DESIGN AND IMPLEMENTATION OF PATIENT INFORMATION MANAGEMENT SYSTEM: A CASE STUDY OF ISLAMIC UNIVERSITY OF TECHNOLOGY

This project is a partial fulfillment of the requirement for completing a Bachelor of Science in Technical Education

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Dedication

This project is dedicated to God Almighty for his protection, guidance, provision, and abundant grace. We also dedicate it to our parents who are restless to the achievement of our success and brought us up with the legacy of humanity and sound modern education. May Allah continue to guide, protect and show your mercy upon them. Ameen

CERTIFICATION

This is to certify that this project has been examined and approved for the award Bachelor of Science in Technical Education

…… ……

Mr Njayou Yousuf DATE

Project Supervisor

Declaration

Muhammad Dikko Gambo and Naznin Akter declare that this project was written by them as a requirement for completing Bachelor of Science in Technical Education with a specialization in ComputerScience and Engineering.

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Naznin Akter DATE

190032403

Acknowledgement

All thanks and praises are due to almighty Allah our creator and sustainer of all things may his peace and blessing is upon our noble and holy prophet Muhammad [P.B.U.H] and his family, companions and followers of his guidance until day of resurrection.

Our profound gratitude goes to our respect supervisor Mr Njayou Yousuf for his patient in reading through our illegible write-ups, and walking useful corrections and frank suggestion despite his crowed schedules. There is however no amount of gratitude we can employ to compensate the tremendous effort of our ever sincere and responsible parents who are always concern with our overall development, May the Almighty Allah grants them with jannatul Firdausi (Ameen).

We will not forget to thank our entire friends in Islamic University of Technology most especially our classmate for their integrity and cooperation.

Abstract

Generally Automation plays an important role in the global economy and and in daily experience. This system, Patient information system is designed to support the Islamic university and technology clinic center daily operation, before this is done manually. it is aimed at computerizing all the records about patients, and medicine inventory. The system is aimed to reduce the cognitive overload, computational offloading, and increase the response time of clinical operations. It will also help in reducing the medical error and improving diagnostic capabilities, Doctors can access data easier which resulted in decreasing the process of time. In addition, many operations, like tracking the number of vaccinated patients, covid_19 infected patients, will no longer manually perform, rather the system will be used to manage these tasks. held calculators in tracking the inventory are dealt out completely. In order to achieve this goal, a thorough System Study and investigation was carried out through the oral interview, questionnaire and Study manuals. Moreover, data was collected and analyzed using dataflow, logical, entity relationship, use case and sequence diagrams. Based on the result we have found that there are cognative hard labour, and cognative overload associated with the manual system which are avoided by the proposed system. The method used to develop the system is user interaction design in order to involve users in each stage of the design process. Finally the language used was scripting language.

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CHAPTER 1 : INTRODUCTION

Generally, Automation plays a crucial role within the world economy and in daily experience. Engineers try to mix automated devices with mathematical and structure tools to form advanced systems for rapidly increasing variety of applications.

The Patient info Management System (PIMS) is an automatic system that's used to manage patient information and its administration. it's meant to supply the Administration and Staff, with information in real-time to make their work more interesting and less stressful.

The manual patient's information system used in (IUT) clinic center has resulted in a wide range of issues these include; duplication of effort is needless particularly for new Inconsistency among in-patients and out-patients might occur since data is duplicated and appeared more than once, making it difficult and hard to analyze, as well as tracing information on a patient's previous medications in a continuous flow.

According to Jantz (2001), the computer-based information systems is mostly changed the world; Large and small systems have adopted the new methodology through the use of personal computers to fulfill many roles within the information production process, bringing us to the current existing new world of information system. Computerizing the documentation of patient records to enable for easier input and output manipulation can lead to the current state of the art in information systems.

1.1 PROBLEM STATEMENT

Inconveniences have arisen as a result of the lack of a well-established information infrastructure to assist patients and personnel (IUT) clinic center. This has resulted in the patient's death. This is primarily due to the old system's flaws, which include an a reliance on paper-based work that is excessive Files on paper take up a lot of office space and are sluggish to record, process, and retrieve patient information. Because of poor information management, it is difficult for different departments to access and share information.

1.2 PROJECT DESCRIPTION

Now days every system is develop to make life easier. This project is basically design for (IUT) clinic center. It’s design to improve the management of the clinic, and to automate the work flow that happen in (IUT) clinic center.

The patient will be the first to register. Patient information is collected and saved in the database if the patient has never registered previously. If the patient is an existing one, however, the patient data is searched using the ID (identity card) number. This will help to improve the patient's record and will help you save time during the registration process. The patient is referred to a doctor at this point.

After the patient has received therapy, the doctor will issue a report that includes the name of the medicine. The staff will look through the report and fill out the patient's record. After that, the team will get ready.

1.3 SCOPE OF THE PROJECT

This project is basically design for IUT Medical center. This patient information system provide a lot of services to IUT clinic which include daily treatment record of patient, admission of new patient, keeps record include about in and out patient accordingly, billing of patient by using of a billing system and other services with authority

1.4 LIMITATION

This project is limited to patient medical recording registration process, medical bill record and data retrieval.

1.5 OBJECTIVES OF THE STUDY

1. To eliminate the use of manual system to information system.
2. To limit the number of patient records that are misplaced.
3. To eliminate the problem of redundant that was increase inefficiencies for data to be retrieve.
4. To produce greater data access, data retrieval speed, and data quality
5. To minimize or eliminate the time consuming for managing patient.

CHAPTER 2 : LITERATURE REVIEW

The records of patients in (IUT) clinic center have over time been run down due to large numbers of patients, this led to poor record keeping since it's a paper based system. The reason why the current system used is manual has led to a variety of problems and these include; unnecessary duplication of the data especially for new and out returning patient, inconsistence may occur since data is held more than once and hard to analyze the data hence difficult to trace the flow of patient past medication data.

According Jantz (2001) the emergence of computer based information system has changed the world a great deal, both large and small system have adopted the new methodology by use of personal computer to fulfill several roles in the production of information therefore computerizing the documentation of patient record to enable easier manipulation of the input process and output will bring us to this existing new world of information system.

Streveler (2004) Information processing and management are the two components that make up HIS. Data collection, transmission, processing, analysis, and display are all aspects of information processing that are used in patient care and health-care management choices.

2.1 ELECTRONICS PATIENT HEALTH RECORD

Terry (2005) defines an electronic health record (HER) as a systematic collection of electronic health information concerning individual patients or populations. It's a digitally stored record that can be played back. In case of Incorporated in network-connected enterprise-wide information systems, data can be shared across multiple health care settings.

Demographics, medical history, medication and allergy information, immunization status, laboratory test results, radiological pictures, vital signs, personal stats like age and weight, and billing information may all be included in such records. Its goal to be defined as a fully patient information system contacts that In health-care settings, it provides workflow automation and simplification, as well as increased safety through evidence-based decision support and quality assurance, Swinglehurst D., Swinglehurst (2009). Whereas the terms Electronic healthcare, EPR (electronic patient record) and EMR (electronic medical record) have different meanings. they are frequently used interchangeably. In hospitals and ambulatory settings, the electronic medical record (EMR) is a legal patient record that is used as a data source. The HER, according to Habib (2010). An EHR is created and maintained within an institution, such as a hospital, integrated delivery network, clinic, or physician office, to provide patients, physicians, and other healthcare professionals with information. Access to a patient's medical records is granted to health care providers, employers, and payers or insurance. Medical records are shared between facilities.

A personal health record is now referred to as an electronic health record. (EHR) that contains information about a person's health. The patient has complete control. Within the context of a thorough meta-narrative review of 10 research In the literature on information systems, an EHR has been described as a patient's container data and a device for acquiring secondary applications of clinical data (billing, audit etc.). The EHR, on the contrary, was viewed as a danger by other research traditions. Within a socio-technical system, a contextualized item. Actornetwork theory, for example, views the

EHR to be a character in a movie, whereas computer science study considers it to be a machine. The EHR is seen as a tool for facilitating specialized collaborative work (CSCW). work. Prof. Barry Robson and OK Baek also investigated these difficulties. Okay, Baek, EHR as a pivotal moment of human history (2009). The United Kingdom of Great Britain and Northern Ireland is a country in the United States of America. In the United Kingdom and Germany, the concept of a national centralized server is popular. Data from the healthcare industry has been received with mistrust. Privacy and security worries, about Records are kept on both paper and electronic media. are used in healthcare. computerized records are subject to privacy problems. The Los Angeles Times reports that at least 150 persons (doctors, nurses, technicians, and billing clerks) have access.600,000 payers, providers, and portion of a patient's information during a hospitalization Other institutions that handle billing data from providers, such as the Department of Health, have some access.& Health Care (2006-06-26). Data breaches at "safe" companies have been revealed recently. At banks and other financial sectors, centralized data repositories Concerns regarding storing data from the retail industry and government databases have arisen. CNN.com reports on the centralization of electronic medical records (May 23, 2006).The same security measures apply to records shared through the Internet.The same concerns apply to any other type of Internet data transmission. In 1996, the United States approved the Health Insurance Portability and Accountability Act (HIPAA), which established regulations for Access, verification, storage, and auditing are all things that need to be considered. transfer of electronic health records11 Electronic records were subject to restrictions under this standard. are held to a higher standard than paper records. However, there are several exceptions. Wafa is concerned about the adequacy of these requirements (2010). a number of directives by the European Parliament and the European Commission Commission have been adopted in the European Union (EU).the Council safeguards the processing of personal data and the free movement of such data, including European Parliament and Council, for the purposes of health care (24 October 1995). On April 13, 2000, the Personal Information Protection and Electronic Documents Act (PIPEDA) received Royal Assent in Canada.

2.2 DIGITAL MEDICAL RECORD CONTRAST WITH PAPERBASED RECORD

A computerized medical record created in a healthcare context such as a hospital or doctor's office is known as an electronic medical record (EMR). Perlin, JB (2006). Electronic medical records are often kept, retrieved, and updated a component of a self-contained health information system in a small town 16 Paper-based records are still the most frequent technique of recording patient information in most hospitals and offices in the United States. The New England Journal of Medicine (NEJM) is a peer-reviewed medical journal published in Boston, Massachusetts (March 25, 2009).

