

C868 – Software Capstone Project Summary

Task 2 – Section C



Capstone Proposal Project Name: _____ Safe Handoff _____

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Application Design and Testing

Design Document

Class Design

Class design is a type of UML diagram which serves as building blocks in Object Oriented Programming. It is a representation of an objects, their attributes, and their relationship in a system. Software designers creates class diagram for developers to read, interpret, and understand the structure of the system. The Class design of Safe Handoff application is shown below (Figure:1). The application has 2 class, User and Patient. User class object is a representation of physician logged into the application. The diagram shows all the fields/attributes and operations/methods used in respective classes. Minus sign placed before attribute name describes its accessibility where minus sign means filed is private and plus sign means filed is public. The line joining class tables represents association between classes and an arrow represents their

relationship. In the application, Patient class is associated with user class where each Patient object has at least one physician/user object.

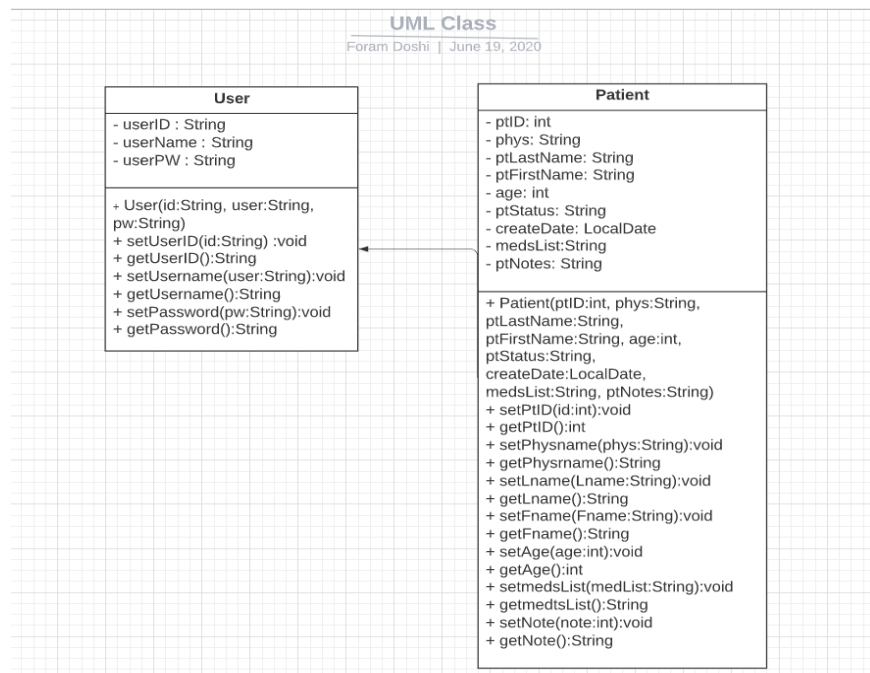


Figure:1 Class Diagram

UI Design

User Interface Design is the visual layout of screen used in the application. UI design sets looks and feel of the application. User interface for Safe Handoff application is designed to give it classic, minimalist, and pleasurable look. Screen layouts for this application are designed to make it intuitive and user friendly. Neutral color scheme is used to give professional look to the application.

