Book Library Management

1. **Introduction**

Following by development of economic, education is expanded about scale and quality in order to provide labor force that have level, major… They then support for economic going up dramatically. Library system plays such a significant role that it has become an integral part of every universities, high school, secondary school and it supports for searching documents of students better.

General Library manages hundreds of books genres, magazines supporting for demands of reader. Readers can borrow books through library card. Library needs to be computerized works such as book categories management and reader management. For traditional library which does not have technology system support, it will become a vast amount of work that burden the librarian. Moreover, manual work often has worst performance and it is difficult to be accepted in the century of digital technology today. Therefore, our library management web applications are adopted. It will help librarian save a lot of time for searching some documents manually in a big library. Besides, librarian can also manage readers and book categories easily and more convenient. Furthermore, readers can search book information and follow reading time to arrange a reasonable schedule for themselves.

1. **Specific description**
2. **User**
3. **Anonymous user:**
4. With users or admin who have not logged in system, they can view all lists of books in library and search books by some information given by the user (these are title, author’s name or ISBN)
   1. The list of books will be showed in list of 12 books.
   2. Each book has title and author’s name showed.
   3. Search book can show list of books have information same with user input
   4. User can input book title or author name to search box, the system will find the items have the same title or author name with it.
5. User also can use the filter to filter book following some criteria: Category, Publisher, Publication year, Language, Country.
   1. User can filter using multiple criteria at once
   2. Each criterion will have a dropdown box to let user choose
   3. Default value of each criteria is none
6. Anonymous users can login (for user already have an account or administrators). 3.1 User can log in by his/her e-mail or phone number.
7. When login, user can use forgotten password to reset password.

4.1 System will interact with an email service to send random password attached to email

4.2 User must provide email that valid in system. If not, server will still show email sent but not.

1. For Users who do not have an account, they must register in library with librarian to have a library card and an account in this web app.

5.1 An email with password initialized randomly will be sent to user’s email. User can use it to login to the system.

1. **Logged in User:**
2. When a reader register member in library, he/she will be provided a library card and an account online to login to the system.
   1. Information of user in system includes:

* User ID (contains 8 number digits)
* User’s portrait (a URL to portrait image)
* Full name (required)
* ID No (optional)
* Gender (required)
* Date of birth (required)
* Password (required)
* Hometown (required)
* E-mail (required)
* Phone number (required)
* Address (required)
* Status (active, temporary block or permanently block)
  1. User ID will be initialized in system when create new user account.
  2. Status activate mean user in activity and can use full feature of normal user, while status block mean user cannot perform any transaction except returning book which borrowed previous.
  3. The expired time for an account blocked are from 3 - 6 months depend on the number of violation of this account.

1. After logged in, users can view and update their personal information

2.1 Information user can view are Full name, User’s portrait, ID No, Gender, Date of birth, Hometown, Email, Phone number and Address.

2.2 Personal information can be updated by user are email, phone number, and address.

2.3 User’s email and phone number inputted must not duplicate with another’s email and phone number.

1. Logged in users can also change his/her password.

3.1 Users must input old password and type new password two times to change password.

1. They can also view notifications from library system, view list of borrowed books and log out of system.
   1. List of borrowed books includes information of borrowed books and total money that user must pay.
   2. Information of each borrowed book:

* Image of book’s cover
* ISBN
* No of book
* Book title
* Date of borrowing
* Date of return (expired date)
* The number of borrowed days remaining
* The amount of money must pay (punish fee for return late)
  1. Notification includes: sending time and content.
  2. After log out, web app will come back to homepage

**2. Administrator(Admin):**

1. Admin or administrator have been granted the technical ability in the system. Admin has three main abilities include Books Management, Users Management, Borrowing-and-Returning Management. Besides, admin can change his/her password which similar to change password of user.
2. There is also an ability called, Log Out, used to log out from the system.
3. There are two types of admin: Normal admin and system admin. System admin have all authorization of normal admin and can Add new admin account, View List Admins, Modify, Set Normal admin state or Upgrade normal admin to system admin.
4. An admin account contains these information:

* ID No
* Password
* Full Name
* Position
* Email
* Phone Number
* Type (Normal, System)
* State (Active, Retired)

1. When create new admin account, admin state will be set to “Active”.
2. System admin can modify Full Name, Designation Email or Phone Number.
3. When Viewing List Admins, System Admin can view personal info of specific admin (include system admin and normal admin). The info can be showed are all the information listed above except Password.
4. Admin who have active state means they are in active and have full right of their account while admin in retired state mean that they have no right in system and they cannot log in to system anymore.
5. System admin always in active state.

* **Books Management**:

1. Admin can view the list of all books and search books which like logged in user.
2. Besides, admin can add, modify or delete books.
   1. Before modifying or deleting books, the system will check whether this book is borrowed by any user or not. If book is borrowed by another user, the system will deny modifying or deleting book and show an problem message to admin. If not, book will be deleted or a form will be showed let admin to modify book.
   2. When adding new book, system will find the number of books have duplicated ISBN with the new book and increase 1 in No of book to the new book information. If no duplicated ISBN, No of book will initialized by 0.
   3. When using modifying or deleting a book, admin must search for this book.
   4. When modifying or deleting books, admin can view details information of book.
   5. Each time reader return book, librarian will check the condition of returned book and update the describe book condition.
3. By viewing the list or finding books, admin might view the information of specific book.
   1. The information of each book including:

* Image of Book’s cover
* ISBN (contains 13 digits)
* Category (Art & Photography, Psychology & Education; Religion; History & Archeology; Science & Geography; Political Science; Business, Finance & Law; Dictionaries & Languages; Science; Medical; Technology & Engineering; Children; Magazine; Comic/Mangan; Health; Entertainment; Computing; Biography; Food & drink; Travel & Holiday Guides; Society & Social Science; Fiction; Personal Development; Home & Garden; Poetry & Drama)
* Title
* No of book (use to identify with other copy)
* Author’s name
* Publisher
* Language
* Country
* Publication Date
* Description (content summary)
* Price (used to calculate fee in case books lost)
* The total number of each type of books
* The number of books available for rent
* Describe book condition.

