



# Dental Clinic Management System- A New Approach

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**Abstract:** Most of medical sectors today are using network services and offering Online web services in order to create more benefits for both their stakeholders and themselves, including the way of how people make booking. As a result, one system called Dental Clinic Management System with Notification using web will be develop to resolve all the current problems at clinic. The objective of this project is develop Decision Support System for Dental Clinic that provide information about the dentist profile, patient information include patient personal detail, patient treatment, patient appointment, patient billing, and dental treatment and disease. During the system development Visual Studio 10 is used in order to create interface and coding. This system is gives advantages to the all both users clinic staff and end user especially patient, where the two users can access the system.

**Keywords:** *Dental Clinic Management System, Data Base, Dentistry and Patient Information.*

## INTRODUCTION

Dental Clinic is an organization that is responsible in providing a health medication and treatment for all types of dental patients. Surely, everyday there are people that need to use the dental clinic services. But how can clinic provide a faster and efficient services if they are still using the traditional method on their daily operation? The traditional method means the customers need to fill in their detail in registration form manually and the information will only keep in files. After the registration, the files will be place in the rack and this will cause problems like taking a longer time to retrieve the information, make mistakes during writing or misplaced the files. Nowadays, technology has changed many aspects of life and people's daily life is becoming indivisible from the network due to the development of Internet. With dental clinic management system, the process gets much faster and more efficient than traditional way. Even though the dental clinic had a system, but they still do not use the application. It is because there are facing several problems during process management. So, people from outside cannot view their treatment examination that they have done in the dental clinic. There are also problem when the patient forgot their appointment time because they cannot check their appointment schedule through online. Although the appointment schedule was provided in the manual, it is possible that the paper will be missing.

Dental Clinic Management System with Notification is specially designed to let the clinic staff has a high efficiency management tools, computerized and systematic patient's record, and detail of treatment records. This system also provide appointment feature, which allow

staffs to view the appointment that already made by doctors and process it by sending a notification to patients. Patients will receive the notification about their appointment details on their mobile phone. This new system will replace the current system that is used in clinic and surely this system will improve the clinic services and make their daily operation running smoothly. Patient treatment module consist the information about the tooth examination and record and list of treatment that has done.

Besides that, dental treatment and disease module provide information about the cause of tooth extraction and tooth filling. It is allow the dentist to trace the patient needs. Decision Support System for Dental Clinic is an independence management solution for managing information in the non-government clinic. The propose system is also focuses to improved the current system in part of record patient tooth treatment. The objectives of the project are to develop decision support system for dental clinic, to improve part of record patient examination form and analysis the cause of tooth disease, prevention and treatment.

## LITERATURE REVIEW

Literature review refers on interview, book, and Internet to get some information about this project to give a clearance perspective in developing for this project. This topic will be discussed about overview of the manual system, study on the development tools and database management system. In computer science, information system is all about information technology and mediates the two opposing worlds of human activity (Steve Elky, 2006). Current system of the dental clinic also has the system that can handle the process management as a computerized. But, there are a few problem during using the system and that cause they used the manually system. So, this literature review has been covered about the process of the manual system that cause the current system is difficult to use.

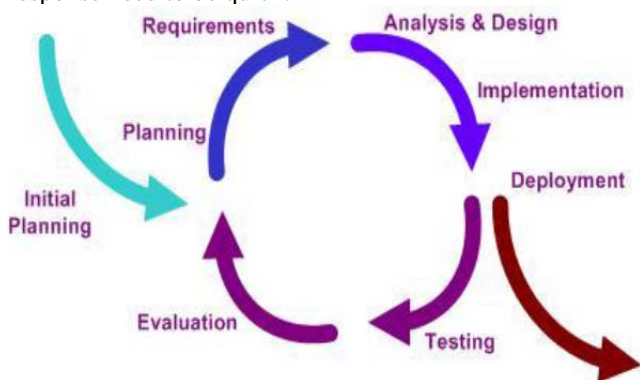
Management system actually has been used long time ago. Every organization needs a system that can manage their data and process. Normally they used a conventional method to manage and store their data. Management system is management documented and tested step-by-step method aimed at smooth functioning through standard practices.

In every company, keeping record are very important. For the clinic, it is very important to keep the patient record for any reference. There is some method in keeping the record such as using the manual method or the computerized method. The computerized system is better than manual system in keeping record (Egwunyenga, 2009) of the

patients. Hence, using the computerized system has so many advantages than the manual system. One of the advantages using a computerized system is that it is not only easy, but it also saves the time to search the patient record. If they use the manual keeping 6 record, they have a hard time to find for it. The computerized system will give the opportunity for the companies to do work more effective and efficiently if the company use it (Dalcı & Tanış).

**METHODOLOGY**

In this section will discuss about the methodology that will be using in the development of Dental Clinic Management System. The fundamental for this project is to develop a management system that can be implemented and integrated in dental clinics. This project will be conducted based on the Iterative and Incremental Development method. Iterative and Incremental development is at the liver of a cyclic software development process developed in response to the weaknesses of the waterfall model. It starts with an initial planning and ends with deployment with the cyclic interactions in between (Wikipedia). Iterative or incremental methodologies provide a cyclical approach to software development, which is especially useful for environments where requirements change often and response need to be quick.