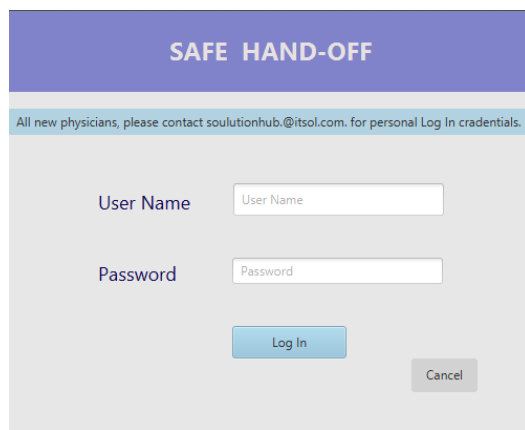


Figure 2: Login Screen

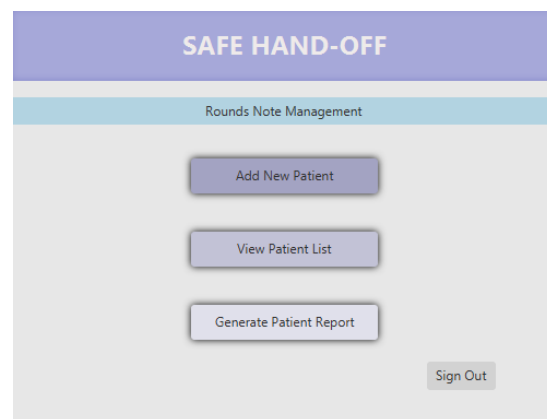


Figure 3: Main Menu

User will input individual credentials to access the application (Figure 2). There is no user registration option on the login page (Figure 2) as login credentials will be provided by HR to physicians to prevent unauthorized access. Main landing page (Figure 3) gives options for three primary objectives to develop the application. User can view the current patient list, add a new patient to list and generate a report on active patients with all the details. Giving these key options on main landing page helps minimize number of clicks to get to the key areas.

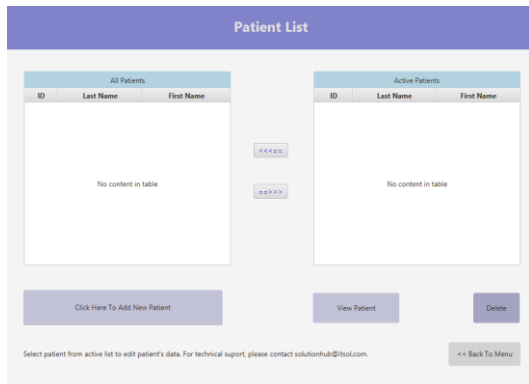


Figure 4: Patient List

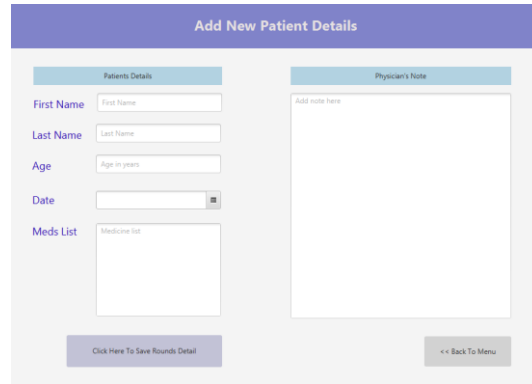


Figure 5: Patient Details

Patient List page gives list of All Patients (archived + active) and Active Patients (Figure 4). User can simply click on the name to select the patient and hit the view button to view/ edit details. “Left” and “Right” toggles in the middle of the screen enables to move patients between the lists with a click of the button (Figure 4). Patient Details page enables adding/ editing details for a patient. This includes all demographic, medication and clinical notes fields as requested by client (Figure 5).

Unit Test Plan

Introduction

Purpose

The unit test plan and test were performed by the developer. For Safe Handoff application, unit test was performed to check Add and Update features in the system. Test patient details were entered to test the functionality of Save button. The result shows the behavior of features/functions checked during the test.

Overview

Adding and updating patient details is the most crucial function in this software project. Similarly, switching patient's status between 'active' or 'discharged' is another important method to check for its desired functionality. With this unit test plan functionalities of 'add new patient details' form and 'view/update patient details', were tested by the developer. Dummy test data was created to run the unit test. Acquisition of the test result was used to confirm the consistent and reliable functionality of the application.

Test Plan

Items

Test patient details to enter in patient last name, patient first name, patient age, medicine list, and rounds note.

Features

List of the function/features that are part of unit test

- Add patient details form
- Update patient details form
- Save (new/edited) data button

Deliverables

The test would produce an entry in the patient table in database.

Tasks

1. Login to the system with test credentials.
2. Open add new patient form.
3. Enter test patient details.

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4. Click Save button.
5. Open patient list window.
6. Select patient from the list.
7. Click view patient details button.
8. Edit test patient details.
9. Click Save button.
10. Go back to main menu.
11. Sign off from the system.

Needs

Before the developer could perform the unit test, the database for the application was needed to be created to perform the test. The developer has set remote MySQL database. Successful login connects the system to database.

Pass/Fail Criteria

Pass Criteria: test patient details will be stored in database.

Fail Criteria: no details will be stored in database.

