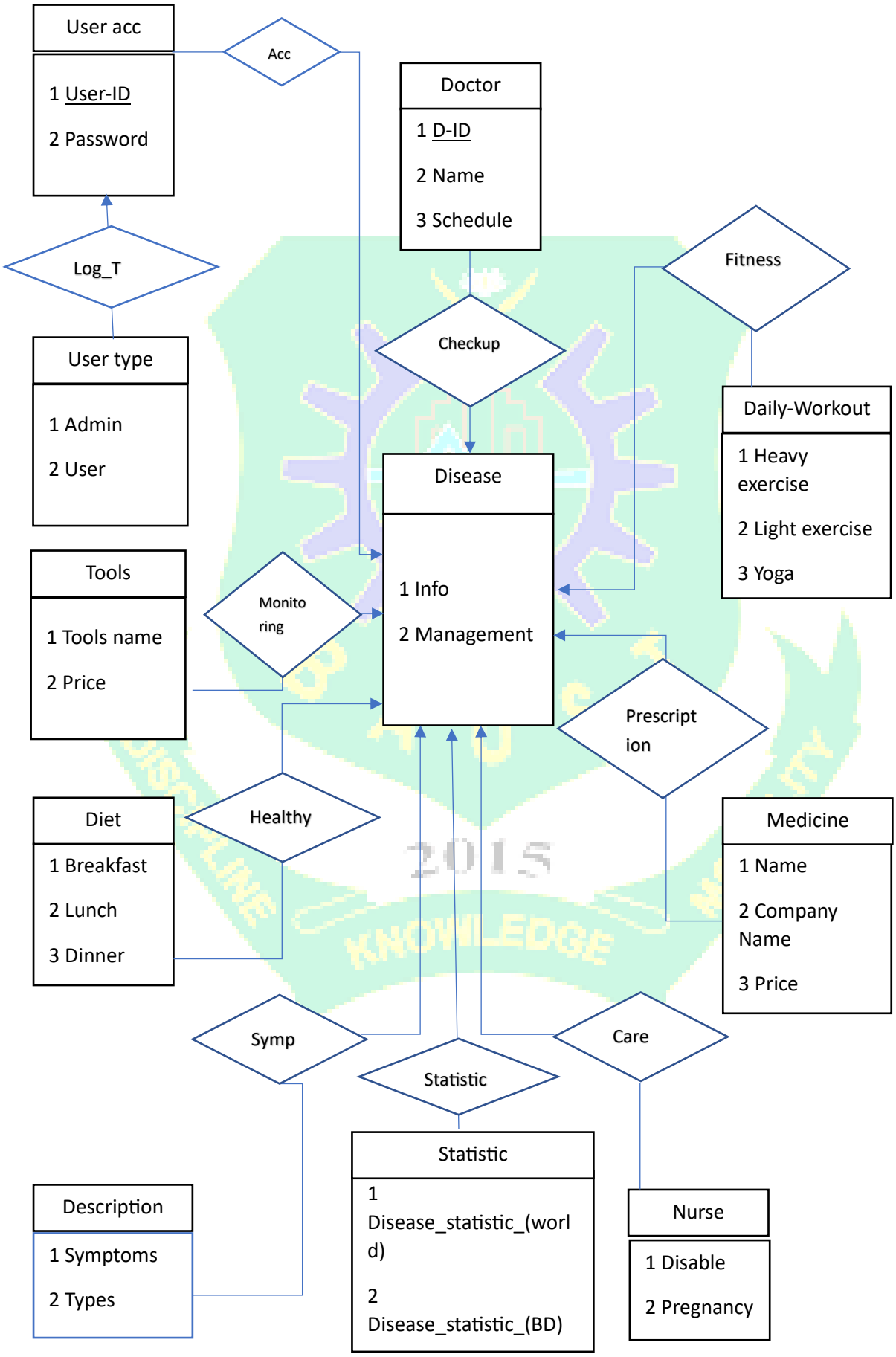
Issues Encountered:

As our database system is about health management system, we had to work with medical domain as a CSE student. At first, we had to learn about the fundamentals of our project and what kind of work we had to for our purpose. Once we got to know about our fundamental, we started to implement. As we go further into the project we faced multiple errors and had to help from sources and Quora, Chatgpt and other related websites about medical services to solve those problems. We had to interact with patients, doctors, nurses to collect data and gain knowledge about our selected diseases like blood pressure, diabetes, allergy, influenza etc. For this we had to visit hospitals, clinics, diagnostic centers. To implement those data we had to learn about Sql, ER diagram and some of the problems had to do with managing libraries, so we took some tutorials. We had to learn specific database model to use in our project. To complete our database system, we had to use mysql, HTML, VS Code (Visual Studio Code), CSS etc. To use thse applications we also had to take tutorials from youtube and websites.

System Architecture:



Database Design:



Tools and Technologies:

During the development of the online healthcare database project, the following tools and technologies were utilized:

SQL Database Management System (DBMS): Used for the creation, management, and manipulation of the database structure and data related to users, doctors, medicines, tools, diet plans, workout routines, nursing steps, disease information, and disease statistics.

HTML (HyperText Markup Language): Utilized for designing and developing the user interface components of the online healthcare application, allowing the presentation of information related to medicines, diet plans, workout routines, and disease statistics in a web-based format.

VS Code (Visual Studio Code): Served as the integrated development environment (IDE) for coding and programming activities, providing a convenient platform for writing, editing, and debugging SQL queries, HTML code, and associated scripts for the online healthcare database project.

CSS (Cascading Style Sheets): Employed in conjunction with HTML to enhance the visual presentation and layout of the online healthcare application, enabling the customization of fonts, colors, and styling elements for improved user experience and interface design.

JavaScript: Utilized for implementing dynamic functionalities and interactive features within the HTML application, enhancing the user interface with responsive elements, data validation, and user-driven actions for an enhanced user experience.

SQL Query Optimization Tools: Employed for optimizing and fine-tuning complex SQL queries to ensure efficient data retrieval and processing, thereby enhancing the overall performance of the online healthcare database system and reducing query execution time.

Implementation:

a)Disease:

In this module we have records of various common diseases like Diabetes, Blood pressure, Allergy etc. And also how to manage these. Meaning how to cure them and prevent them.

b)Statistics:

In this module we have analyzed the global and domestic situation for these common diseases. Meaning we have created an all around records of every little incident that occurred both in international stage and national.

c)Description:

Here the various symptoms and types of these known common diseases are described briefly.

d)Medicine:

Here various names of the medicines that are required to treat these common diseases are listed. Here also the chemical components of these are also described. So that it is easier for the user to know that what they are using. For there are specific chemical components that are very harmful for they might have allergic reactions to these components.

e)Diet:

Here the diet plans for every type of patients are listed. So that they might know what type of food they should eat for them to remain healthy and active.

f)Work-out:

In this we have given a list of various light hearted exercises for the patients according to there need and want. We have also listed the needed exercises for the patients who are recuperating from various injuries or operations. In simple terms rehabilitation exercises.

g)Nurse:

Here the term for "Nurse" is used for nursing mainly. For those who are unable to look after themselves. Mainly the elderly, paralyzed or disabled, pregnant females and babies etc. Here it is described how to take care of these personals.

h)Tools:

Here the list various tools are given and also the knowledge about them and for what type of diseases we use them.

i)Doctor:

In this a list of famous doctors and specialists are given. There are contact info, appointment dates and schedules and also their visiting information are also given in full details.

j)User account:

Here the various id and their info are recorded. Both the admin and naïve or direct users.

