The Dentist Online Reservation System Design and Implementation
Web Based Application and Database Management System Project

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Abstract. Most of business 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. This project is about to implement a database system which the transactions can be done in web base application. The system helps to save the time and effort of the users in safe and convenient ways. It enables patients to book and check their appointment schedule. The system also helps the administrator to maintain the database online easily. It enables the administrator to check the patient’s requests, manage the appointment schedule, and manage the patient’s information. It offers an opportunity for patients to submit their personal comments to the dental clinic to give better services. The design for the proposed system can be obtained easy way to access the enquire information about the dentist appointment.

Keywords: network services, database system, web applications

1. Introduction

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 online dentist reservation system, the process gets much faster and more efficient than traditional way. Thousands of business and organizations have already discovered the advantage gained by using the online reservation system. [4] Online dentist reservation system allows the system adminster to access and manage the database online, quickly pull data and create strong reports right from the online reservation system with most practical to find the fastest information, instead of having to maintain and manage separate data files, folders and spreadsheets. They simply navigate to the system just as any Web Site. The data will be housed securely and safely online. [8][9]

2. Scope and Objective

The scope of this project will focus on the patients and dentist who will use the system, to make the appointment via online service. This project will be implements for a small Dental clinic. The prototype can be used by the dentist to manage the appointment for the patients those who would like to do the appointment for the dentist date via online system anytime and anywhere.

The proposed system will save the effort and the time of patients from waiting to make the appointment as well as reduce the work of system administrator to access to information for report and easier to manage the appointment. The system administrator needs to maintain the record of patients. Patients should be able to know the availability a particular date. They should be able to reserve the available rooms according to their need in advance. In this project, the dentist will play as the role of administrator. The dentist can update, delete and add the patients’ information, appointment schedule and record of patients’ booking online easily.

3. Web Application Architecture

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Within the mobile computing sector, web applications are different from native applications which are developed for a particular platform or device and installed on that device. The two are not mutually exclusive because many applications contain elements of both native and Web application. A web application can be divided into three different layers. Presentation layer which forms the first tier of the application consists of web server and the web browser, which is responsible for assembling the data into presentable format. Application layer constitutes the second tier of the application and is consisting of server side program and scripts. Finally the third tier provides the programmable access to the databases. When a user which is first tier, send a request to the web server, web server process the request which is second and third tier, formats the result and finally sends the formatted results from first tier to the client. In this process server side scripts play a very important role of processing the users request and in the generation of dynamic pages, based on user and its input. [11]

![Processing flow between the three layers of web application](image)

4. Requirement and Design

The system should be able to satisfy the requirement in keeping the records of the patients safely, patients should be able to know the availability schedule of dentist, patients should be able to book for an appointment online anytime and anywhere, patients should be able to check their appointment schedule online. The system design is for making decision, for the system operation for the software, hardware and for network infrastructure. [1] The first step in the design phase is to develop the design strategy. The interface design specifies how the users moved through the system. The database and file specifications define what data stored and developed. To describe the whole structure of the system, object oriented approach implemented in the system’s requirement design by the representation of use case diagram and class diagram. [2]

![Use case diagram](image)
4.1. Use Case Diagram

Use cases have quickly become a widespread practice for capturing functional requirements. This is especially true in the object-oriented community where they originated, but their applicability is not limited to object-oriented systems. The Use Case diagram used to show the system components that classified to the dentist and the patients, both of the dentist and patient have their own operation. [3]

4.2. Class Diagram

The purpose of a class diagram is to depict the classes within a model. In an object oriented application, classes have attributes (member variables), operations (member functions) and relationship with other classes. The proposed system has three classes which are Appointment class, Dentist/Admin class and Patient class. [3] According to the above class diagram, the proposed system (Online Dentist Reservation System) contains three main tables: Dentist table, Patient table, Appointment table.

![Class Diagram](image)

4.3. Database Management

For the database of the system, the Microsoft Access Database is used and it primarily a Windows file. It must have a location, also called a path, which indicates how the file can be retrieved and made available. Although you can create a database on the root directory such as the C: drive, it is usually a good idea to create our files, including our databases, in an easily recognizable folder. [6] As a normal computer file, a Microsoft Access database has a file extension. When we are creating a database, the database must have the extension .accdb. When we create a database, if you specify only a name (and path), Microsoft Access would automatically add the .accdb extension. If we want to create a database that is compatible with previous versions, use the extension .mdb but we must explicitly add that extension like patientsdata.mdb. [7]

5. System Implementation

To implement the web based application for the proposed system, I first start with developing Web Forms applications using .NET Framework 2.0 tools and technologies in visual studio 2010. [10] 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, I chose C# for the whole system.

5.1. Master Page

ASP.NET master pages help to create a consistent layout for the pages in an application. A single master page defines the look and feel 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
5.2. Authentication

The main part of application that I focus on the proposed system is in Appointment tab. The patients must log in when they want to book for appointment.

Once the users click Appointment tab, the users will automatically access to the authentication page where the users need to login. The system will authenticate the username and password and send them to their respective page. If the user is a registered patient, he/she will access to the page that he/she can choose whether to make a reservation or check the appointment schedule. If the user is admin or dentist, he/she will access to the page that he/she to manage the database online.[8][10]
6. Result Discussion

This stage present the usability of the proposed evaluated and the user solidification determined. The proposed system was tested by running the system on the Mozilla Firefox and Internet Explorer with the local host server. The user evaluation of the prototype was conducted on 20 students from Rangsit University International College. Each of them was given brief explanation regarding the usage and the user interface of the prototype, test the system, and answer the survey questionnaire. The questionnaire consists of 10 questions to assess the user satisfaction and to prove the usability of the proposed system. Figure 7 shows the result and level of usability of the system based on the feedback of 20 students. The result shows high number of users agrees that system is usable, helpful and meet the main objective of the project.

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Figure 7: Result of the collected data from the 20 students

7. Conclusion and Future work

Online Dentist Reservation System was successfully developed using the required features cross the previous chapters which fully developed by using Microsoft Access, ASP.NET 2010 and the SQL Server to obtain the building of the system. The C# language was used to utilize this application. Because of limited finical resources and the time frame, I was 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. Moreover, the system can be improved to support more functionality like allowing the patients to cancel, pre-pone, or post-pone the schedule that they have requested in their advanced booking and the billing system that the patients can pay online.

8. References:


