

## **An Application of Web-based E-Healthcare Management System Using ASP.Net**

**Assad H. Thary Al-Ghrai**

Department of Computer Science, College of Science, Al-Nahrain University, Baghdad, Iraq.  
E-mail: aht@sc.nahrainuniv.edu.iq, assad.thary@gmail.com

**Ali Abdulwahhab Mohammed**

Department of Remote Sensing, College of Remote Sensing and Geophysics, Al-Karkh University of Science, Baghdad, Iraq.  
E-mail: ali\_abdulwahhab@kus.edu.iq

**Harith M. Saeed**

College of Science, Al-Nahrain University, Baghdad, Iraq.  
E-mail: harith.m.s.h@gmail.com

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### **Abstract**

In this article, a Website for medical healthcare system was designing and developing. It consists of two major sides: client- server side (front end side and back end side). The client-side is everything involved with what the user sees, it has been designed a web using HTML, CSS and JavaScript languages. The server-side is mainly how the site doing modifications and updates which indicates to the entire user can't see everything in the browser such as servers and databases. The web has been implemented and developed using ASP MVC5 and C# programming language. SQL Server languages used for the database part and it make simple ease of use for patients to their health registrations. Consequently, it has simple and straight accessibility through a group of physicians for patient records. The article interested with auspices to the patient appointments combination, billing, timetable, physical, date, and information of medication in single overall system. The results of website designed provide accessibility with easy manner of pertinent information to the management organizations for instance the Medicaid and Medicare. Furthermore, the website reduces the mistake in healthcare, and reduce the cost of delivery of healthcare. Consequently, the website prepared for utilize by nurses, physician, pharmacists and another healthcare professionals, and by patients and monitor patients using medical devices.

### **Keywords**

Healthcare, Client-Side, Service, Server-Side, ASP.Net, SQL Server.

## **Introduction**

In the last years with the development of technologies in programming languages, the world becomes directive for designing and implementing many systems that will be useful and easy the work by the people like remote sensing systems, satellite image classifications systems, and health care management systems, etc (Hana, &Hamza, 2015) (Al-Ghraiiri et al.,2018) (Assad et al., 2019).The Systems of Healthcare Information (HIS) are computer based systems prepared to achieve managerial information and medical which cans Healthcare professionals carry out their works in high efficiently and effectively (Eysenbach, 2001) (Lu, S., 2007). Medical exercise knows are notable with problems of maximal business than previously (Guglielmo, 2003). Consequently, hard regulations of government are strength healthcare specialists to extend several times on notifying (Liu, Q., 2008). In the same time, achieved auspices is gathering other measurement of difficulty to the healthcare specialist utilize capitation to avoid reimbursements. Moreover, the threats of misunderstand complaints are powering physicians onto hold moment specifics of theirs activities with patients (Borfitz, D., 2003). Due of these aspects, immediate cost of given that appropriate care to patients increased frequently, which healthcare professional are increasingly searching qualification in medicine practicing (Ahmed, M.J., & Zeebaree, S.R., 2017). In present, information of healthcare is transferred from one healthcare specialized to another during treatise observations or connection of singular (Oguntunde, & Odim, 2013). For more instances, electronic contact between pharmacists and physicians is not usually utilized but, actually, the patient gets a paper about prescription writing by the physician (Granja et al., 2015). The patient still waits to give prescription to the pharmacy and to fill from the pharmacist (Hameed et al., 2015). Also, the prescriptions filled incorrect which led many deaths every year that indicates that there is an accelerated necessity to decrease the mistakes in healthcare (Granja et al, 2015). The Health net review resolve that big systems of healthcare have hardness in organizing the information of personal, data scale, extracting significance -based knowledge and databases (Patil, T. P., 2015). These problems specify the requirement to enhance the fineness of systems of healthcare, simple the contact to the information of healthcare (Song et al., 2006). A clear method to increment effectiveness in the medical exercise is utilizing tools and automates as much operations as potential without confidentiality and safety. And building a safer health system, these systems do it robust for humans to do the mistaken something and simple for humans to work the correct something. E-healthcare systems have spent hard effort for developing. Beyer, et al., 2004) discusses the limitations and improves challenges and identifying healthcare network integration for more flexible, operation oriented architecture. In (Ardissono et al., 2006) provides a survey of the subject of computer-help

