# LIBRARY SYSTEM

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**Introduction to the system:**

Library Management System is a software to manage the different operations required at a library .the features of the system is being able to login as a head Librarian ,librarian or a member. The librarian is able to  Add members for registration, Add/ Modify/ Delete book categories, Add/ Modify/ Delete book entry in a specific category ,book-keeping and Clock in/ Clock out (Librarian).

The used programmes are jframes ,mysql as data base and jDBC to connect JAVA with mysql.

In this program we used Jframe each frame is is considered as independent class. The data of the users and books are stored in mysql data base which is connected to java using mysql JDBC jar file. The login form is actually login class in GUI form. when user login to the system the system checkout the the data stored in login table in mysql database this table contains user name, password and accout type so when there is match the correct user will login to the correct account type (member, Librarian and head librarian).

# System detailes

At the login page user will be able to write user name and password in order to enter the system.
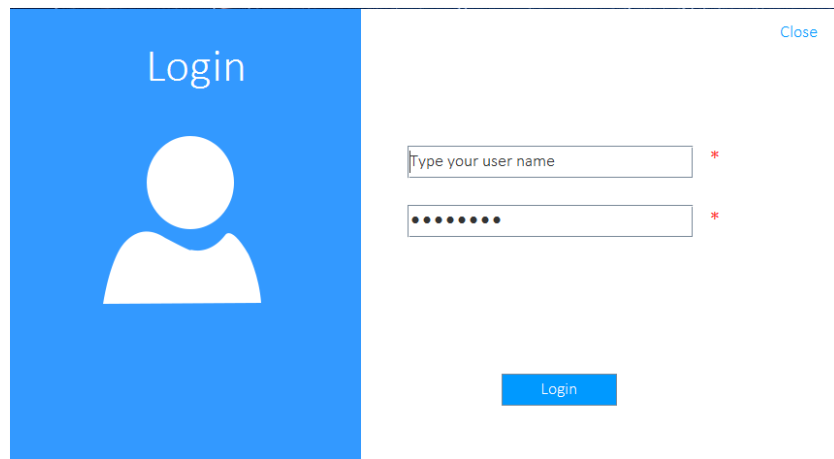


The following frame is the member's frame. This frame is actually class that will include all the member information (properties) and functions (editing profile). You can notice that the frame shows a welcome text with the member user name. This class contains a GUI tool tabbed pane, which enabled us to divide the member jfram into multiple sub-frames (user profile, book search and renew membership).
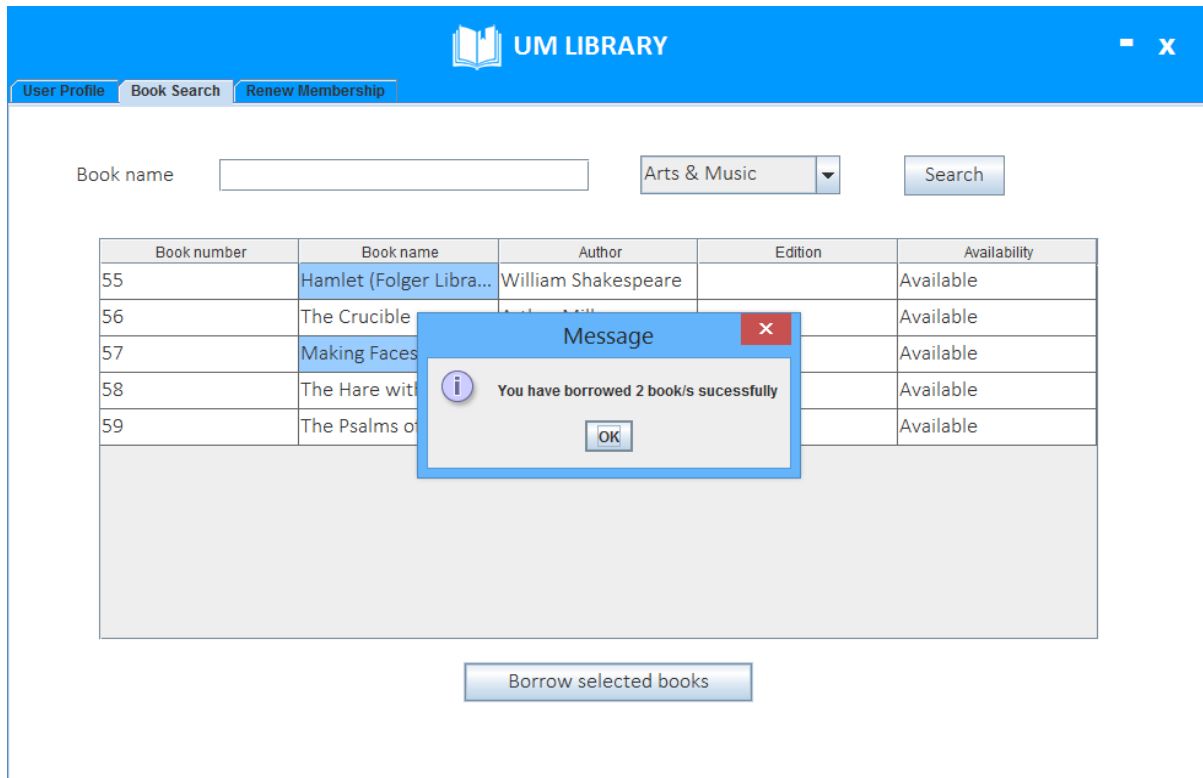
The members are able update their information. We are able to acheive this goal by fetching user information in member frame (class). All the information are visible to a member using disable jtext field and jtext area. If the member wants to change his/her information he/she needs to click the edit link. it is not actuall link it is a jlabel that we set the click event of it to enable editing of textfield one by one.



if the member wants to change password he/she just has to click on change password link to take him/her to the change passward frame.

In this frame, the system will ask to enter the current password, for security purpose. if there is match the textfields and button will be enabled to allow the member to change the password.

The second tab of this frame is search a book in which the member can choose the category

of books and write a name or part of the name of the book then click search. If the member did not write the name of the book, then the search button will fetch all the books in the selected category. In the table book information will be visible to the member including the book availability. The member can select on the wanted book/s then click borrow. the book status will change to borrow.
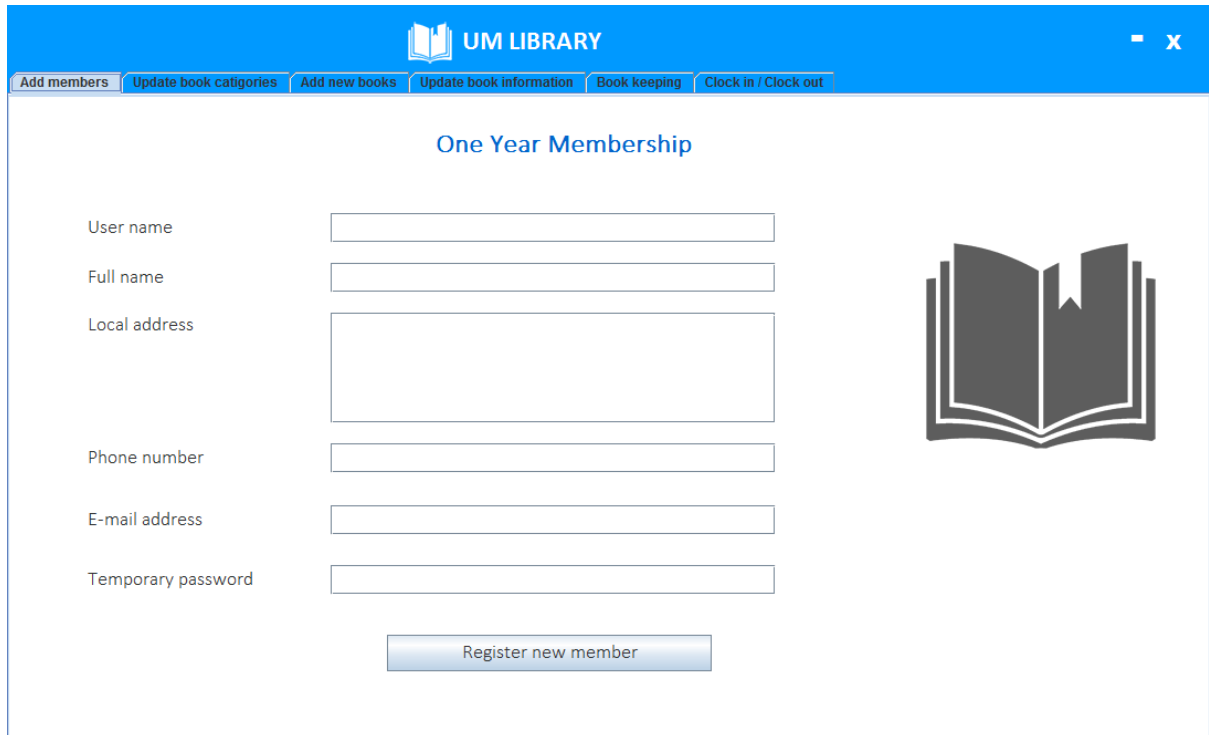
The last tab at Member frame is to renew membership. This tab will show the member his/her expiration date. We calculate this date using the date class that gives us the current date (the date from the computer clock) and we assumed that the library policy gives members a fixed period of one year membership, so we add 365 day from the current date to get the expiration date. The expiration date of every member is stored in member table in MySQL database, so
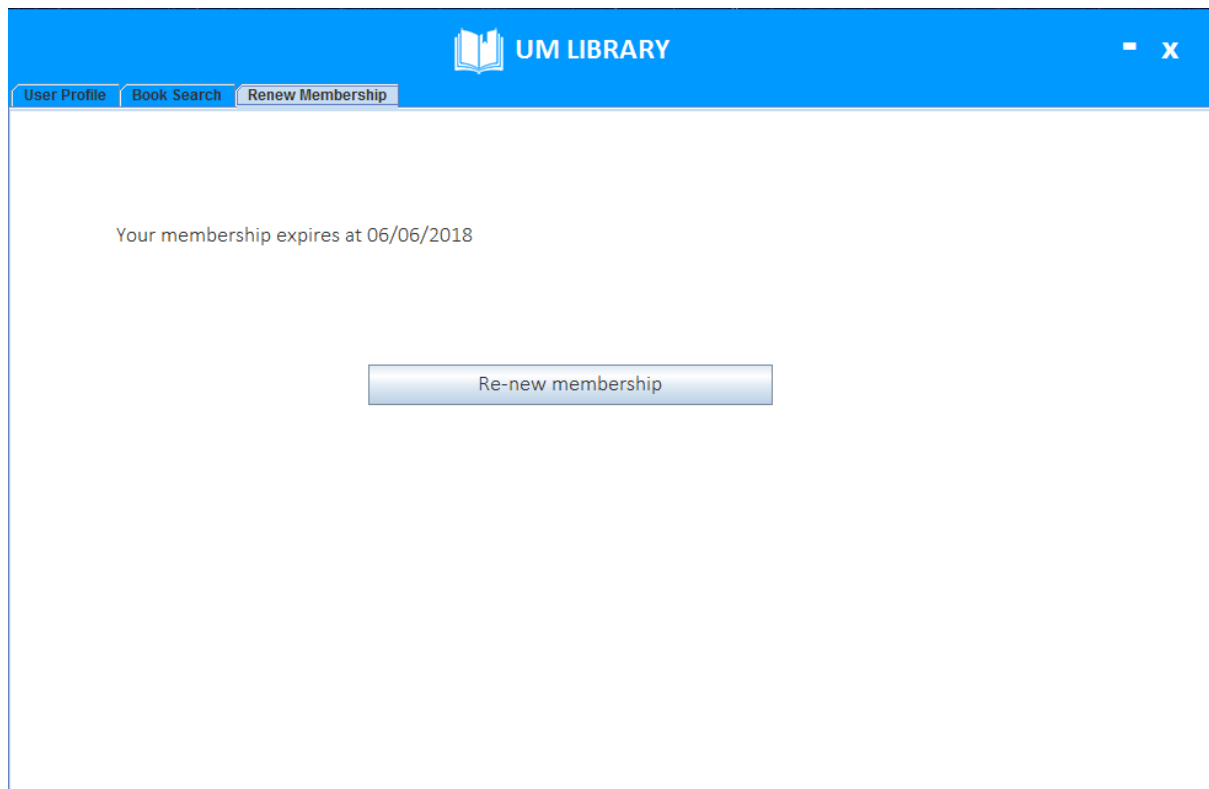