1. When viewing list of all books or after searching book finish, admin can decide to modify the information of that book or delete it.

* **User management**:

1. Admin can view list of all users, add or search user accounts and send notice to users.
   1. In the searching users, a page table with User ID, Full Name, email and phone number and user status will be showed. Each page table has 15 users. Admin can navigate to another page of list user. Admin can choose specific user in this table to view user information in detail.
   2. In the searching users, admin can find users by using user information as full name, user ID, email and phone number.
   3. In the sending notice to users, admin can send notice to one or multiple users.
2. In the viewing list of users and searching users, admin can select an account to view the detail information of the account, block, unblock or update account
   1. The expired time of block user will be calculated at that moment and then stored in database.
   2. Before user blocked or updated, admin can also view information in detail of this account.
   3. The account information can be changed are almost user information except user id and user status.
   4. With account blocked, admin can unblock account and admin can block an active account in the opposite.

* **Borrowing-and-Returning Management**:

1. There are two functions called Create Transaction and View List Transaction. When users borrow, renew or return books, admin will create a new transaction.
   1. When admin create a new transaction, the system will show a form for admin with transaction ID, Date of borrowing and transaction type (borrow) filled automatically.
   2. Only borrowing transaction can be created with create a new transaction feature.
   3. When admin View list of Transactions, the system will show the information in a table with Transaction ID, User ID, User Full Name, Number of Book borrowed and Times of renewing. The renewing transaction and return transaction will be shown as subtype of borrowing transaction.
2. From View list of transactions, admin can select create a renewing transaction or create a return transaction in a specific borrowing transaction.
3. In list transaction, admin can select a borrowing transaction to be renewed or returned. Admin can also select book in borrowing transaction to add to renewing transaction or return transaction.
4. User can only renew books or return in this selected borrowing transaction. With books in the different transaction, the different renewing transaction must be created by select create a renewing transaction in different borrowing transaction.
5. Renewing transaction ID and return transaction ID will have the same transaction ID with borrowing transaction selected.
6. Each time renewing, Times of renewing will be increased automatically by 1. If admin click renew in borrowing transaction have 2 times of renewing, a message will be shown to admin.
7. Book’s transaction status of book in renewing transaction or return transaction will be changed after these transactions created successfully.
8. Rule of borrowing and returning books:
   * + - Fee: 1000VND/book/day
       - The maximum number of books in a transaction is 4. The maximum number of books can borrow is 10.
       - A transaction book can borrow 14 days, renew 2 times and 7 days/renew times.
       - If user return the books late, users must pay 2000VND/book/day. Return the books late twice, account will be locked in 3 - 6 months.
       - An Account will be locked permanently if this account violates twice.
       - In the situation that the user has lost the book, the book is damaged, the user must buy a different book for the library and pay the fee of returning books late.
   1. Borrowing transaction will have total fee of borrowing book and return transaction will have punish fee for return late (default is 0).
9. In the View List Transaction, admin can choose to view the Detail of Transaction.
   1. A transaction including:

* Transaction ID
* User ID
* Information of books
* Number of books borrowed
* Date of borrowing
* Date of return (expired date)
* Transaction type (Borrow, Renew, Return)
* Times of renewing
* Total Fee
* Transaction status (active, closed, expired or canceled)
* Issued by (admin take the transaction)
  1. Each book in borrowing transaction also have book’s transaction status. Its values can be “borrowed”, “returned”, “renewed”
  2. Transaction is **active** when transaction does not reach Date return of transaction and user have not returned books in transaction.
  3. Transaction is **closed** when all books in transaction is returned or the remain book is in a renewing transaction.
  4. If Date of return is reached but any book in the transaction does not be returned, status will turn into **expired**. After that, the system will calculate automatically fee for return late and show this fee to borrowed list books of this user. When user return books to library, he/she will be charge for this fee, then transaction status will be changed to **closed**. If there are two times transaction status turns into expired with the same account, this account will be blocked for 3 month from the day second transaction become **expired**. After this account unblocked, system will reset counter of expired time to 0 but still save the number of blocked in this account. The block time will be increased to 6 month if this user backslides.
  5. After an account is blocked twice, this account will be blocked permanently in the third blocked times.
  6. In case the transaction is canceled for some reason, the transaction status will be changed to **canceled**.
  7. When the User ID is chosen, the system will show the User Information. Information of books includes: book title, book ID, fee to lend and book status (borrowed or returned). When book name or book ID is chosen, the system will show the information of this book.

1. If user want to renew any book in list book borrowed, user must still return to library to check for book condition before expired time. At that time, if no one else books these book and renewing times does not exceed limit renewing, user can renew.
2. A transaction can only do one type of transaction (borrow, renew or return).
   1. When admin create new transaction, a dropdown box will be shown to let admin select which type of transaction will be created.