

# Clinic Reservation System

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## ABSTRACT

This paper is focused on on-line appointment or reservation system for clinics. The main objective is to provide the best clinic services to patients and to reduce waiting time. As a web-based online clinic reservation system, the internet as the communication must need to apply. By using a web site, the reservation processing between customer and clinic administrator will be done. The website administrator can manage a patient record, doctor record and check the patient condition of this system. Customer can view and select available doctors and can also register by using online. In addition, doctor can search and view patient reservation information. This system is implemented by using Hyper Text Markup Language (HTML), Cascading Style Sheet (CSS), JavaScript, jQuery, Bootstrap, PHP, My Structured Query Language (MySQL), Apache Web Server, and compatible PCs.

**Keywords:** clinic reservation system, web-based, php

## INTRODUCTION

Health care is a fast-growing business in Myanmar. The current health care service organizations looked-for efficiency and patient satisfaction for the best performance. The patient of most clinics in developing countries is faced with inquiring the doctor's information, clinic's information, queuing in counter for registration, gathering and waiting in the lobby (or waiting room) of the clinic.

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This could lead to inquiring the doctor's information using phone (may be engaged), long waiting time for patients, and peak workloads for counter staffs by queuing. To overcome these problems, web-based online reservation system is one of the key processes in this environment [1].

- Sending the file to the client associated with the requested URL
- Generating response by invoking a script and communicating with database

## A. Methodology of Clinic Reservation System

Nowadays, many systems have been developed to make life easier. The system will include database that will record all the data. For the private clinic, they are using digital system to record the patient information and other information that related to the clinic. There are many systems for clinic management system, but it does not meet the local user requirement that is still new in the electronic system [2].

To overcome the problems of manual reservation system, web application must be applied. There are so many advantages to using the web application. Having a website will make promoting the company less expensive and more convenient for the customers. A website is more environmentally friendly when it comes to advertising and marketing. Many will be more likely to visit the website, rather than driving a car to the physical location and browsing for the products.

## Web Application Technology

Web server is a computer where the web content is stored. Basically, web server is used to host the web sites but there exist other web servers also such as gaming, storage, FTP, email etc. Web server respond to the client request in either of the following two ways:

Figure 1 shows the system of Web Server Operation.

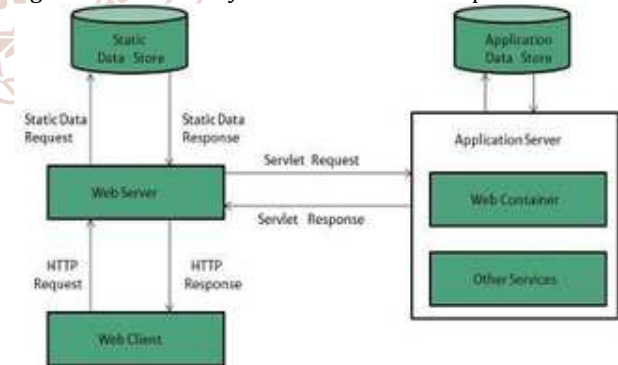


Figure.1 Web Server Operation

When client sends request for a web page, the web server search for the requested page if requested page is found then it will send it to client with an HTTP response. If the requested web page is not found, web server will the send an HTTP response: Error 404 Not found. If client has requested for some other resources then the web server will contact to the application server and data store to construct the HTTP response [3].

**Client-Server Architecture**

The architecture of a computer network in which many clients (remote processors) request and receive service from a centralized server (host computer). Client computers provide an interface to allow a computer user to request services of the server and to display the results the server returns. Servers wait for requests to arrive from clients and then respond. Ideally, a server provides a standardized transparent interface to clients so that clients need not be aware of the specifics of the system (i.e., the hardware and software) that is providing the service.

Many clients can access the server’s information simultaneously, and, at the same time, a client computer can perform other tasks, such as sending e-mail. Because both client and server computers are considered intelligent devices, the client-server model is completely different from the old “mainframe” model, in which a centralized mainframe computer performed all the tasks for its associated “dumb” terminals [4].

**B. Design and Implementation**

Online Clinic Reservation System is implemented by using online-based web application. This process can convert from manual document-based system to online-based computerized system. In this system, users can search the clinic information, services and reserve appointment using online. Administrator can manage the doctor and patient information. For security, username and password are needed to login. Doctor can search their appointment data. Figure 2 shows the Block Diagram of the Online Clinic Reservation System.