we just fetch the information from the table using SQL query statements. The renew button will enable the member to extend his membership for another one year. The calculation is the same.

Librarian frame:

When the librarian login with his account the librarian frame will open.
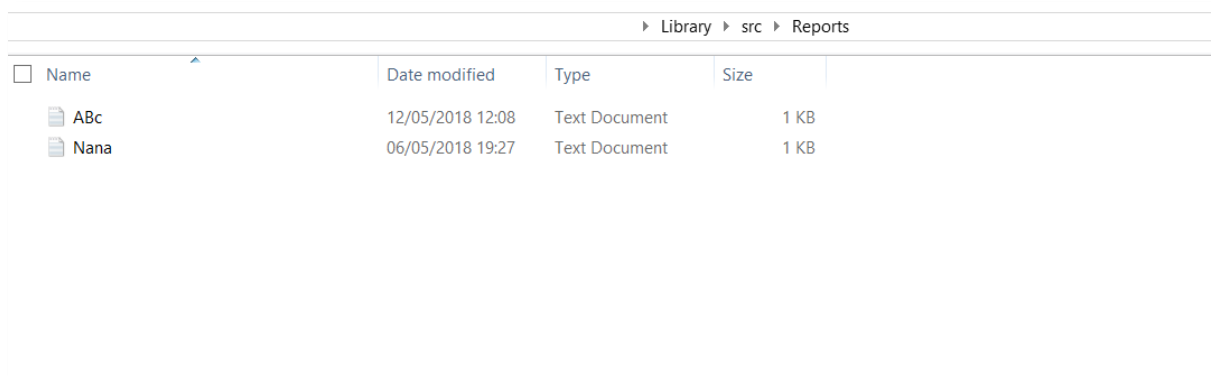


This frame contains so many tabs. This tab enable the librarian to register new members. He/she type the new member information then press register. All the new information will be add to user information table in MySQL database. The insert SQL statement is used to do the insertion. Moreover, this frame will make the librarian make temporary password to the user then the member can login using this password and go to change it using the previously explained form. Therefore, a small report is created at the same time of registering the

member. This report is a text file saved at the same directory of the program itself.
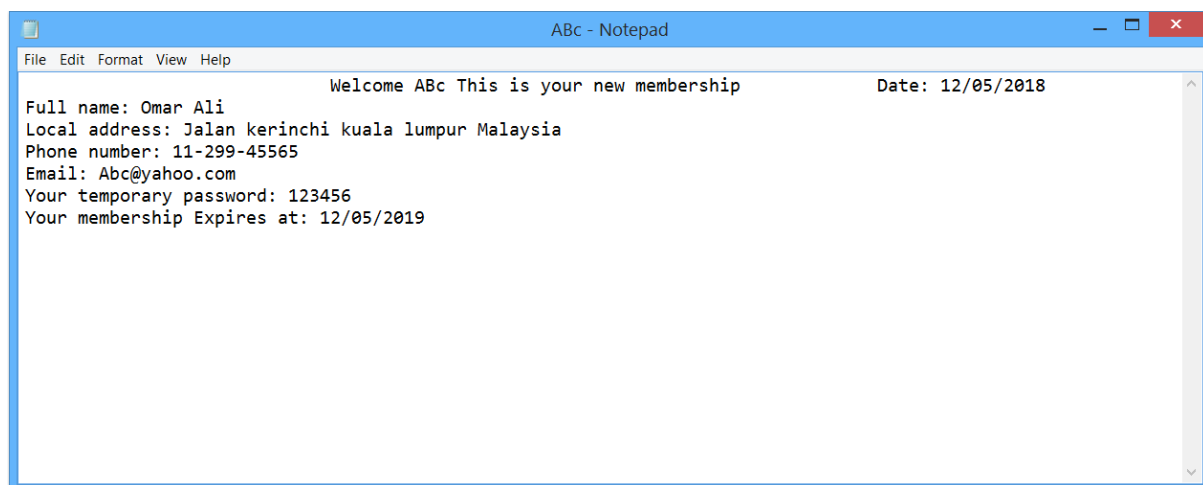