healthcare do property and requirements. In (Bourke, M.K., 1994) explained implementing healthcare work flow as a BPEL procedure (Taylor et al., 2004) (Tsiknakis et al., 1997) and (Tsuji-mura et al., 2009). In addition, diseases such as disease heart, stroke, and cancer are usually directly linked to daily life. It is therefore important that people change their each day lifestyle in order to avoid and decrease the diseases. To understand the change, the most important thing is that citizens can simply know their health conditions and get correct advice from their physiological data based on evidence (Gritzalis et al., 2005). In this article, is developed a distributed e-healthcare system that purposed for utilize by physician, pharmacists, nurses and other healthcare specialist, completely by medical devices and patients utilized to observe patients.

### **Problem Statement and Objective**

The main problem is the human beings perform mistakes. For avoiding errors, the system was designed that made it difficult for people to work the mistaken something and simple for people to work the right something. In present, information of healthcare system is transferred from one healthcare specialized to other during paper observations or personal connections. To enhance this operation, the human computer interfaces for the physicians, pharmacists, nurses and other healthcare specialist could be used for prescriptions convey electronically from the physician to the pharmacist. Also there are many deaths from incorrect prescriptions each year. The big systems of healthcare have hard in controlled the data of personal, the data standardize, content-based knowledge extraction. The problems refer to the necessity for enhancing the goodness of the healthcare system within information's, and minimize the cost of healthcare delivery. The aim of this article, designed a website that provides the following:

1. Simple access to health records and through a group of physicians for patients.
2. Design a comprehensive system for patient appointments integration, billing, schedules, history, physical, and medication data.
3. The system provides simple access of relevant information to the organizations like the Medicaid and Medicare.
4. Reduce the errors and charge in healthcare delivery.

### **Design of Healthcare Management System**

In this paper, it has implemented a web-based platform-independent framework for its simple use and effective use of our technology. It therefore considered safety and confidentiality due it handled data personality over the Internet. In addition, it measured

that the users should ensure as feedback not particular the information from the system of web, but besides the analyzed report.

### **Confidentiality and Safety for Management System of Web-Based Healthcare**

Several envisaged safety threats, like leakage or forgery of confidential data and attacks disease on a WBHMS, exist. The basic safety features of the data in each case, namely benignity (avoidance of unauthorized alteration), availability (avoidance of unauthorized withholding), and confidentiality (avoidance of unauthorized detection) (Omar, W.M., & Taleb-Bendiab, A., 2006) shall be covered. The most important security risks are listed as follows:

- Attacks on the server of central information: the data of person is stored on a data server and be able to be arrived by remote users over the Internet. Though these systems are helpful to users, they jeopardize the secrecy and privacy of data stored. The correlated security incidents include access for unauthorized, server system failure in technical, denial of service, and computer virus threats.
- Communication lines monitoring and tampering: because data have information of personal, through monitoring communication lines, they can detect unauthorized access to data that jeopardizes data confidentiality. The correlated safety incidents are electronic data being compromised and falsified.
- Authorization issues across various environments: Users have remote access to the WBHMS. It is becoming increasingly difficult and complicated to ensure that only approved individuals can access the personal data. The associated security incidents are the masquerading of user identities, unauthorized device usage and theft of passwords.

### **Functions for the Management System of Web-based Healthcare**

The device will measure the physiological data of the users, and show users the data. Nevertheless, the program cannot be used for citizens who don't have the right information of the disease or who are oblivious to their health. And given a situation like this, they established to develop the following:

- Data viewer feature: This application cans users to test their data of physiological on a regular basis, not only from home, but also from anywhere through the Internet. they can quickly check their own past documents too. In addition, because the authority can validate the long-term condition of users over the Internet, the authority gives users several good advice on the safety of users.

