

Undergraduate Research Project

A Secure Comprehensive Health-care System: From Design to Implementation

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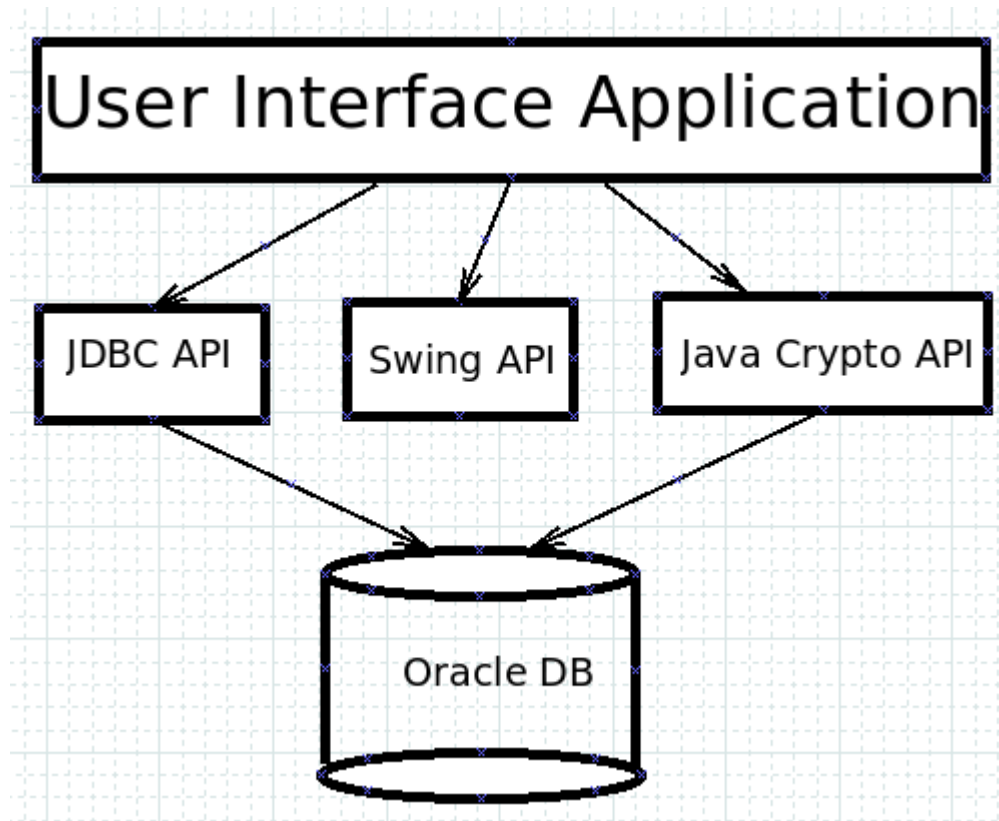
<https://github.com/YonathanPhoenix>

Mentors: Dr. Ebru Cankaya

Dr. Ovidiu Daescu

A Secure Comprehensive Health-care System: From Design to Implementation

■ System Design



A Secure Comprehensive Health-care System: From Design to Implementation

- The Clinical Information Systems Security Model
 - Patient: subject of medical records (or agent)
 - Person health information: data about patient's health or treatment enabling identification of patient.
 - Health-care provider: access to personal health information
 - Medical Office Staff: Manage and maintain basic information of health-care providers and patients

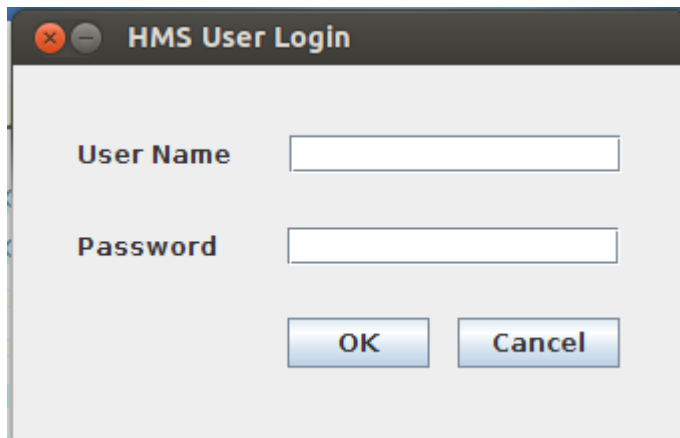
A Secure Comprehensive Health-care System: From Design to Implementation

