PATIENTS RECORDS MANAGEMENT SYSTEM

CASE STUDY: MAKERERE UNIVERSITY HOSPITAL

By

GROUP CSC12-8

INFORMATION SYSTEM

DEPARTMENT OF COMPUTER SCIENCE

SCHOOL OF COMPUTING AND INFORMATICS TECHNOLOGY

A Project Proposal Submitted to the School of Computing and Informatics Technology

For the Study Leading to a Project in Partial Fulfillment of the

Requirements for the Award of the Degree of Bachelor of

Science in Computer Science of Makerere University.

Supervisor

Mr. Paul Ssemaluulu

Department of Information Technology

School of Computing and Informatics Technology, Makerere University

pssemaluulu@cit.mak.ac.ug, +256-41-540628, Fax: +256-41-540620

February, 2012.

GROUP MEMBERSHIP:

STUDENT-NAME	STUDENT-NUMBER	REGISTRATION NUMBERS
KAYONDE RICHARD	209008307	09/U/13755/EVE
KAGERE ALLEN MILDRED	209011180	09/U/13727/PS
TOILI MERCYLINE	209005554	09/U/13905/EVE
MACHARIA ISAAC G	209014110	09/K/18244/PS

Date: February, 2012

Approval

This Proposal has been submitted for Examination with the approval of the following

Supervisor**.**

Signed: …….

Date: ……

Mr. PAUL SEMALUULU

Department of Information Technology

School of Computing and Informatics Technology, Makerere University

CHAPTER 1

Introduction

Patients Records Management System is a fully fledged system aimed at enabling Makerere University Hospital to keep track of all the patients' records and be accessed with ease. This will help to improve ways in which services are rendered to patients by increasing efficiency and reducing time taken to deliver services.

The University Hospital has three clinics (general clinic, dental clinic and eye clinic) and services offered include Reproductive Health, Pharmacy, Emergency Services, X-Ray and Ultra Sound Services, Physiotherapy Services, Laboratory Services, Ward Services. The proposed system will enhance quality and efficiency delivery of the above services due to the ease at which the records will be accessed.

1.1 Background

Makerere University Hospital is one of the largest public hospitals in Uganda providing medical services to students, staff of Makerere University and private patients. The Makerere University Hospital used to occupy the present Makerere University Police Post. In 1972, the then Sick-

Bay, which was called Students Health-Service was transferred to its present premises. These premises came under possession of the University at the expulsion of the Asians by the then President of Uganda Field Marshal Idi Amin Dada. The then Nile Nursing Home was purchased by the University as a large and alternative place for the University Hospital, able to cater for a wider Makerere University Community. On 16th February, 1978, President Idi Amin visited the Sick-Bay and he crowned it the Hospital status; thus the name Makerere University Hospital.

The number of patients to be served has dramatically increased leading to a slow delivery of services. There is a possibility of the patients being given wrong drugs prescriptions due to fatigue caused by a lot of writing by doctors and nurses trying to reduce the queues.

1.2 Problem Statement

The problem Makerere University Hospital is currently facing is using the manual process to provide health services and use of cards and files to track records of continuing patients and set up records for new patients in the hospital.This process has so many inconsistencies and inconveniences like patients losing their health cards or their files being misplaced. Therefore an automated system will help to keep track of patient's records and medical bills making it easy to determine the state of new and continuing patients.

1.3 Objectives

1.3.1 Main Objective

To implement a Patients Records Management System that will enable Makerere University Hospital keep track of their patient's records.

1.3.2 Specific Objectives

a. To study the current Manual Records Management Process used by Makerere University Hospital so as to obtain requirements with a view of coming up with a better functional Patients Records Management System.
b. To design a Patients Records Management System model that will accommodate the user requirement and obtain the design specification.

c. To implement a Patients Records Management System for Makerere University Hospital and enhance a working system.
d. To test and validate the working Patients Records Management System.

1.4 Scope

The project will focus on implementing a Patients Records Management System that will be used by Makerere University Hospital in keeping track of their patient's records.

1.5 The importance of the problem

Many patients end up spending a lot of time when being diagnosed because the original diagnosis and treatment notes cannot be retrieved, so with the development of this proposed system this problem will be solved since the system will be able to manage the patients details.

Another serious issue is over prescription, where patients are continued on a prescription that is not effective and yet this could have access to the patient records. So with the development of this system the patient's details can be followed for the doctor to prescribe better or effective prescriptions.

1.6 Beneficiaries

The developed system will be beneficial to medical officers and researchers in patient record management systems.