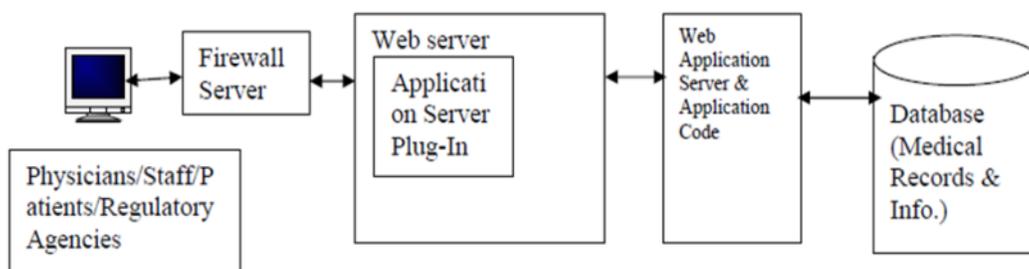
- Function of Analysis: This feature measures unseen physiological state from the data calculated with the critical sensing device. In addition, the feature is expected to help specialist diagnosis.
- Feedback function: The specialist's guidance is beneficial to consumers. This function allows the specialist to advise each user accordingly. In fact, the patients don't have to go away to the hospital occurrence to meet with the doctor about their wellbeing. Even this feature is useful for users who don't go to hospital.

### **Benefits of Healthcare Information Systems**

The systems of healthcare information present advantage to together the physicians and patients. The patient is capable to practice fast and efficacious records in the system (Subramanian et al., 2006) (Budgen et al., 2007). The position was ignored by the provider that able to observation the data virtually from anywhere. The systems of healthcare information present physicians and another Healthcare provider which can aid physicians in the acknowledgement of effective charge and high-quality care. This demands they have fast and suitable incoming to overall medical information from various sources.

### **Application Architecture Design**

The client model becomes the actually standard when it related to developing and designing applications of web. Usually, a browser hosted user interface (UI) is easily related with client application that is produced dynamically and sent to the client, as HTML by the server. Clients of web are basically virtual station that transmits HTTP requests to the server. A model of client web is shown in figure (1).



**Figure 1 A model of client web architecture**

The queries from staff of medical, physicians, staff or patients of authoritarian agencies like Medicaid/Medicare can handle by figure (1). The physicians and patients pass their requests during a firewall server. Easy requests (like requests for static HTML pages) are

handled by the web server, while more sophisticated requests for the data are managed by the server application.

To get back precise data requested by the customer and format them suitably to be sent back to the customer by iterating the application code with the database. For example, a request for a particular date and physical register used for a patient on a particular history is achieved by reading from the suitable database tables and transmitting the information reverse to the user. Code of application is normally written in Java language. Classically pages of Java server, which cover medley between code of Java and HTML languages, that can be able utilized to design suitable interfaces for the patients to return their medical, appointment records, and billing for physicians to arrival patient health registers. Figure (2) describes the application modules for the medical information system which is designed utilizes the following essentials:

1. The information registration must be made as simple as possible.
2. Authorized users to display information in organized way.
3. Notes must be able to be registered fast and simple during the care.
4. The entire care team at all times observe detailed about Patient documentation.

