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Online Patient Information Management System (OPIMS)

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Abstract

Online Patient Information Management System (OPIMS) is an extensive, coordinated information system designed to manage patient's data in hospitals with the administrative process. Health care centers depend on patient information, for the efficiency of administrative process and for better management. The principle objective of OPIMS is to streamline the stream of data from the hospital towards decision making for patient planning and management in an enhanced and effective way. A Computerized PIMS will be important in light of the fact that, there are a considerable measure of challenges in keeping up a lot of data on paper, particularly as there is usually no backup for the data, access to data can be tedious in the event that requires for the search of a file, and accuracy is required in the recording of key data, and the administrator cannot manage all that is composed on the tremendous measure of paper to be utilized. Hence, it is very important for health organizations like hospitals and clinics to have a computerized patient information management system. The system was implemented via the following technologies; PHP, HTML, MySQL, CSS, JavaScript, etc.

Keywords: inforain managemnt system, jaascript, patient planning,

INTRODUCTION

Generally, computer has played an important role in global economy in various ways. The Computer is used in many different fields such as in education for learning, in entertainment industries, for management, for problem solving and in business, etc. Due to its importance it has been recognized world-wide. One of its vital roles is in management systems. Today in health services, management of patient information requires a process and keeping of records from different departments in the hospital. All these records are very vital information needed by the organization for efficient and effective operation.

Online Patient Information Management System (OPIMS) is an extensive, coordinated information system designed to manage patient's data in hospitals with the administrative process. Health care centers depend on patient information, for the efficiency of administrative process and for better management. The principle objective of OPIMS is to streamline the stream of data from the hospital towards decision making for patient planning and management in an enhanced and effective way. Recording of data, be it medical, individual, money related or lawful, or recording of medicinal faculty data on paper is at danger of thieves, fire, mislay by the staff and even altering the content. A

Computerized PIMS will be important in light of the fact that, there are a considerable measure of challenges in keeping up a lot of data on paper, particularly as there is usually no backup for the data, access to data can be tedious in the event that requires for the search of a file, and accuracy is required in the recording of key data, and the administrator cannot manage all that is composed on the tremendous measure of paper to be utilized. Hence, it is very important for health organizations like hospitals and clinics to have a computerized patient information management system.

Mother of Christ Specialist Hospital, Enugu as a case study uses manual process in gathering data and managing their patient information, which in some cases they encounter loss of patients files, the card unit where the patients' files are being stored are not well arranged because of multiple patients' files. Implementation and use of Computerized Patient Information Management System in Mother of Christ Specialist Hospital, Enugu will provide a lot of benefits to the staff and entire management.

LITERATURE REVIEW

This considers the origin of computer use in medical field as well as the benefits and contributions from different authors on the subject matter.

Considerations Regarding Hospital Information Systems

The use of computers in medicine dates back to the 1950s with studies that attempted to expand the mental capacity of physicians (Stumpf and Freitas, 1997) or dealt with research on electrophysiology (Collen, 1986). With the evolution of this equipment, especially with the capacity to simultaneously execute various tasks beginning in the 1960s, computers began to be used in the processing of information in large hospitals, in both administrative and financial functions for the collection of statistics and the development of research projects (Stead, 2007; Stumpf and Freitas, 1997). The use of microcomputers, beginning in the 1 970s, introduced the concept of distributed processing, increasing the number of systems in use in large hospitals (Stumpf and Freitas, 1997).

Because this diffusion did not always occur in an organized or homogeneous manner, the initial diffusion of computers in hospitals led to the emergence of islands of computerization, with isolated systems that lacked any form of interconnection and were developed by different teams. The redundancy and the lack of data integrity deterred health professionals, who saw these systems as developed by systems professionals for systems professionals (Stumpf and Freitas, 1997). This situation was also investigated by McDonald (1997), who analyzed the lack of interconnection of the different systems used by the hospitals, laboratories, and service providers in the healthcare field.

Collen (1986) described the development of approaches in the 1 970s that sought to approximate the habitual processes of decision-making with the use of artificial intelligence in differential diagnoses. In the same decade, studies were undertaken in search of a better organization of the healthcare system (Kaihara, 1978). With the help of computer-processed simulations, the author established an ideal relationship between medical centers and population demands.

The distributed processing was expanded during the 1980s with the development and greater availability of microcomputers, and the possibility of network communication of such equipment increased in the 1 990s (Stumpf and Freitas, 1997). This allowed for the emergence of hospital information systems (HIS), covering medical, administrative, and hospitality areas, although hospitality may be considered as integrated into the administrative area (Cortes, 2008). These three areas are interlinked by horizontal data and information flows, providing support to the developed activities.

METHODOLOGY

Research methodology here refers to the procedures and techniques used to reach a study's goal. In computer 40
science and
engineering, there are some methodologies in existence such as Object oriented analysis and design methodology (OOADM), Structured system analysis and design methodology (SSADM), Prototyping, Usability engineering methodology, etc. For the purpose of this work, Structured System Analysis and

Design Methodology (SSADM) was used to analyze the system. Structured System Analysis and Design Methodology (SSADM) is a systematic approach to the analysis and design of information systems that uses a combination of text and diagrams throughout the life cycle of a system design beginning from the initial design idea to the actual physical design of the application.