Patients (Students)

Eases them on the burden of carrying the medical cards which can easily be misplaced by the patients or students.

Doctors and Nurses

Helps them to give proper prescriptions to the patients considering the previous prescriptions given to them and avoids the making of mistakes made due to lack of documents to show the previous prescriptions given.

Management

Help in record keeping for overall operations to improve on the service delivery.

CHAPTER 2

Literature Review

Introduction

This chapter covers how the current process is carried out and findings that were reviewed from different sources such as eBooks, online journals, newspapers, magazines and the internet. It shows in brief what other researchers had worked on and how their systems work. The chapter presents us with various systems used by hospitals to automate the process. Various literatures from various researchers on the different types of hospital management systems they operate their advantages, how they are managed and how effective they are as well as the value they bring to the organization in use. Literature review discusses published information in a particular subject area, and sometimes information in a particular subject within a certain time period of time.

2.1 Description of the current system

Accessing patient's files and records at Makerere University Hospital is done manually at all the departments, making it very labor intensive and ineffective. This process involves very large amounts of data, thus consuming a lot of time. The problem of data retrieval, loss of information results since the nurse or the person involved in data search deals with very many files for different years. This is actually cumbersome and extremely hectic. This trend is good to be dealt out with for better services to the patients in hospitals. This process has so many inconsistencies and inconveniences like patients losing their health cards or their files being misplaced. Therefore an automated system will help to keep track of patient's records and medical bills making it easy to determine the state of new and continuing patients. The following are some of the reasons why this manual file storage should be not be adopted in the hospital.

The current process of attending to patients has a number of problems including the following:

1. High possibility of losing patients previous records and files due to misplacement, disasters occurrences like fire outbreaks.
2. It is time wasting e.g. in terms of capturing, analyzing and verifying details about patients**,** scheduling and making of their appointments.

3. It faces a possibility of many human error caused by doctors in their prescription due to fatigue.

4. It is expensive due to high administrative costs incurred in terms of high stationary costs, printing patient's cards, data entry and capture, data analysis and cleaning for storage purposes.

Makerere University Hospital should be able to efficiently store and keep track of their patient's records the system will provide an easy mechanism for doctors and nurses to retrieve the prescription they had earlier written so as to avoid making wrong prescriptions. The project will produce a Patients Records Management System that will enable Makerere University Hospital keep track of their patient's records.

2.2 Patients Records Management System

This is an automated system that keeps track of all patients' details and enables easy access, retrieval and storage of the patient's information.

2.2.1 The need for a Patients Records Management System

A need according to Encarta Dictionaries is defined as a pressing requirement of something essential in order to have success or achieve a goal, Encarta Dictionaries, 2008 [1]. The proposed Patients Records Management System will dramatically and by a large extent help Makerere University Hospital improve on the quality of services offered to its patients. The Hospital will be able to efficiently store and keep track of their patient's records the system will provide an easy mechanism for doctors and nurses to retrieve the prescription they had earlier written so as to avoid making wrong prescriptions. The project will produce a Patients Records Management System that will enable Makerere University Hospital keep track of their patient's records.

2.2.2 Features of a Patients Records Management System

According to Entreon, Warken aan warrken, 2009 [2] "A system that has various intuitive features will make it more convenient to the users in an organizations".

These features include:

Easy usability

Usability is the degree to which a given product or system assists the person using it to accomplish a task.

Reliability

A measure of consistency or stability.

Programming logic

Programming logic consists of one server program, scripts that are used to validate data, perform calculations or navigate the applicants through the application system. According to Introduction to Programming logic (2009) [3].

Database

A database is a shared collection of logically related data and a description of this data designed to meet the needs of an organization. Connolly & Begg (2004) [4]. The database could be a set

of flat files and/or database tables. The structure of the database is designed to facilitate data access and/or updates by both the applicants and the server.

Secure user-login and management interface

The system will ensure security and integrity of information captured by enhancing restricted login and rights to respective entity given according to regulations and policies of Makerere University Hospital.

2.2 Related systems (existing systems)

2.2.1 Patient Management Software

Patient Management Software (PMS) is software that is regulated as a medical device. It is software that is used to acquire medical information from a medical device to be used in the treatment or diagnosis of a patient. It is also used as software that is an adjunct to a medical device and directly contributes to the treatment of the patient by performing analysis, or providing treatment or diagnosis functionality that replaces the decision and judgment of a physician. This is being used in Canada.