The majority of doctors are still reluctant to sacrifice the ease of data entry and low cost of data entry.However, as simple as it is for a clinician to capture medical data at the point of care, it takes a significant amount of time. When compared to digital records, there is less storage space. The majority of states in the United States demand physical examinations.

Records must be kept for at least 7 years. The costs of including medium, like hard drives and tapes, Per unit of information, paper and film differ substantially from electronic media. medium for storing data When paper records exist in multiple locations, it's difficult to keep track of them all. It takes time and

effort to gather all of your medical records into one place for evaluation by a health care practitioner. complex, whereas digital records might make a simple way.

This is especially true for personal records, which are impossible to save if they are not stored online (thus difficult to centralize or federate).When many copies, faxes, and transports of paper-based documents are necessary, copying, faxing, and transferring When compared to the same and change of digital records, the expenditures are significant. The federal and state governments, as a result of the numerous "after admission" benefits,

Insurance firms and other significant medical institutions are promoting the initiative aggressively. Electronic medical records are becoming more widely used. Congress included a formula that includes both incentives (up to $44K per physician under Medicare or $65K over six years under Medicaid) and penalties (i.e. reduced Medicare/Medicaid payouts). for covered patients to providers who do not use electronic medical records (EMRs) by 2015) for EMR/EHR

The American Recovery and Reinvestment Act, adoption versus the continued usage of paper records was debated. The American Recovery and Reinvestment Act of 2009 was passed. Digital medical records, according to one research, improve overall efficiency by 6%. EMRs can cost thousands of dollars per year, and the monthly cost of an EMR can be in the thousands of dollars (depending on the cost of the EMR). However, the expense of a few "non-essential" examinations or admissions JB Perlin 17 can be minimized (2006).

The findings were widely panned, with Jerome Groopman publicly querying "how such remarkable promises of cost-cutting and It's possible that quality improvement is accurate. Hartzband is a band from Germany (2009). The improved portability and accessibility of electronic medical records, on the other hand, The ease with which records can be accessed and stolen may also rise. unapproved users or unethical users vs. paper medical records The growing security requirements for electronic medical records have been acknowledged. documents covered by the Health Information and Accessibility Act, as well as recent legislation EMR users have experienced large-scale breaches in confidential documents, according to the Institute of Medicine. Medicinal plants (1999). Concerns regarding security play a vital role in the opponent to their widespread usage.

2.3 HEALTH INFORMATION REVIEW IN MANY COUNTRIES

Health informatics is a term that refers to the study of health information. It is a field of study. that brings together informatics science, computer science, and health care. It concentrates on the resources, equipment, strategies needed to optimize acquisition. In health and biology, data storage, retrieval, and utilization are all important.

Clinical recommendations, formal guidelines, and informatics tools are all examples of informatics tools. Information and communication systems, as well as medical terminologies It is put to good use. To name a few, nursing, clinical care, dentistry, pharmacy, and public health. Occupational therapy and (bio)medical research are two fields that I am interested in.

Data was a crucial component of the Nazi health-care system, which accepted Nazi eugenics as one of its main ideas. New systems and technologies include electronic tabulating and sorting electronic punch

cards, as well as medical science. On a large scale, Personal data was gathered, classified, and analyzed using statistics. Never before in human history has anything like this happened on such a grand scale. The data was utilized to locate and locate sterilization or mass murder are used to eliminate the 'It's a genetic flaw. Many Some of the system's designers would go on to play pivotal roles in the postwar period. field of medical informatics, O. K. Baek, O. K. Baek, O. K. Baek (2009). Technology is being used all across the world. The emergence of In the early 1950s, computers ushered in a new age in medicine. Gustav was born in the year 1949. Wager founded the first informatics professional association.

With the early 1950s, computers ushered in a new age, the global use of technology in medicine began. Gustav Wager founded Germany's first informatics professional group in 1949. Medical and health information's beginnings, evolution, and future Technology is discussed in this reference. University departments with specialized expertise and In the 1960s, training programs in informatics began in France, Germany, and the United Kingdom.

Belgium and the Netherlands are two countries in Europe. The first medical informatics research units appeared in the 1990s. During the 1970s in both Poland and the United States Since then, the mission has been to develop high-quality health informatics research, education, and infrastructure19. of the United States, as well as the European Union The process of processing medical data is referred to as medical computing, medical computer science, computer medicine, medical electronic data processing, medical automatic data processing, and medical information processing. were some of the early titles for health informatics. medical software engineering, medical information science, and processing computer technology in medicine. The health informatics community is still developing; it is far from mature, but research undertaken in the field is showing promise. but research undertaken by the UK Council of Health Informatics Professions shows that it is growing.

Project management of domain information, ICT, education and research, clinical health information service, medical records (service and business-related) and information management are all examples of domain information project management. These constituencies house NHS professionals and those who work for the NHS. Academic institutions and commercial service and solution suppliers The most significant worldwide coordinating body since the 1970s has been the the International Medical Informatics Association (IMIA) is a non-profit organization (IMIA).

Despite the fact that the idea of using computers in medicine emerged as technology advanced in the early twentieth century, informatics did not gain traction in the United States until the 1950s.In the 1950s, the first time computation was used in medicine was for dental projects. (2006).The creation of expert systems was the next stage in the mid-1950s.

MYCIN and Internist-I are two examples. The National Library of Medicine (NLM) first opened its doors in 1965. to use the databases MEDLINE and MEDLARS Neil Pappalardo, Curtis Marble, and others were in this situation at the time.

MUMPS (Massachusetts General Hospital Utility) was created by and Robert Greenes. Octo Barnett's Computer Science Laboratory has a Multi-Programming System is a system that allows you to program multiple things at o nce. During the 1970s and 1980s, it was the most popular programming language for medical applications. according to Reilly (2003). The MUMPS operating system was used to

support MUMPS language specifications. In the United States, a descendent of As of 2004, This system is currently in use. Hospitals run by the Department of Veterans Affairs. The Veterans Health Information Systems and Technology Architecture is the world's largest enterprise-wide health information system, with an electronic medical record (VistA). The Computerized Patient Record System (CPRS) is a graphical user interface that allows health care providers to keep track of their patients' information. can view and and keep a patient's electronic health record up to date at any of the VA facilities more than 1,000 health care institutions.

CHAPTER 3 : RESEARCH METHODOLOGY

3.1 SOURCE DATA

During the project we collect our data From IUT clinic center. For acquiring and getting necessary data and information that are needed for system analysis, there are two major factor finding techniques were used in this work and they are:

(a) Primary source `

(b) Secondary source

Primary Source:

In case of primary source it is used for collecting original data for the purpose of project work like personal interviews and questionnaires.

Secondary Source:

The significance of secondary data sources through this type of project cannot be overstated. The study analyzes secondary data from periodicals, journals, newspapers, and library sources.

3.2 METHODS OF DATA COLLECTION

3.2.1 ORAL INTERVIEW

The investigator and the doctors at the IUT where the experiments were done performed this, and the lab attendees were interviewed. Based on the researcher's questions to the personnel, reliable facts were gathered.

3.2.2 STUDY OF MANUALS

The manual-based method utilized by clinic users was investigated, and a great deal of information on the system was gathered.

3.2.3 QUESTIONNAIRES

It is useful in gathering information from key organization members about: Attitudes, Beliefs, Behaviors, and Characteristics.

The goal of the survey is to identify and outline the functional requirements for our proposed Patient Information System IUT clinic center.

3.2.4 EVALUATION PROCESS

Some of the important forms are used by the IUT clinic center; these forms include patient admission form, billing form, medicine form. All are very much helpful for designing the interfaces of the the new system.

3.3 THE EXISTING SYSTEM

The study of a system is referred to as system analysis is a way of obtaining and evaluating data on in order to improve existing operations processes and systems gain a thorough understanding of the problem and, if possible, design and implement an effective computerized system. " The process of determining the most effective way to use a computer and other resources to do tasks that meet an organization's information needs.," according to E.C. and chapman R.J. Before going on to the essential This new system's design building pieces are we must examine the current system and identify its shortcomings.

Manual activities are involved in the IUT clinic center's medical system and drug prescription. It has been noticed that in order to obtain medical care in the Patients queue according to A new patient must register first with the clinic center by filling out a patient form, stating that the individual is an official patient of that Clinic, according to the first come, first serve (FCFS) schedule. The user will also have permission access to a hospital folder. It is the file where basic information on the patient's diagnosis and medication is kept.

3.4 INPUT ANALYSIS

The input data for the new system comes from the patient's form. At first patient comes to the IUT clinic, then he or she completes or fill up a patient form. This serves as the input for the newly built system. The information needed to get into the system is as follows:

1. Address
2. Age
3. Patients Name
4. Disease Symptoms
5. Gender
6. Date visited.

3.5 PROCESS ANALYSIS

New patient and existing patient is added into the manual system. There are some books, and this book is intended to keep the fundamental information regarding the patient's diagnosis and medication. Also there is some books for register the new patient information and how much medicine are available and which medicine are needed to be store something like that.

3.6 OUTPUT ANALYSIS

The results are displayed in the form of reports on a spreadsheet. The reports are shown on a computer screen and can also be printed.

3.7 BREAKDOWN OF THE CURRENT SYSTEM

The failure of the current system are highlighted below

LACK OF CONSISTENCY:

This condition creates a difficulty in that competent and effective medical care is a long way off. Doctors often rush through their work in order to see all of the patients in the IUT medical center. and as a result, they may become fatigued, resulting in cases of faults and blunders. Furthermore, the diagnosis and prescription are dependent on the doctor's memory, as their brains are frequently loaded with many diseases, symptoms, and treatment medicines, making it In his medical job, he finds it challenging to remember and absorb all of this information. As a result, it may not always be able to provide a clear diagnosis and prescription.