The purpose of this small report is to give the member printed information about his/her

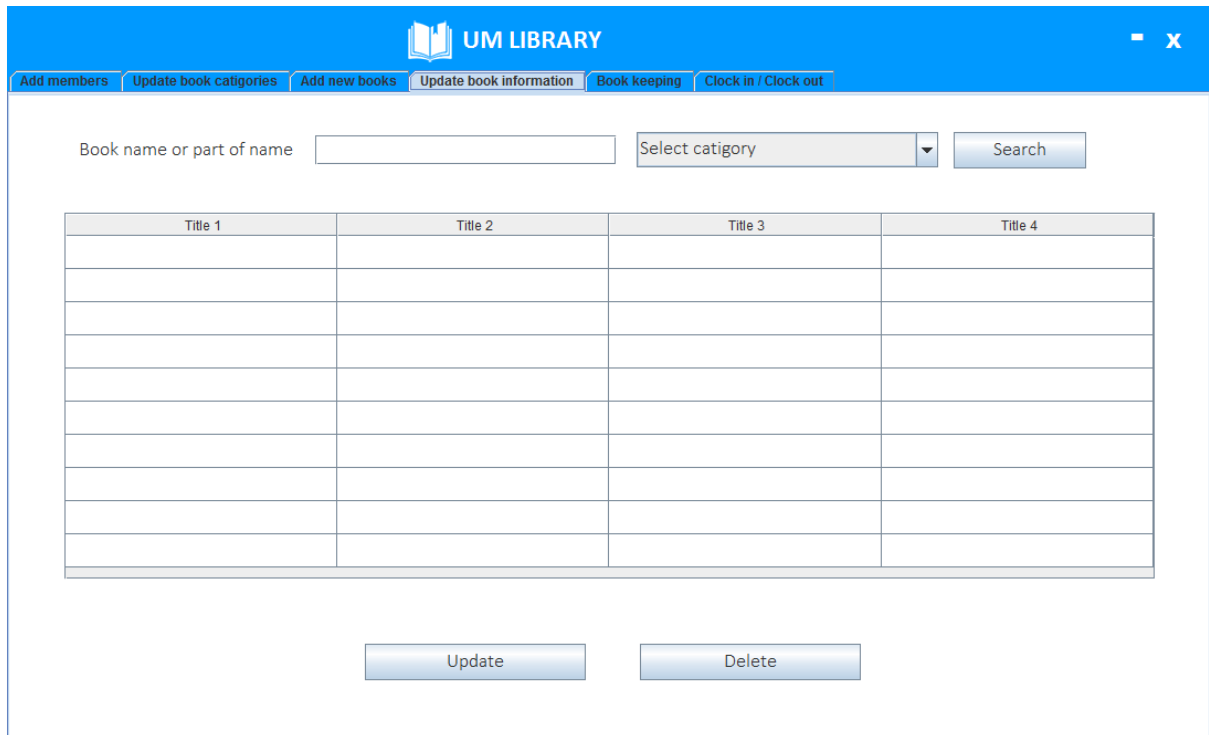membership along with the temporary password for the first login process.