The system is implemented to run on a desktop setting or from a server where multiple accesses can be done. The system utilizes QR codes to confirm payments and also record patient diagnosis results that makes using this system highly sophisticated tool for storing and retrieving patient's details. According to De Toledo P, Jimenez S, and Del Pozo F. A telemedicine system to support a new model for care of chronically ill patients [5].

2.2.2 Chronic Patient's Management.

The system developed to support the Chronic Disease Management Model consists
of two main elements:
1. A virtual and ubiquitous cooperative working space, a continuum of care space, to coordinate at any time and place all professionals of the multidisciplinary care team (primary care personnel, specialists based at different hospitals. All of them procuring common targets centered on the patient, with predefined and consensual care plans and making use of tools to optimize all available resources and tasks efficiency

2. A multi-access system to allow the patient or the professional to access any service available adapted to his/her better convenience and needs, including telemonitoring services if required by the patient. According Pauwels RA, Buist AS, Calverley PM, Jenkins CR, Hurd SS. Global strategy for the diagnosis, [6].

2.3 Types of Record Management System

	Patients Records Management System	Document Management System	Library Management System	Digital Imaging System
Speed	✓	✓		✓
Accuracy	✓		✓	
Accessibility	✓	✓		✓
Completeness	✓		✓	
Comprehensiveness	✓			✓
Compliance	✓	✓	✓	
Effectiveness	✓			✓
Security	✓	✓	✓	
Authenticity	✓			✓

A number of record management systems above were reviewed according to various system requirements and Patients Records Management System was adopted.

2.4 Conclusion

The system will keep track of all patients' information of the hospital, the system will enable the medical officers to easily access the information they need pertaining a given patient or patients without spending too much time looking for it among other files kept in the stores of the hospital.

The system will ease retrieval of the patient's information if needed by the medical officers without having to struggle with boxes in the store room. Therefore managing the patients' information is simplified by this system.

The manual system will be replaced by the new proposed system which saves time, it is more efficient and can work under all conditions as long as there is power around and access of patients' information is therefore simplified.

Chapter 3

Methodology

3.1 Overview

Chapter three will majorly focus on the various basic methodologies for the research project and the key elements of the system design methods to be used. The main goal is to implement a research project that will be used by Makerere University Hospital keep track of their Patients Records efficiently and in an organized manner.

Makerere University Hospital should be able to efficiently store and keep track of their patient's records the system will provide an easy mechanism for doctors and nurses to retrieve the prescription they had earlier written so as to avoid making wrong prescriptions. The project will produce a Patients Records Management System that will enable Makerere University Hospital keep track of their patient's records.

In the first section, an analysis of the literature of the existing systems that have the same functionalities which will be performed with the aim of identifying shortcomings of the current systems with regard to research of our project. The next section addresses determination of system requirements, followed by design techniques deployed and the techniques used to implement a Patients Records Management System with the testing and validation section.

3.2 Literature review

Objective (a) of reviewing of current system and existing literature will be achieved by examining documents, interviews, observing the enterprise in operation, research, and questionnaire is important. Examining documents and research will be preferred for clarity and verification of facts collected and information about existing systems and associated problems through avenues like reference books, journals and the internet.

3.3 Requirements determination

3.3.1 System study

Objective (a) of obtaining the requirements for designing a Patients Records Management System, a system study and analysis for the Makerere University Hospital will be carried out.

3.3.2 Observations

A close observation and look at how doctors and nurses do prescription for patients on a daily basis will be investigated and closely examined which will mainly be used to assess the process that takes place in order to actualize and execute the activities. As participant observers, researchers will also get a chance to interact with the current systems used and give a detailed observation report.

The following are reasons for using observation method:

- ✓ To make it possible to collect different types of data, being on site over a period of time.
- ✓ To provide us with a source of questions to be addressed to Makerere University Hospital management.
- ✓ To help us get a feel on how things are organized and prioritized during the entire process.

3.3.3 Interviews

An interview is a conversation between two or more people (the interviewer and the interviewee) in a context where the questions are asked by the interviewer to obtain information from the interviewee. The free dictionary, et al, 2007 [7]. Interviews will be conducted with the help of a number of groups using the current technologies i.e. Makerere University Hospital and staff.

Interviews are used because:

- ✓ They help to document personalities of prospective users of Makerere University Hospital Management and staff that are both technical and operational.
- ✓ They will assist to expand our understanding of the hospital operations thus we are in a better position to collect requirements.

3.3.4 Questionnaires

A Questionnaire is a form containing a set of questions addressed to a statistically significant number of subjects as a way of gathering information for a survey.The free dictionary, (2007)[7]. Questions will be used to capture raw data from individuals who are patients, nurses, doctors, management, students and any other relevant group that can provide the information.

