

TO DESIGN AND DEVELOP A PATIENT & HEALTH CARE SYSTEM

BY

Nazmus Sakib
ID: 183-15-1833
AND

Apurba Das
ID:183-15-11850

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

Supervised By:

Professor Dr. Md. Fokhray Hossain
Professor
Department of CSE
Daffodil International University

CO-Supervised By:

Ms. Subhenur Latif
Assistant professor
Department of CSE
Daffodil International University




DAFFODIL INTERNATIONAL UNIVERSITY
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APPROVAL

This Project titled “**TO DESIGN AND DEVELOP A PATIENT& HEALTH CARE SYSTEM**”, submitted by Nazmus Sakib, ID No: 183-15-11833 and Apurba Das, ID No: 18315-11850 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 29 January 2023.

BOARD OF EXAMINERS




2/2/23

Chairman

Dr. Touhid Bhuiyan

Professor and Head

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University



29-1-23

Internal Examiner

Arif Mahmud

Associate Professor

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University



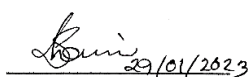
29.01.23

Internal Examiner

Saiful Islam

Assistant Professor

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Daffodil International University



29/01/2023

External Examiner

Dr. Shamim H Ripon

Professor

Department of Computer Science and Engineering
East West University

DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Dr. Md. Fokhray Hossain, Professor, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

Supervised by:



Professor Dr. Md. Fokhray Hossain
Professor,
Department of CSE
Daffodil International University

Submitted by:



Nazmus Sakib
ID: 183-15-1833
Department of CSE
Daffodil International University



Apurba Das
ID: 183-15-1850
Department of CSE
Daffodil International University

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ABSTRACT

Doctor's Information is aimed at developing an online information of Doctor. In emergency basis, patients can find Doctor by searching their nearest area, disease and particular Doctor's name in this website. That means patients will get all the information about Doctor using this application. Basically when a person become sick then he/she get worried and tensed. At that moment this website will help them a lot at any time and an emergency. This is the moto of this application that how general people will get help at their emergency. In this application, it is the description of how to find a qualified and desired Doctor according to particular disease very easily and efficiently using this website at an emergency. After searching and finding the Doctor, patients can make appointment and go for the further treatment. Patients can have registered and login in the website and find Doctors for their treatment and communicate with the Doctors by the internal messaging system and external system like directly phone call or email etc. via this website. This website has been developed in a few cases of the diseases, and in a few areas, initially. The future scope is to develop the website with all the common diseases and area such as, entire Dhaka city and also the main cities of Bangladesh.

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CHAPTER 1

INTRODUCTION

1.1 Background of the project

We must explain my inspiration for choosing the Doctors Information before we can begin to describe the project. That there is still a lack of a well-established, cordial relationship between patients and doctors and that communication between them is difficult is truly regrettable. Even when we have a serious health problem, we often plan to go to outside of the country such as India, Singapore, or Thailand, without even knowing that we can get a solution of the same standard quality at a much cheaper cost in Bangladesh. Another issue with this sector is how difficult it is to provide assistance on the same day for someone from a rural location who travels to Dhaka for an appointment. The individual must wait for several hours to receive a serial for a subsequent day, travel back to their community, and then return to receive the service once more. This demonstrates how poorly doctors and patients communicate with one another. To address this issue, Doctors Information, an online information system, was created and developed to help patients find acceptable doctors by disease, area, or doctor name while also creating comprehensive profiles of doctors. Moreover, this system will also provide an online appointment booking system, so that patients can book an appointment with the doctor of their choice without having to wait in long queues. This will help to reduce the time and cost of travelling for both the doctor and the patient. Furthermore, this system will also provide a platform for doctors to communicate with their patients and provide them with the necessary information and advice.

1.2 Motivation

- Convenience: Web-based healthcare systems offer convenience to both patients and doctors by allowing access to medical records and information from the comfort of their own homes.
- Cost savings: By using web-based healthcare systems, patients and physicians can save money on office visits and telephone consultations.

- Flexibility: Web-based healthcare systems give patients the flexibility of scheduling doctor appointments and communicating with physicians from any location
- Access to medical records: Web-based healthcare systems make it easier for both patients and doctors to access medical records and information.
- Improved communication: Web-based healthcare systems enable patients and physicians to communicate more effectively and efficiently, regardless of their location.

1.3 Problem Statement

An inventive method of giving patients medical aid is through the web-based healthcare system. It strives to give people access to resources and high-quality medical treatment that could be difficult to find otherwise. A system like this might lower expenses for private healthcare providers and enhance results while shortening hospital stays. It is made to be simple to use and simple to get to. It also aims to develop an effective platform where patients can get prompt access to high-quality medical treatments. It's critical that rules governing the usage of this web-based system safeguard patient privacy and safety while assuring the optimum outcome for their health. As a road plan for creating the web-based application, this problem statement. the web based health care system must be able to meet the ever-evolving demands of the medical industry, while simultaneously taking into account the latest technological advancements. It is essential for this type of system to be user-friendly, efficient and cost-effective in order to provide the best possible healthcare services to its users.

1.4 Objectives

The main aim of this project is to provide an online information system, Doctors Information, that allows users to easily find a suitable doctor based on their specialization and location.

- This system provides the information of doctor in which sector the doctor is specialized.
- This system provides a comprehensive profile for each doctor, including their name, address, specialist, contact number, chamber, experience, qualification, certificate, and feedback. Additionally,

- this system allows doctors to store patient treatment records for follow-up and better treatment. Furthermore,
- this system provides a feedback option that could help a patient in choosing their doctor.
- This system is cost-effective, efficient, and user-friendly, providing a great benefit to both doctors and patients.

1.5 Research Methodology

The methodology of the web-based health care system has revolutionized the way we access medical care. It has become easier to access information, book doctors' appointments, monitor health data and receive treatments from the comfort of our homes. This is a huge benefit for those who are unable to easily move around due to physical limitations, or simply can't afford to take time away from work. The web based health care system employs a variety of methods for providing medical care. It provides patients with electronic health records, which stores important health information in a secure database. Patients can use these records to keep track of their health history and current medications. They can also access a variety of resources like online doctor's appointments and telehealth services. The system also helps to manage payments and billing, making it easier for patients to keep up with their medical bills. Additionally, it offers services such as remote diagnosis and patient education that help to provide improved care in an efficient manner. The web-based health care system has made a huge difference in improving patient outcomes and increasing access to medical care. It enables doctors and other medical professionals to work more efficiently while providing patients with better quality care. Moreover, it reduces wait times and costs, ensuring that everyone has access to the healthcare

1.6 Proposed Solution

The web-based patient help care system that has been presented as a solution is a fantastic way to advance the medical field. Patients would have access to their health information and assistance through this system in a simple and practical manner. They may quickly book visits using this technology, access and view their doctor information, and ask doctors for guidance. Additionally, individuals may utilize this system to pay their expenses, monitor their health improvement, and receive reminders when it's time for check-ups or testing. By giving patients better, more precise care, this

web-based patient system has the potential to change the healthcare industry. It may also shorten waiting times for appointments and assist individuals in better managing their health. This level of convenience and personalized care could have a major impact on the quality of healthcare all around, as well as reduce wait times in hospitals and clinics. The web based health care patient system could truly be a game-changer in medical care. Interface that's easy to use. Design that is flexible. Accessible 24 hours a day. Computer literacy at the very least is necessary. a lot An efficient search engine that allows you to filter results by area, disease, doctor's name, specialty, and other pertinent factors. With a safe login method, creating a profile is simple and easy for doctors. Online services come at no cost. reduces the time, cost, and energy of people.. Automated appointment scheduling and reminders are also included . there is also a Option to rate and review doctors. Secure payment gateway for online payments. Option to store medical records and documents.

1.7 Roadmap of the Project Paper

The project has been organized in seven chapters.

In chapter 1: Introduction.

In chapter 2: Literature Review

In chapter 3: System Study and Requirements Analysis.

In chapter 4: System Planning.

In chapter 5: System Design.

In chapter 6: Implementation and Testing.

In chapter 7: Impact Of Environment & Sustainability

In chapter 8: Conclusion and Future plan.

1.8 Conclusion:

We are unconcerned about the fact that international medical services are becoming more commonplace every day. To provide this industry with improved service, no such steps are performed. We must pay more attention to it. Millions of individuals are looking for improved medical care but aren't receiving it. What's more, though, is that occasionally they go untreated. We have a system of information called "Doctors Information" to enhance medical services. In this area, a great deal more study is required. We anticipate that this information system will significantly improve Bangladesh's health care system.

CHAPTER-2

LITERATURE REVIEW

2.1 Introduction

The advancement of web-based patient and healthcare systems has revolutionized the way healthcare providers and patients interact. This new technology allows for more efficient communication, improved access to health records, and easier coordination of care. Web-based patient and healthcare systems can help facilitate the efficient management of patient information, facilitate the tracking of patient health and medical history, and support the delivery of quality care. These systems can provide a wide range of benefits, including improved communication between providers and patients, better data management, and improved coordination of care. By providing access to health records and other data, web-based patient and healthcare systems can help healthcare providers to better understand patient needs and provide more tailored treatments. Additionally, web-based patient and healthcare systems can help patients to better manage their own health, by providing access to their health records and other important information. This literature review will examine the current state of web-based patient and healthcare systems. It will look at the benefits of these systems, Opportunities, the challenges and risks associated with their use, and the strategies for ensuring their successful implementation. The review will also discuss the potential implications of web-based patient and healthcare systems for the future of healthcare delivery.