- Development Tools
 - Netbeans IDE 8.0
 - JDK 1.7
 - Oracle 10g

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■ Login Screen

- Allow User To key in User name and password
- Connect to Oracle DB
- Check for right User
- Password from DB is decrypted to compare user login password.



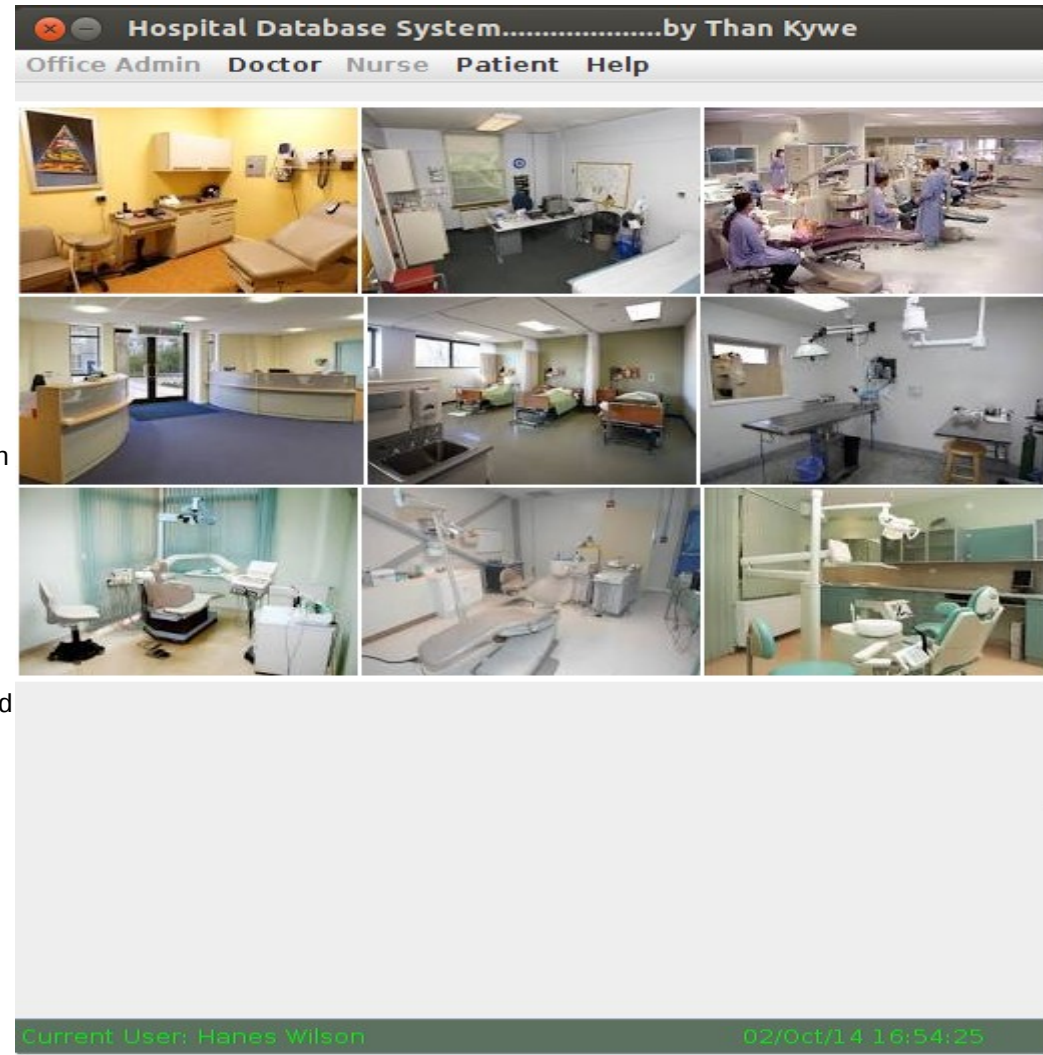
The image shows a Windows-style dialog box titled "HMS User Login". It contains two text input fields, one labeled "User Name" and one labeled "Password". Below these fields are two buttons, "OK" and "Cancel".