Questionnaires will be used to capture raw data from individuals in the shortest time possible. They will contain direct questions designed to strategically attain data on particular fields. Questionnaires will be used to confirm the data that will be collected using observation and interviews.

The questionnaire method of data collection has the following advantages:

- ✓ Questionnaires are familiar to most people since nearly everyone has had some experience completing questionnaires.
- ✓ Questionnaires reduce bias since there is a uniform question presentation. The researchers' opinions will not influence the respondent to answer questions in a certain manner thus offers great anonymity.
- ✓ Questionnaires are easy to analyze once completed

3.4 System Design

Objective (b) of systems analysis and design of the proposed Patients Records Management System will be achieved by designing a database using conceptual, logical and physical database a design.

The data collected using different methods will be analyzed and integrated with the help of Entity-Relationship Diagrams and Enhanced Entity Relationship Diagrams.

These will be developed using tools such as Microsoft Visio studio. Project management tools such as Microsoft project professional were used to present the time schedules for the system development procedures, task dissemination and ordering

3.5 Software Implementation

Objective (c) of software implementation of the proposed Patients Records Management System will be achieved by use of a client-server model architecture which involves having a main server that provides information to other workstations/computers, which are known as the clients that access it through the internet. The server runs a server-side program that is accessed by client programs through the internet.

3.5.1Server

Essentially the server is a computer with server software installed and running, connected to a network .The server must be networked to connect it with other machines by connecting it to the clients. The system includes a server side application. The following applications were used to implement the server side application.

(i) PHP

We chose to use PHP due to the advantages that fall under object oriented programming languages. Object oriented languages enhance the need to expand a program where features of the objects in the program can be added independently without reorganizing the system.

(ii) Databases

The system has a database on which the rest of the application is based. We shall use MySQL for the online food ordering and delivery aid system database.

(iii) Client interface

The user-facing element in a Client Server application provides the means to interact with it. The interface takes the form of a web application, connecting and interfacing with the database. The client interface's role overall is sending a request to the server, which responds in return. We will develop the interface using HTML on windows operating system platform.

3.6 Testing and Validation

Objective (d) of testing and validation of the proposed Patients Records Management System will be achieved by unit and integration testing of the developed system. This will be achieved by using the client side of the application on one machine in a network and the server side on a different machine on the same network and verifying that the functionality of the system has been achieved as expected.

We will feed in test data in the required fields in system and upon execution check if the system realizes the expected output. This will help us to know whether the functionality of the system has been achieved and check for errors.

The validation will be done through an experiment in an actual computer where the system will deployed in a few computers and actual users should be able to interact with the system and provided feedback.

References

1. Microsoft student with Encarta premium Dictionaries of current English, (2009). University press, 3rd Edition [1].
2. Entreon, Warken aan warrken, 2009[2].
3. Introduction to Programming logic (2009) [3].
4. Connolly, T. and Begg, C. (2004). *Database Solutions: A Step by Step Guide to Building Databases*. Essex: Pearson Education. 3rd Edition, ISBN 0 321 173 503 [4].
5. De Toledo P, Jimenez S, and Del Pozo F. A telemedicine system to support a new model for care of chronically ill patients. Journal of Telemedicine and Telecare. 2002. 8(Suppl 2): S2:17-9[5].
6. Pauwels RA, Buist AS, Calverley PM, Jenkins CR, Hurd SS. Global strategy for the diagnosis, management,and prevention of chronic obstructive pulmonary disease. NHLBI/WHO Global Initiative for Chronic Obstructive Lung Disease (GOLD) Workshop summary. Am J Respir Crit Care Med 2001; 163(5):1256-1276[6].
7. The free dictionary, (2007) [7].

Appendix I: Budget Estimates

Item	quantity rate	Amount
Stationery		
Sub-total		200.000/=
Sub-total		**200.000/=**

This budget includes a feasibility study, mapping out the field as well as organizing and carrying out interviews.

Secretarial Services

Word processing (typing) and printing		50.000/=
Photocopying		20.000/=
Data analysis		200.000/=
Binding books 3	10.000@	30.000/=
Sub- total		**300.000/=**
Grand total		**500.000/=**

Appendix II: Time Frame

Activities	Month
1. Writing and submission of research proposal	February 2012
2. Collection of data	March 2012
3. Data analysis	March 2012
4. Writing research report	April 2012
5. Submitting research report	May 2012