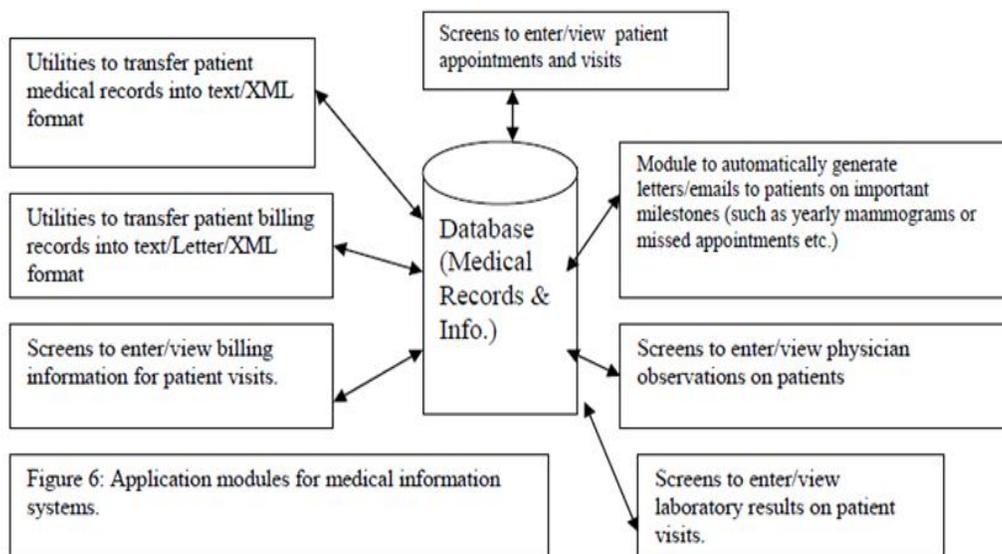


Figure 2 Application modules for medical information

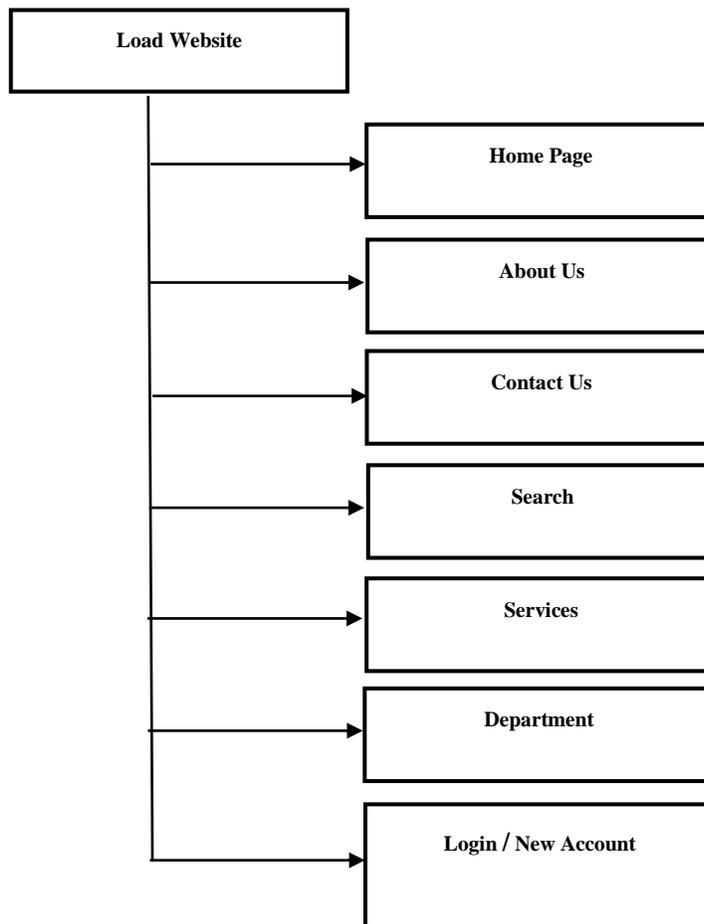
### Our Software Requirements

The technical requirements of the system are demand is 200 MHz hardware or frequency processor within higher clock and 512 MB or enough disk Storage and higher RAM. The website was designed and implemented using ASP MVC5 and C# programming

language. SQL Server languages used for the database part and it make the health records of patients can be access in easy and direct manner between a groups of physicians. Also, the same requirements they were using and applied in satellite image classification systems when I built the system of it as shown in (Al-Taei, & Al-Ghrairi, 2016) and (Assad, & Al-Taei, 2016).

### **System Diagram**

In this article, the site of the health centre designed. Which consists of seven page (home, about us, contact us, search, services, department, login in \ new account), and each page is specific to a specific work. In the beginning, when we enter the site, we will see the default (home page) for the site, figure (3) illustrates the diagram of the proposed healthcare website.