2.2 Literature Review

Web-based medical appointment systems: a systematic review. *Journal of medical Internet research* [1]. Implementing web-based therapy in routine mental health care: systematic review of health professionals' perspectives. *Journal of medical Internet research* [2]. Development of a web-based health care intervention for patients with heart disease: lessons learned from a participatory design study. *JMIR research protocols* [3]. Development of a web-based application to improve data collection of antimicrobial utilization in the public health care system in South Africa. *Hospital Practice* [4]. HealthFace: A web-based remote monitoring interface for medical healthcare systems based on a wireless body area sensor network. *Turkish Journal Of Electrical Engineering And Computer Sciences* [5]. Nip, tuck and click: medical

tourism and the emergence of web-based health information. The open medical informatics journal [6]. Effect of an online appointment scheduling system on evaluation metrics of outpatient scheduling system: a before-after multicenter study. Journal of medical systems [7]. Developing an online patient Appointment Scheduling system based on web services architecture. In APAMI Conference Proceedings [8]. Online appointment sequencing and scheduling. IIE Transactions [9]. PEC e-SUS APS online appointment scheduling system: a tool to facilitate access to Primary Care in Brazil. *Ciência & Saúde Coletiva* [10]. Patients' adoption of the e-appointment scheduling service: A case study in primary healthcare [11]. Assimilation of medical appointment scheduling systems and their impact on the accessibility of primary care: Mixed methods study. *JMIR Medical Informatics* [12]. Blood donors' usage intentions of donation appointment-scheduling systems during the COVID-19 pandemic and beyond. *Journal of Philanthropy and Marketing* [13]. Coordinating care—a perilous journey through the health care system. *New England Journal of Medicine* [14]. Coordinating care—a perilous journey through the health care system. *New England Journal of Medicine* [15]. Influence of mechanism of patient-accessible hospital information system implementation on doctor–patient relationships: A service fairness perspective. *Information & Management* [16]. Accounting for the control of doctors: management information systems in hospitals. *Accounting, Organizations and Society* [17]. Design and implementation of a web-based patient portal linked to an ambulatory care electronic health record: patient gateway for diabetes collaborative care. *Diabetes technology & therapeutics* [18]. The literacy divide: health literacy and the use of an internet-based patient portal in an integrated health system—results from the Diabetes Study of Northern California (DISTANCE). *Journal of health communication* [19]. A web-based patient portal for mental health care: benefits evaluation. *Journal of medical Internet research* [20]. Risks and benefits of web-based patient narratives: systematic review. *Journal of medical Internet research* [21]. Privacy enforced access control model for secured data handling in cloud-based pervasive health care system. *SN Computer Science* [22]. A web-based, patient-centered toolkit to engage patients and caregivers in the acute care setting: a preliminary evaluation. *Journal of the American Medical Informatics Association* [23]. Are physicians ready for patients with Internet-based health information?. *Journal of medical internet research* [24]. Outcomes of a

Web-based patient education program for asthmatic children and adolescents. Chest [25].

2.3 Opportunities

The use of web-based systems in the healthcare sector has increased in recent years. This has been driven by the need to improve patient care and reduce costs. In this literature review, we discuss the opportunities of web-based patient and health care systems, including their potential to improve patient access and engagement, facilitate data sharing, and promote cost savings. First, web-based systems have the potential to improve patient access and engagement. By allowing patients to access their health information and medical records online, these systems can improve the quality of care and reduce the need for in-person visits. This access can also facilitate the exchange of information between patients, providers, and other stakeholders, allowing for better communication and coordination of care. Second, web-based systems can also facilitate data sharing, allowing for easier access to patient data. This can help providers to better coordinate care and reduce the risk of medical errors. Additionally, web-based systems can enable the sharing of medical records between healthcare providers, allowing for better coordination of care and improved patient safety. Third, web-based systems can also help reduce costs. By providing access to electronic health records, these systems can reduce the need for paper records and can help reduce administrative costs. Additionally, web-based.

2.3 Challenges

1. **Security and Privacy:** Security and privacy of patient data is a major issue for web-based healthcare systems. These systems store a variety of sensitive information, including personal medical records, billing information and other sensitive data. It is important to ensure that the system is secure in order to protect the privacy of the patient.
2. **Accessibility:** Web-based healthcare systems must be designed to be accessible for all users regardless of their level of technical knowledge or experience. The system should be easy to use and understand, and should provide the necessary functionality and features for users to meet their healthcare needs.

3. Cost: The cost of developing and maintaining a web-based healthcare system can be significant and must be taken into consideration when deciding whether to develop a system.

4. Integration: Web-based healthcare systems must be integrated with existing healthcare systems in order to ensure accurate and timely data exchange.

5. Performance: Performance is also an important factor to consider when developing a web-based healthcare system. The system must be capable of providing reliable and efficient performance in order to ensure patient safety and satisfaction.

6. User Experience: The user experience of a web-based healthcare system must be taken into consideration when designing and developing the system.

2.4 Conclusion

The literature analysis has found that through enhanced communication, greater access to healthcare services, and increased data security, web-based patient and healthcare systems have the potential to improve patient care and results. Cost, technical complexity, a lack of consumer adoption, and privacy concerns are just a few of the main issues that need to be resolved. To evaluate the possible advantages and hazards of web-based patient and healthcare systems, more investigation is required.

CHAPTER- 03

SYSTEM STUDY AND REQUIREMENTS ANALYSIS

3.1 Introduction

Before developing any new system, it is essential to understand the environment in which the proposed system would be run. This includes interacting with the user to understand their demands and the resources available to them. This helps to identify the improvements that need to be made and the resources that need to be allocated. The study and analysis of the proposed system is then carried out under the guidance of experienced information system experts. This ensures that the system is developed in a way that meets the user's requirements and is optimized for the environment in which it will be used.[2]

- Identify the users need.
- Allocate functions to hardware, software, people, database and other system elements.
- Established cost and schedule constraints.
- Create a system definition that forms the foundation for all subsequent engineering works.

3.2 Feasibility Study

A feasibility study aims to objectively and rationally uncover the strengths and weaknesses of an existing or proposed business venture with the aim of determining if it is feasible. In other words, a feasibility study assesses whether or not a business idea has the potential to be successful in the real world. Some of the key factors that are assessed in a feasibility study include:

- The Business Idea: Is the business idea sound?
- Will it generate enough revenue to sustain itself?

The Market: Is there a demand for this product/service? Are there any competitors? How strong is their market position? etc.

- The Competition: What are the competition's strengths and weaknesses? Can our company compete against them? etc.
- Financial Viability: Will this business make money? How much capital will be required to get it off the ground? etc.
- The seven steps involved in the feasibility analysis are:
 - Problem Definition
 - Feasibility Analysis
 - Requirements Analysis
 - Design
 - Implementation
 - Testing
 - Evaluation

During feasibility analysis for this project, following primary areas of interest are to be considered. Investigation and generating ideas about a new system does this. Steps in feasibility analysis seven steps involved in the feasibility analysis are:

- Assemble a team for the project and select a project manager.
- Draw schematics of the system's flow.
- Specify a potential recommendation system.
- Specify and pinpoint the proposed system's capabilities.
- Establish and assess each suggested system's performance and cost-effectiveness.
- Data on system performance and cost are weighted.

Choosing the optimal course of action for the work involves identifying and defining potential systems, which is the process of a feasibility study. After conducting initial study, analysts produced suggested, succinct concepts, which they then provided to consumers for review. The following are the requirements for the feasibility study:[4]

- Technical
- Economical

- Usable
- Behavioral

3.2.1 Technical Feasibility

Technical feasibility is an essential step in the process of project identification and implementation. It involves the evaluation of the technical aspects of a project, such as the availability of inputs, raw materials, and markets for outputs, as well as the efficiency of production methods. The selection of the most suitable production method should be based on a number of factors, including availability, quality, and cost of inputs; anticipated output prices; and anticipated rise in productivity per unit of fertilizer or crop per dunum. The project's possible environmental effects, risks, and rewards should all be taken into account in the technical feasibility assessment. To guarantee that the project is profitable and sustainable, decision-making should be informed by the study's findings.[10]

- The availability of raw resources, their quality, and their costs.
- The availability of markets for each method's outputs and their anticipated prices.
- A number of efficiency criteria, such as the productivity of a particular crop per dunum or the anticipated rise in one additional unit of fertilizer.