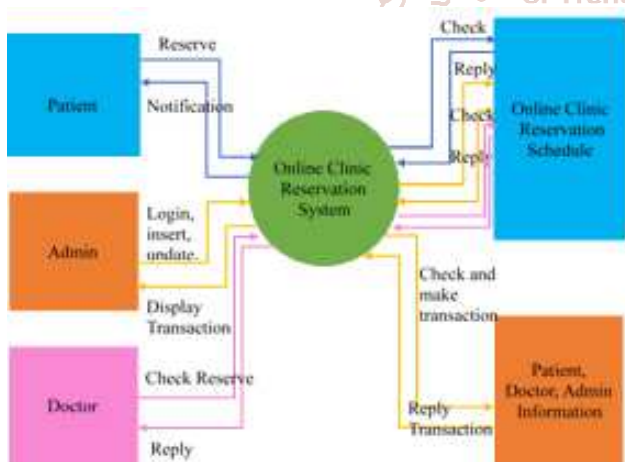


Figure 2 Block Diagram of the Online Clinic Reservation System

In figure 3, all parts or function of online clinic reservation system are described, namely, user/customer/patient visiting website, reservation, admin login registration, inserting, updating, deleting and searching for admin, patients, and doctor.

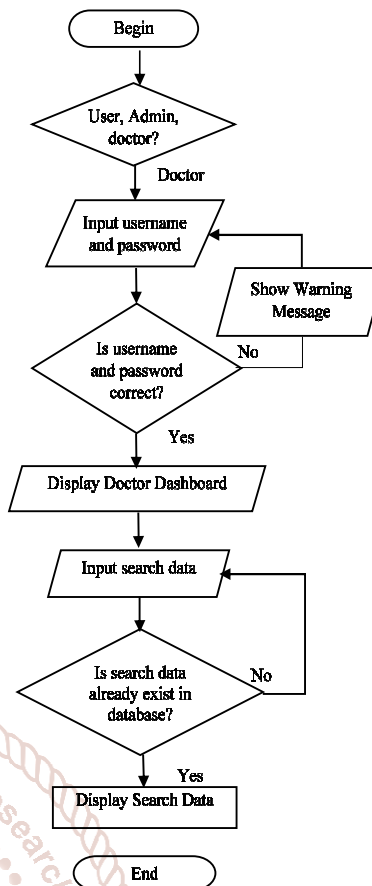


Figure 3 Overall System Flowchart of the Online Clinic Reservation System (Doctor)

Figure 4 describe the user point of view. To reservation the system, the user can fill the information in home page or reservation form by clicking the reservation button or search home page. If the user filled patient information completely, the system can check the data into the database.

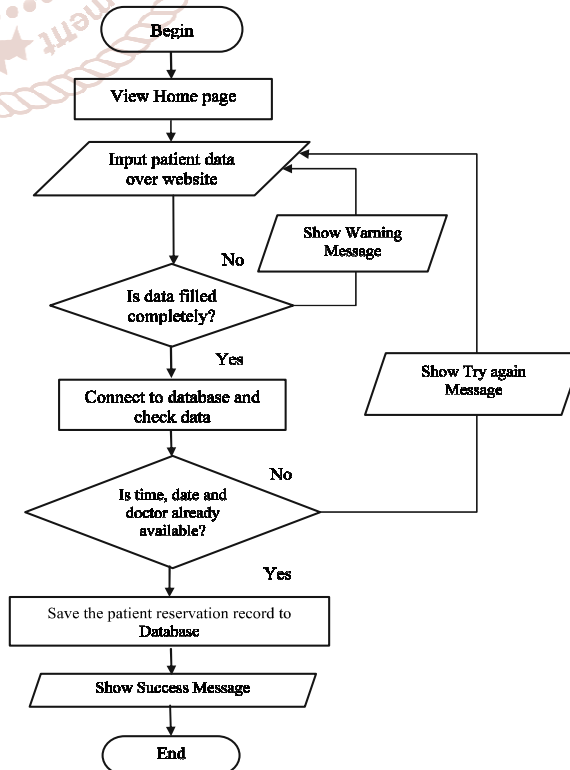


Figure 4 System Flowchart for Patient’s Reservation

If the user did not complete the information, the system will show the warning message to fill the required information. And then, the system checks the user's reservation. If the user's reservation is available, the system shows the success message. If the user's reservation is not available, the system shows the warning message.