**Figure 3 Block diagram of the healthcare website**

## Results and Analysis

The results based on the services available for the users, the systems of E-healthcare mainly split into three kinds:

1. The information of E-Health services and tools for people: - provide data during electronic health portals.
2. administrative of E-Health support services and tools for many people:– In order that provide service of health to users rather than providing electronic data such as e-Prescription, administration, and e-Results.
3. Home care and telemedicine services and tools of E-Health for people: – providing that the data about services such as remote ECG s, remote contingency management.

The technical requirements of the system are demand is 200 MHz hardware or frequency processor within higher clock and 512 MB or enough disk Storage and higher RAM. The database tables designed and implemented using MS SQL server, and the interface implemented by using ASP.NET. All interfaces of the proposed website are shown in figures (4, 5, and 6) respectively.

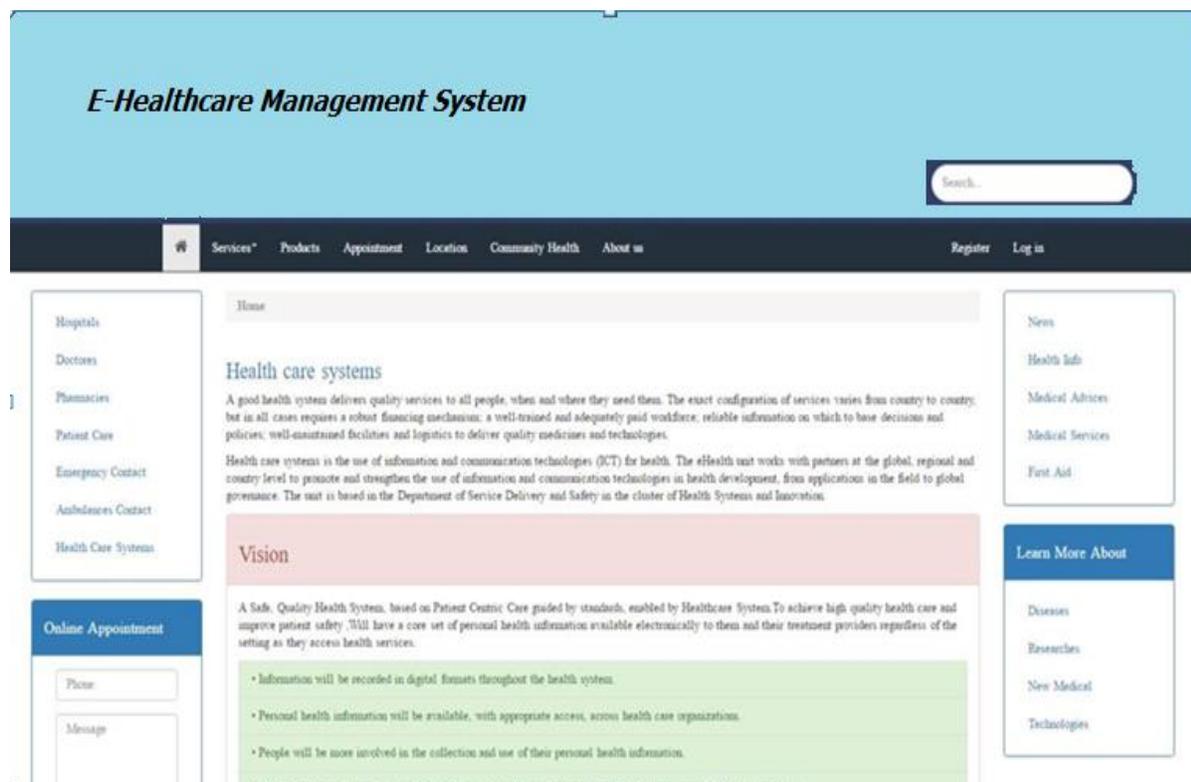
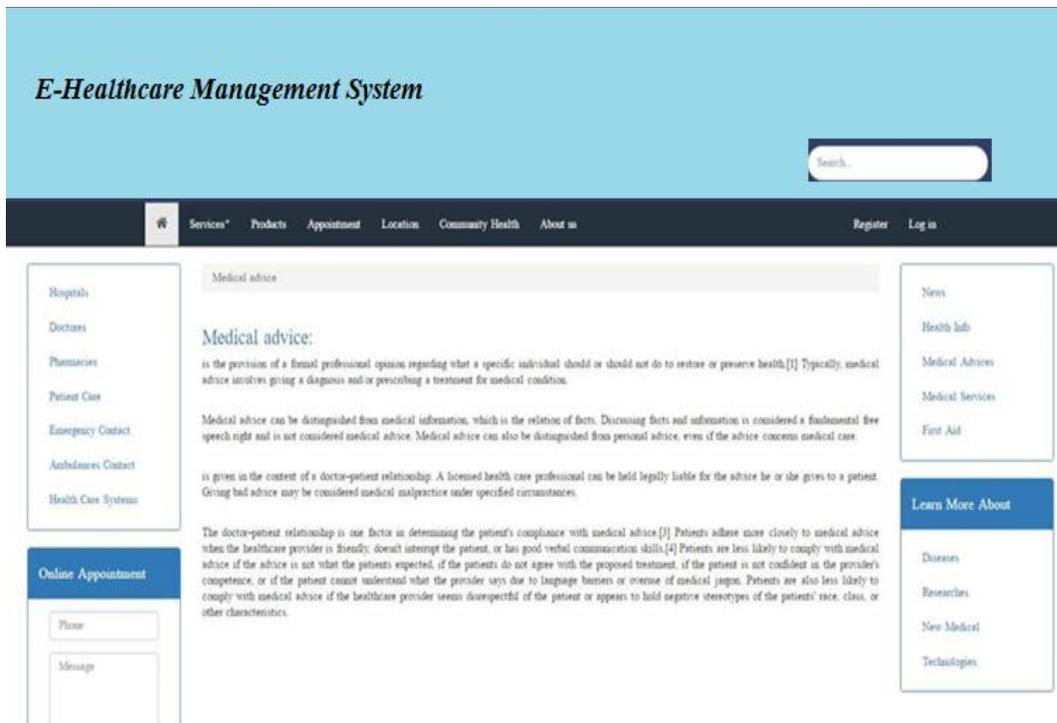