3.2.2 Economic Feasibility

Economic justification is generally the "Bottom Line" consideration for most systems. Cost-benefit analysis is used to weigh the costs and benefits associated with the candidate system, and if it meets the organization's primary goal of making a profit, the project is moved to the analysis and design phase. During the preliminary investigation, the financial and economic questions are verified to estimate the following: [3]

- The total cost of the system
- The expected return on investment
- The expected payback period
- The expected life of the system
- The expected rate of return
- The expected cost savings

- The expected cost avoidance

3.2.3 Operational Feasibility

Human organizations and political issues are mostly involved. What adjustments will the system make? are the key issues to think about. What alterations are made to organizational structures? What new abilities are going to be needed? Are these abilities possessed by the current employees? Alternatively, may they eventually be trained? Additionally, what are the potential benefits of the system? How will it improve the efficiency of the organization? What are the potential risks associated with the system? The system is operationally feasible as it is very easy for the end-users to operate it. However, it is important to ensure that the system is secure and reliable. Furthermore, it is essential to assess the impact of the system on the organization's resources, such as time, money, and personnel.[5]

3.2.4 Behavioral Feasibility

After considering the fact that the system is behaviorally feasible, the project is carried out with the primary goal of maximizing user friendliness. The proposed system is designed to meet the needs and requirements of the users, ensuring that the user experience is as smooth and enjoyable as possible. Additionally, the system is designed to be intuitive and easy to use, allowing users to quickly and easily access the features and functions they need.

3.3 Requirement Analysis

Requirement analysis in systems engineering and software engineering is a critical step in the success of any development project. It involves the process of determining the needs and conditions of the system or software being developed. Requirements must be documented, actionable, measurable, testable, and defined in detail to ensure that the system design meets the desired objectives. Additionally, the requirements should be reviewed and validated by stakeholders to ensure that they are accurate and complete. This process helps to ensure that the system or software meets the needs of the users and is developed in a timely and cost-effective manner.[12]

3.3.1 System Requirements

System requirements provide a detailed description of the system services and constraints needed to meet the user's needs. They are often referred to as a functional specification and should be as precise as possible. System requirements documents serve as a contract between the system buyer and software developer, ensuring that the system meets the user's needs and expectations.

3.3.2 User Requirements

Users of the system who lack in-depth technical expertise should be able to grasp the functional and non-functional requirements from the user requirements for the system. Any technical details that are unnecessary for the user to understand should be avoided in favor of a requirement that focuses on the system's exterior behavior. For instance, in a transport system, the users and administrators can provide the essential information to the drivers and helpers without the requirement for them to be familiar with the technical features of the system. Additionally, it's important to write the user requirements in language that is appropriate for the target audience and easy to grasp.[16]

Hardware and Software Requirements

Hardware Requirements

The following minimum Hardware specifications are recommended for developing Vat Calculation in Bangladesh:

- PC or laptop running Windows XP (Service Pack 2 or higher), Windows Vista (Service Pack 1 or higher), Windows 7 or Windows 8.
- Intel(R) Core (TM) i5 CPU M520 @ 2.40 GHz
- 2GB RAM
- Hard drive-250GB

Software Requirements

The official statement of what is expected of the system developers is found in the software requirements document. Both the user needs for a system and a thorough description of the system requirements should be included.

Name	Uses	Version	
Operating system	System Software	Windows 8	
Ms Word/Ms PowerPoint	Create documentation	Ms Office 7	
Visual Studio	To System Designing	2012, 2013	
Visual Studio	Code Editor	2012, 2013	
MS SQL Server	For Database	2012	
Frontend	Scripting	Backend	Framework
C#	xml	MS SQL	.NET
Dev Component			

Table: 2.1 Software

Table: 3.2 Programming Languages

Requirements to Run

In order to implement any perception or vision, some sort of tools is needed. These tools work as the bridge between dream and real world. They make it possible for us to transform our conception into reality.[10]

3.4 Cost Benefit Analysis

The most important information contained in a feasibility study is cost-benefit analysis - an assessment of the economic justification for a computer-based system project. Cost-benefit analysis typically involves two steps: estimating the costs and benefits associated with the project. The cost-benefit analysis outlines the costs associated with project development and compares them to both tangible (measurable in monetary terms such as taka) and intangible benefits of the system. Additionally, The analysis should also take into account any potential risks related to the project and how to mitigate them.[20]

3.5 Conclusion

The system study and requirement analysis for a web-based patient and health care system have been completed to help identify and develop a solution that can meet the needs of the target audience. The analysis identified the current system deficiencies and opportunities for improvement. Requirements have been established to address these deficiencies and create an enhanced patient experience. The requirements will guide the design, development, and implementation of the web-based system. A comprehensive test plan has been established to ensure the successful launch and operation of the system. The system should yield increased patient satisfaction, improved access to care, and more efficient organization of patient health information. With the proper implementation, this system should provide a better overall user experience for patients, providers, and healthcare staff. The system study and requirement analysis is an important step to developing an effective web-based patient and health care system. By systematically assessing the current needs of healthcare providers, staff, and users, the development process can be undertaken with a better understanding of how to create an effective solution.[25]

CHAPTER-04

SYSTEM PLANNING

4.1 Introduction

The objective of this chapter is to introduce the process of design and developing of Doctors Information including Data Flow Diagram (DFD), Data Normalization, E-R Diagram, Database Model, Data Dictionary and Decision Tree. DFD offers a perspective on how the system or business functions that can improve efficiency and effectiveness in achieving system goals. Data Normalization provides redundancy and consistency. A data model for representing the data or information components of a business domain is provided by the entity—relationship model (ER model).

4.2 Data Modeling

Data modeling offers a defined and documented representation of already-existing processes and occurrences, making it a crucial component of the design and development of application software. In order to capture and translate complicated system designs into clearly. representations of data flows and processes, data modeling techniques and tools are utilized. This results in a blueprint for construction and/or re-engineering.. Data modeling not only defines data elements, but also their structures and relationships between them. By using data modeling standards, organizations can ensure that data is modeled in a standard, consistent, and predictable manner, allowing it to be managed as a valuable resource. Data modeling is a critical step in the software development process, as it helps to ensure that data is accurately represented and understood.[17]

4.3 Data Flow Diagram

A data flow diagram (DFD) models the process characteristics of an information system by graphically representing the "flow" of data through the information system. It often serves as the first step to get an overview of the system that will be developed later. DFD can be used to visualize data processing (structured design). A DFD outlines the types of data that enter and are generated by a system, and where that data comes from, where it goes, and where it is stored. It does not display timing information or

information about whether the processes are running sequentially or concurrently (shown in the flowchart).[19]

E-R diagram:

The Entity Relationship Model (ER model) is a data model used in software development to abstractly represent the data or information portion of a business domain or process requirements for implementation in a database such as a relational database. Entities (elements) and the relationships that can exist between them make up a large part of the ER model.[23]

4.4 Data Normalization

Normalization is the process of organizing data in database. This includes creating tables and establishing relationships between those tables according to rules designed both to protect the data and to make the database more flexible by eliminating redundancy and inconsistent.[7]

First Normal Form (1st NF)

- The table cells must be of single value.
- Eliminate repeating groups in individual tables.
- Create a separate table for each set of related data.
- Identity each set of related data with a primary key.

Second Normal Form (2nd NF)

Any information in the table must pertain to the entire composite Primary Key, not just a portion of it, if it is in the first NF and the Primary Key is composite (many columns).

Third Normal Form (3rd NF)

If the field is in the second NF and the table's primary key is the only non-key field that depends on any other characteristics.

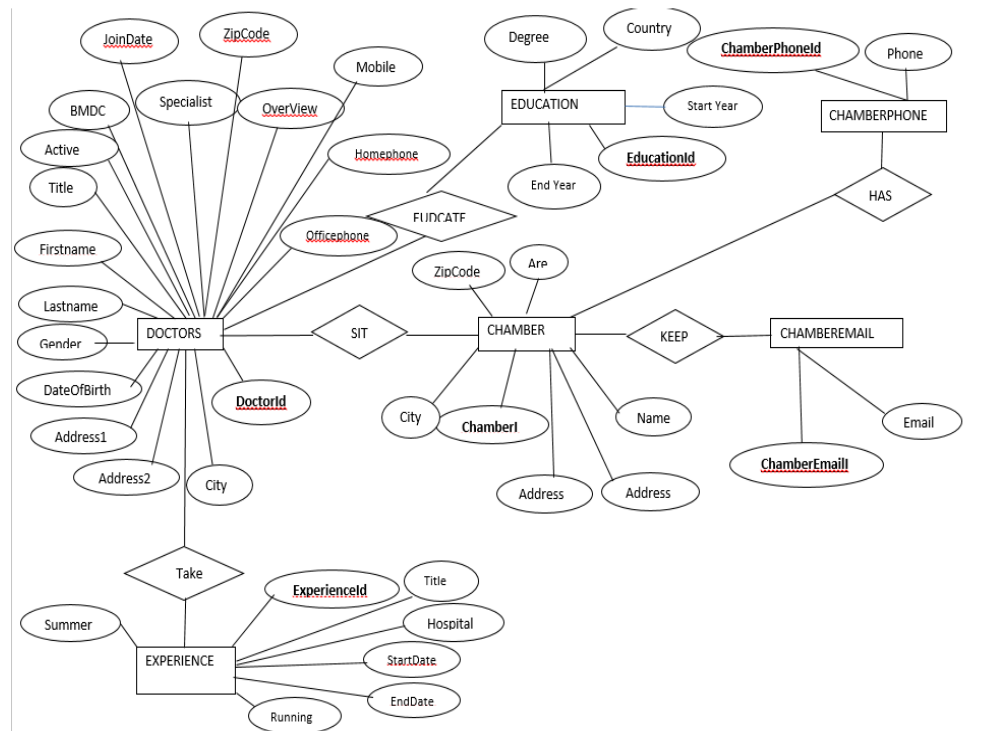
Other Normalization Forms

The Boyce Codd Normal Form (BCNF), a development of the third, fourth, and higher normal forms. In reality, people hardly ever go past the 3NF and hardly ever past the 4NF.