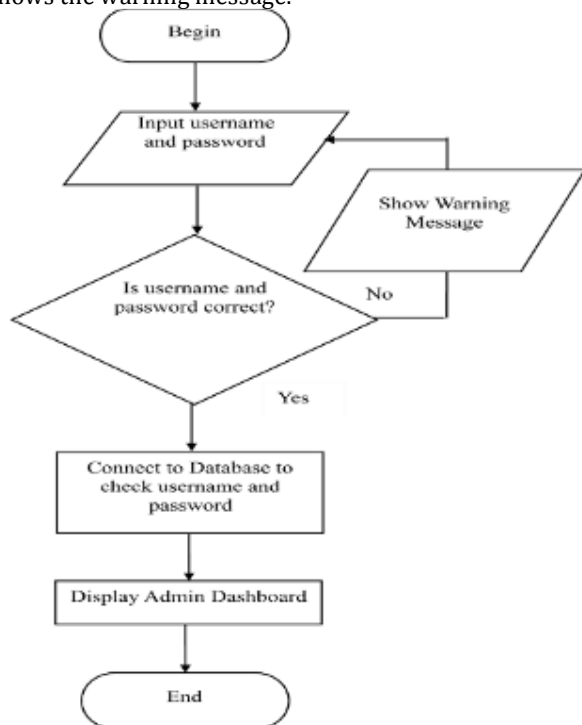


Figure 5 System Flowcharts for Admin

Figure 5 describe the admin login system. To manage the online clinic reservation the system, administrator needs to login to check the authentication. If the username and password are correct, the system shows the admin dashboard to manage the system. If the username and password are incorrect, the system shows the warning message as shown below.

**C. Test and Results**

The online clinic reservation system starts from the home page of the system. In home page screen, there are five main menus. They are home, about us, services, contact us and register page. In this system, there are two types of users. They are called user and admin.



Figure 6 Home Page Including the menus

Patient can reserve by selecting the date, time and doctor from the website home page. If the patient does not fill the required data completely, the system will show the warning message "Please Fill out this Field" as shown in Figure 7.

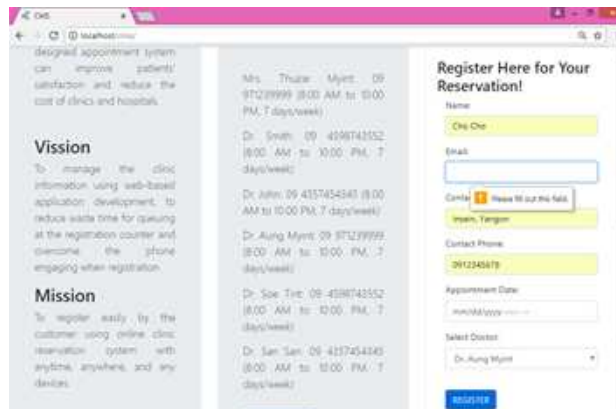


Figure 7 Patient Reservation with incomplete data

If the patient's selected date, time and doctor is available in the database, the system will show "Your Appointment is Success" message as shown in Figure 8.

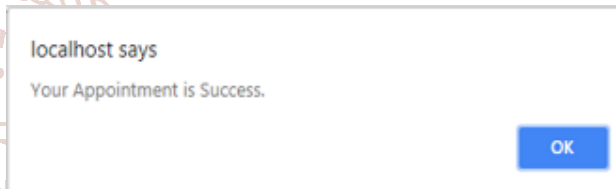


Figure 8 Patient Reservation for the success appointment

For secure login, different link is used. Admin link is <http://localhost/cms/admin/>. Only the authenticated user also called admin can enter data entry, data searching, and manage the system. The username and password are checked for authentication. If the login button is pressed, it can check this username and password from those of the database. If the user name and password are not matched, the system shows "Invalid username or password" message. If username and password are correct, the system will show the admin dashboard to manage the system as shown in Figure 9.