Figure 4 Home Page Interface



**Figure 5 Medical advice Page Interface**

In the new account work page, as noted in the above forms, we will be required to enter the user information for the purpose of registering on the site. All fields must be filled in so that we can register and access the site. This information will be stored in a special database of members. As for the login page for the site, it is for members who have already registered on the site, can access the site through this page only write the user name and password, and will conduct a process to validate the input, if it is correct and identical with the inputs that were previously entered to the database during the registration On the site and the account, you will enter the site without any problems, and if the input is wrong, will prevent access to the site and displays the error message. After entering the site we will see a page which is your account page, we show the page required check in the link (please enter here), after we check, we will see the page is welcome to the every one login in the site. Figure (6) shows the service page interfaces.



Figure 6 Service Page Interfaces

Each section contains the name of the doctor or the names of doctors specializing in this disease. For the dermatology section, it contains two parts, a special section for chronic obstructive diseases and a section on lymphatic diseases. For the chronic scabies department, it also contains the classifications of the disease, Herpes dermatitis and Grover's disease. The doctor, pharmacies, and hospital interfaces shown in figures (7, 8, and 9) respectively. The system will design all pages, the contact us page and save it as a name contactus.asp, the about us page and save it as a name aboutus.asp, the search.asp, the services.asp, the department.asp, the doctor table work.asp.