Here we try to apply all the techniques: 1NF, 2NF, 3NF and BCNF in Database Normalization form to design the database. Our designed relational database Tables, E-R diagram are given below.

4.5 Entity Relationship (E-R) Diagram

All entities are given in tabular form along with attributes.



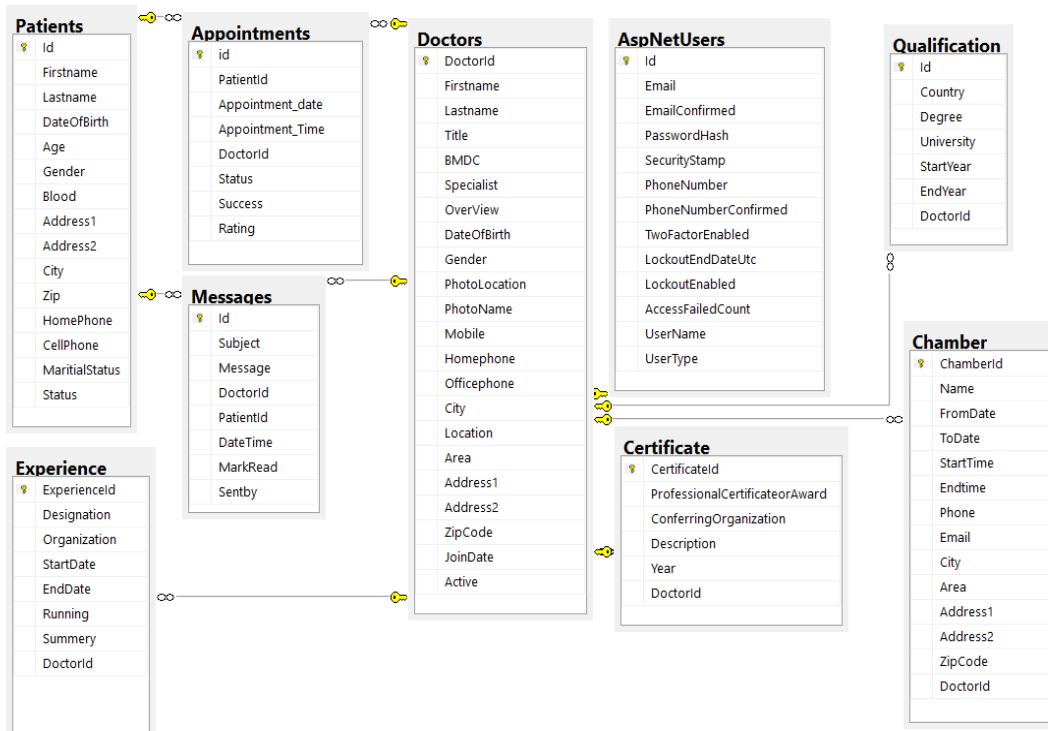
E-R Diagram:

In software engineering, an entity—relationship model (ER model) is a data model for describing the data or information aspects of a business domain or its process requirements, in an abstract way that lends itself to ultimately being implemented in a database such as a relational database. The main components of ER models are entities (things) and the relationships that can exist among them.[8]

4.6 Database Model

The logical structure of a database is specified by a database model, which also establishes how data is organized, stored, and processed. The relational model, which displays data in a tabular style, is the most popular database design. With the help of this model, data may be arranged into connected tables, each of which has its own set

of columns and rows. This format makes data a strong tool for data analysis since it makes it simple to manipulate and query the data. The relational architecture also enables data to be linked between tables, enabling the establishment of complicated associations between various data sets.[11]



4.7 Data Dictionary

A data dictionary is a collection of descriptions of the data objects or items in a data model for the benefit of programmers and other persons who need to refer to those objects or items. In order to analyze a system of objects that people interact with, it is necessary to first identify each thing and understand how it relates to other objects. This method of creating a picture of item relationships is known as data modeling. Each data object or item is given a name that is descriptive, followed by a description of its relationship (or inclusion in a structure that implicitly describes a relationship), a description of the type of data (such as text, image, or binary value), a list of potential predefined values, and a brief textual.

Type, length, occurrence & sequence of attributes are given below in detail:

Doctors:

Sl. No.	Attribute Name	Data Type / Size	Status	Null
0	Doctor Id	int (10)	Primary Key	No
1	First name	nvarchar(256)		No
2	Last name	nvarchar(100)		No
3	Title	nvarchar(150)		No
4	BMDC	int		No
5	Specialist	nvarchar(100)		No
6	Over View	nvarchar(500)		No
7	Date Of Birth	date		No
8	Gender	nvarchar(5)		Yes
9	Photo Location	nvarchar(150)		Yes
10	Photo Name	int		
11	Mobile	Nvarchar(13)		
12	Home phone	int(11)		Yes
13	Office phone	int(11)		Yes
14	City	nvarchar(50)		Yes
15	Location	Nvarchar(50)		Yes
16	Area	Nvarchar(50)		
17	Address1	nvarchar(256)		Yes
18	Address2	nvarchar(256)		
19	Zip Code	Int(4)		Yes
20	Join Date	datetime		Yes
21	Active	bit		Yes

Qualification:

Sr. No.	Attribute Name	Data Type / Size	Status	Null
0	Id	int (10)	Primary Key	No
1	Country	nvarchar(50)		No
2	Degree	nvarchar(100)		No
3	Start Year	date		No
4	End Year	date		No
5	Doctor Id	Int(10)	Foreign Key	No

Experience:

Sr. No.	Attribute Name	Data Type / Size	Status	Null
0	Experience Id	Int(10)	Primary Key	No
1	Designation	nvarchar(100)		No
2	Organization	nvarchar(100)		No
3	StartDate	date		No
4	End Date	date		No
5	Running	bit		No
6	Summery	nvarchar(300)		No
7	Doctor Id	Int(10)	Foreign Key	No

Chamber:

Sr. No.	Attribute Name	Data Type / Size	Status	Null
0	Chamber Id	int (10)	Primary Key	No
1	Name	nvarchar(50)		No

2	Phone	nvarchar(13)		No
3	Email	nvarchar(100)		No
4	City	nvarchar(50)		No
5	Area	nvarchar(50)	Foreign Key	No
6	Address 1	nvarchar(50)		
7	Address 2	nvarchar(200)		
8	Zip Code	int		

Message:

Sr. No.	Attribute Name	Data Type / Size	Status	Null
0	Id	Int (11)	Primary key	No
1	Subject	nvarchar(50)		No
2	Message	nvarchar(500)	Foreign Key	No
3	Doctor Id	nvarchar(128)		
4	Patient Id	nvarchar(128)		

Certificate:

Sr. No.	Attribute Name	Data Type / Size	Status	Null
0	Certificate Id	int	Primary Key	No
1	Professional Certificateor Award	nvarchar(100)		No
2	Conferring Organization	nvarchar(100)	Foreign Key	No
3	Description	nvarchar(300)		
4	Year	int		
5	Doctor Id	nvarchar(128)		

Patients:

Sr. No.	Attribute Name	Data Type / Size	Status	Null
0	Id	Nvarchar (128)	Primary Key	No
1	FirstName	Nvarchar (100)		No
2	Last Name	Nvarchar (50)	Foreign Key	No
3	Date Of Birth	date		
4	Age	int		
5	Gender	Nvarchar(10)		
6	Blood	nvarchar(10)		
7	Address1	nvarchar(250)		
8	Address2	nvarchar(250)		
9	City	nvarchar(50)		
10	Zip	nvarchar(10)		
11	Home Phone	nvarchar(11)		
12	Cell Phone	nvarchar(11)		
13	Marital Status	nvarchar(10)		
14	Status	nvarchar(10)		

Appointments:

Sr. No.	Attribute Name	Data Type / Size	Status	Null
0	Id	int	Primary Key	No

1	Patient Id	nvarchar(128)		No
2	Appointment Date	date		
3	Appointment Time	nvarchar(50)		
4	Doctor Id	nvarchar(128)		
5	Status	nvarchar(50)		
6	Success	Bit		
7	Rating	int		

Asp.NetUsers:

Sr. No.	Attribute Name	Data Type / Size	Status	Null
0	Id	nvarchar(128)	Primary Key	No
1	Email	nvarchar(256)		No
2	Email Confirmed	bit	Foreign Key	No
3	Password Hash	nvarchar(128)		
4	Security Stamp	nvarchar(128)		
5	Phone Number	nvarchar(128)		
6	Phone Number Confirmed	nvarchar(128)		
7	Two Factor Enabled	bit		
8	Lockout End Date Utc	bit		
9	Lockout Enabled			
10	Access Failed Count			
11	User Name	nvarchar(256)		
12	User Type	nvarchar(50)		

4.8 Development Tools (Software and Hardware)

The software and hardware lists are given below which are required for project execution:

Software Tools:

- 32bit /64bit Operating System (XPt7/8/10)
- Microsoft Word
- Microsoft PowerPoint
- Adobe Photoshop

Development Tools:

Front-End:

- HTML5
- CSS3
- ASP.NET
- MVC

Scripting:

- JavaScript

Browser:

- Web Browser (Internet Explorer, Mozilla, Chrome etc.)

