**Project Report**

**Project Name:** An On-line Radiology Information System

Lecture section: B1

Instructor: Yuan, Li Yan

Group Member 1: Bicheng Yan 1372784

Group Member 2: Yue Yin 1345121

Group Member 3: Xiaocong Zhou 1281462

**Introductions of implementation for each module**

First the system will grab oracle log in information by setting an attribute for any time’s usage.

**1.Login module:**

This module will be used by all users to login to the system different privileges and allows them to modify their personal information and/or the password.

After connection to the sql, this module will get a user name and password which enable the user to log

into the system.

1.If the user given only a password or a user name, our **login.jsp** file would handle this case by given error information of “either your user name or password is invalid.”

2.If the user does not given any information of log in, our **login.jsp** file would handle this case by given error information of “please enter your user name and pass word”

Finally the system would display different interfaces with several privileges based on the user’s class on successful log in,where the classes contains Patient, Administrator,Doctor and Radiologist

***Privileges of Administrator:(admin.html)***

*1.Search*

*2.User management*

*3.Report Generating*

*4.Data Analysis*

*5.Modification on personal information*

*6.log out*

***Privileges of Radiologist:(radiologist.html)***

*1.Search*

*2.Uploading*

*3.Modification on personal information*

*4.log out*

***Privileges of Doctor:(doctor.html)***

*1.Search*

*2.Modification on personal information*

*3.log out*

***Privileges of Patient: (patient.html)***

*1.search*

*2.Modification on personal information*

*3.log out*

**2.User management module:**

In this module, we allow the user (administrator) to

(1)create accounts for new users ( newperson.html, newuser.html) restricted by triggers reference to background.sql. If the administrator wants to create a new account for a new user, 6 basic personal information are required. Skippable otherwise. Follow the instruction on the web page for the rest.

(2)update the information of users’ **(updateUser.jsp)** (restricted by triggers reference to background.sql.

This purpose can be approached by searching the user name first. After that, the administrator can modify the information for the person that was searched previously, except Person ID of this person.(disabled automatically by the web page)

Every time create a new user, the system does not allow the user to create a new account that have same user name. With same class a person can not have two account in the system.(restricted by triggers reference to background.sql.)

**3.Report generating module:**

This module enable administrator to get the list of all patients with a specified diagnosis for a given time period by making a select in the database. For each patient, the list must contain the name, address and phone number of the patient, and testing date of the first radiology record that contains the specified diagnosis.

**4.Uploading module :**

In this part, radiologists need enter a radiology record,after that radiologist can upload (a) medical image(s) as binary image stream(blob) where they/it can be shrunk so that 3 versions(thumbnail, regular\_size, full\_size) of same picture can be produced. After that, insert these 3 images into the database.

**5.Search module:**

This module will be used by all registered users to search the database by giving a set of key words (separated by comma if applicable) that come from relevant radiology records and to view medical images with the zoom-in facility. For each search, it can be conducted by given any combination of patient name, diagnosis and descriptions. The result will be sorted by rank where rank computed by sum the multiples of the scores and weights(Rank(record\_id) = 6\*score(patient\_name) + 3\*score(diagnosis) + score(description))

The searching result will be displayed follow the security table bellow:

|  |  |
| --- | --- |
| Classes | Result Displayed |
| Administrator | All results relevant |
| Doctor | All records of patients of him |
| Radiologist | To those radiologists who uploaded |
| Patient | Records of him/herself |

**6.Data analysis module :**

This module is designed for users of administrators to

(1)get the number of pictures based on any kind of group by restriction combinations that consist of user name, test type, year, month,week .

(

**select** p.first\_name, p.last\_name, rr.test\_type, extract(year from rr.test\_date), extract(month from rr.test\_date), to\_char(rr.test\_date,'w'), count(\*)

**from** radiology\_record rr,persons p,pacs\_images pp

**where** rr.patient\_id = p.person\_id

**and** pp.record\_id = rr.record\_id

**group by** p.first\_name,p.last\_name,rr.test\_type,extract(year from rr.test\_date),extract(month from rr.test\_date),to\_char(rr.test\_date,'w');

)

(2)Any kind of combination of given person name, test type, time interval/ day.