Structured system analysis and design methodology (SSADM) was chosen for this work because it divides an application development project into modules, stages, tasks and provides a framework for describing project in a way suited for managing the project for each stage.

Analysis of the Existing System

In Mother of Christ Specialist Hospital, Enugu, which is the case study of this research work, the current system of managing patients' information is manual where data is written on different papers and transferred to different departments; human errors are vulnerable since it is paper based and retrieval of files is time consuming as they had to manually locate files some of which were even lost and thus finding such information was hard.

When a new patient visits this hospital for treatment, he will be issued a paper-card (patient card contains a file number) and a file is opened for him which will contain all the information about that patient (i.e. information like the name, age, phone number, place of origin, residence of the patient, past treatments done with reports if any, etc). Each time the patient visits the hospital he must go with that patient card. On presenting this card, manually his file will be searched for, which takes time and it's cumbersome. The old patients on visiting the hospital as well must present their cards and wait for their files to be located before they are attended to. What of, if their files are misplaced or lost? The patients will not be attended to, or may have to obtain another file at their cost. This is really stressful and costly. Hence, the present system of managing patients' information in this hospital is really inefficient.

The requirement analysis discovered necessity of having automation and computerization of their patients' information management system that would result in reduction of paper work, faster access to patients' information, easy and durable storage of patients' information, compliance with the current trend of technology in the world, etc.

Strength of the Existing System

As stated above the existing system is paper-based. At least, from the inception of the Mother of Christ Specialist Hospital, Enugu, the present system has been serving the purpose of recording information about patients in the hospital. It makes patients' information available to nurses and doctors (though not as when due), and they make use of such information for their day-to-day attendance to patients in the hospital. And at the same time, it makes information available to the management for decision making after a long time of gathering it.

Weakness of the Existing system

The existing system has some loopholes. Being paper-based, the staff have to go through a lot of files in order to get patients' information before attending to the patients. At times they have to subject the patients to series of questions in order to know about their past ailments, treatments given and the reactions or the entire patients' health history. This indeed is tiresome and time consuming. This is what should have been done with just a click in the automated system.

As the hospital Administration currently uses health record files for storing patients' information. This system of information storage is susceptible to security problems such as illegal modification and update of records as well as misplacement of those files.

Analysis of the Proposed System

The proposed system (Online Patient Information Management System (OPIMS)) is both computerized and web-based. The

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data or files used in this system are digitalized, that is, all the necessary information about the patients is stored in the computer systems and accessible online (only to the authorized users) both within and

outside the hospital. The usefulness of the proposed system goes beyond the premises of Mother of Christ Specialist hospital, Enugu.

In the Proposed system, when a new patient visits the hospital, he is assigned an electronic card (e-card) number which he will use to manage his information system. This e-card is like a file in a computer system that contains all the information about the patient. The old patients after their files have been digitalized are issued e-card numbers as well.

E-card relieves the patients from carrying their details with them by providing online access. It may happen that the patient faces some problem when he is out of city and has no treatment reports with him. In that case, if he has the card number, he can visit any doctor in that city and show his treatment history by accessing the online card by just entering his card number and password. He is thus saved from undergoing all the tests again and can have immediate treatment. Online access to the software allows the doctors to view reports and visit de tails of patients even by sitting at home. Thus the E-card system can be beneficial for both the patients and doctors.

The system is secure as a user can modify the information only after proper authentication. It provides a big leap forward over the existing laborious and inefficient system of patient information management. Chances of errors are also eliminated to a large extent. Computerization and automation of the whole system helps in easy and fast access to the required information. The system is highly user friendly as appropriate messages are provided to guide the user logged in.

RESULT

After designing and developing the proposed system, we have the following;
The users of the system are the patients, doctors and system administrator. The patient can access the system to view and add his data. The doctor can access the system as the patient presents him his name and e-card number to view the medical history/information about the patient. And the system administrator will access the system in order to add new patient or delete the old one that has died and carry out other administrative activities. The inputs to the system could be login data, new patient, patient's personal information, etc. The input designs are given in figures 4.1 and 4.2 below;

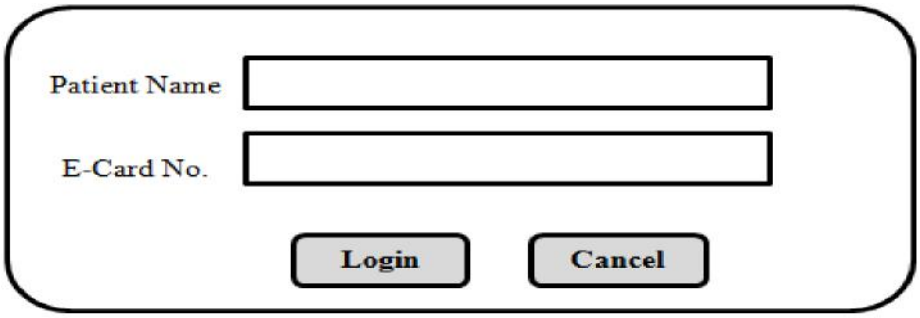

Fig. 4.1: Patient login design

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4.1.2 Output design/specification