Back-End:

Programming Language:

- ASP.NET

Web Application Framework:

- .NET Framework 4.5.2

Database Server:

- SQL Server

Hardware Requirements:

- CPU: Intel Pentium 4 or upper better performance
- RAM: 2GB or more
- HDD: Minimum 5GB to include database for future

4.9 Operational Environment

In order to implement any perception or vision, some sort of tools is needed. tools work as the bridge between dream and real world. They make it possible for us to transform our conception into reality. After meeting all the software & hardware requirements to run this Web page first it is needed to refresh the Apache Web server and MySQL Database server.[21]

The table shown below is the minimum requirement for local server environment:

Processor	Intel Pentium 4 or upper for better performance
Operating System	Microsoft Window 7 or upper version for better performance
Memory	2GB RAM
Screen Resolution	Monitor with screen resolution minimum 1024 x 768
Hard disk Space	Minimum 5GB to include database usage for future
Server Tools	SQL Server
Browser	Mozilla Firefox, Google Chrome, etc.

4.10 Methodology Used

The software used to develop the Doctors Information system is .NET Framework 4.5.2, an ASP.NET framework, and SQL Server as the database. The methodology used to develop this system is the Waterfall model, which is one of the system development life cycle (SDLC) models. This model requires that users proceed to the next phase only after the current phase is complete, and they are not allowed to go back to previous

phases if there are any mistakes. The Waterfall model consists of seven phases: Requirement Specification, Design, Construction, Integration, Testing and Debugging, Installation, and Maintenance. During the Requirement Specification phase, the requirements for the system are collected and analyzed. The Design phase involves designing the user interface and database design. The Construction phase is a time-consuming phase that involves writing the program using ASP.NET framework 4.5.2. The Testing and Debugging phase involves module testing, system testing, unit testing, and user acceptance testing. Any bugs found during this phase are solved immediately before the system is launched. Lastly, the Domain Registration, Hosting Purchase, and Maintenance phase involves installing the system on a remote server site.[21]

4.11 Conclusion

The successful implementation of a web based patient and health care system requires careful planning and dedication from all involved parties. A comprehensive system plan should be established that outlines the objectives and goals of the system and identifies the necessary resources. System administrators should pay special attention to security and privacy concerns, ensuring that adequate levels of data encryption, authentication, and access control measures are in place. Integration with existing information systems should also be considered to improve efficiency. Finally, it is important to ensure that staff and users alike are adequately trained and familiar with the system prior to launch. A well-planned and executed web-based patient and health care system can provide both quality and cost savings to healthcare organizations and providers, as well as improved access and accuracy of services to patients.[25]

CHAPTER 5

SYSTEM DESIG

5.1 Introduction

the system we created is extremely user-friendly and simple to use. Anyone can use and understand this design because it is so straightforward. This website's button, menu, and search forms are all very simple to use. Additionally, very minimum computer setup is required to use this website. The patient will initially have the choice to register. Before seeing the doctor's information, the patient must register with some basic information. Doctor follows a similar procedure. There are two registration options available: one is as a patient, and the other is as a doctor.

5.2 System Design

This chapter will discuss about System Design phase which is one of the Software Development Life Cycle (SDLC) phase. The Graphical User Interface (GUI) design will be carried out in this chapter.[4]

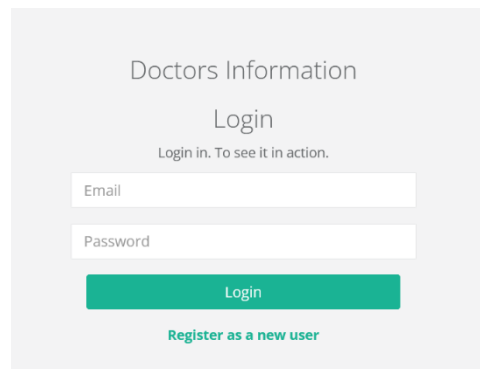
5.3 User Interface

Patient and Health care system is an online information system used by Doctors and Patients. So it is just simply designed. The interface is user friendly and easy to use. This can be proved when users can know what the buttons, menus, search fields function are when he/she looks at the buttons or menus or search fields. It is because the buttons, menus and search fields text are clear and easy to understand.[16]

5.3.1 Input Design

- Input Device: There are so many input devices which are used to input data in the application. Some of the devices are given below:
- Keyboard
- Mouse

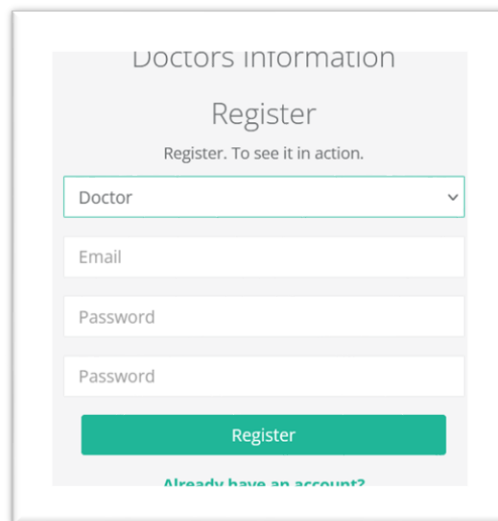
Input Screen Format: Doctor Login Form



The image shows a login form titled "Doctors Information" with a sub-heading "Login". Below the sub-heading is the text "Login in. To see it in action." The form contains two input fields: "Email" and "Password". Below these fields is a green "Login" button and a link "Register as a new user" in blue text.

Fig: Doctor Login

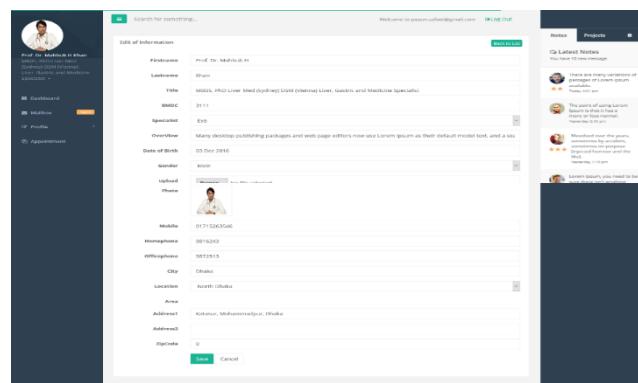
Input Screen Format: Doctor Registration Form



The image shows a registration form titled "Doctors Information" with a sub-heading "Register". Below the sub-heading is the text "Register. To see it in action." The form contains a dropdown menu for "Doctor", followed by three input fields: "Email", "Password", and "Password". Below these fields is a green "Register" button and a link "Already have an account?" in blue text.

Fig: Doctor Registration

Input Screen Format: Doctor Profile



The image shows a doctor profile form. The form is titled "Edit Information" and contains various fields for personal and professional information. The fields are: "Full Name" (with a dropdown menu), "Title" (with a dropdown menu), "Specialty" (with a dropdown menu), "Date of Birth" (with a date picker), "Gender" (with a dropdown menu), "Upload Photo" (with a photo upload button), "Mobile" (with a text input field), "HomePhone" (with a text input field), "OfficePhone" (with a text input field), "City" (with a dropdown menu), "Location" (with a text input field), "Address" (with a text input field), "Address2" (with a text input field), and "ZipCode" (with a text input field). The form also includes a "Save" button and a "Cancel" button.

Fig: Doctor Profile

5.3.2 Process Design

In our project we apply different type processing techniques. These are given below:

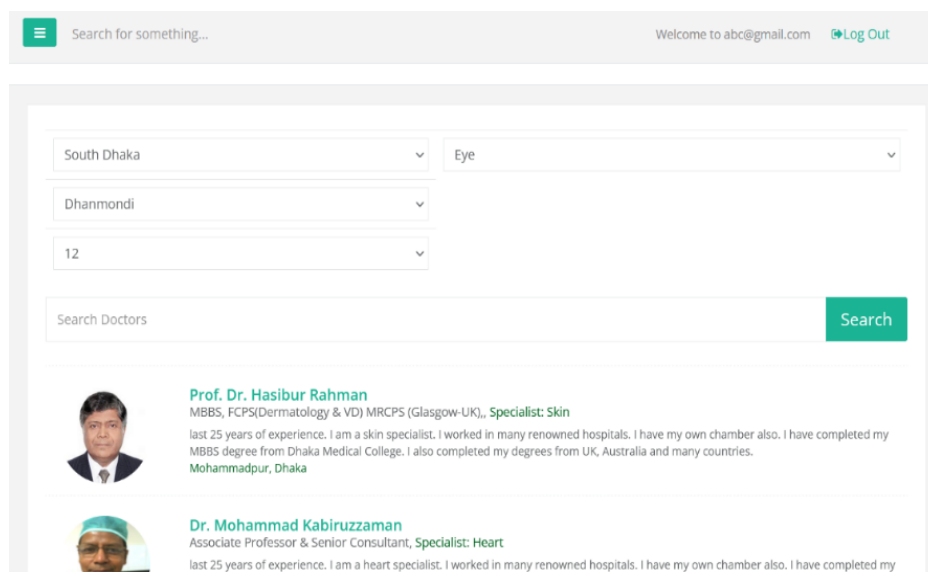
- **Batch Processing:**
- Batch processing is the execution of a series of programs ("jobs") on a computer without manual intervention. When Doctor generate a monthly or yearly patient record then this type of process is known as Batch Processing.
- **Online Processing:**
- A method of using a terminal remote from a company mainframe or an interface to the Internet like an e-commerce website for taking product orders and dealing with payments. In our project we used two search field to search doctors.

