Assignment – 3
[250 Points]

CSC-413-02
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San Francisco State University
Computer Science Department

Assignment-3 – CS-413-02 (Software Development)

Assignment Goal

Designing the Graphical User Interface for the Banking Application

GUI for an application, be it a desktop, mobile or Web, represents the presentation layer of that application. In this assignment, we will be creating basic user-interface that will be used to log in the User and display the show the core business object(s) of the application.

While the process of creating the GUI and objects of other layers (business-logic, data-access logic, security, integration etc.) of the application, is a continuously evolving through the life cycle of the application, the initial version of the user-interface as built in this assignment will capture a subset of the basic and foundational use-case(s).

As referred to in the SRS document, the foundational use-cases(tasks) include log-in, creating-new, deleting-existing, retrieval, updating of Business Model objects.

Since you had already defined the core business objects like BankAccount, Customer, Transaction together with its subclasses and their attributes, we have completed the initial steps of implementing the business Model Classes and defined the constructors and the accessor methods (getters/setters). Use the following steps to create the initial set of GUI widgets required to display, edit and update the business Model objects

1. Install MySQL DB and Workbench
   (a) Please follow instruction shared as shared via Canvas Announcement earlier, to install the MySQL Database
       - This will store data related to existing and new business Model objects
       - SQL Commands and related data will be provided to insert starter data related to business Model objects
   (b) Please follow instruction shared as shared via Canvas Announcement earlier, to install the MySQL Workbench
       - This will be used to view data related to business Model objects using SQL commands
       - The Sample Commands will be provided that can be copy/pasted to the Workbench to view data stored in the database tables, as shown in the demo during last class session. This will allow you to validate if you DAO objects stored the data correctly

   Note:
       - Using the Workbench allows you an alternate way to look at the application data, by looking at the database directly
       - Since this class provides your first interaction with a Database and you may not know SQL, sample SQL statements will be provided in GitHub that can be run the Workbench as showcased in class

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2. Implement the Swing components to display information as it relates to the appropriate objects [100 pts]

   (a) Create JPane, JLabel and JTextFields to display BankAccount information
   (b) Organize the components created above within the BankAccount JPanel as per the in-class discussion and demo in class
   (c) Create JLabel and JTextFields to display Customer information and organize the components created above within the Customer JPanel
   (d) Create JLabel and JTextFields to display Transaction information and organize the components created above within the Transaction JPanel

   Note:
   - It is strongly recommended that you use Java Swing for the presentation layer(GUI) of the Banking Application for this part of the assignment, as discussed yesterday
   - If you, however, choose to use another option like JavaFX, or SWT or a combination with HTML, you can do so, but the onus to have the GUI layer of the application working will be your and there could be penalty for the workflow (CRUD tasks) not working due to issues related to it

3. Implement the Controller classes [100 pts]

   (a) As discussed in class, the controller classes will handle user actions and mediate interaction between the UI components and the business Model objects.
   (b) Implement the EventHandlers for responding to each user input, such as button clicks, changes in the text field, checking a checkbox, selecting a radio-button options

   Note:
   - You may use the code, as showcased during the class discussion, as the starter to define the GUI and the event handlers
   - We will continue to enhance this initial set of GUI components, and event handlers through subsequent assignments of this class

4. Test the Application for the following basic capability of the UI created in steps 1 and 2 above [50 pts]
   (a) Test the basic running of the display and edit widgets for your business Model object(s)
   (b) Perform following test:
      (i) Test display and edit widgets work as expected
      (ii) Test and validate the user(entity interacting with the UI) can view and modify business Model objects accurately and the requisite data validation for data being updated is performed, where necessary
      (iii) Make sure all requisite test cases for the display and edit of data for the business

Model objects is completed and available for the grader to test

5. Assignment submission
    (a) Submit the document by zipping your project file and uploading to Canvas
    (b) Any special instructions for testing your work must be provided, as a separate text if needed, along with you submission of the zipped project code
    (c) Please provide requisite documentation of the your classes, methods and the testing of your GUI