LACK OF SPEED OF OPERATIONS AND EFFECTIVENESS:

Patients have been seen waiting in line for medical attention for several minutes in IUT Clinic center.In most cases The medical records system, on the other hand, is built on a typical filing system. Although many patients are served by this approach of recording information or retrieving an old file, it costs time. And there are occasions when a large number of patients are a spillover. Furthermore, redundancy may emerge as a result of the human brain's complexity, which may cause it to perform poorly, especially when new folders and card saves are acquired every year.

3.8 JUSTIFICATION FOR THE PROPOSED SYSTEM

Among other things, the new system will feature the following characteristics, which will improve the current system.

1. The new system will aid management in locating patient information such as bills, therapies, and so on utilizing a computer system.

2. Because the computer data will provide a precise output, accuracy is maintained.

3. Because the medical system that has been established will aid in the treatment of patients and the preservation of information, there will be less congestion in IUT.

4. When compared to the manual approach, the medical system operates at a high speed.

CHAPTER 4 : SYSTEM DESIGN

4.1 INTRODUCTION

The system investigation, analysis, and design, as well as context level diagrams, entity relationship diagrams, and sequence diagrams, Use Case diagram, Data flow diagram are all covered in this chapter.

4.2 SYSTEM STUDY

This analysis was conduct at IUT Clinic Center. The primary goal is to figure out how the process of collecting patient data is carried out. IUT Clinic Center is using a manual system. All of the information is manually entered from the drug dispenser when a patient requests medications from the staff, and when the supplier delivers drugs, all of the information is manually entered. The data is manually entered from the dispenser to the drug account.

4.3 SYSTEM ANALYSIS

Design and implementation of Patient Information System is categorized by user requirement, software and hardware requirement.

4.3.1 EXISTING PATIENT RECORD MANAGEMENT SYSTEMS

In addition to the literature review, observation, interviews, and questionnaires described in Chapter 3, it should be emphasized that we were able to assess existing systems at IUT CLINIC CENTER as stated below. The existing system was prone to human error, with data written on various papers and transferred to various departments; it was vulnerable to human error because it was paper-based, as well as retrieval of file system was time consuming because they had to manually locate files, many of which were even19 lost, making it difficult to locate such information. According to the statistics, 90% of users were dissatisfied with the system since it was insecure in terms of safety and storage, and it was vulnerable to damages such as data loss, worn-out papers, and fires. Even though the speed of recording and retrieving patient information was average, 10% of those polled were satisfied with the approach because the paper work may be used for future reference. Users suggested that the proposed system be user-friendly, versatile enough to handle a large number of users at once, provide feedback when requests are filed, and employ passwords to prevent unauthorized users from accessing the system, ensuring security. The study and design of the system were done using context diagrams, data flow diagrams, sequence diagram affinity diagram use case diagram and entity relationship diagrams (ERDs).

4.3.2 REQUIREMENTS SPECIFICATIONS

After studying the data, we came up with a list of criteria, including user requirements, system hardware, and software features. These were divided into four categories: user, functional, non-functional, and experimental. requirements for the systems.

4.3.3 USER REQUIREMENT

The users described some of the basic requirements of the system this includes Search for patients, Register staff, Update, staff records, patients and View all types of reports, Admission patient, view vaccinated status, Add patient details, view patient master list, view medicine details, Generate patient master list, Doctor appointment, view doctor status and so on.

4.3.4 FUNCTIONAL AND NON-FUNCTIONAL REQUIREMENT

The desired functionality of the new system is stated below.

Raw patient, staff, and medicine supply submissions are accepted at the submit point. Conduct financial, medicine inventory, patient, and other analyses. supply of drugs, Users of the system must be authenticated. Besides these the functional requirement is –

1. Generate patient master list
2. Vaccinated patient
3. Hospitalized patient

Pharmacist module:-
The user can use this module to add, update, view, search, and delete medicine information.

Patient module:-
➔Data Members :- Patient Id, Name, Age, Sex, Location, Phone Number. Job position, Department and other information related to patient are added in this module.
Doctor module:-
The Doctor uses this module to manage the system.

The Doctor perform the following tasks in this module .

➔ Add New Patient :- This module is used to enter a new patient's information.
➔ View Details :- This module is used to look up information about a patient who has already been admitted.

➔ Search :- This module looks for a patient's record based on his ID, name, gender. Department and other relevant information.

➔ Delete :- This module removes a patient's entry from the database.

Location module:- This module used to track the patient location

The following are non-functional requirements:

All user input must be verified and validated, and users must be notified if problems are discovered while using the system. The system only permits the database administrator to delete records. It's important that the system has room to grow. The system should allow to doctor

1. Track location of the patient
2. ADD To Do Note, view To Do note, Update To Do note.
3. Provide some pharmacist tips

4.3.5 SYSTEM REQUIREMENT

The hardware and software requirements for this running system are described in this section, which are very effective and efficient.

Table 4. 1 Hardware Requirement

Hardware	Minimum Support requirement	Recommended Requirement
Processor	**CPU:** 1 GHz or faster	**CPU:** 1 GHz or faster
Memory	**RAM:** 1 GB	**RAM:** 2 GB
Disk Space	80 GB (including 20 GB for database Management system)	80 GB (including 20 GB for Database Management system)
Display	1024x768 or higher resolution video adapter and display, DVD drive (for boxed product)	1024x768 or higher resolution video adapter and display, DVD drive (for boxed product)

The table above shows hardware components of the machine that allows the system to function as required for using PIMS

Operating System

Table 4. 2 Software requirement

Windows operating system	MAC operating System
Windows 8.1, and Windows 8.1 Pro editions	Mac OS X Mountain Lion v10.8*
Windows 8 Standard and Pro editions	Mac OS X Lion v10.7*
Windows 7 Ultimate, Professional, Home Premium*	Mac OS X v10.6.x*

4.3.6 FEATURES PROPOSED FOR THE CURRENT SYSTEM

1. The system at the front desk should record patient initials so that they can be used by other parts of the institution.
2. Generate patient master list allow user to log in to view his information
3. When it comes to medicine distribution, the doctor and pharmacist control panel should be able to distinguish between treated and untreated patients.

4.4 SYSTEM DESIGN

For design this system we are mainly use Data flow diagram, Context diagram, use case diagram, sequence diagram, entity relationship Diagrams. This all of this diagram ensure that unauthorized person doesn't allow to access this system.

4.4.1 Context Diagram

Context diagram is the top-level view of the system. In this context diagram, all the external entities that interact with our system are indicated. Moreover, one single process, process (0) represent the entire system.

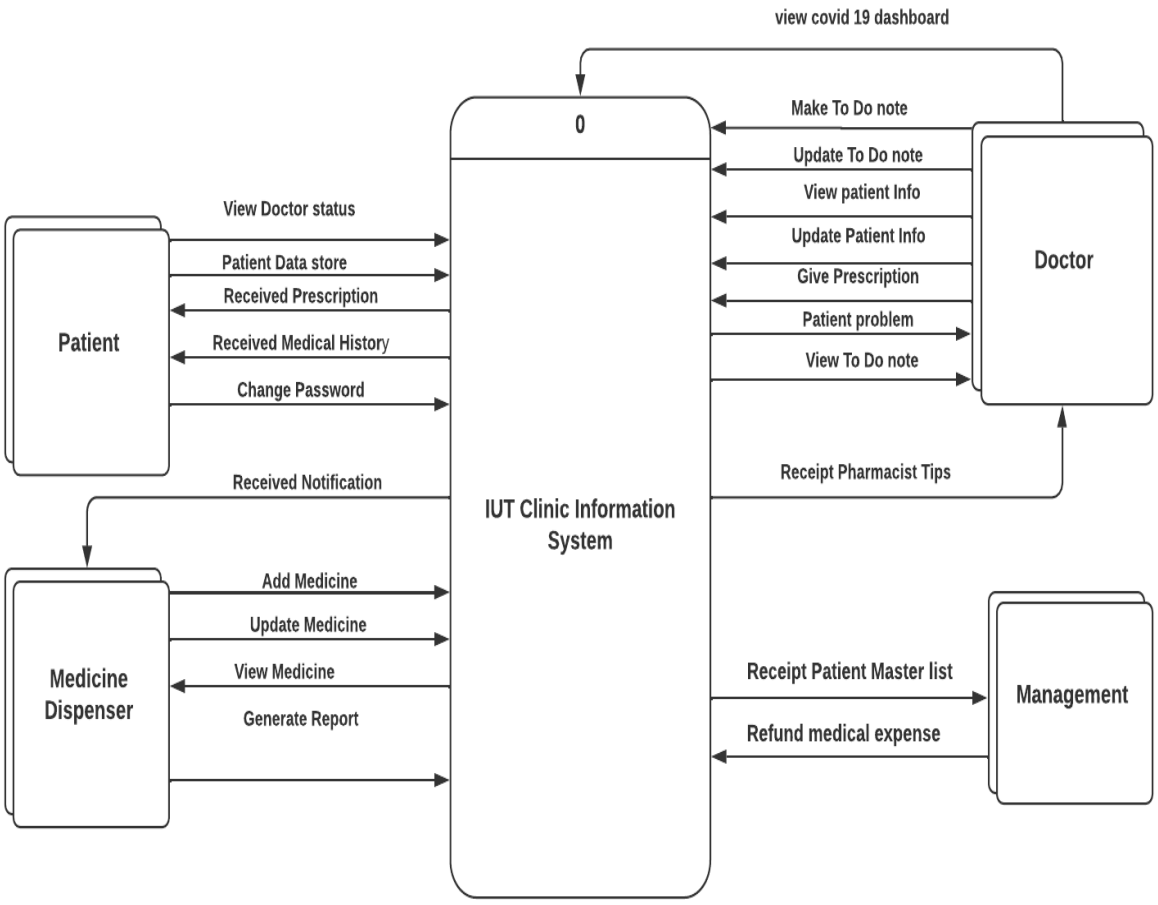


Figure4. 1 Context diagram for Patient Information system

4.4.2 DATA FLOW DIAGRAM

This diagram is a diagram (0) 0f our proposed system, all the entities are the same as in context diagram. Except that diagram (0) let us see the internal components that are not visible in the context diagram such as Processes and Data store.