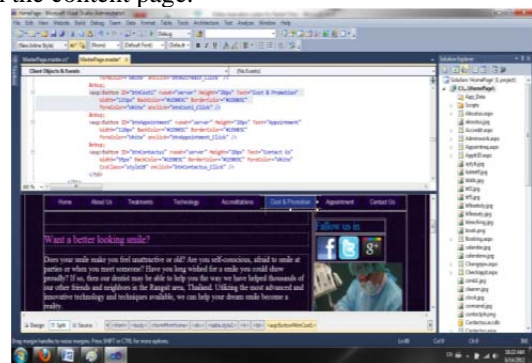


**Figure1. Iterative and Incremental Development Method**

There are many reasons why we use Iterative and Incremental Development Method for this project. Iterative and Incremental Development Method is very efficient to deal with a project that change often and response need to be quick. It also can deal with a project that the budget didn't cover the costs of the project because change control procedures gobbled up additional funds (Steigjer, 2008). When using Iterative and Incremental Development Method, the development cost of change is more efficient than conventional software development process. The scopes of project are specified and a schedule has been design as guidance throughout the system development process to make sure the delivery of it on timely mannered. One of the most important tasks in the Development of software using the Iterative and Incremental Development Method is gathering and defining the requirements for the project. In order to arrange requirement to develop management system, a research and analysis on existing system has been done.

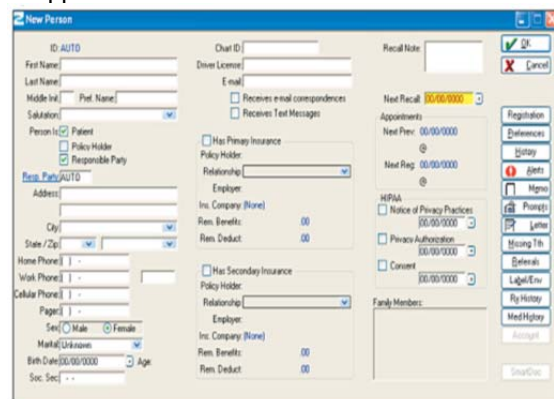
**PROJECT IMPLEMENTATION**

Dental Clinic Management System is standalone application which this system is just to save the data as computerized and not connected to any network. Although this means it cannot share resources with any other computers, this system is also give an advantage, as it can make the computer more secure. To implement the web based application for the proposed system, we first start with developing Web Forms applications using .NET Framework 4.0 tools and technologies in visual studio 2010. The processes include on coding activities that enhance the performance and scalability of the Web site application. The .NET Framework provides an extensible architecture for customizing the behavior and display of components and controls in design mode. For programming language, we chose C# for the whole system. ASP.NET master pages help to create a consistent layout for the pages in an application. A single master page defines the look and fell and standard behavior for all of the pages. Then individual content pages that contain the content to display can create. When users request the content pages, they merge with the master page to produce output that combines the layout of the master page with the content from the content page.



**Figure2. Home Page**

In the schedule new appointment page shown as Figure 3, user can view or print list of appointments for selected date or time period. Firstly, users need to select patient from patient list and doctor from doctor list. Then, enter date and time for new appointment. Press save button after finish. User change appointment data, just need to select appointment from appointment list, change data and press 'Save' button. For deleting appointment, they just need to select appointment from list and Press 'Delete' button.



**Figure3. New Appointment Page**

Employee can see appointments for some time period (just choose appropriate date and time). When this application only can access by employee, patient cannot check or view their appointment schedule. Dental Clinic Management System would create a user-friendly interface, where any doctor would be able to use this software with basic computer skills. This is a complete application for dental clinics developed in Asp.net using SQL server.

Before installing the dental software ensure that your hardware & Software meets the recommended system requirements of:

1. A PC with at least 1 GHz speed Pentium processor
2. Operating system: Microsoft Windows 7
3. Minimum 512 MB of RAM (memory) for the software.
4. Hard disk drive with at least 200MB of free disk space for software and data files.
5. Visual Studio 2010
6. Net Framework 4.0
7. SQL Server 200
8. Internet Explorer 7 or higher.

Besides that, it is fully networked, and databases can be accessed from anywhere on the Internet, so user can share your data with anyone, anywhere. But My SQL has access control so that one person who shouldn't see another's data cannot. To provide additional security, My SQL supports encrypted connections using the Secure Sockets Layer (SSL) protocol. This is will provide to the administrator of this system later. The important thing for make sure my project running smoothly is study for the current process because the system must follow the requirements .The problems and 20 constraints also defined by me in this phase. The new system must overcome a problem in current system.

### RESULT & DISCUSSION

This stage present the usability of the proposed evaluated and the user solidification determined. The proposed system is tested by running the system on the Mozilla Firefox and Internet Explorer with the local host server. This continuing education course is intended for general dentists, hygienists, dental assistants, dental students, dental hygiene students, and dental assistant students. This course introduces a variety of functions and concepts that facilitate the transition from a manual dental-office accounting system to a computerized system - a change that can enhance and strengthen the practice for years to come.

### CONCLUSION & FUTURE SCOPE

Dental Clinic Management System not only provides an opportunity to the clinic to enhance their patient care, but also can increase the profitability of the organization. Dentist would be able to significantly improve the operational control and thus streamline operations. This would improve the response time to the demands of patient care because it automates the process of collecting, collating and retrieving patient information. Dental Clinic Management System is successfully developed using the required features cross the previous sections which fully developed by using Microsoft Access, ASP.NET 2010 and the SQL Server to obtain the building of the system. The C# language is used to utilize this application. Because of limited finical resources and the time frame, we are not able to assure the entire functionalities of the system. However, the future enhancements can be carried out to fill in the insufficiencies that came upon during the work of this project. By following every single step included in the project, junior students who interested in this topic can pursue some future works. The system is flexible enough to add on more works in order to make it usable in a large dental clinic such as; adding new modules without effecting the current system, adding transfer link between booking table and appointment table so that the dentists will find their work easier to manage.

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