(sql example:

**select** count(\*)

**from** radiology\_record rr,persons p,pacs\_images pp

**where** rr.patient\_id = p.person\_id

**and** pp.record\_id = rr.record\_id

**and** rr.test\_type=*'X-ray'/\*input\_test\_type\*/*

**and** p.first\_name=*'Xiaocong'/\*input\_first\_name\*/*

**and** p.last\_name =*'Zhou'/\*input\_last\_name\*/*

**and** rr.test\_date between *'01-May-2008'/\*input1\_to\_date\*/ and '30-May-2009'/\*input2\_to\_date\*/*

)

For the later case, if a time interval given is illegal(ie. From 2014-1-1 to 2000-5-5) the result would be zero.

|  |  |  |
| --- | --- | --- |
| **Module** | **Filename** | **Brief description** |
| **Login** | login.html | Give a interface that getting user account |
| login.jsp | Check if user account is correct |
| admin.html | Main user interface of administrator |
| doctor.html | Main user interface of doctor |
| radiologist.html | Main user interface of radiologist |
| patient.html | Main user interface of patient |
| updateUser.jsp | Modify user account and personal information of the current user. |
| **User management** | userManagement.html | Allow administrator to create a new account or update a existing user. |
| newperson.html | Create a new account for a new person |
| newPerson.jsp | Get the information inputed from the interface to database. |
| newuser.html | Get new account info and class to database |
| newUser.jsp | Insert a row to table of users |
| newdoctor.jsp | Choose a relation(doctor, patient) base on the user class |
| finishNewuser.jsp | Insert a row to family\_doctor |
| chooseUpdateUser.html | Present a UI for user to enter a User Name to get all info of such user. |
| updateUser.jsp | Modify user account and personal information of the current user and the CLASS and Family Doctor relationship of this user on UI |
| finishUpdateUser.jsp | Make the modification on the database |
| **Report generating** | reportGenerating.html | Get Diagnosis within particular time interval |
| reportGenerating.jsp | Generate a list of records based on given time interval and diagnosis . |
| **Uploading** | record.jsp | Get test information from user intercface |
| InsertRecord.jsp | Try to insert a record to table of radiology\_record |
| uploading.html | Give a interface of uploading medical images |
| getimage.jsp | Insert image(s) to database |
| **Data analysis** | dataAnalysis1.html | Give a user interface of dataAnalysis. |
| dataAnalisis.jsp | Show the result of total number of pictures |
| dataAnalisis1.jsp | Grab the particular data for later analysis |
| afterdataAnalysis1.jsp | Return a number of |
| dataAnalisis2.jsp | Grab the attribute(s) of grouping by for later analysis |
| afterdataAnalysis2.jsp | Return a table of all counts based on different restriction(s) |
| **Search** | search.html | A simple interface for getting key word within a time period |
| search.jsp | List the search result(s) for the constrains given previously, and rank the result list based on timing or based on frequency. |
| GetOnePic.java | Display a picture(**require to compile before running server)** |
| PictureBrowse.java | List all images for specific record(**require to compile before running server)** |
| **Other background scripts** | | |
| triger.sql | user\_manage\_insert | Check redundant person\_id in table of persons |
| user\_manage\_insert1 | Check redundant e-mail in table of persons |
| user\_manage\_insert2 | Check redundant user\_name in table of users |
| user\_manage\_insert3 | Check existence of person\_id in table of users |
| user\_manage\_insert4 | Check redundant relation between doctors and patients in table of family\_doctor |
| user\_manage\_insert5 | Check existence of person\_id in table of family\_doctor |
| user\_manage\_insert6 | Check non-matching relation between doctors and patients in table of family\_doctor |
| user\_manage\_insert7 | Deny those users who try to register two accounts of same class |
| myIndex.sql | Setup inverted indexes on radiology\_record(diagnosis)  Setup inverted indexes on radiology\_record(description) | |
| updateIndex.sql | Keep updating indexes previously initialized | |
| userValidate.js | Called by newuser.html in the user interface to validate the inputs | |
| personValidate.js | Called by newperson.html in the user interface to validate the inputs | |
| report.js | Called by reportGenerating.html in the user interface to validate the inputs | |
| userDocumentation.html | It contains the installation guideline and a user manual for each module | |