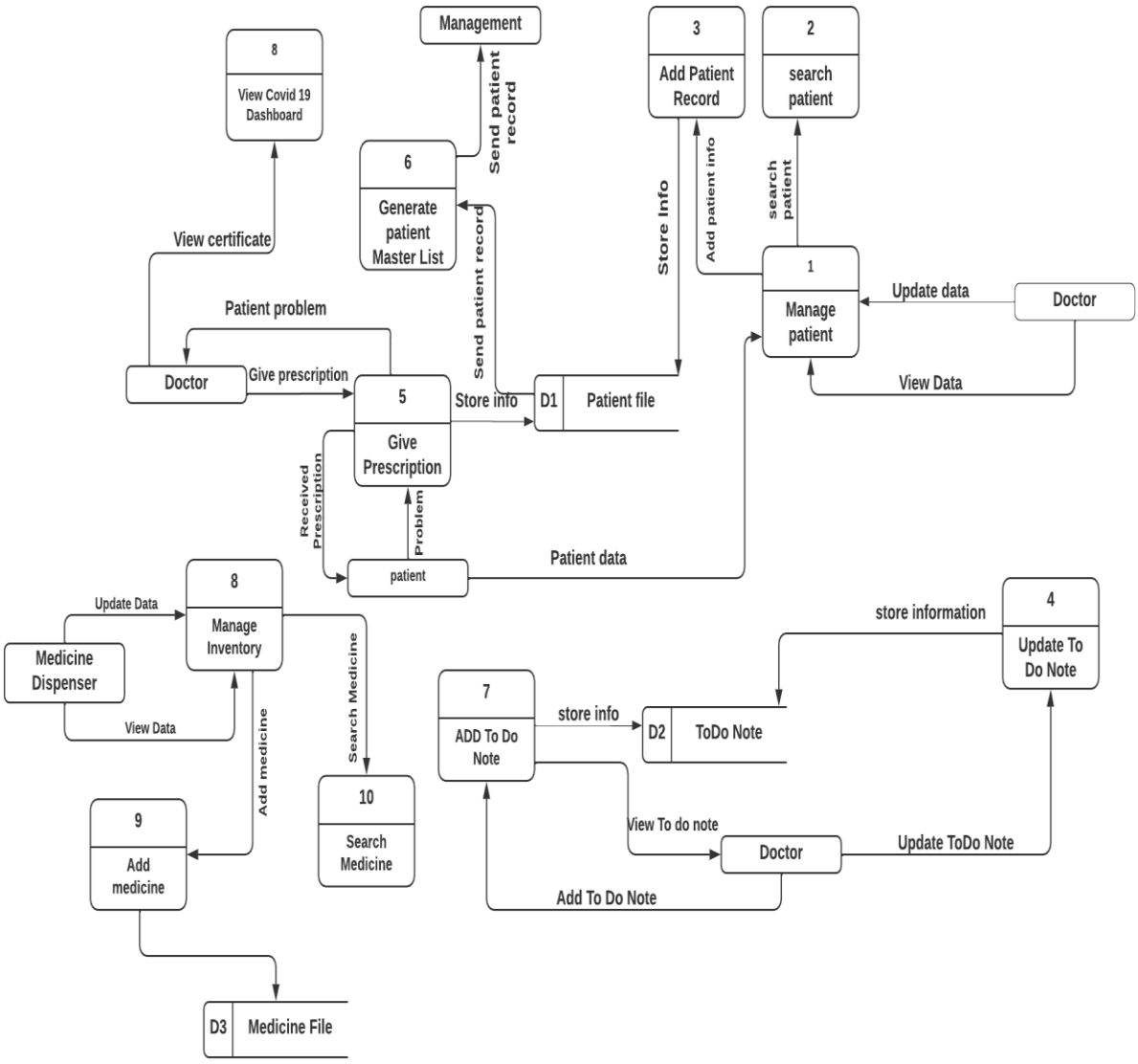


Figure4. 2 Data Flow Diagram For PIMS

4.4.3 USE CASE DIAGRAM

This diagram represent the user's interaction with the system and their relationship with different use-cases, which the users are involved. The users include New and Existing patient, Management as well as the Doctors and the Medicine Dispenser.

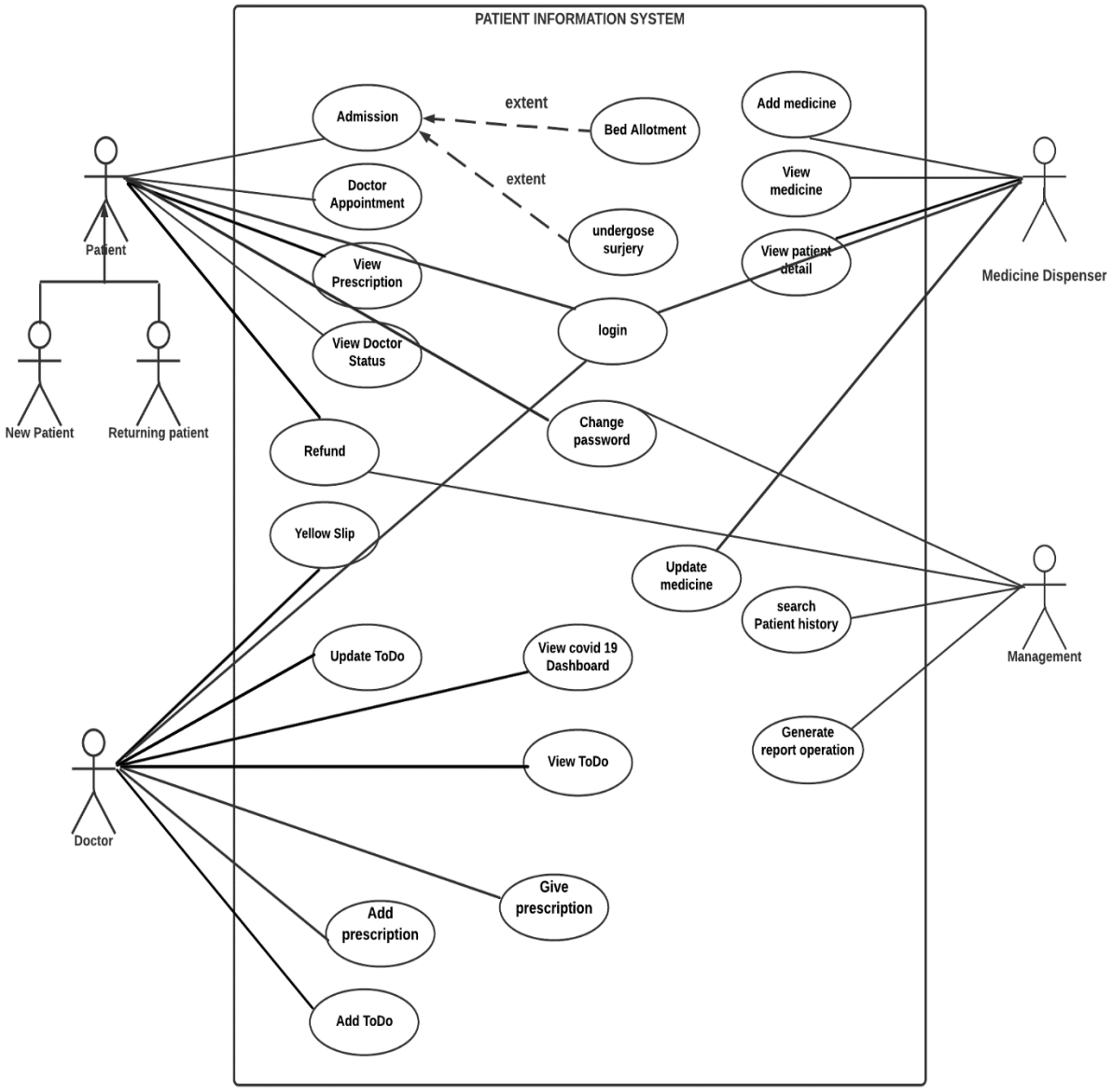


Figure4. 3 Use Case Diagram for PIMS

4.4.4 SEQUENCE DIAGRAM

This diagram represents a sequence diagram for refunding the money been paid by the students when they undergo treatment or bought some medicine from outside of the clinic.it shows object interactions arranged in time sequence and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenarios.