5.3.3 Output Design

Output Device: There are so many output devices which are used to show the output data of the application. Some of the devices are given below:

- a. Monitor
- b. Pr

Output Screen Format: Search Doctor





Dr. Mohammad Kabiruzzaman
Associate Professor & Senior Consultant, **Specialist: Heart**
last 25 years of experience. I am a heart specialist. I worked in many renowned hospital. I completed my MBBS degree from Dhaka Medical College. I also completed my degrees from UK, Australia, and Bangladesh.
Mohammadpur, Dhaka



Professor Dr. Faruque Ahmed
Professor & Head, Dept. of Gastroenterology, **Specialist: Gastroenterology**
last 25 years of experience. I am a gastroenterology specialist. I worked in many renowned hospital. I completed my MBBS degree from Dhaka Medical College. I also completed my degrees from Bangladesh and the UK.
Dhanmondi, Dhaka



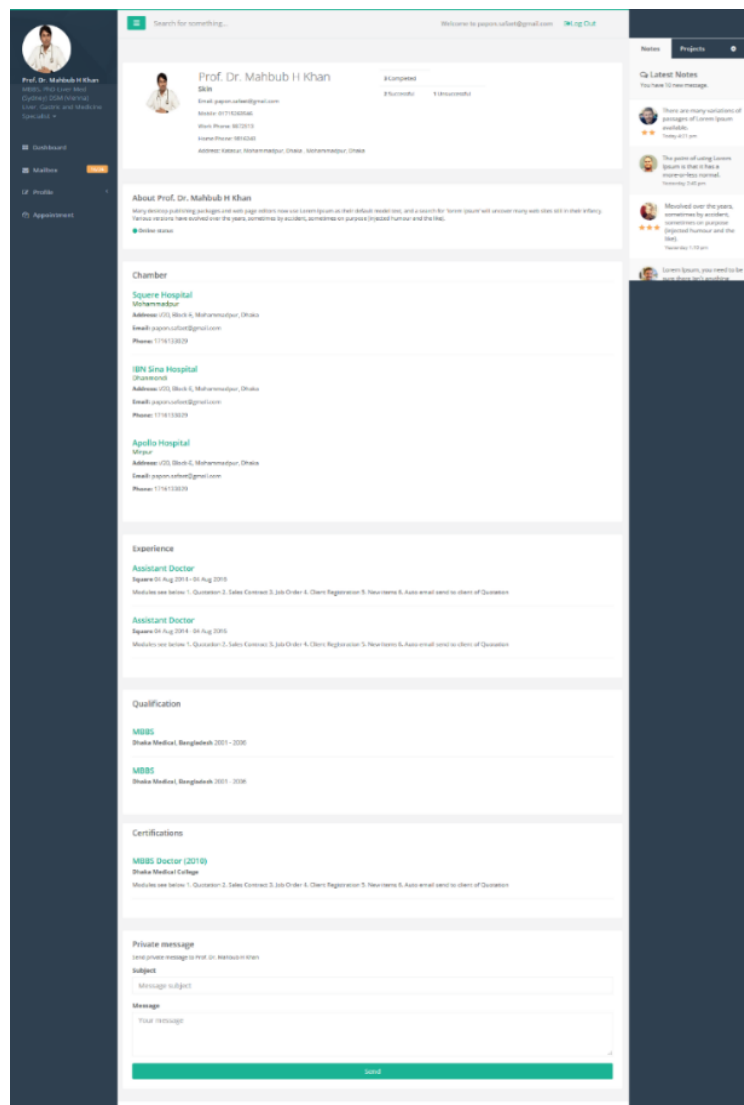
Prof. Lt. Col. (Retd) Dr. Md. Hamidur Rahman
Head of the Department & Senior Consultant, **Specialist: Heart**
last 30 years experience
Mohammadpur, Dhaka



Prof. Dr. Masoom Siraj
Head of the Department & Senior Consultant, Cardiac Surgery, **Specialist: Heart**
last 25 years of experience. I am a heart specialist. I worked in many renowned hospital. I completed my MBBS degree from Dhaka Medical College. I also completed my degrees from UK, Australia, and Bangladesh.
Mohammadpur, Dhaka

Fig: Search Doctor

Output Screen Format: Doctor Experience



The screenshot displays a web interface for a doctor's profile. The main content area is titled "Prof. Dr. Mahub H Khan" and includes the following sections:

- Chamber:** Lists three hospitals: Square Hospital (Mohammadpur), Ibn Sina Hospital (Dhanmondi), and Apollo Hospital (Mirpur), each with address and phone number.
- Experience:** Details roles as Assistant Doctor from August 2018 to August 2019, and Assistant Doctor from August 2014 to August 2015.
- Qualification:** Lists MBBS degrees from Dhaka Medical College, Bangladesh, for the years 2011-2016.
- Certifications:** Lists MBBS Doctor (2019) from Dhaka Medical College.
- Private message:** A form to send a message to the doctor, including fields for subject and message, and a "Send" button.

Fig: Doctor Experience

Output Screen Format: Appointment List

The screenshot displays a user interface for a doctor's appointment management system. On the left is a dark sidebar with a profile for 'Prof. Dr. Mahbub H Khan, Doctor' and navigation links for 'Dashboard', 'Message', 'Profile', and 'Appointment'. The main content area has a search bar at the top, a 'List of Appointments' title, and a 'Create New' button. Below this is a table with columns for 'Full Name', 'Date', 'Status', and 'Action'. The table contains three rows of data, all for 'Apurba Das' with 'Accepted' status. Each row has a 'Details' button in the 'Action' column.

Full Name	Date	Status	Action
Apurba Das	1/3/2023 06:00PM	Accepted	Details
Apurba Das	1/5/2023 06:45PM	Accepted	Details
Apurba Das	1/2/2023 06:30PM	Accepted	Details

Fig: Appointment List

5.4 Conclusion

The internet is a vast and ever-growing resource for people to find information and connect with others. It has also become an essential tool for businesses to market their products and services. In order to make your website user-friendly and attractive. It will also be stylish and user-friendly, which will encourage people to visit your website and learn more about your products and services. In this post, we will discuss the basics of website design. We will also discuss the different types of website designs and the factors that determine which type of website design is best for health service. Finally, we will provide a simple and user-friendly system for you to use to create a professional website design.

CHAPTER- 06

IMPLEMENTATION AND TESTING

6.1 Introduction

This is the next phase after design here we have shown how schemes of design is implemented. From data base to front end packages will be used according to requirements and design. The details specification and data organization are given in the following:

6.2 Interface-Selecting the Front-End Package

The back-end controls all the internal or technical parts of the software while the front end deals with the user in client machine. It provides the interface to the user using which the user operates and controls the software. A user-friendly interface is very easy to use. It sometimes can spread thongs up. All sorts of validation and verification techniques are dependent on this interface. Therefore, here we use C# design mode and Dev Component for front-end protection.[11]

6.3 Choosing the Database System

There are different types of database system such as hierarchical database system, relation database system etc. we will use here relational database system.[19]

6.4 Selecting the Back-end Package

To implement the database table many packages can be used like MS Excel but no structure queries can be used to create table and retrieve data. That is why database management software should be used as the backend management software. Such as Microsoft Access, Oracle, MS SQL Servers, MYSQL. We will use here MS SQL. Because it can support the entire required task for this software.[22]

