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Online Clinic Claim System

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APPROVAL

Online Clinic Claim System

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DECLARATION

I certify that this thesis and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline

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*With the name of Allah the most Gracious, the most Merciful creator,
I seek His Blessing on His Prophet Muhammad s.a.w*

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LIST OF ABBREVIATIONS

ASP	Active Server Page
AJAX	Asynchronous Java
HCI	Human Computer Interaction
HTML	Hypertext Transfer Protocol
IIS	Internet Information Server
ODBC	Open Database Connectivity
PHP	Hypertext Preprocessor Programming
SDLC	System Development Lifecycle
SQL	Structure Query Language

ABSTRACT

Developments in web technology have made most of our daily life applications more easy and manageable. The Internet has become a common medium of communication and is found in various places such as offices, homes, and hospitals. The services obtained from the Internet can reduce the gap of communication between any two users, e.g., the users and the health centers. Besides a host of services provided via this scenario, the user can access significant health information. The concept of the web-based health center is not new and there is always some room for modifications, improvements, and adoption of new technologies. The common feature shared among most of these healthcare providers is to establish secure, confidential, and retrievable electronic transactions to the users. It is fundamental in such situations to strengthen the physician-patient relationship by facilitating communication and simplifying transactions to achieve optimum health services. The main purpose of this research is to assist clinical personnel such medical staff and medical consultant to run clinic daily activities through the computer-based clinic system and the used of the electronic data. This research focused on the development of web-based application for the clinic system application which can give long term benefits to them. This application is developed using the open source software such as Apache Web Server, MySQL Database, phpMyAdmin Database Administrator plus with PHP programming language.

CHAPTER 1

INTRODUCTION

1.1 Introduction

The explosive growth of the information technology has brought human to the new era which all the information can be gathered and centralized in technology. Nowadays, there are lots of technology that we can use them in order to get important data which after that it can be transferred into a useful knowledge and understanding. These knowledge and understanding are the thing that human used to achieve their goal and objective in their purpose.

The changing of information technology environments also has made the internet growth rapidly across the world. All the information before that been gathered and centralized will be transferred and shared across the world through the internet.

Medical field also cannot run from these impacts. There a lot of research n job must be done in order to bring the medical field in the information technology. Medical information process requires specific information and approvable fact. All the medical information such as patient record, medical report, medical cost etc, must be done specifically and accurately. Although the process of medical infrastructure has change from the paper-based process to the IT-based process but the terminology and concept is still the same.

IT system development for clinicians has been impeded by the problem of containing the complexities of medical practice in an electronic health record. Although good systems are available 'off the shelf' for many well-circumscribed areas of health care (such as laboratory or end of copy systems) the data from these systems cannot easily be aggregated to form a health record or for the purposes of audit and resource management.

1.2 Statement of Problem

As with other high-volume hospitals, the more paper have to process, the more people have to dedicate to the job and the greater the potential for inefficiencies and human error. In addition, the processing of information off paper documents is a tedious and time-consuming task, resulting in delays in the posting of payment information and the generation of secondary billing. This, in turn, ultimately impacts accounts receivable days.

The older paper-based process was slower for a variety of reasons that many providers will recognize readily. With off line method, claim can only be made by sending in batches periodically. Payment can only being made after certain period.

Standalone application is the new method used in many desktop systems for replacing the paper-based processing nowadays. This method isn't connected to anything else. It exists or runs completely by itself and do not depend from the outsourcers. The environments in this application only consist of single copy of application and each PC can contain one database to store data.

From the using side this application allows only single user to access the application in the one time. The users face an inability to share information simultaneously with the outsourcers. Because of this application consist of single copy of application, it does not permit multi user environment. The alternative to make this application become multi user and can be used in one

time is to have several copies of the same system to be installed. Standalone application also does not allow concurrent access to the application. The next user needs to wait the current user finishing their transaction before they can use the same application.

From the large organization using side it is not easy to manage data which reside in different server although several standalone can be installed in various sites. It will cost time consuming for the administrator to monitor the progress and access the information of each branch because they only can view the report at the end of each month.