LOGINNAME	LOGINPASSWORD
hwilson	hRxjEs90gsd+4o5voSZ7...
jameswolf	YjBQz7a9jvqG5sGyKNZA...
thuff	Raudl4lvVzHrntXoEgIA...
charlie	+Ln9qTujEl2BtfKUxfZU...
earlnix	w4XMgMCLrjzY3uvYvvDa...
kwillion	eFdm6XBTs0ulRaaYuSw...
kshane	v4A48lMrlyp5/IM7fvUS...
tkoh	XFA4vm37pMm/1VPdYs01...
mmoh	YILlHSAtm5fCNrxMtQlv...
smike	xpZUBLEia2xVTa09fsf...
tkywe	pd9KgRLQpc793vVRs9qL...

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■ Main Screen

- Detect Current User Name and Title
- Current user and access time have been shown in status bar.
- Based on title, accessible features are different.
 - Physician
 - Nurse
 - Office Staff
 - Sys Admin
- Current user is a physician
 - He can access Doctor and Patient from main menu.
- If current user is Nurse, he/she can access, Nurse and Patient from the main menu.
- If current user is Office staff, he/she can access Office Admin.
- If current user is Sys Admin, he/she can view system login information [who access the system and when it happens].



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- Patient Registration Screen
 - This screen is for the medical office staff.
 - Medical Office Staff can
 - Register new patient
 - Modify the patient information
 - Delete for wrong information

Patient Registration

PATIENTSSN	FIRSTNAME	LASTNAME	ADDRESS	CONTACTNO	DOB	GENDER	BLOODGR...
100000009	Yonathan	Smith	123	789455612	1989-12-03	M	O+
987654321	Carl	Smith	11568 La...	893-345-6...	1989-11-24	M	AB-
876543219	John	Wood	568 Mamo...	893-666-6...	1999-11-24	M	B-
765432198	James	Madison	68 Richar...	893-885-6...	1989-08-24	M	A+
654321987	Catherine	Cute	1568 Lanc...	893-945-6...	1969-04-24	F	O+
543219876	Johnathan	Pheonix	68 Lancas...	893-222-6...	1989-09-24	M	AB+
234567891	Test	Mary	123 East ...	12365478...	1988-04-28	M	A+

Patient Details

Patient SSN:

First Name:

Last Name:

Address:

Contact No.:

DOB:

Gender:

Blood Type:

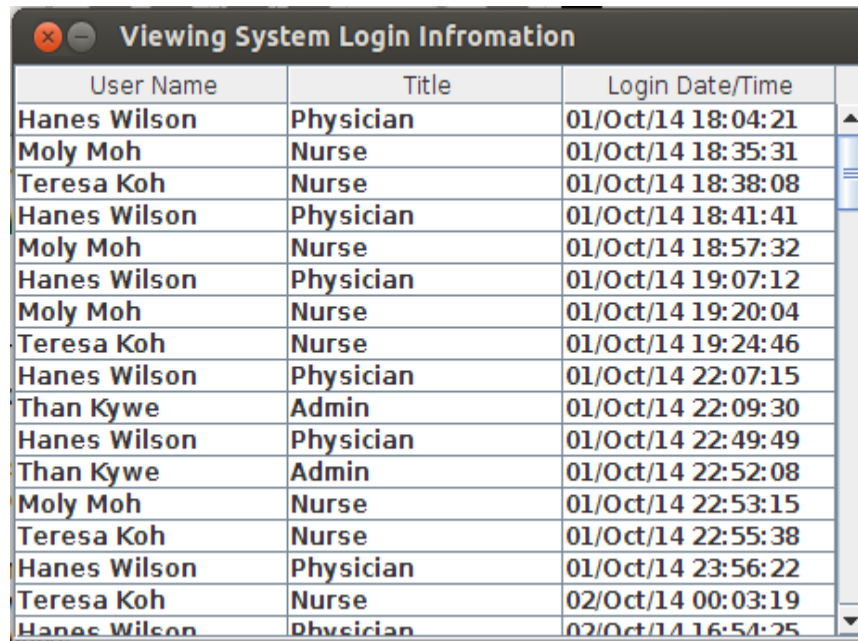
Remarks:

Buttons: Add New, Save, Delete, Update

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■ System Login Information Screen

- This screen is for the application system administrator.
- System Login Information is stored in LogFile inside the application system folder. It is encrypted.
- System decrypt the login information for the sys admin to trace who accessed the system and when.



The screenshot shows a window titled "Viewing System Login Information" with a table containing login data. The table has three columns: "User Name", "Title", and "Login Date/Time". The data is as follows:

User Name	Title	Login Date/Time
Hanes Wilson	Physician	01/Oct/14 18:04:21
Moly Moh	Nurse	01/Oct/14 18:35:31
Teresa Koh	Nurse	01/Oct/14 18:38:08
Hanes Wilson	Physician	01/Oct/14 18:41:41
Moly Moh	Nurse	01/Oct/14 18:57:32
Hanes Wilson	Physician	01/Oct/14 19:07:12
Moly Moh	Nurse	01/Oct/14 19:20:04
Teresa Koh	Nurse	01/Oct/14 19:24:46
Hanes Wilson	Physician	01/Oct/14 22:07:15
Than Kywe	Admin	01/Oct/14 22:09:30
Hanes Wilson	Physician	01/Oct/14 22:49:49
Than Kywe	Admin	01/Oct/14 22:52:08
Moly Moh	Nurse	01/Oct/14 22:53:15
Teresa Koh	Nurse	01/Oct/14 22:55:38
Hanes Wilson	Physician	01/Oct/14 23:56:22
Teresa Koh	Nurse	02/Oct/14 00:03:19
Hanes Wilson	Physician	02/Oct/14 16:54:25



The screenshot shows a window titled "LogFile" containing a large block of encrypted text. The text is a continuous stream of alphanumeric characters, representing the encrypted login information stored in the application system folder.

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■ Patient Visit Records

■ Under Construction

- Nurse can add related treatment record for the individual patient. Nurse can view visit history of the patient but it is limited [means nurse cannot view detail treatment records of doctor].]
- Doctor can also add his treatment records for individual patient. He/she can view the complete treatment records of the patients assigned to him/her.
- Admin office staff can view the patient basic info, visit date/time. He/she can track patient waiting time and to assign the related health care provider to each patient.

The screenshot shows a web application titled "Patient Visit Records". It features a top navigation bar with tabs for "Visit 1", "Visit 2", and "Visit 3". Below the navigation bar, there is a table with four columns labeled "Title 1", "Title 2", "Title 3", and "Title 4". The table has five rows, with the first row containing the column headers and the subsequent rows being empty. To the right of the table is a large, empty rectangular area. Below the table, there is a "Services Info" section containing several input fields: "Patient Name", "Current Visit D..." (with a date format hint "(MM/DD/YYYY)"), "Blood Type", "Patient DOB", and "Gender".

Title 1	Title 2	Title 3	Title 4

Services Info

Patient Name

Current Visit D... (MM/DD/YYYY)

Blood Type

Patient DOB

Gender

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■ Questions ?