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# Business Integration for the Hospital Medical History Database System by Using the Java Server Page and SQL Technique

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## Abstract

*This research not only describe convenience of e-business system but also point out the key techniques to construct Internet system of medical history related technique – JSP, SQL, JDBC, ODBC, Javascript, Oracle Database, Internet techniques and so on. The doctor and the staff who use this Internet system can access, delete, update, and modify the Internet database. Furthermore, they can download and upload images and documents via Internet. This system can garner the security and convenience when you use this system.*

**Keywords:** JAVA, JSP, JavaBean, Oracle Database, Servlet, JavaScript, Telemedicine, hospital's Internet and Intranet, medical image process via the Internet.

## 1. Introduction

The web server of jakata-tomcat [3,4] and the technique of JSP [4] implement this JSP Internet patient medical history database system. Also we connect the Internet Oracle database [6] with JDBC and ODBC [4] [5] [6] drivers to the JSP server. When you initially browse the JSP file, the JSP file will be compiled to the servlet file [3]. The servlet file is a byte code file, which can be executed in a more efficient way when a client demands this file. When client requests a demanded servlet, the servlet will be translated into HTML file in server and return this HTML file to client. Thus the client can only see traditional language of HTML; therefore the secret information can be hidden.

Since JSP was based on framework of JAVA [1], thus we suggest someone who wants to program the JSP language should had experiences in JAVA programming. Moreover, our technique not only includes server side issue, but also includes client side issue. We use component of HTML input-box and JAVASCRIPT [2] to simplify the

input process. Furthermore, JSP files another function is the JSP can include javabean program code. The implementation concept of Javabean is similar to active X. Using JSP has the following advantage: (1) JSP is a freeware language. (2) JSP can be executed in different platforms. (3) JSP is a faster language.

## 2. Access and Process the Patient's medical history by the Internet Technique

### 2.1 The doctor's login system



帳號	doctor
密碼	****
<input type="button" value="登入"/>	

Figure 2.1.1: Doctor login and confirm page

Figure 2.1.1 shows when a doctor keys in the login ID and password and presses login button, the system will save the login ID and password in the session object automatically. Each time when doctor login to the system, the system will take login ID and password to check against the permit-account automatically. If he or she is the legal user, he or she then can login this system; otherwise, the system will cut the usage to the user. The Java Server Pages is operating on the server side; in the client side, the client can't see the Java Server Pages source code. Thus the web server can hide information form the client.

### 2.2 Add a record to system

病歷號碼	e9002016	性別	男 <input type="radio"/> 女 <input type="radio"/>
病患姓名	陳秀美	電話	04-2234567
生日	1970/10/30	照片檔名	amy.jpg
職業	商業	學歷	大學
圖檔上傳	C:\MyDocument\amy.jpg <input type="button" value="瀏覽..."/>		

病歷號碼	性別	病患姓名	電話	生日
e9002001	男	曾建羸	04-7654321	1968/6/6
e9002013	男	黃宏楠	05-5998992	1974/1/21
e9002015	男	洪松男	04-7561019	1976/10/27
e9002016	女	陳秀美	04-2234567	1970/10/30

Figure 2.2.1: Add a new patient's record to the system

Figure 2.2.1 shows add a new patient's record to the system. The user can type in the necessary data and press the transmit button to send the typed message to the web server. By checking figure 2.2.1, one can find the following advantage:

1. Using HTML text-input-box can reduce mistakes and increase inputting efficiently. For example, we can use combo button to reduce times of input and increase efficiency.
2. For the client side, by using the java text-input-box one can prevent mistakes happened too. For example, when one user types the date-field with the wrong date-type, the system will give a warning to the user to avoid mistakes.
3. Javabeen can simplify the writing-process of JSP and reuse them. For example, in this case, when you have many files need to upload or download, you can use java bean to pack program and reuse them.