The explosive growth of the internet usage has brought human to the next step of the new information transaction. Many of the business transaction today used web-based application in advancing their business process.

In contrast, Web-based applications dynamically generate a series of Web documents in a standard format supported by common browsers such as HTML/XHTML. Client-side scripting in a standard language such as JavaScript is commonly included to add dynamic elements to the user interface. Generally, each individual Web page is delivered to the client as a static document, but the sequence of pages can provide an interactive experience, as user input is returned through Web form elements embedded in the page markup. During the session, the Web browser interprets and displays the pages, and acts as the *universal* client for any Web application.

A web-based application allow system administrator to monitor the application that was installed in the server. Web-based application allows maintenance and management of the application from one place. On the user side, they do not need much maintenance as browsers are bundled with the operating systems nowadays. They only required the internet connection to access the application.

1.3 Objectives

The objectives of this project are:

- i. To develop a framework for managing claim and issuing medical certificate especially for panel clinic.
- ii. To develop an architecture to submit claim on online basis and issuing medical certificate online to respective company/department.
- iii. To develop the online clinic claim system that can generate statically report on employees' medical expenses.

1.4 Scope of the study

This system is focus on the three modules of the claim process. The modules are claim entry, claim submit, and claim status. Other features of Online Clinic Claim System are Online Patient Record/History, Report/Queries analysis, and expenses analysis.

PHP was used as the platform to develop this module with the purpose to identify the changes in web interface (HCI), web processing and web design. This programming language is a reflective programming language originally designed for producing dynamic web pages. PHP is used mainly in server-side scripting, but can be used from a command line interface or in standalone graphical applications. Textual User Interfaces can also be created using ncurses.

PHP generally runs on a web server, taking PHP code as its input and creating Web pages as output, however it can also be used for command-line scripting and client-side GUI applications. PHP can be deployed on most web servers and on almost every OS platform free of charge. The PHP Group also provides the complete source code for users to build, customize and extend for their own use.

Originally designed to create dynamic web pages, PHP's principal focus is server-side scripting. While running the PHP parser with a web server and web browser, the PHP model can be compared to other server-side scripting languages such as Microsoft's ASP.NET system, Sun Microsystems' JavaServer Pages, mod_perl and the Ruby on Rails framework, as they all provide dynamic content to the client from a web server.

1.5 Significant of the project

The purpose from this system will help clinic and organizations/companies in constructing their management process to meet the changing of IT nowadays. The significance of this research is divided into three stages: panel clinic, organization management/administrator and employee.

i. Panel Clinic

Simplify claims preparation by panel clinics

Once verified, all the staff information has already been provided. All the clinic need to do is to fill up the visitation and charge details. Since the staff information is updated by the Human Resources Department (HRD), there would be no more claims submitted to wrong department or branches.

ii. Organization Management/Administrator

MediClaim - The Connection

It is an online medical billing gateway, for employers, insurance companies and healthcare providers. The key features are:

- Online staff verification
- Online payment status (accepted, rejected and paid)
- Able to capture related information such as MC, type of diagnoses and cost breakdown.

iii. Employee

Faster and accurate employee's verification (with online panel).

Employee's information, entitlement and eligibility can be updated online by the organization/company HRD; any changes would be reflected immediately at the panel clinics. When a company employee seeks treatment at the panel clinics, he would just have to show identification such as Staff ID Card, and when the clinic enters his NRIC No. or Staff No., his information, such as name, department, entitlement, family member's eligibility and so on would be displayed on the screen.

1.5.1 The important of the research

The prime intention from this research was to utilize the recent advances in technology to offer efficient services to the users. Patients could preview the clinical services that could be provided to them or other related information. They could also keep track of their medication history and could eventually observe their progress or anticipate any future impact that requires direct involvement of the clinic staff. The technology behind this service scheme relies highly on using a dedicated web server, such as IIS, to implement PHP codes to ensure immunity against any information tapping over the Internet. A MySQL type database was implemented to store the clients' credentials in a secure location on the web server and to be flexibly manipulated by the clinic staff, as required, in an on-line fashion.