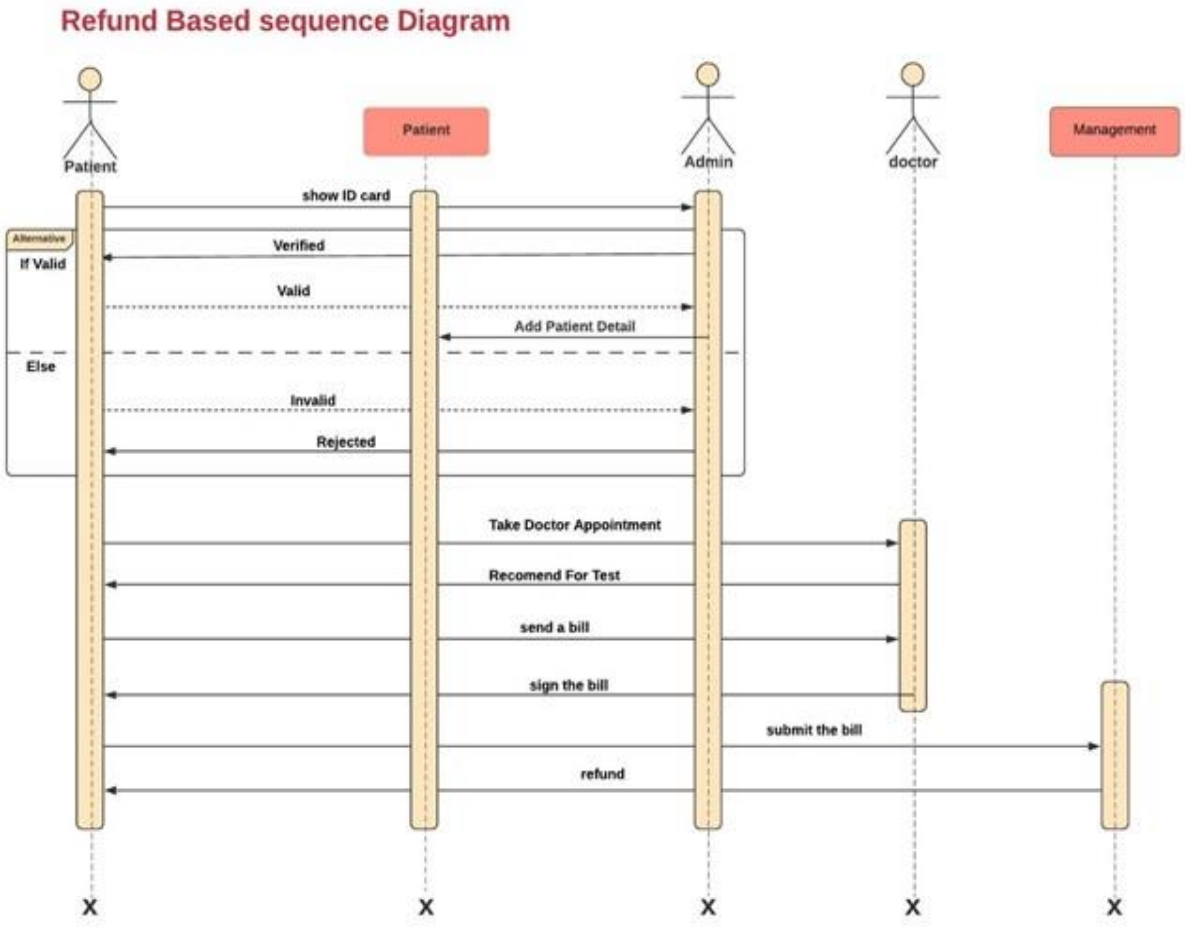


Figure4. 4 Sequence Diagram For PIMS

4.4.5 AFINITY DIAGRAM

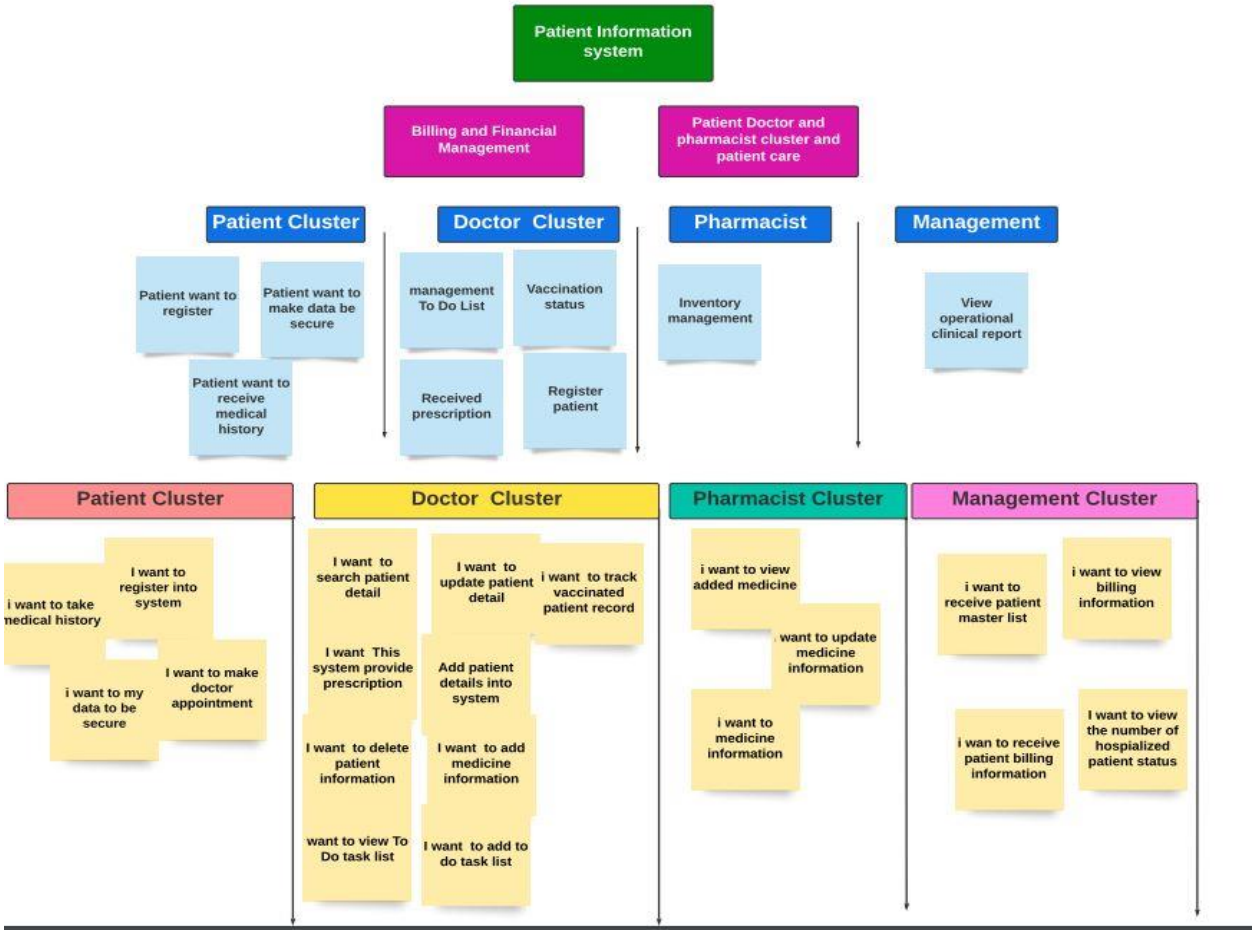


Figure4. 5 Affinity Diagram For PIMS

4.4.6 SYSTEM INTERFACE

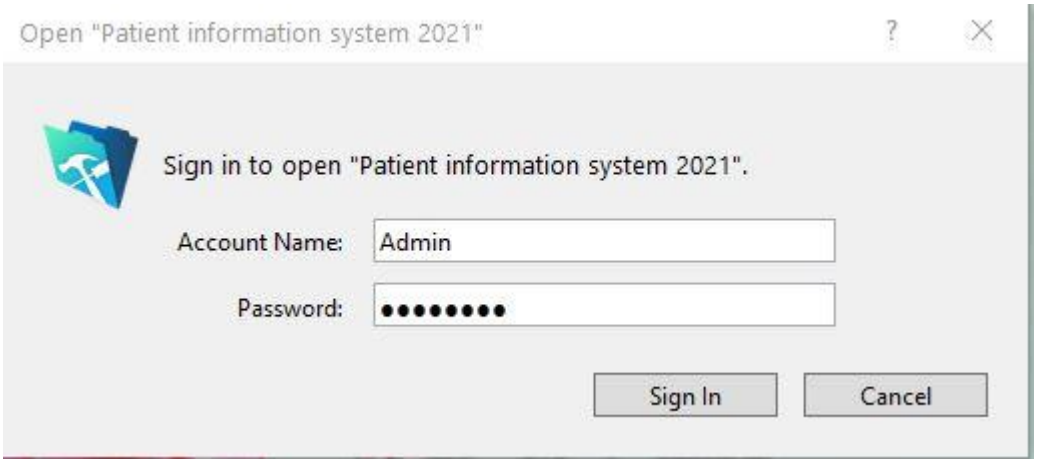
System interface in this chapter was designed by using file maker.

4.5 SYSTEM ADMINISTRATION HOME PAGE

The system administrator can add, delete, search, sort, and see patient information from this home page. This is the entire home page of our project. In addition, this home page contains the name of the system, current date, and three menu, which are patient information, Task To Do and Medicine record.