The output of the system would be a "Welcome Screen" on a successful logging in to the system, patient's information, etc. The output design is shown fig. 4.3 below;

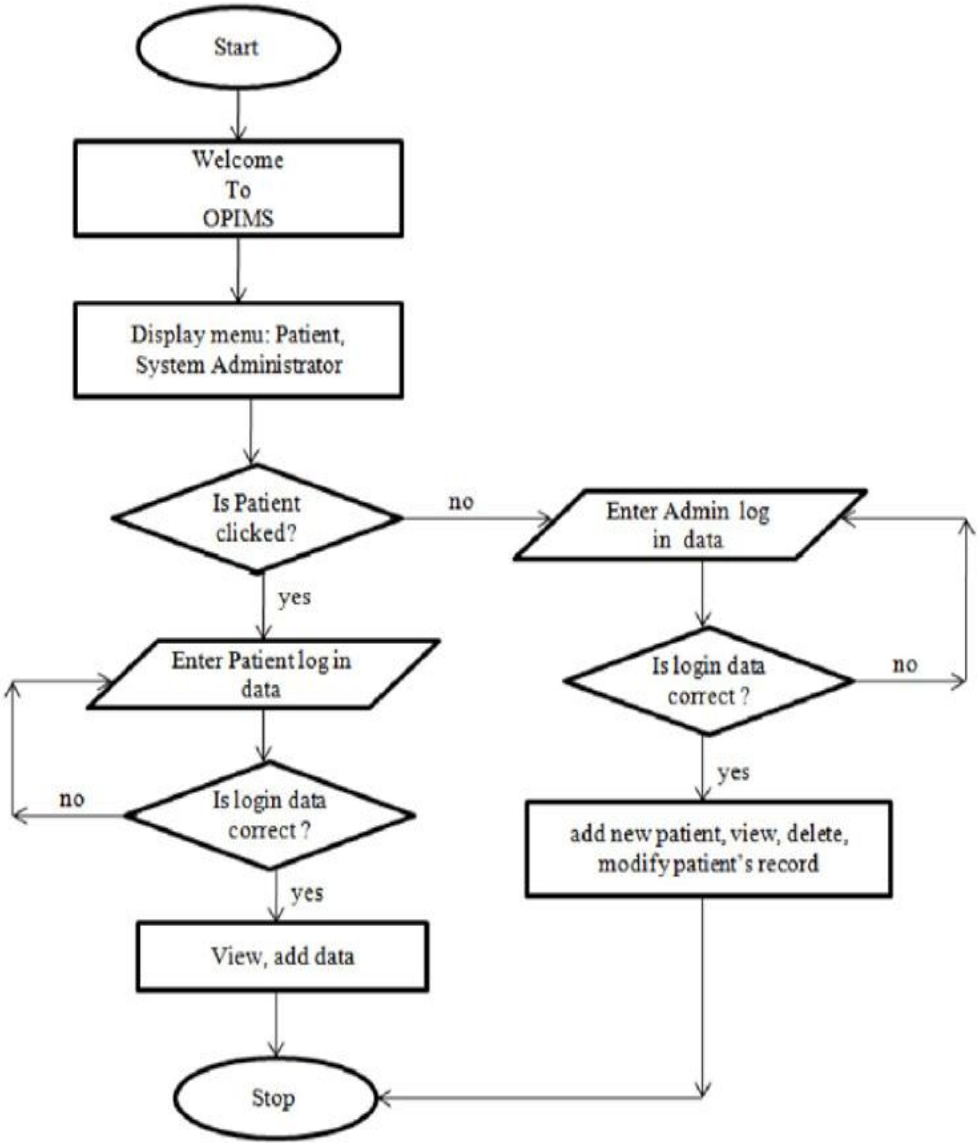
Fig. 4.3: Output design

Security design/specification

The proposed system is highly secure as only authorized users with proper login data can access it (see fig. 4.1 and fig. 4.2), compared to the unsecure existing system with patients files/data exposed carelessly. The patient can only view and add information to his e-file/efolder but cannot modify or delete any data from it without exclusive permission of the system administrator.

System flowchart

Figure 4 .4 below is a system flowchart displaying how data flows in the system and how decisions are made to control events.



DISCUSSION AND CONCLUSION

As we have seen that the aim and objectives of the study have been met, the researcher therefore strongly believes that if the system is adopted for use, it will be of great help to the staff of Mother of Christ Specialist Hospital, Enugu in performing their duties with ease as well as their patients for online access to their medical information. Other interested users like future researchers are not left out, it can still be of immense use to them in furthering their research.

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