1.6 Summary

In conclusion, this chapter explained the overview of the research. The title of the research is defined. Chapter 1 is mostly discussed about the identified problems by the researcher. Researcher started explained the problems in general before went to more specific. This chapter also showed the objectives and scopes regarding to the research have been identified researcher in order to achieve the project scope. Some significant of the research has been explained as well.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The change from paper to electronic records becomes more highly structured. It also allows faster transmission and communication among clinicians and reduces interpretation problems characteristics of paper orders because of unclear handwriting and under specified instructions.

The primary reason to change from the paper- based process to the computer-based process was not to eliminate the function of the medical staff. Indeed although the traditional processes are been replace with the automatic process, it will still need human to handle and manage the process.

According to the Morris AH et all. (1994) computer-based clinical practice guideline systems that currently help guide clinicians through difficult patient management situations. Such systems are already in use for selected patients in many institutions with advanced clinical information systems.

The objectives of these changes not only to be parallel with the growth of the information technology but to put patient safety as a priority in the medical services from the human error during the operation.

Physicians now must be minimally familiar with the use of a computer interface (CRT, light pen, keyboard, and mouse) and have sufficient knowledge of the system's order pathways, or interface, to execute an order. (Elizabeth J. Davidson et al. 1999).

Online Clinic Claim System is a web-service application system that offers online transaction directly between panel clinic and the company/ organization without involving third party. The panel clinics/hospitals will link up to the web application to do transaction such as patient verification, claims submission and report queries. In general, Online Clinic Claim System is replacing the conventional way of panel clinics verifying patient over the telephone or log books and replacing submitting claims or reimbursement invoice using hard copies by conducting transactions online.

Using web-based framework this features can be achieving because it based on centralized database and can be accessed anytime and anyplace. This chapter discusses the general information regarding about the theory that been used and some literature review as an evidence to this research

2.2 Electronic Data

Information technology has brought many changing in the human activities today. These scenario make human always depend to the technology because they want their activities become easier and faster.

Although the information technology has spread to all fields in the human activities unfortunately there are still some groups that still want to use the old process and did not believe the electronic data. These scenarios also happen in the medical field.

Most clinics still used lots of papers to keep everything about patient. Some clinics may already have an information system to keep patients' information in the right manner. But, when talking about patient's medical history relating to past medication prescriptions that had been received before, there is no clinic being used fully automated information system to keep patient's medical history of medication prescriptions.

From the data entry view, some of the medical staff still refers to use handwriting in entering the data about patient and medical report. These kind of process will make many problem occurs and will lead to the negative effect in the medical process.

According to Leape et al. (1995), Saanum and Mellbye (1996), and Winslow et al., (1997), they reported that many studies shown that the lack of on a prescription entry could give rise to therapeutic mistakes. Therapeutic mistakes mean fail to give appropriate medications to treat illness. The solution is to evolve electronic patient records so that clinical detail is automatically captured during the process of care, and does not rely on subsequent labor-intensive abstraction. (Morris AH et al, 1994).

There was a research conducted by S. Dobrzanski, I. Hammond, G. Khan and H. Holdsworth, 2002, which was about types of prescribing errors happen in clinic. Those researchers had recommended the use electronic data application in the computerized clinical information system to reduce and minimize the errors. The opportunity for electronic medical record development over the next decades affords the chance to pose the question of usage needs more broadly. (Charles Safran, 1995).

These statements also have been approved by James A. Welker (2007). According to him, electronic prescribing has been found to reduce clinical trial errors associated with illegible handwriting, inappropriate dosing, and inappropriate medication choice.

Dean F. Sittig (2006) also gives an idea that one of the predicted benefits of currently available clinical information systems was to reduce the amount of paper used. In fact, the implementation of these systems has only served to multiply the amount of paper used

2.3 Electronic Claim

Electronic claims are the new method in the financial field that arrives from the impact of the information technology. Electronic claims submitters enjoy many features not available to practices that still submit on paper. This kind of claim is paid substantially faster than paper claims and is made out daily, instead of twice a week as for paper submitters.