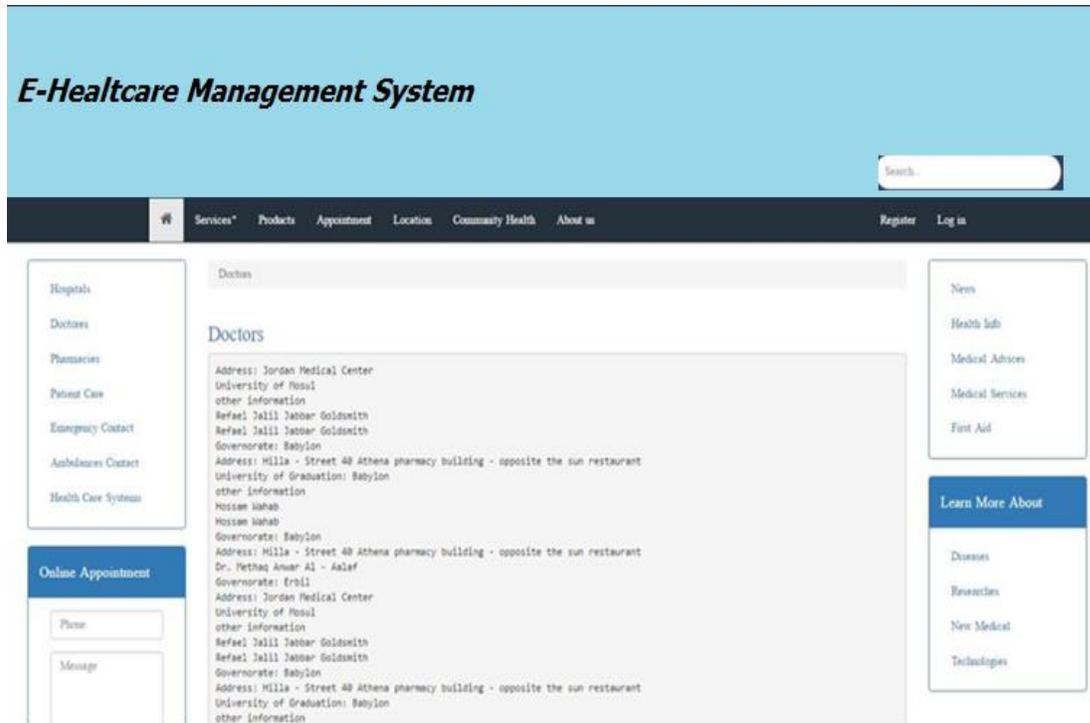


Figure 7: Doctor Page Interface

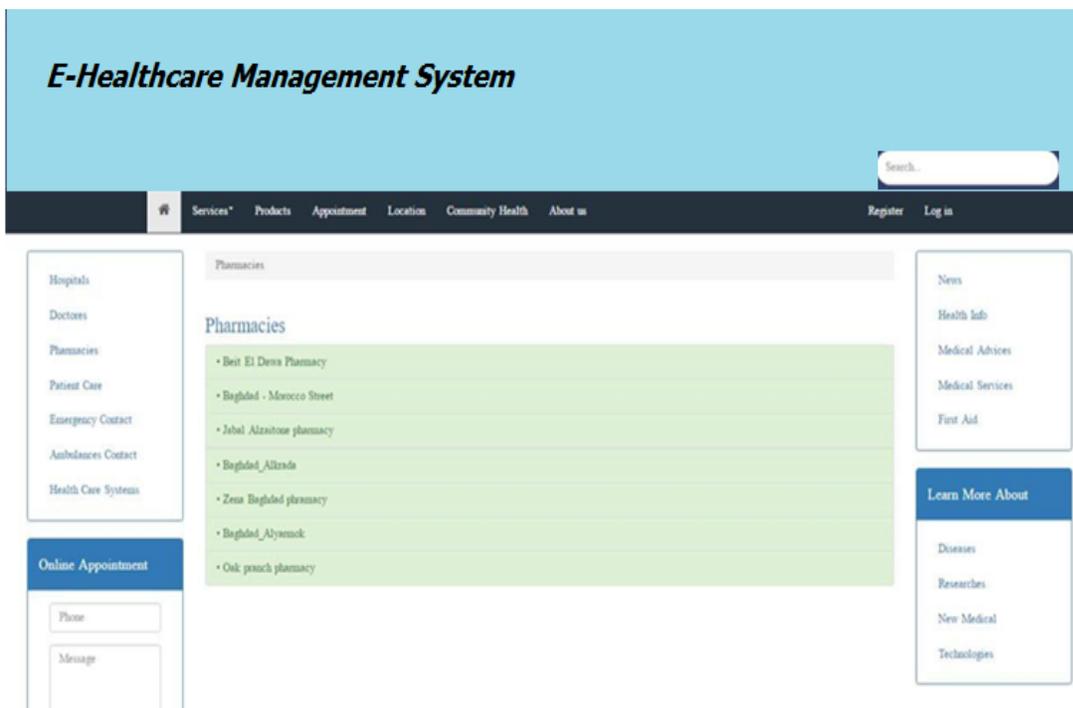


Figure 8 Pharmacies Page Interface

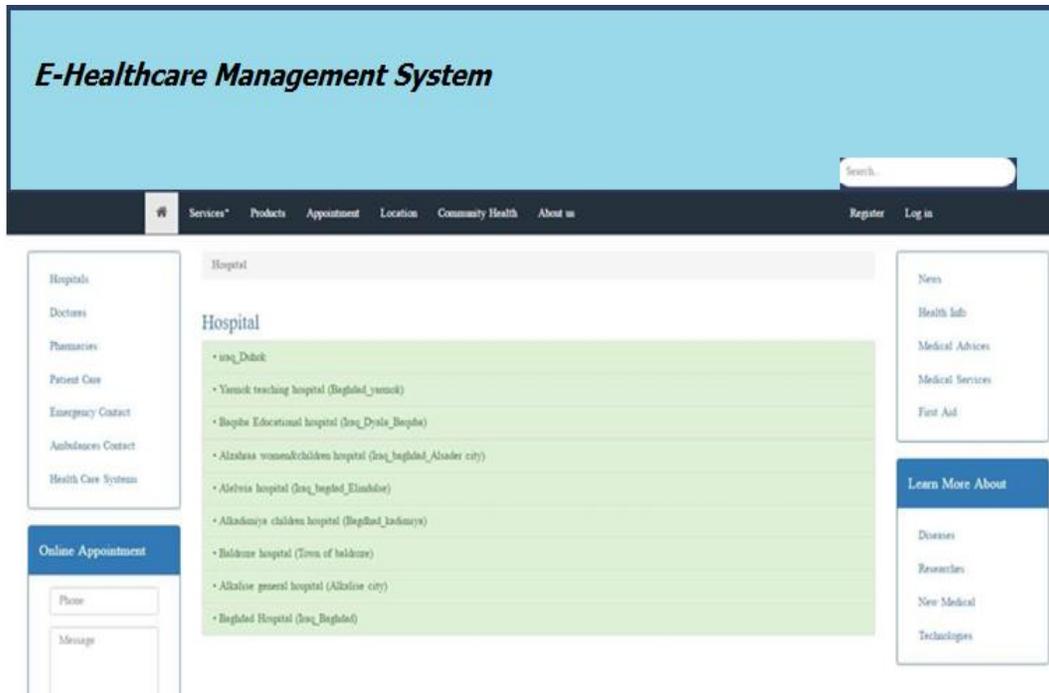


Figure 9 Hospital Page Interface

This server-side inclusion technique is called SSI (Server-Side Includes) to eliminate the repetition of the design of similar parts on the page such as the top of the page or the bottom of the page to put the part to be repeated in the page SSI file containing the rights to save. We can use only one feature. And add the file name in the files to be repeated part. For example: we will adopt a single design for all pages. At the top of the page the title of the site, and links to the different sections and link to the question display page and personal account page.

## Conclusions

In this article, the website system designed to restore all information that is stored in digital form and finding the nearest hospital for the contingency patients that make the arrival very faster and provide perfect results. The main objective in this article was how to storing the information in effective manner and designing the system keeping medical contingency into mind. Consequently, the article will reduce the additional work, transparency increased, and provides best service of health to all the users. The system designed and allowing users to make more flexible and feasible when used the systems of healthcare. Our system of E-healthcare designed and applied to achieve the functionality

requirements like (home, search, doctor, services..., etc) pages that presently focuses on the relationships between physicians, patients, pharmacists and nurses.

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