This tab of Librarian Jframe is change category. To delete the category the librarian has to choose which category he/she wants to delete and click delete button. We used delete SQL statement to achieve this process. To update the selected category the librarian need to select the category from the jcomboBox, and type the new name in the jTextfield, then press update button. We used the update SQL statement to achieve that. Finally, to inset new category, the librarian only need to write the new name and click insert button. The insert SQL statement was used to achieve that.

The next tab is to insert new book to the library database. The librarian will chose the category to which the new books to be added to then write the book information is the fields provided in the table. The librarian is able to add up to 10 books at a time then click save button.



  Here we used the insert SQL statement inside a loop to do the insertion according the number of rows in the table. We put the condition that the first field (book name) must not be empty. so for example the librarian filled only 5 rows not the full 10 rows then only 5 rows will be added to database, because it will ignore the rows with empty book name. We will show that in action during the presentation day.

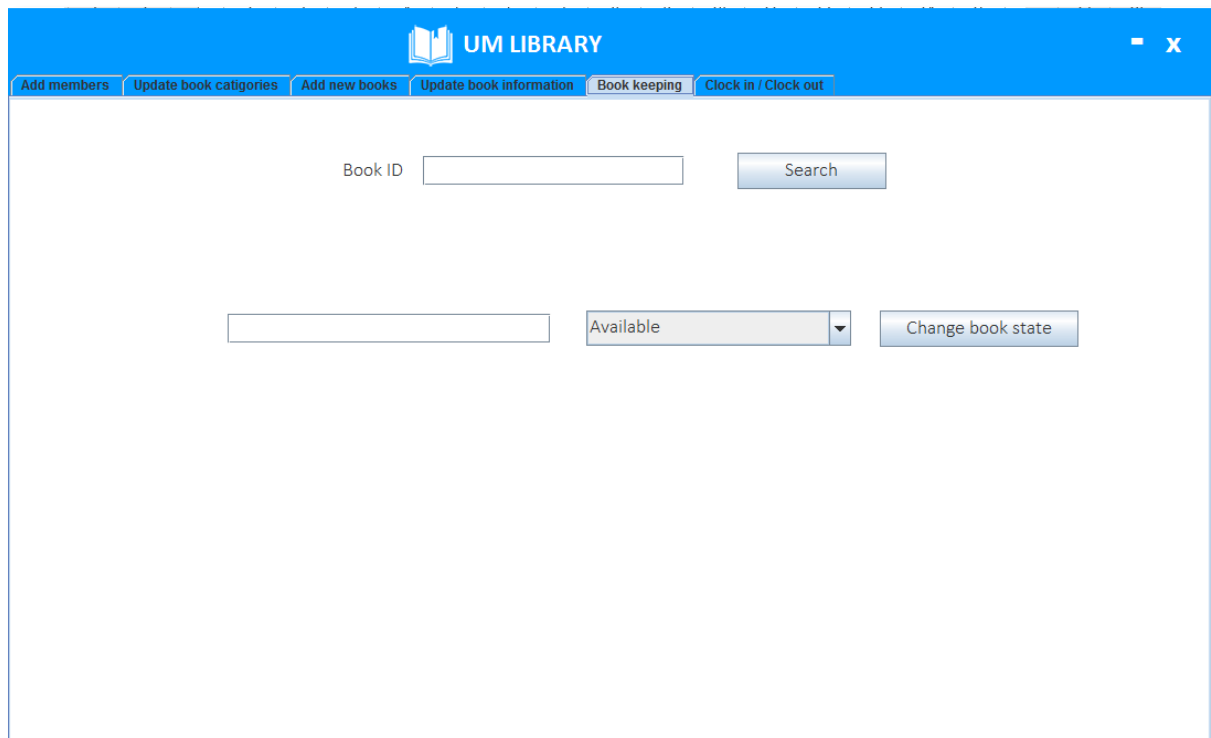The next tab is to update book information



In the frame the librarian will search for books that needs update or delete. We use the select SQL statement to fetch data from the table. If there is information that needs to update, the librarian will double click the target jtable cell and write the new information. After that he/she will click the update button to save the new information in books table in MySQL database. We used update SQL statement to do that. The same thing to delete the unwanted book. The librarian just need to select the book/s to delete them from books table in the MySQL database using delete SQL statement.