The older paper-based process was slower for a variety of reasons that many providers will recognize readily. With paper claims, a provider cannot bill until after the recipient has received a full month of services, and then it takes two to three weeks until the previous month's claims are processed.

Online claims system hosts a software application at its own physical site and allows authorized hospital personnel to access the software through secure Internet connections from virtually anywhere. Using a browser based front end, personnel in hospital billing offices can easily access applications hosted at the online claims system and tap the functionality of the software. Choosing an Online claims system for claims processing eliminates the capital outlay for system acquisition, including all the costs for hardware and software, as well as the human resources for implementation.

According to the previous research by Sharon Jordan (1998) the system allows providers to reverse past claims for up to 365 days. This eliminates the paper adjustment, which could take several months to process, and allows the facility to bill the corrected claim the same day as the reversal.

Strahan, Herman (1992) report that faster reimbursement helps them cut their receivables and improve their cash flow. Additional benefits come from lower office overhead. Many practices that submit electronically save hours--even days--of clerical time. Instead of spending valuable time filling out paper claims and handling claims follow-up, office staff members are free to concentrate on collections and patient support.

The Online claims system model also eliminates ongoing maintenance requirements. Instead, hospitals essentially lease the system, or in the case of claims-processing software, simply pay a transaction fee. Another advantage of Online claims system is improved control of submissions. Practitioners know how and when their claims are received and filed. Although electronic claims must still undergo an editing process, they are free of handwriting errors that often slow manual claims submissions.

Another advantage of electronic claim is improved control of submissions. Practitioners know how and when their claims are received and filed. Although electronic claims must still undergo an editing process, they are free of handwriting errors that often slow manual claims submissions.

Electronic claim submitters receive special reports showing which claims were accepted and detailing any claim errors. Problem claims can be corrected before they're processed. Improved accuracy can cut days and sometimes weeks from turnaround time.

Regarding on previous researcher (Schmidt, Cynthia, 1996), the goal was first to receive information in an electronic format and automate the posting process to the financial system, thereby accelerating the billing process. Second, research has sought ways to use data received in an electronic format to automate the process of generating secondary billing, which would help to speed up collections from secondary payers and improve accounts receivable days.

Increased use of electronic transactions benefits payers and healthcare professionals. Electronic transactions also can result in more accurate information and reduced administration for physician practices, and the need for fewer phone calls. Physicians also can get information 24 hours a day, 7 days a week, and fast. (Laura Gater, 2005).

2.4 Web-based Application

Web applications are popular due to the ubiquity of the browser as a client, sometimes called a thin client. The ability to update and maintain Web applications without distributing and installing software on potentially thousands of client computers is a key reason for their popularity. Web applications are used to implement Webmail, online retail sales, online auctions, wikis, discussion boards, Weblogs, MMORPGs and many other functions. (<http://www.wikipedia.com>).

Web applications dynamically generate a series of Web documents in a standard format supported by common browsers such as HTML/XHTML. Client-side scripting in a standard language such as JavaScript is commonly included to add dynamic elements to the user interface. Generally, each individual Web page is delivered to the client as a static document, but the sequence of pages can provide an interactive experience, as user input is returned through Web form elements embedded in the page markup. During the session, the Web browser interprets and displays the pages, and acts as the *universal* client for any Web application.

Web-based application also can be referred as web services. Web services embody the paradigm of *Service-Oriented Computing*: Applications from different providers are offered as services that can be used, composed, and coordinated in a loosely coupled manner. (Charfi, 2004).

Morris (2001) define this kind of software is much easier, cheaper, more reliable and more powerful than desktop software. It has been emerge as a systematic framework for application-to-application interaction. Built using existing web protocol, the information can easily distribute between other applications that running on different environments.

Web-based is the next generation Internet, with its higher speed, will allow patients and clinicians to access a worldwide network of specialized clinical experts in either a synchronous or asynchronous manner. This application will greatly reduce and eventually eliminate the current time and distance restrictions on access to the best clinical providers. The next generation Internet, coupled with these wireless handheld devices, has the most potential to influence the early detection, diagnosis, treatment, survivorship and end of life care for patients, their care givers and clinicians.