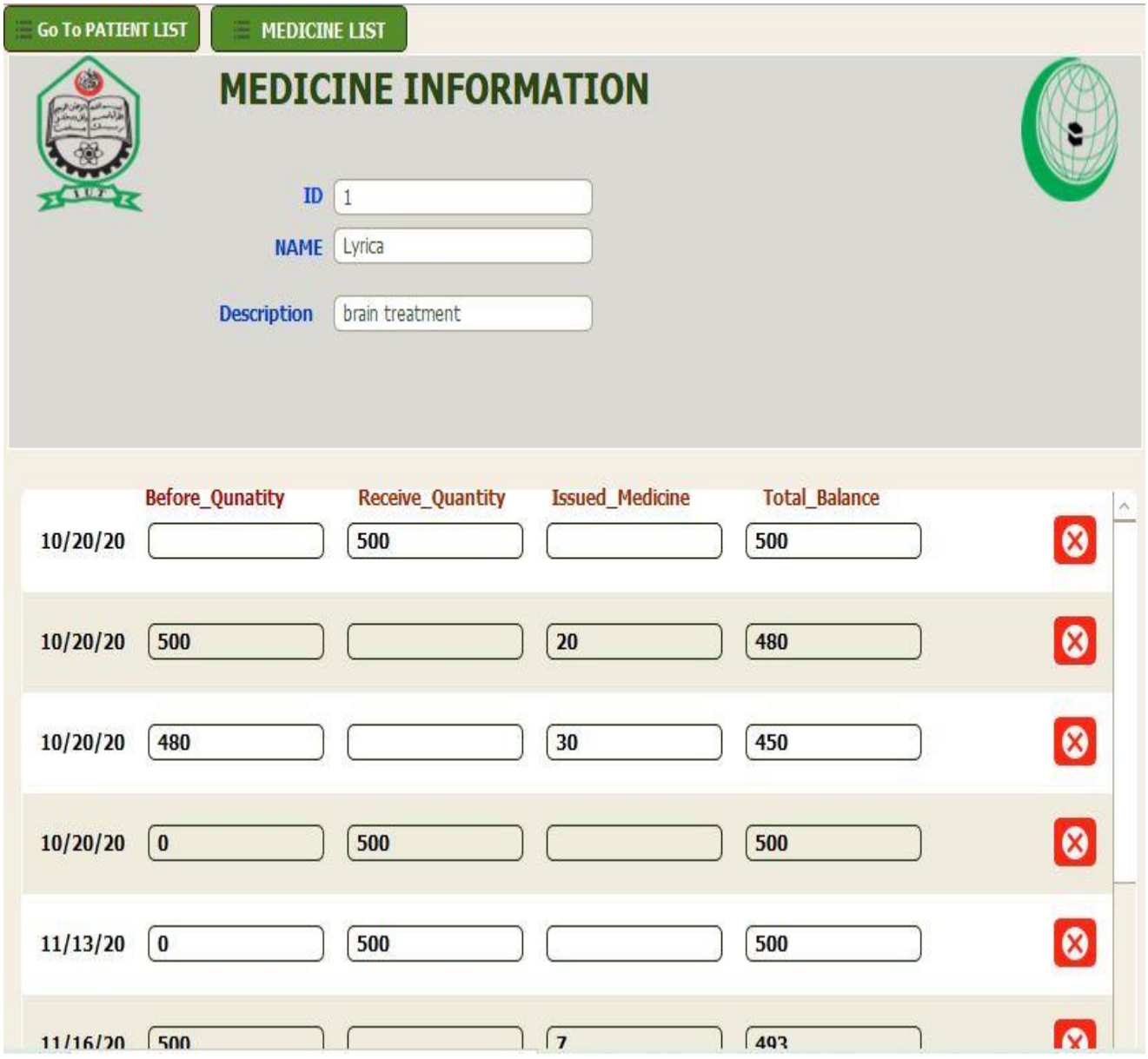
4.5.1 LOGIN FORM FOR USERS

The system can only be accessed by authorized users who have the correct user name and password. When a user name and password are entered incorrectly, the system denies access to the services.



4.5.2 PHARMACIST LAYOUT

The Pharmacist and Doctor have access to this layout it is designed to manage the medicine inventory.



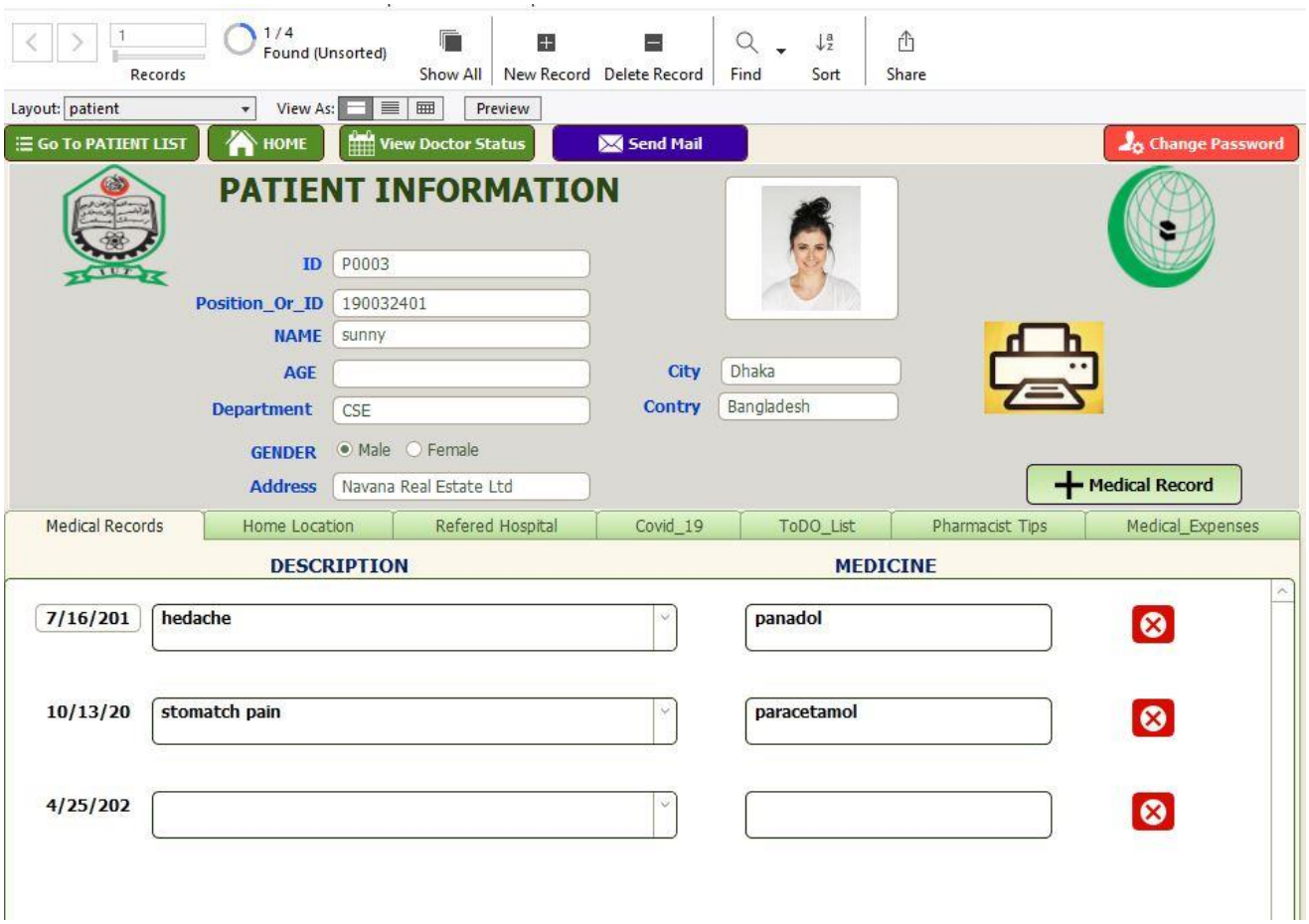
4.5.3 DOCTOR MODULE

Doctors use this module to manage the system. They can perform the following tasks in this module .

➔ Add New Patient :- This module is used to enter a new patient's information.
➔ View Details :- This module is used to look up information about a patient who has already been admitted.

➔ Search :- This module looks for a patient's record based on his ID, name, gender. Department and other relevant information.

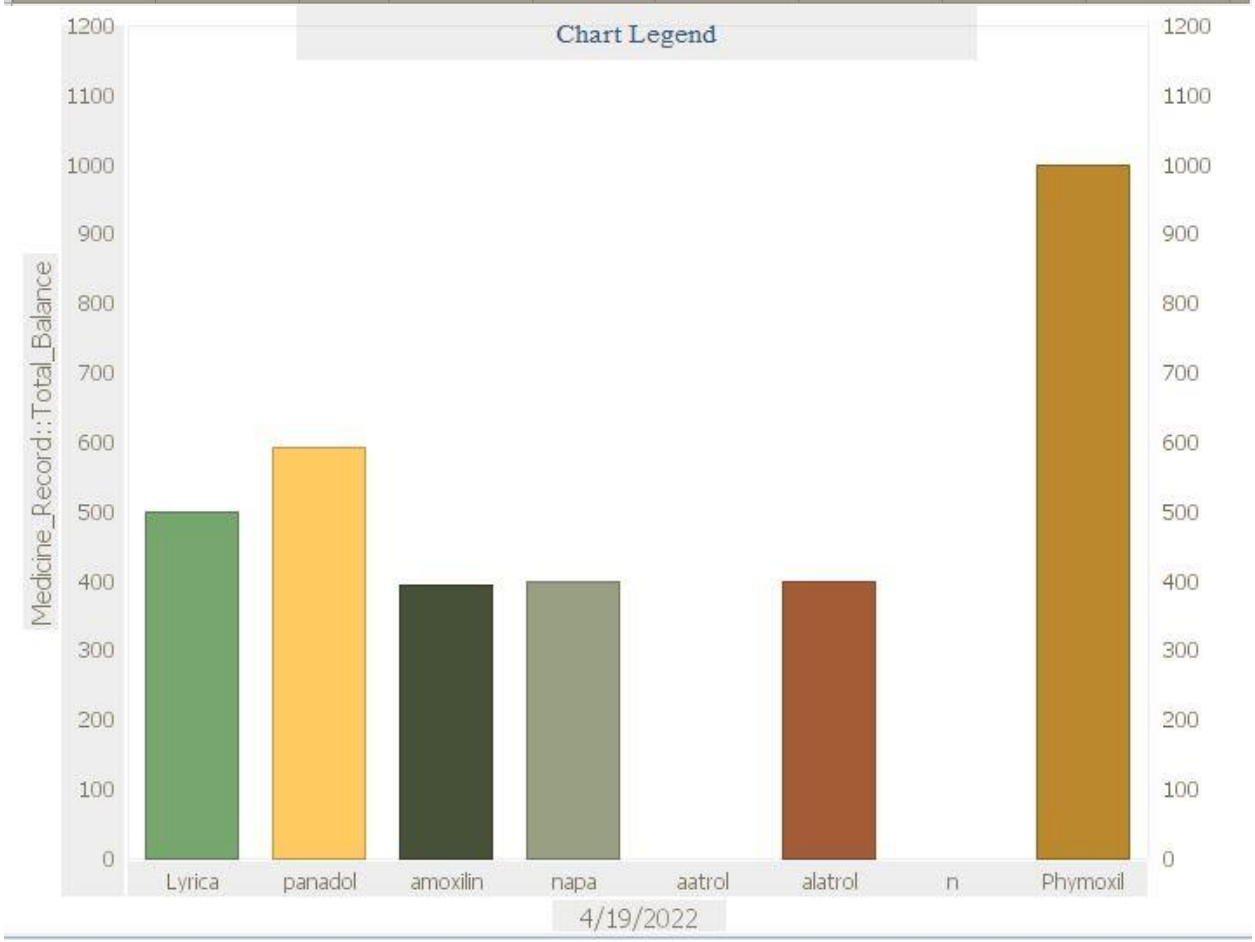
➔Delete :- This module removes a patient's entry from the database.