Specifications

Here is a screenshot of the code that represents testing code that was used.

```
114
115
116 @FXML
117 void onActionEditPt(ActionEvent event) throws IOException {
118     Patient selectedPt = activePtsTbl.getSelectionModel().getSelectedItem();
119
120     if(selectedPt != null){
121         Boolean isEditPt;
122         isEditPt = myApp.showPtUpdateForm(currentUser, selectedPt);
123     } else {
124         Alert alert = new Alert(Alert.AlertType.WARNING);
125         alert.setTitle("Update patient data");
126         alert.setHeaderText("Select a patient");
127         alert.setContentText("Please select a patient from Active Patients list.");
128         alert.showAndWait();
129     }
130
131 @FXML
132 void onActionOpenAddPt(ActionEvent event) throws IOException {
133     Boolean isEditPt;
134     isEditPt = myApp.showPtAddForm(currentUser);
135 }
136
```

Code snippet: I add and update form access functionality

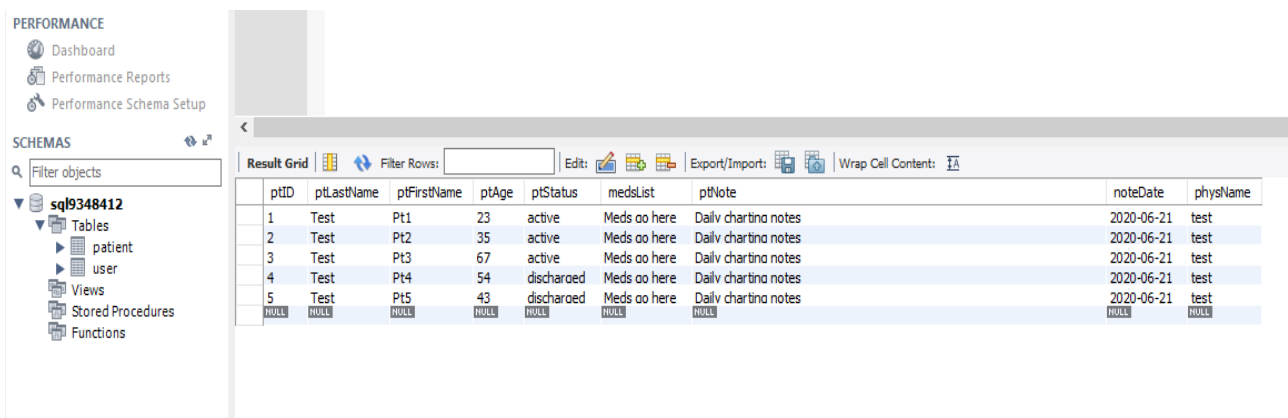
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```
72
73
74 @FXML
75 void onActionSavePtData(ActionEvent event) throws SQLException {
76
77     if(validatePtData()){
78         if (isEditPt()){
79             String lastName = lNameTxt.getText();
80             String firstName = fNameTxt.getText();
81             String age = ageTxt.getText();
82             LocalDate date = datePicker.getValue();
83             String phys = updatePt.getPhysName();
84             String medsList = medsListTxtArea.getText();
85             String ptNote = notesTxtArea.getText();
86             int ptId = updatePt.getPtID();
87
88             DBConn.updatePt(lastName,firstName, age, date, phys, medsList, ptNote, ptId);
89             JOptionPane.showMessageDialog(null, "Patient's data is updated successfully.");
90         }else {
91             String lastName = lNameTxt.getText();
92             String firstName = fNameTxt.getText();
93             String age = ageTxt.getText();
94             LocalDate date = datePicker.getValue();
95             String phys = currentUser.getUsername();
96             String medsList = medsListTxtArea.getText();
97             String ptNote = notesTxtArea.getText();
98
99             DBConn.saveNewPt(lastName,firstName, age, date, phys, medsList, ptNote);
100             JOptionPane.showMessageDialog(null, "Patient's data is saved successfully.");
101         }
102     }
103 }
```

Code snippet: 2 Save button functionality

Results

The test result fulfilled the pass criteria. The test data was successfully registered into the database when clicking the save button. Code snippet 3 shows entries of test patient details in patient table in database.



The screenshot shows a database management interface. On the left, there is a 'SCHEMAS' panel with a tree view showing a database named 'sql9348412' containing tables 'patient' and 'user', and views 'Stored Procedures' and 'Functions'. The main area displays a 'Result Grid' with a table of patient data. The table has columns: ptID, ptLastName, ptFirstName, ptAge, ptStatus, medsList, ptNote, noteDate, and physName. There are 5 data rows and one row of NULL values. The interface also includes a 'PERFORMANCE' sidebar with 'Dashboard', 'Performance Reports', and 'Performance Schema Setup' options.

ptID	ptLastName	ptFirstName	ptAge	ptStatus	medsList	ptNote	noteDate	physName