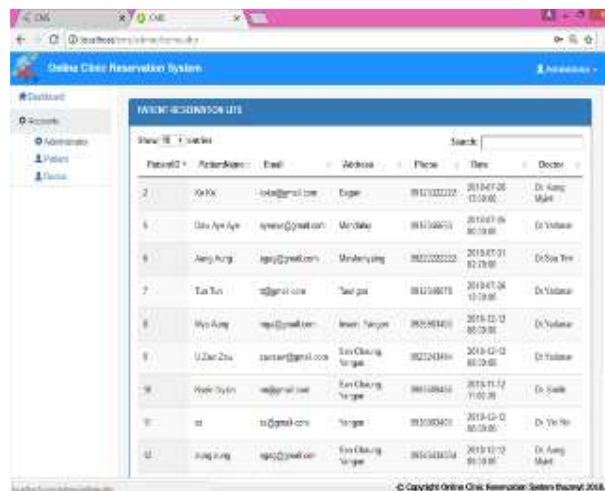


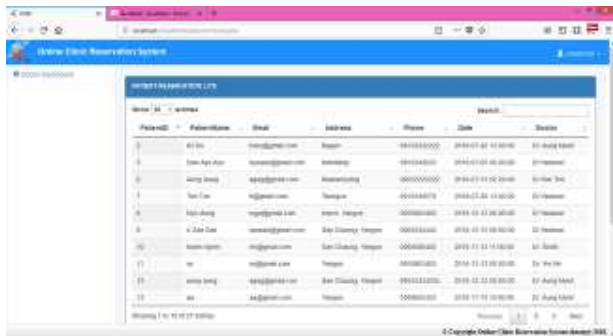
Figure 9 Admin Dashboard

In the admin dashboard, it is divided into three parts. They are admin, patient, and doctor. The admin of the clinic can

add the information about the admin or create new admin using new admin data entry form by filling the data and clicking save button. After the admin fills the data completely for the patient or doctor, the system will save the data into the database.

The system can also allow the admin to insert the data not only for doctor and patient but also for admin. In addition, the admin can update the existing data without noticing the location, devices, and time using online.

Doctor Login link is <http://localhost/cms/doctor/> for secure login. Only the authenticated doctor can search the patient data. The username and password are checked for authentication. If the login button is pressed, it can check this username and password from those of the database. If the doctor username and password does not match, the system shows "Invalid username or password" message. If the username and password match, the system will show the Doctor Dashboard as shown in Figure 10. Doctor can also search the patient data which he wants to find by entering the data into the search box.



Patient ID	Patient Name	Email	Address	Phone	Date	Status
1	John Doe	john.doe@gmail.com	London	0000000000	2019-01-01 10:00:00	Dr. Pending
2	Jane Smith	jane.smith@gmail.com	New York	0000000000	2019-01-02 11:00:00	Dr. New
3	Bob Lee	bob.lee@gmail.com	Chicago	0000000000	2019-01-03 12:00:00	Dr. Pending
4	Emily Wong	emily.wong@gmail.com	San Diego	0000000000	2019-01-04 13:00:00	Dr. Pending
5	Mike Chen	mike.chen@gmail.com	San Jose, Taiwan	0000000000	2019-01-05 14:00:00	Dr. Pending
6	Sarah Kim	sarah.kim@gmail.com	San Jose, Taiwan	0000000000	2019-01-06 15:00:00	Dr. Pending
7	David Kim	david.kim@gmail.com	Taipei	0000000000	2019-01-07 16:00:00	Dr. Pending
8	Anna Kim	anna.kim@gmail.com	Taipei	0000000000	2019-01-08 17:00:00	Dr. Pending
9	John Kim	john.kim@gmail.com	Taipei	0000000000	2019-01-09 18:00:00	Dr. Pending
10	John Kim	john.kim@gmail.com	Taipei	0000000000	2019-01-10 19:00:00	Dr. Pending
11	John Kim	john.kim@gmail.com	Taipei	0000000000	2019-01-11 20:00:00	Dr. Pending
12	John Kim	john.kim@gmail.com	Taipei	0000000000	2019-01-12 21:00:00	Dr. Pending
13	John Kim	john.kim@gmail.com	Taipei	0000000000	2019-01-13 22:00:00	Dr. Pending
14	John Kim	john.kim@gmail.com	Taipei	0000000000	2019-01-14 23:00:00	Dr. Pending

Figure 10 Doctor Dashboard

#### D. Conclusion

This system implements the web-based online clinic reservation system between customer and clinic at different

locations using any devices and any time. Database is used to achieve the faster response time for query. Client and server architecture are used because it is online based. In this system, it includes the three types of users: user, admin and doctor.

The benefits of implementing this system is to register easily by the customer using online clinic reservation system with anytime, anywhere, and any devices, to manage the clinic information using web-based application development, to enable the availability of the registration timely and accurately, to reduce waste time for queuing at the registration counter, to overcome the phone engaging when registration, to obtain the quick response and offer the best performance for customer. Website administrator can manage a patient record, doctor record and check the patient condition of this system. Customer can view and select available doctors and can also registrar by using online. Doctor can search data. Online clinic reservation system will be modified by creating schedule control management system for doctor directly in the future.

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