4.5.4 GENERATING REPORT

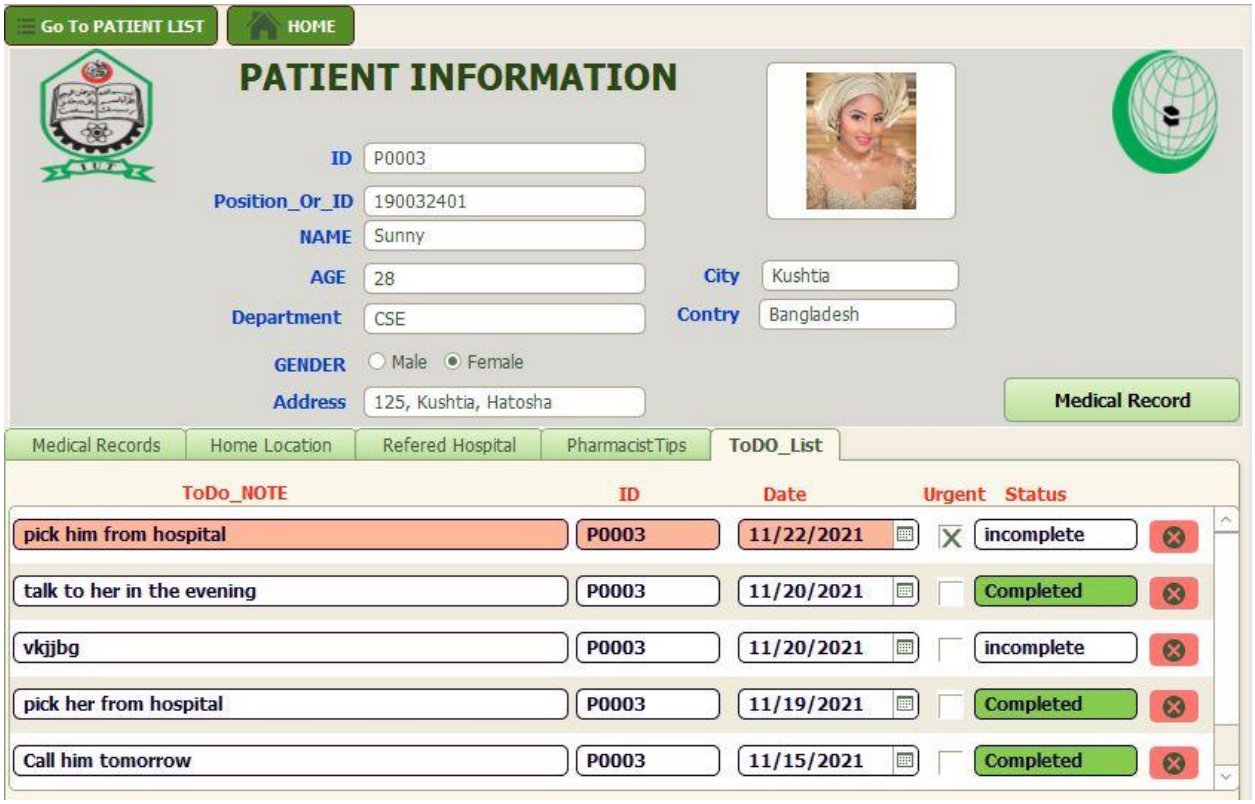
In this module, the system administrator can generate patient master file or the report operation of the clinic and send it to the management. Either in printed hard copy or as Pdf file.

id	name	age	Department	::date	::Drug_name	country	city	Position_or_ID
P0003	Sunny	28	CSE	**7/16/2018**	**panadol**	Bangladesh	Kushtia	190032401
P0004	MUHAMMAD	20	TVE	**10/13/2021**	**JVHRHUHIUG**	Nigeria	Abuja	
P0008	dikko	abc	CSE					190032401
P0009				**3/11/2022**				student



4.5.5 ToDo List Interface

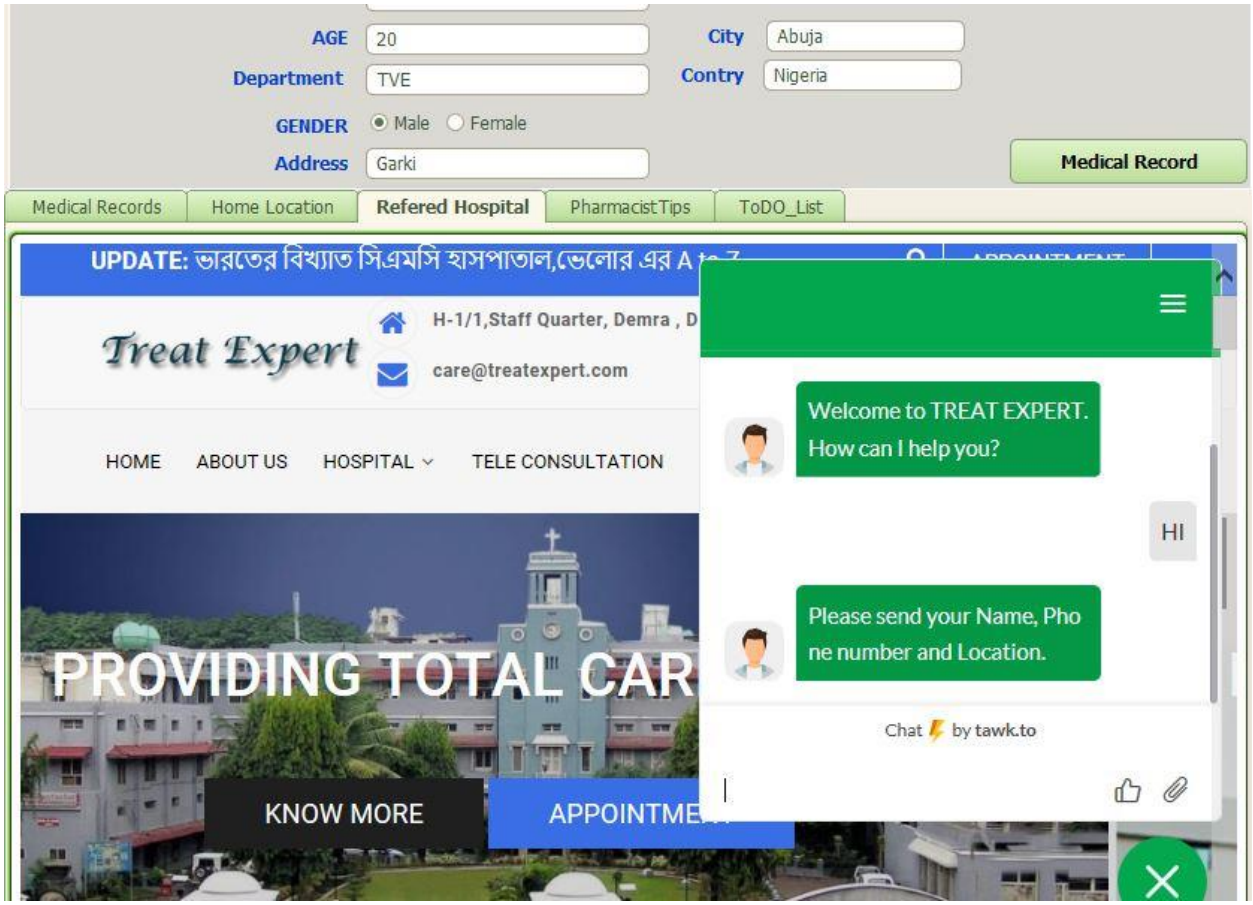
In this layout Doctor Can to add do note, view to do note and update to do note.


Go To PATIENT LIST
HOME
PATIENT INFORMATION
ID
P0003
Position_Or_ID
190032401
NAME
Sunny
AGE
28
City
Kushtia
Department
CSE
Contry
Bangladesh
GENDER
Male
Female
Address
125, Kushtia, Hatosha
Medical Record
Medical Records
Home Location
Refered Hospital
PharmacistTips
ToDO_List
ToDo_NOTE
ID
Date
Urgent
Status
pick him from hospital
P0003
11/22/2021
incomplete
talk to her in the evening
P0003
11/20/2021
Completed
vkjjbg
P0003
11/20/2021
incomplete
pick her from hospital
P0003
11/19/2021
Completed
Call him tomorrow
P0003
11/15/2021
Completed


Medicine Record
patient Record
Home
vkjjbg
11/20/2021
Inprogress
P0003
pick him from hospital
11/22/2021
Inprogress
P0003
send him medical record
11/22/2021
incomplete
P0004