1	Test	Pt1	23	active	Meds oo here	Daily charting notes	2020-06-21	test
2	Test	Pt2	35	active	Meds oo here	Daily charting notes	2020-06-21	test
3	Test	Pt3	67	active	Meds oo here	Daily charting notes	2020-06-21	test
4	Test	Pt4	54	discharged	Meds oo here	Daily charting notes	2020-06-21	test
5	Test	Pt5	43	discharged	Meds oo here	Daily charting notes	2020-06-21	test
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Code snippet:3 patient entry list in database

Source Code

All source code for the application is submitted in separate folder with the documentation.

- Source code folder name: FDoshi_Capstone
- Login user name: test
- Login password: test

User Guide

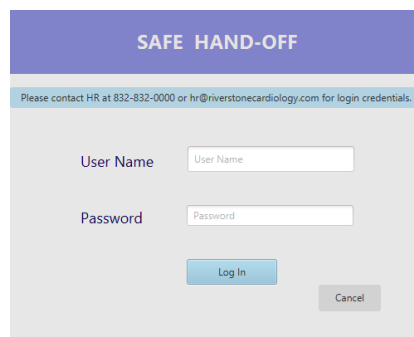
Installation and Using the Application

Access Credentials:

- To protect patient privacy and avoid unauthorized access, individual credentials will be provided by HR.
- Contact HR at 832-832-0000 or hr@riverstonecardiology.com to get credentials.
- May use “User Name: test” and “Password: test” to test the software functionality.

How to Login:

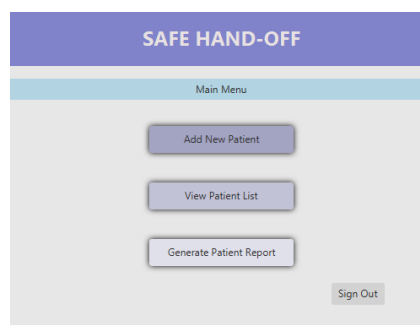
- Run the installed application from your PC.
- Enter your password User Name and Password in corresponding fields and click “Log In”.



The login screen features a purple header with the text "SAFE HAND-OFF". Below the header is a light blue bar containing the instruction: "Please contact HR at 832-832-0000 or hr@riverstonecardiology.com for login credentials." The main area is light gray and contains two input fields: "User Name" and "Password", each with a corresponding label to its left. Below the "Password" field are two buttons: a blue "Log In" button and a gray "Cancel" button.

How to Add New Patient:

- From Main Menu:
 - Click on “Add New Patient” button



The main menu screen has a purple header with "SAFE HAND-OFF" and a light blue bar below it with the text "Main Menu". The main area is light gray and contains three buttons stacked vertically: "Add New Patient", "View Patient List", and "Generate Patient Report". A gray "Sign Out" button is located in the bottom right corner.

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- Enter Patient Details and then hit “Click Here to Save Rounds Detail”

The screenshot shows a web form titled "Add New Patient Details". It is divided into two main sections: "Patient's Details" and "Physician's Note". The "Patient's Details" section contains input fields for "First Name", "Last Name", "Age" (with a dropdown menu), "Date" (with a calendar icon), and a "Meds List" text area. The "Physician's Note" section has a large text area labeled "Add note here". At the bottom, there are two buttons: "Click Here To Save Rounds Detail" and "<< Back To Menu".

- You will see pop-up “patient data is saved successfully”. Click OK.
- Continue to add another patient details or click back to main menu.

- From Patient List

- Click on “Click Here to Add New Patient” button below All Patients

The screenshot shows a web page titled "Patient List". It features two side-by-side tables. The left table is labeled "All Patients" and the right table is labeled "Active Patients". Both tables have columns for "ID", "Last Name", and "First Name". The tables are currently empty, with a message "No content in table" displayed below each header. Below the "All Patients" table is a button labeled "Click Here To Add New Patient". Below the "Active Patients" table are buttons labeled "View Patient" and "Delete". At the bottom right, there is a button labeled "<< Back To Menu".