The next tab is to change the book status from borrowed to available when the member returns the book.



The librarian will search using book ID, which in an library will be written in the book itself. This to make sure that he/she gets the exact book to change its state. Then from jcombBox the librarian will choose the state available then click the change book state button. this button use the update SQL statement to change the status field in books table from borrowed to available.

The final tab of librarian frame is the clock in clock out.
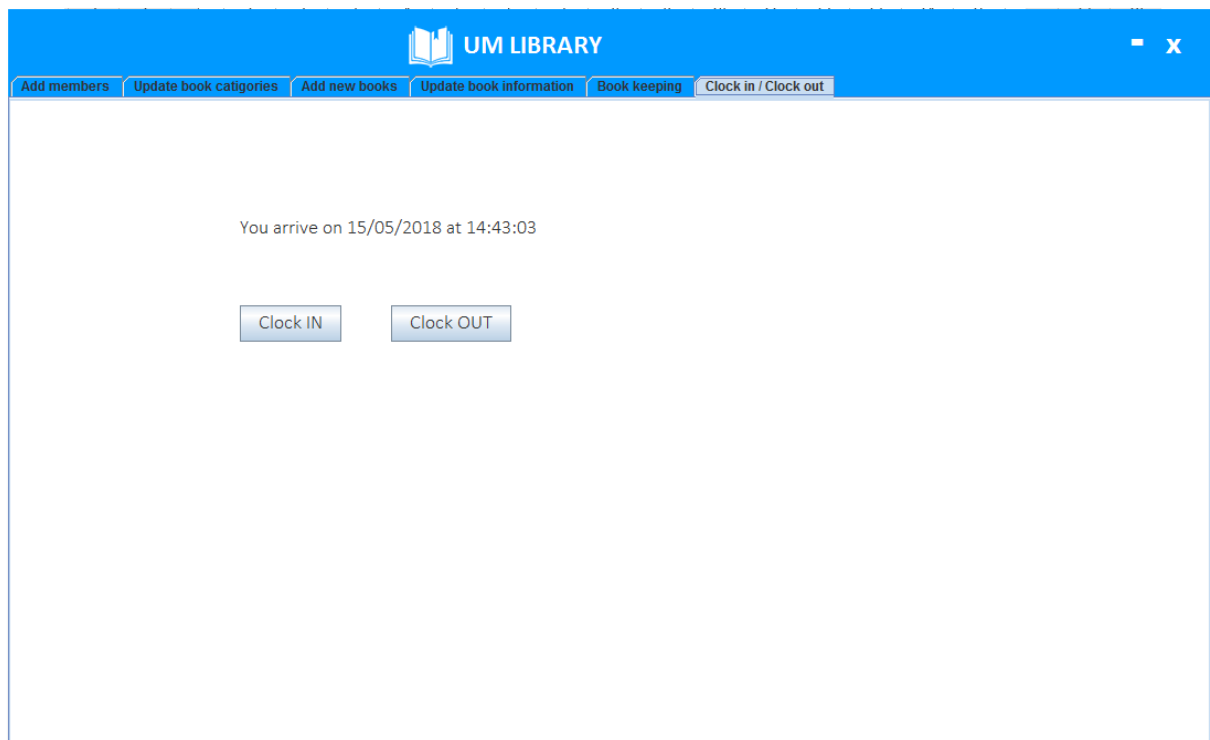


It is very simple. When librarian arrive, he clicks clock in button to register his/her attendance on the current time. We used date built in java class to get the current date and time.

The final Jframe is head librarian jframe:

This frame we make it as simple as possible, using only select SQL statement to fetch data from database depending on the choice in jcomBox. The head librarian will choose the field he/she wants to get information about and the information will be shown in a table

The second tab also is very simple. It allows the head librarian to write his report based on the information he/she gets from the previous tab, then save his report in file.