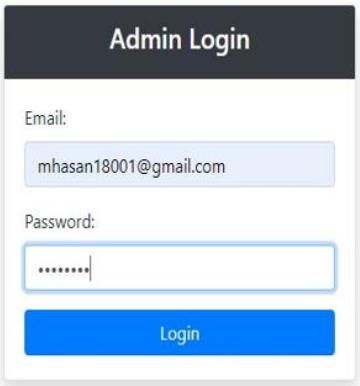
k)User type:

Here the various user types are listed and divided.

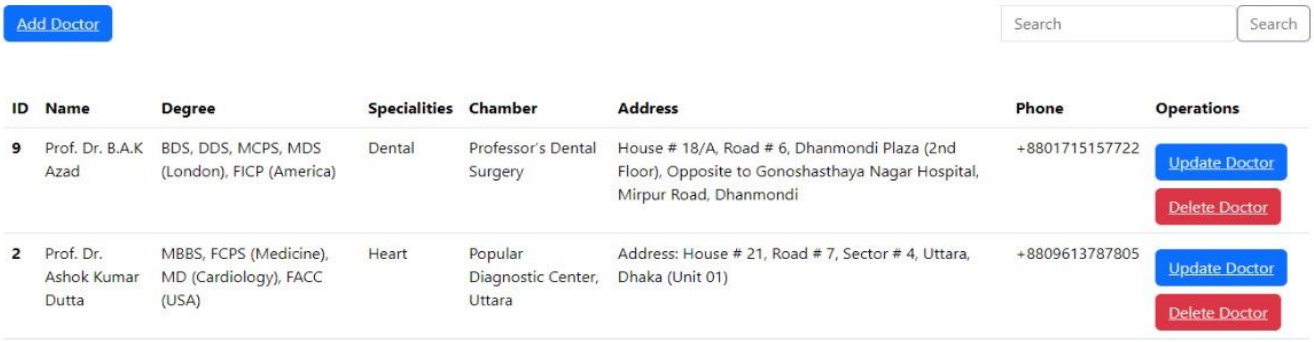

Login
Email
mehedihasan14203@gmail.com
Password
Login
Not Have an Account? Sign Up Here


Select Your Disease:
Diabetes
Diabetes
Heart
Dental
Influenza
Allergy
Blood pressure


Disease Description
Doctor
Doctors for Diabetes:
Name: Prof. Dr. Md. Hafizur Rahman
Degree: MBBS (DMC), DEM (BIRDEM), MD (EM), MACE (America)
Chember: Popular Diagnostic Centre Ltd – Dhanmondi Branch
Address: House #16, Road # 2, Dhanmondi R/A, Dhaka-1205, Bangladesh
Contact: +880 9613 787801
Tools
Nursing
Medicines
Diet plans
Workout
Statistics


Admin Login
Email:
mhasan18001@gmail.com
Password:
Login


User
Doctor
Workout
Nursing



Conclusion and Limitations:

In conclusion, the development of the online healthcare database project has significantly contributed to streamlining healthcare management and improving access to crucial medical information for users. The project has successfully addressed key challenges related to data integration, user authentication, patient management, and disease statistics tracking, providing a comprehensive platform for storing, managing, and retrieving critical healthcare information.

However, it is important to acknowledge certain limitations that may impact the project's scope and functionality. These include:

Scalability Challenges: The current design may face scalability limitations when handling a significant increase in user and data volume, requiring careful consideration of database scaling strategies and performance optimization techniques.

Regulatory Compliance: Compliance with evolving healthcare regulations and data privacy laws poses an ongoing challenge, necessitating regular updates and adherence to industry standards to ensure data security and privacy.

Limited Feature Set: While the current implementation covers essential healthcare management features, there is a potential for the addition of more advanced functionalities, such as integrated telemedicine solutions and real-time data analytics, which could further enhance the project's capabilities.