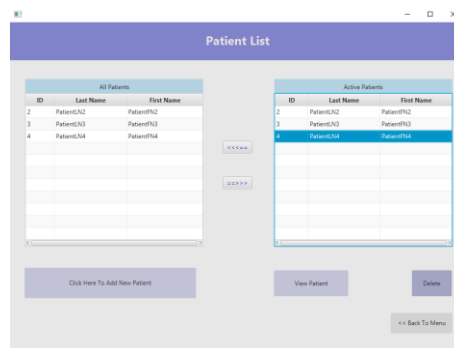
- Enter Patient Details and then hit “Click Here to Save Rounds Detail”

This screenshot is identical to the one above, showing the "Add New Patient Details" form with input fields for patient information and a physician's note, and buttons for saving and navigating back.

- You will see pop-up “patient data is saved successfully”. Click OK.
- Continue to add another patient details or click back to main menu.

How to Edit Patient Detail

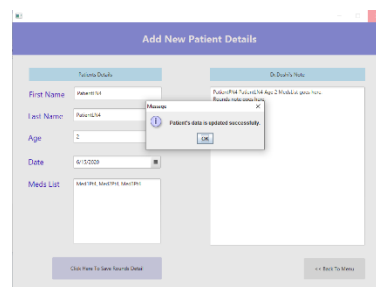
- Select the desired patient from “Patient List” page



- Click on “View Patient”



- Edit/ update the desired details on next screen
- Enter Patient Details and then hit “Click Here to Save Rounds Detail”
- You will see pop-up “patient data is saved successfully”. Click OK.



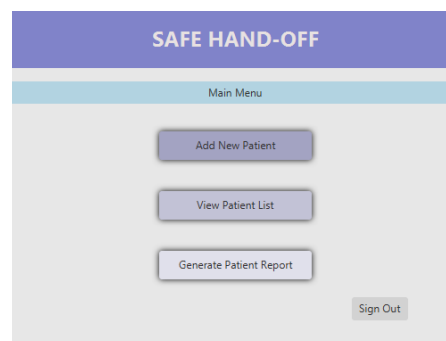
- Continue to update more details or click back to main menu.

How To Manage Patient List

- Added patients will show up in “All Patients” section of patient list
- To add a patient to active list
 - Select the desired patient from “All Patient” list
 - Click on == >> icon in the middle of the screen
 - You will see pop-up “Patient is Readmitted”. Click ok.
 - This will add the selected patient to “Active Patients” list
- To remove a patient from active list
 - This will help remove a patient from active rounds list after discharge. Patient will still be available for future access in “All Patients” section.
 - Select the desired patient from “Active Patients” list
 - Click on << == icon in the middle of the screen
 - You will see pop-up “Patient is Discharged”. Click ok.
 - This will remove the patient from “Active Patients” list
- To delete a patient from the database
 - This function will delete the patient from the database. User will not have future access to deleted data.
 - Select the desired patient from the list
 - Click on “Delete” icon at right lower corner of the screen
 - User will need to confirm again in the pop-up that says “Delete this patient details?”
 - Click OK to delete the patient from database

How to Create Patient Report

- Click on the “Generate Patient Report” icon from main menu



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- This will open a box with details of all patients in active list

Name	Age	Date	Physician	Medicine	Note
PatientLN2 Rounds note goes here.	3	2020-06-14	Doshi	Med1Pt2, Med2Pt2, Med3Pt3	PatientFN2 PatientLN2 Age 3 MedsList goes here.
PatientLN3 Rounds note goes here.	7	2020-06-15	Doshi	Med1Pt3, Med2Pt3, Med3Pt3	PatientFN3 PatientLN3 Age 7 MedsList goes here.
PatientLN4 Rounds note goes here.	2	2020-06-15	Doshi	Med1Pt4, Med2Pt4, Med3Pt4	PatientFN4 PatientLN4 Age 2 MedsList goes here.

- Click on “Print Rounds Report” icon to generate a text file which can be printed/ saved.

Report - Notepad

File Edit Format View Help

Name	Age	Date	Physician	Medicine	Note
PatientLN2 Rounds note goes here.	3	2020-06-14	Doshi	Med1Pt2, Med2Pt2, Med3Pt3	PatientFN2 PatientLN2 Age 3 MedsList goes here.
PatientLN3 Rounds note goes here.	7	2020-06-15	Doshi	Med1Pt3, Med2Pt3, Med3Pt3	PatientFN3 PatientLN3 Age 7 MedsList goes here.
PatientLN4 Rounds note goes here.	2	2020-06-15	Doshi	Med1Pt4, Med2Pt4, Med3Pt4	PatientFN4 PatientLN4 Age 2 MedsList goes here.