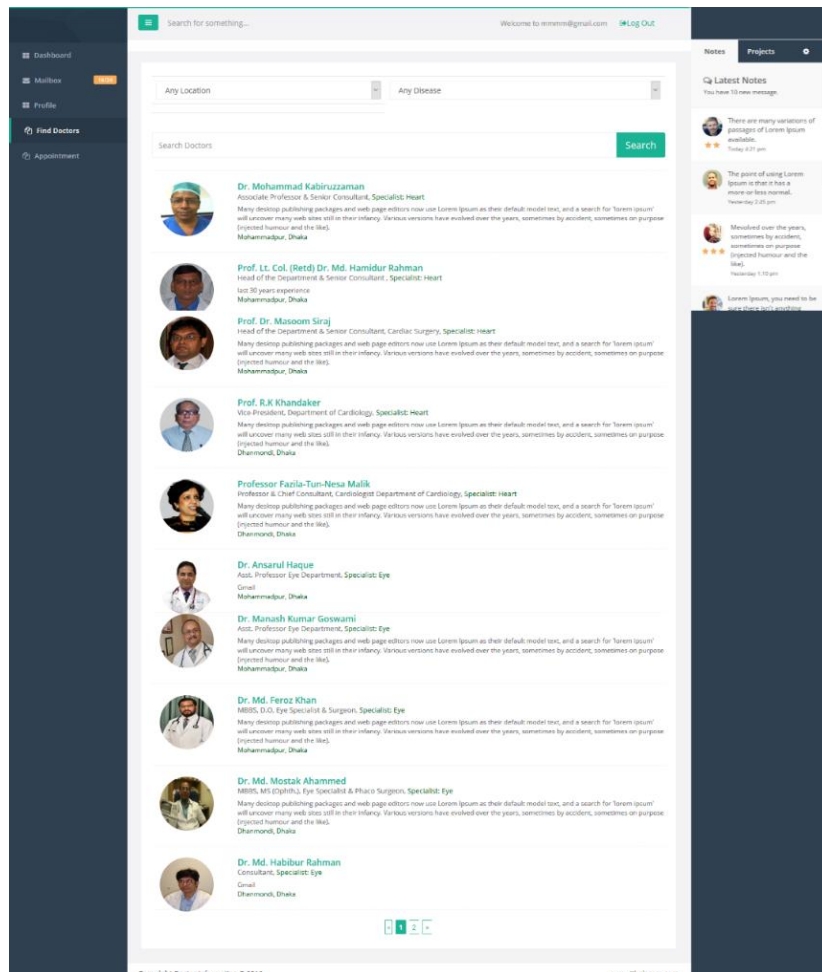


Fig: 6.4 Doctor

6.5 Testing

Project testing, which serves as the final examination of specification design, code, and implementation, is a crucial component of project quality assurance. Building the project from an abstract idea to a practical implementation was the aim of the preceding definition and development phase. The application program's role is to create an interface between database tables and forms and to assist the user with various data entering validation checks. Each application module was created with the user's requirements and database storage in mind. The designed system is tested throughout the testing phase using diversetest data. System testing requires the preparation of test data, and once that data is ready, the system can be tested.[15]

6.6 Different Types of Testing

Different types of testing are:

- Unit Testing
- Integration Testing
- Validation Testing
- Output Testing
- User Acceptance Testing
- System Testing
- Acceptance Testing

6.6.1 Unit Testing

Unit testing focuses on verifying the smallest units of software design, known as modules. During the design phase, unit tests are prepared to guide the system development process. These tests are then used to uncover errors within the module by testing important control paths. To ensure that each module is functioning correctly, unit testing is carried out during the coding stage, with the expected output from the module being verified.[11]

6.6.2 Integration Testing

The systematic construction of the program structure while testing is being done to find interface issues is known as integration testing. The goal is to create a software structure that has been predetermined by design using unit-tested modules. This testing phase combines all modules. The program is then assessed as a whole, and a typical outcome is chosen.

6.6.3 Validation Testing

At the culmination of integration testing, the software is completely assembled as a package and any interface errors have been uncovered and corrected. The final step is validation testing, which can be defined as the process of ensuring that the software functions as expected by the user/customer. This is achieved through a series of black box tests that demonstrate the software's functionality. Validation testing is an essential step in the software development process, as it ensures that the software meets the user's requirements.

6.6.4 Output Testing

Testing the output of the suggested system comes after doing the validation testing. In order to determine whether the output adheres to the necessary format, it is compared to the format that the user has selected. On-screen and printed formats are both used to test the output format. Given that it was created with the user's requirements in mind, the on-screen presentation is deemed to be appropriate. The hardcopy output is also discovered to be in the necessary format. Consequently, the system doesn't need to be corrected.

6.6.5 User Interface Testing

User acceptance of system is the key factor for the success of any system. To ensure that the system under consideration is accepted by its users, the development team kept in constant communication with the prospective users throughout the development process. This allowed them to make necessary changes and adjustments based on user feedback. Additionally, the team also conducted user surveys and focus groups to gain further insights into user preferences and expectations. This enabled them to create a system that was tailored to the needs of the users, thus increasing the chances of successful user acceptance.

6.6.6 System Testing

By carrying out the tests outlined in the system test plan, the development team validates the fully integrated system throughout the system testing phase. This strategy is based on the requirements and specifications document, and passing the tests shows that the system complies with the standards. The developers fix any flaws found by the system tests, and the draft user's guide is improved. Additionally, a preliminary system description document is created. When all tests outlined in the system test plan have been successfully carried out, the system testing is deemed to be finished.

6.6.7 Acceptance Testing

An impartial acceptance test team evaluates the system during the acceptance testing phase to make sure the software satisfies all specifications. This team, which is separate from the development team to assure objective outcomes, is made up of analysts who

will use the system and members of the requirements definition team. The acceptance test team creates the acceptance test plan prior to this stage based on the information in the requirements and specifications document and any approved specification amendments. The development team supports the test team during acceptance testing and may carry out acceptance tests under their direction. The development team fixes any issues found throughout the test. Upon successful completion of the tests outlined in the acceptance test plan.[13]

6.7 Testing Process

Software testing can be done in a variety of ways, but the most effective testing involves investigation more than just setting up and executing procedures. "The process of interrogating a product in order to evaluate it" is one definition of testing, where the "question" refers to the operations the tester tries to carry out.[10]

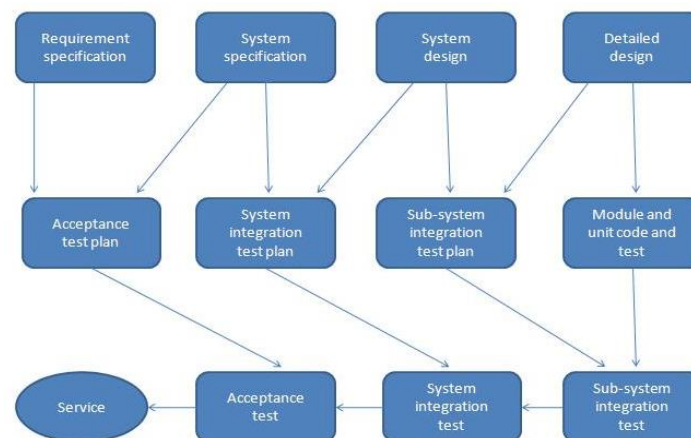


Fig: Testing process

6.8 Conclusion

A project is never finished until it's finished. That's why it's so important to test our project regularly. By doing so, we can catch any issues early and make sure that our project is going to meet our expectations. In this post, we're going to be discussing the importance of testing our project, how to do it, and what to look for when testing our project. From ensuring that our project is well organized to checking to see if our project is well documented, we'll cover everything we need to know in order to test our project successfully. So let's get started. Testing our project is the final step in making sure that our project is a success.

CHAPTER 7

LITERATURE REVIEW

7.1 Introduction

SWOT analysis is a strategic management tool used to analyze an organization's strengths, weaknesses, opportunities and threats. It can be used to evaluate the performance and standing of a company in the industry, and can help in strategic planning for the future. When applied to a health care system, the SWOT analysis allows for a holistic approach to evaluating its current and prospective capabilities.

7.2 Strengths

Web-based healthcare systems offer a wide range of advantages over traditional healthcare models. These systems provide rapid access to services, allow clinicians to work more efficiently, facilitate better communication, increase patient safety, and reduce costs. These systems can also improve the overall quality of patient care by providing a platform for clinicians to share resources, evaluate and compare outcomes, and measure performance.

7.3 Weaknesses

Despite the benefits, there are some weaknesses associated with web-based healthcare systems. These include security issues, interoperability issues, and user-friendliness. Additionally, web-based healthcare systems can be difficult to implement and maintain, as they require significant investments in both technology and staff resources.

7.4 Opportunities

Web-based healthcare systems provide various opportunities for health care providers, such as increased efficiency and cost savings. Additionally, these systems can open up new areas of care, such as remote or virtual consultations, that were not readily available in traditional healthcare models.

7.5 Threats

There are some potential threats associated with web-based healthcare systems. These include privacy and security risks, the potential for data breaches, and the risk of software manipulation and misuse. Additionally, there is a risk that providers may become overly reliant on web-based health care systems, leading to reduced quality of care.

7.6 Impact on Society

These days, we cannot discount the benefits of a web-based health management system that impacts society. In areas like the military, for example, this type of system can help to make sure that everyone is able to schedule their appointments and be on time for them. It's also helpful in the event that someone falls ill and they need to be seen promptly by a doctor without wasting precious time. One of the best benefits of a web-based health management system is the impact it can have on society. It's great to be able to track the progress of your patients from any part of the country without having to take a flight. Doctors and nurses can now help more people by using this system, not just in their town, but around the world too!

7.7 Impact on the Environment

Online health management system has an effect on the environment as well. Patients will utilize gasoline- or diesel-powered automobiles when they go outside to meet the doctor. We are all aware that using oil or gasoline pollutes the environment. Therefore, there is no potential for environmental damage while searching for a doctor online., this will benefit the environment.