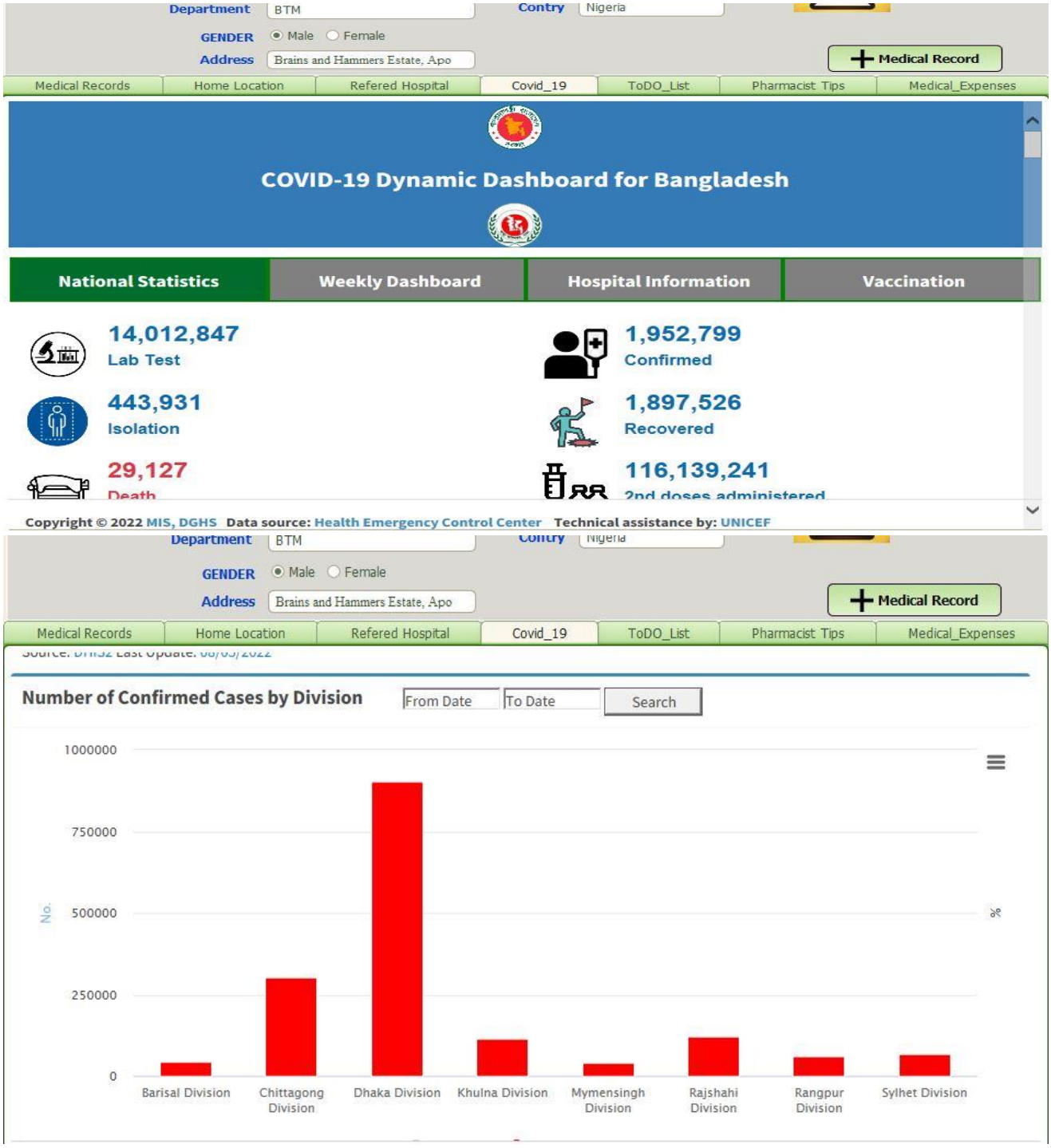
4.5.6 REFFERED HOSPITAL

This is a website to which the patient is referred. It help the doctor to stay in contact and to communicate with the external hospital.



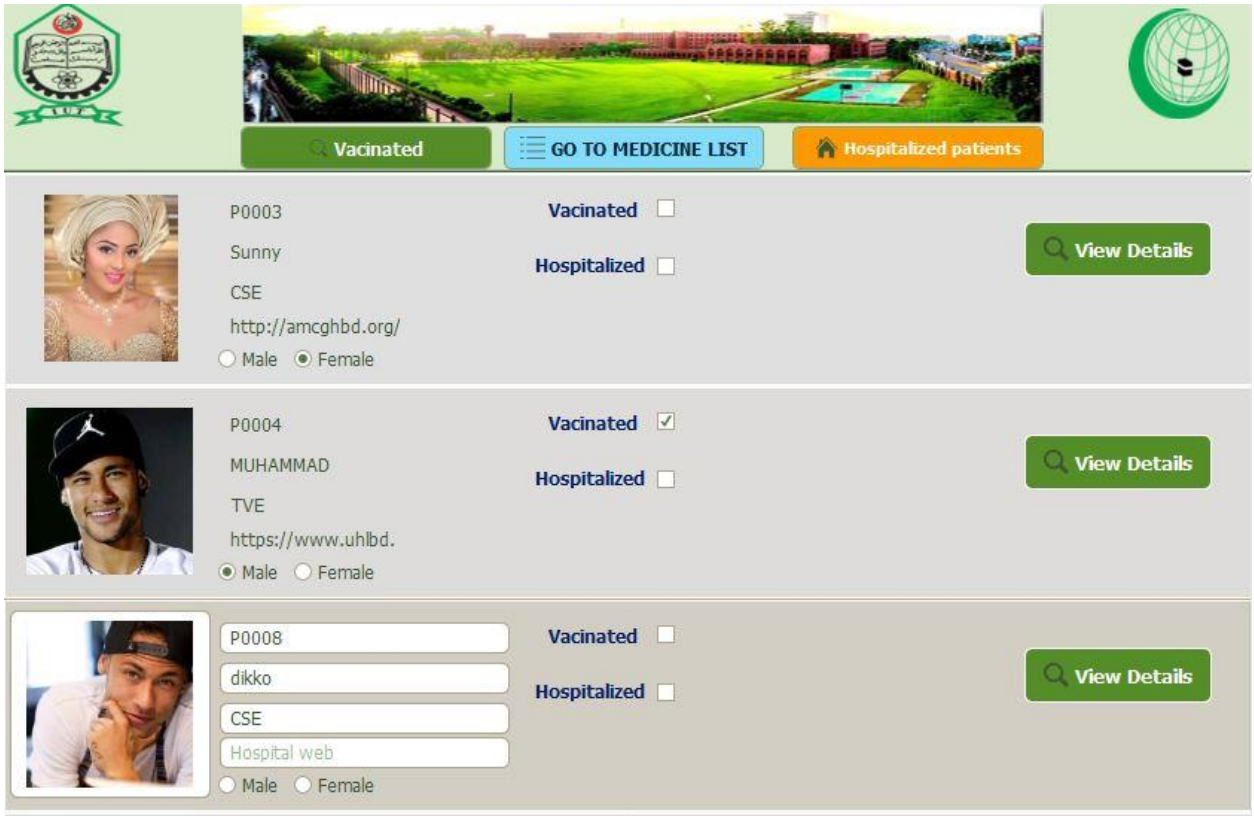
4.5.7 COVID 19 DASHBOARD

In this muddle doctor can view Covid 19 updates, such as number of infected people, recovered people, death rate and confirmed cases by Gender and Districts.



4.5.8 Doctor List Interface

In this layout, The doctor can view the record in list format and he can also track the Vaccinated patient and Hospitalized patient.



CHAPTER 5 : SUMMARIES, RECOMMENDATION AND CONCLUSION

5.1 INTRODUCTION

This chapter only describe about the overall project limitation, recommendation and conclusion. In addition, it explains the system's goals and how they are achievievd.

5.2 SUMMARY

As discussed in the previous chapters the main problem that we addressed was dealing with patient medical document as well as tracking the medicine inventory. The above situation drove us to techniques of developing this Patient Information Management System to be used at IUT clinic center to enable them to manage patient records efficiently and effectively. The project has implemented Most of the objectives stipulated in earlier chapter. The patient information system offers a number of benefits to the users and can capture data, store, view, add and delete the records entered.

Problems encountered during data collecting include the release of sensitive information, the lack of projects and publications on patient records management systems, and the lack of sensitive information supplied to us.

Problems encountered during system design include a lack of time to complete the task, requirement to take the rules and policies of the manual system into consideration in designing the proposed system.

5.3 LIMITATIONS

The following service is not provided by the system. It does not automatically produce an alarm to notify the pharmacist management when a drug's expiration date approaches.

5.4 CONCLUSION

The main goal of establishing a computerized patient information system is to provide clinic administrators with information in an easy, fair, and timely manner. As a result, if the clinic wants to stay relevant, the IT employed should serve the system's basic goal. In the clinic, more work remains to be done in order to make the designed system effective. This could include employee training on how to enter data in the system in the correct and relevant format, as well as management updating the system's hardware and software requirements.

5.5 RECOMENDATION

Training for all members of the hospital's personnel to become familiar with the system will be a top priority. Because this is a new system, certain members of the staff's management may fear that the computerized patient records management system would oust them. I would suggest that the clinic's management teaches its employees on how this system will work and how it will facilitates their efforts.

5.6 FUTURE WORK

This proposed system “IUT Patient Information System” can be enhance by implementing some of the requirement from the user. That is to auto produce an alarm to notify the pharmacist management when a drug's expiration date approaches.

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APPENDIX

Persona 1:

#hello my name is… Bristy Mondal

at a glance

Age: 40

Family Status: Married

Education: MSc in Pharmacy

Role: Senior Clinical Pharmacist

Bio: Bristy modal has been a pharmacist for 12 years.She is married with one childreen

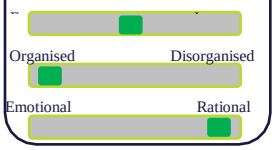
Role: Senior Clinical Pharmacis. She delivers direct patient care providing prescribed medicine.

Location: Gazipur, Dhaka

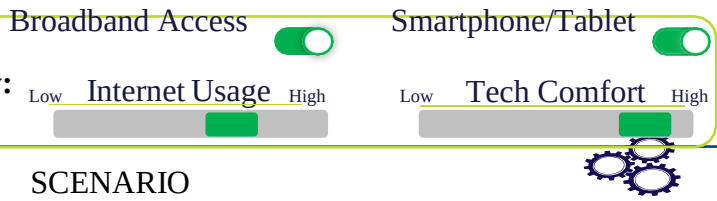
Goals: Reduced computational offloading. Counsel the patient o the safe use of prescribed medicine. Participate in departmental audits.

Frustrations/Fears: the high computational offloading caused by the manual system often frustrates her. She is concerned that there may not be enough time to calculate in stock and out stock medicine and undertake her dispensary duties.

Personality



Technology:



SCENARIO

Bristy mondol has been appointed as a pharmacist in Islamic University of technology She arrives at work at 8 am. She appeared the medicine Record book to view the instock and outstock medicine but the book does not product a quick and easy access TV this information

A new patient has arrived in the clinic and the doctor prescribed some medicine to him,bristy search the corresponding page of each medicine to keep the record. Another patient arrived and focuses prescription of some medicines . Bristy find a sheet of paper to add the previously counted medicines with the newly counted ones and update the result in the book

She has tried using calculator to minimize the computational offloading but not satisfied She is looking for a professional system to help her carry this task.