**Scenario**

The library user is required to register an account in the library system by providing their information. Next, the system will match the user details with the existing user ID in the account file to check whether the new user ID is same with the existing user ID. For valid registration, library user is required to key in their user ID and password to login. The system will access the account file to match the existing user ID and password with the current user ID and password. For invalid login, the system will exit. For valid login, the system is entering to the process of borrowing book.

To borrow book, library user has to provide book searching and book reservation details to the system. Next, the system will match the book reservation details with the details from the book reservation file. After that, available book details will be send to the system from book file and the book availability status will be send to the library user by the system. Finally, the library user has to provide the book collection confirmation to the system. After the book has been reserve, book renewal details is required when the library user decided to extend the book reservation time. Then, the system will update the book status and store the data into the book file.

To return book, library user has to send the book return confirmation to the system. The system will update the book status after the library user has returned the book and store the data into the book file. For those who did not return book at the given date, penalty will be given. The system will calculate fines based on the book return details. Then, the system will send the fines amount to the library user who did not return book on time and library user has to provide the banking details to the system in order to pay the fines. To receive the fines payment from library user, the system has to provide the library user banking details to bank. When the library user banking details is confirmed by bank, then the confirmed banking details will be received by the system. Finally, the system will send the fines receipt to the library user. After that, the system will record the fines details into the loan file.

Lastly, the system will generate a report when the library manager request for a report. After generating a report, the system will send the generated report to the library manager. The report will be generated by using the details from the loan, book reservation and payment file.

**Context Diagram**

**DFD 0 Diagram**



**DFD 1 Diagram**