7.8 Sustainability Plan

Sustainability Plan is a web-based management system that helps corporate professionals plan, monitor and celebrate the sustainability achievements they make in their day-to-day business. Our system provides tools to manage sustainability efforts with ease and transparency so you can see progress and stay motivated. We give you everything you need to make your business more sustainable

7.9 Conclusion

The SWOT analysis of web-based health care system revealed several strengths, including enhanced access to care, time saving, cost savings, improved coordination of care, and increased patient satisfaction. It also highlighted several weaknesses, such as security concerns, lack of communication between providers, and limited data interoperability. Although these weaknesses may impede the adoption of web-based health care, its strengths make it a viable option for many health care settings. Ultimately, the success of this system will depend on ensuring adequate security measures and effective data sharing.

CHAPTER 8

CONCLUSION

8.1 Conclusion:

We are unconcerned about the fact that international medical services are becoming more commonplace every day. To provide this industry with improved service, no such steps are performed. We must pay more attention to it. Millions of individuals are looking for improved medical care but aren't receiving it. What's more, though, is that occasionally they go untreated. We have a system of information called "Doctors Information" to enhance medical services. In this area, a great deal more study is required. We anticipate that this information system will significantly improve Bangladesh's health care system.

The conclusion of a web-based “PATIENT & HEALTH CARE SYSTEM” is that it can provide a secure, efficient way to deliver quality care to patients while also reducing paperwork and increasing convenience. It also allows healthcare providers to track patient records and data more efficiently, as well as access patient information remotely and/or on any device. Additionally, it can reduce costs and allow for improved collaboration between healthcare providers.

The web-based PATIENT & Health Care System is a great tool for improving the quality and efficiency of healthcare—from strengthening communication between healthcare providers and reducing unnecessary medical visits to reducing errors and improving access to health information. It has the potential to revolutionize healthcare by providing more timely and accurate medical decision-making, along with increasing patient safety and satisfaction. The system offers access to detailed patient information and medical, integrated patient-provider messaging, administrative billing and payment processing. As the use of A Web Based Patient and Health Care System continues to increase, health systems and providers will have access to more timely and accurate data to drive improved clinical outcomes and cost savings as well.

The conclusion of a web based “PATIENT & HEALTH CARE SYSTEM” is that it is a valuable resource for patients and health care professionals alike. With the help of this system, doctor can offer better healthcare services and care for their patients. It provides access to comprehensive health care information, better communication between patients and health care providers, and efficient management of administrative tasks. Moreover, the system ensures quality standards for patient care and security protocols for patient data. All of these factors make it an efficient and functional system that can easily be implemented in different healthcare settings.

8.2 Further Suggest Work

We broke the system down into various components during the development process, and owing to time constraints, some of those components could be completed totally, others partially, and the remaining components are still being worked on. Even if the system functions very well, we still need to continue developing it in the future if we want a fully functional system. We need to do additional work on a developer-friendly modular procedure in order to expand the system. To create a website with all the common diseases and areas, including the full city of Dhaka and the major Bangladeshi cities. Creating additional components elevates the system to the commercial level. This system becomes more dependable and secure when system monitoring mechanisms are developed for it. Putting this information system's name on it.

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APPENDIX

APPENDIX-A

SUMMARY OF THE PROJECT

A Web-based “Patient & Health Care System” is a software solution designed to help healthcare providers of all sizes manage their patients’ personal record in one secure, digital system. This system can help increase efficiency in healthcare by providing better tools to manage and track patient information, improve communication between doctor and patients, and provide improved accuracy in records. Additionally, this system can offer additional features such as appointment scheduling, communicate with doctor, , and more. With a web-based patient and healthcare management system, healthcare providers can more easily access, providing improved organization and access to patient data. Furthermore, this system can help streamline the healthcare practice, allowing healthcare providers to efficiently serve their patients, reducing administrative costs and costs associated with manually updating patient records.

System Architecture

The architecture of a web-based patient and healthcare system typically comprises three primary layers — the Presentation Layer, the business logic layer, and the database layer. The Presentation Layer is the graphical user interface and it is the most visible part of the application. It provides the user with an easy-to-use interface that guide's them through the system. This layer makes use HTML5,CSS3, ASP.NETMVC The Business Logic Layer is responsible for handling business requests. This layer is typically responsible for retrieving data from the database and implementing the business logic associated with the application such as authentication, authorization, etc. This layer is often implemented with the help of a programming language such as, JavaScript, The Database Layer is the bottom layer of the application and it is responsible for managing data related to the application. It is typically implemented with the help of a Relational Database Management System, e.g Oracle Database, MySQL, etc. This layer requires SQL queries to access and manipulate the data.

Security:

Authentication: The web-based patient and health care system use secure authentication like two-factor authentication to ensure that only authorized personnel can access the system. (Asp.net mvc is use for the authentication.)

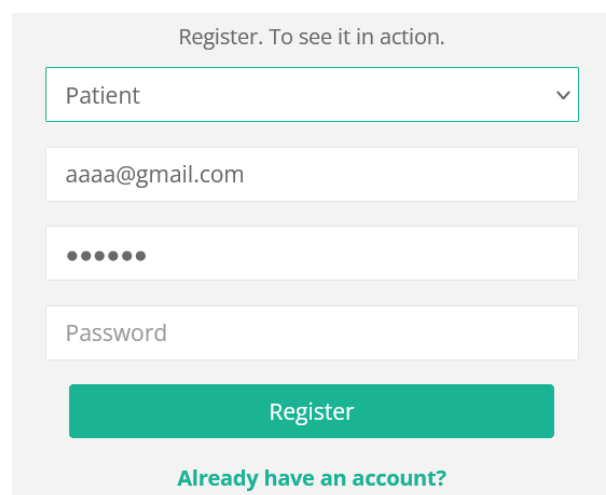
Access control: The web-based patient and health care system should use access control like Role-Based Access Control (RBAC) to control who is allowed to access certain parts of the system. Data Protection:

Data Access Control: Access to patient data are limited to only those personnel who need to access it

Audit Logging: All activities related to the web-based patient and health care system logged to ensure that any suspicious activity can be detected and reported.

The development of a Web-based patient and healthcare system has been beneficial to doctor and patients alike. It provides a comprehensive and secure platform for healthcare services to be accessed remotely with minimum cost and time. The secure data communication between clinician, patients, and other healthcare professionals, enables secure and seamless communication of data, and treatments, improving patient care, while also offering convenience and ease of access to both doctor and patients. This system has made it easier than ever before to access healthcare services and receive treatments while still maintaining the security of the patient. With this system, the healthcare industry is much better equipped to handle severe chronic diseases, provide better care and improve overall healthcare outcomes.

View from patient end:



The image shows a registration form for a patient. At the top, it says "Register. To see it in action." Below this are four input fields: a dropdown menu with "Patient" selected, an email field containing "aaaa@gmail.com", a password field with five dots, and another password field labeled "Password". A green "Register" button is positioned below the fields. At the bottom, there is a link that says "Already have an account?"

Fig: Patient Register

APPENDIX-B

View from patient registration

The screenshot shows a web interface for editing patient information. At the top, there is a search bar with the placeholder text 'Search for something...', a user greeting 'Welcome to bbbb@gmail.com', and a 'Log Out' button. Below this is a header section with the title 'Edit of Information' and a 'Back to List' button. The main form contains several input fields: 'Firstname', 'Lastname', 'DateOfBirth' (pre-filled with '07 Jan 2023'), 'Age' (with a dropdown arrow), 'Gender', 'Blood', 'Address1', 'Address2', and 'City'.

Firstname	<input type="text"/>
Lastname	<input type="text"/>
DateOfBirth	07 Jan 2023
Age	<input type="text"/>
Gender	<input type="text"/>
Blood	<input type="text"/>
Address1	<input type="text"/>
Address2	<input type="text"/>
City	<input type="text"/>

Fig: Patient Information

APPENDIX-C

Contact End

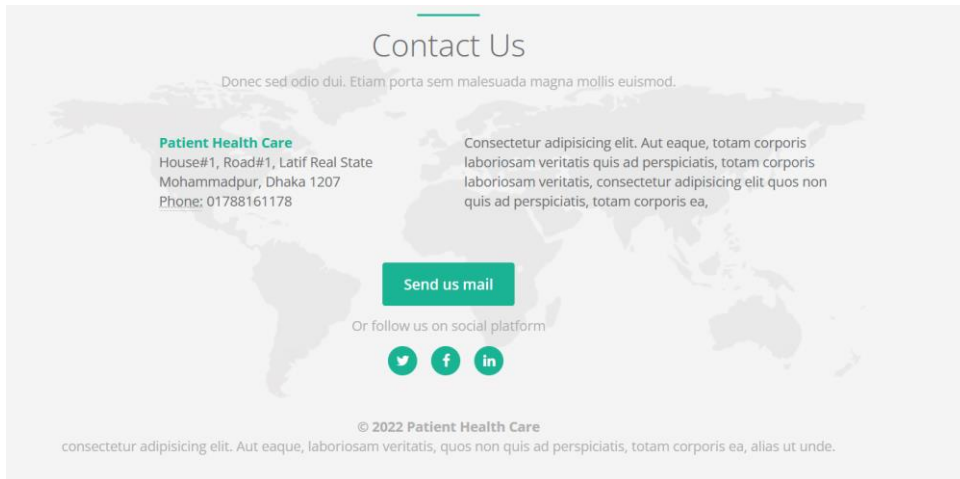


Fig: Contact info

APPENDIX-D

Plagiarisms Report

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