### 2.3 Delete a record from system

**Before**

病歷號碼	性別	病患姓名	電話	生日
e9002001	男	曾建羸	04-7654321	1968/6/6
e9002013	男	黃宏楠	05-5998992	1974/1/21
e9002015	男	洪松男	04-7561019	1976/10/27
e9002016	女	陳秀美	04-2234567	1970/10/30

**After**

病歷號碼	性別	病患姓名	電話	生日
e9002001	男	曾建羸	04-7654321	1968/6/6
e9002015	男	洪松男	04-7561019	1976/10/27
e9002016	女	陳秀美	04-2234567	1970/10/30

Figure 2.2.1: Delete a patient's record from the system

Figure 2.2.1 shows that the user can input a patient number

that the user want to delete and press the enter button to delete a record form the system. The server will execute SQL command inside the server and delete the record. Although most machines implement the SQL command by SQL-92 protocol, but some components are not clear defined in this protocol. Thus each company has its dedicated rules to execute the SQL commands. Therefore you shall use oracle dedicated SQL command for oracle database.

### 2.4. Query a record from system

病歷號碼	文件代碼	圖片檔名(before)	圖片檔名(after)
e9002001	k6	e9002001b1.jpg	e9002001a1.jpg
e9002001	k5	e9002001b2.jpg	e9002001a2.jpg
e9002015	k9	e9002015b1.jpg	e9002015a1.jpg
e9002015	k10	e9002015b2.jpg	e9002015a2.jpg
e9002016	k7	e9002016b1.jpg	e9002016a1.jpg

病歷號碼	e9002015	手術前圖片	手術後圖片
病患姓名	洪松男		
文件代碼(下載)	k10	術前	術後一分鐘

Figure 2.4.1: query a patient's record from the system

Figure 2.4.1 shows the Java Server Page's Search function. One can input a patient number and press the search button to pick the patient data from the database and display the patient data in the Internet page.

### 2.5 Modify a record from system

Figure 2.5.1 shows the Java Server Page's update function. One can input a patient number and fill in the necessary data and press update button to update the data.

## 3. Results and conclusion

The technique of JSP and the server of Tomcat implement this Internet system. The patient can access, update, and delete information from the hospital mainframe computer by the JSP technique. Furthermore, the patient can even download and upload the files via the JSP technique. Since JSP is inherited from Java, JSP can be executed in different platform too. Each time when a JSP file is execute, an attached class-file will be compiled. If the same JSP page were executed again, the JSP file will not be compiled again. The server can simply execute the previous compiled class-file; thus, the execution speed will be faster.

By the usage of the reuse of the class-file, the efficiency of JSP can be superior to ASP. Furthermore, there are many web server support JSP and most of them are freeware.

## Reference

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**Before**

病歷號碼	性別	病患姓名	電話	生日	照片檔
e9002001	男	曾建崑	04-7654321	1968/6/6	e9002001.jp
e9002015	男	洪松男	04-7561019	1976/10/27	e9002015.jp
e9002016	女	陳秀美	04-2234567	1970/10/30	amy.jpg

**Update**

病歷號碼: e9002015 [確定]

病歷號碼	e9002015	性別	男 <input type="radio"/> 女 <input type="radio"/>
病患姓名	洪松男	電話	0913097999
生日	1976/10/27	照片檔名	e9002015.jpg
職業	工業	學歷	大學
圖檔上傳	瀏覽...		
生活習慣	抽煙 <input type="checkbox"/> 喝酒 <input type="checkbox"/> 吃檳榔 <input type="checkbox"/> 熬夜 <input checked="" type="checkbox"/>		
送出 重新設定			

**After**

病歷號碼	性別	病患姓名	電話	生日	照片檔
e9002001	男	曾建崑	04-7654321	1968/6/6	e9002001.jp
e9002015	男	洪松男	0913097999	1976/10/27	e9002015.jp
e9002016	女	陳秀美	04-2234567	1970/10/30	amy.jpg

Figure 2.5.1: Update a patient's record