References:

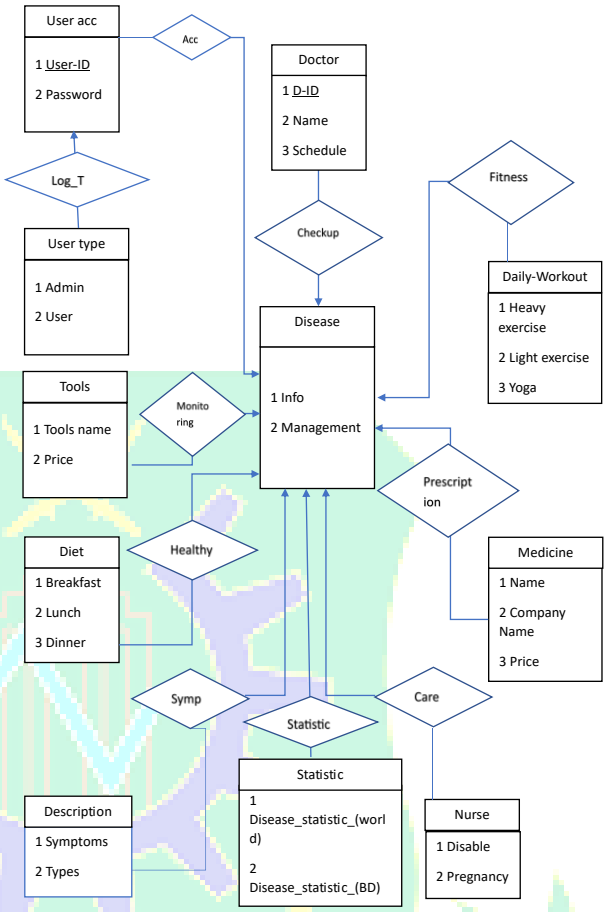
- https://www.nih.gov/
- https://www.healthline.com
- https://www.techpout.com/hospital-management-software/#1_Soft_Clinic

Complex Engineering Problems (CP) and Complex Engineering Activities (CA) Analysis

Title: Design and Implementation of an online Health management System

Attainment of Complex Engineering Problem (CP)

S.L.	CP No.	Attainment	Remarks
1.	P1: Depth of Knowledge Required	Yes No	K3 (Engineering Fundamentals): Require knowledge of Database design and web development.
			K4 (Engineering Specialization):
			K5 (Design):

		Yes	**Database Design:** 
		Yes	K6 (Technology): XAMPP server, PHP, MySQL, CSS, HTML, JavaScript etc.
		Yes	K8 (Research): We studied related applications to medical sector.
2.	P2: Range of Conflicting Requirements	Yes	Even though we are CSE engineering students, we had to work about medical sector, research and study on medical knowledge to build this database system.
3.	P3: Depth of Analysis Required	No	
4.	P4: Familiarity of Issues	Yes	We had to work with Medical domain as a CSE student. We also had to interact with patients, doctors and visit clinic, hospital to collect data information to build our database system.
5.	P5: Extent of Applicable Codes	No	

6.	P6: Extent of Stakeholder Involvement and Conflicting Requirements	Yes	Involves patients, workers, customers and admin
7.	P7: Interdependence	Yes	Involve login, disease, doctor, medicine, tools, diet plan and workout modules.  

Mapping of Complex Engineering Activities (CA)

S.L.	CA No.	Attainment	Remarks
1.	A1: Range of resources	Yes	Involves patients, caretaker or personal nurse, elderly and disable person and admin. Technologies: XAMPP server, PHP, MySQL, CSS, HTML, JavaScript etc.
2.	A2: Level of interaction	Yes	We had to interact with patients, nurses, doctors to verify and collect data information to build this database system.
3.	A3: Innovation	Yes	We did not find any kind of websites or software that could give us free advice on various disease like diabetes, blood pressure, influenza etc. Even though we found some websites that gives information about research material for doctors, not for general public and it was not generalized. They were very complex.
4.	A4: Consequences for Society and the Environment	Yes	Provides knowledge for those who do not anything about basic treatments for diseases like diabetes, blood pressure, allergy, influenza. Thus this will have a serious impact on society and help people to assists in times of need.
5.	A5: Familiarity	No	