

## **Library Information System - Project Proposal**

### **1. The description of the database application.**

This document represents the system requirements for a typical Library information system from normal library transaction such as borrowing and returning the book, magazine, and DVD to deep transaction to control of employee's salaries.

### **2. The data to be stored in the database. You must explicitly specify all the entities (around 15 entities) and attributes that your application will contains**

1. Customer (Customer ID, first name, last name, email, phone number, Address)
2. Librarian/Staff (Employee ID, first name, last name, email, phone number, Address, Salary, Role[rank])
3. Books (ISBN, Title, Price, Qty, Category, Author, Edition, Publisher)
4. Magazines (Magazine ID, Title, Qty, Date of release, Publisher, price, category)
5. DVD (DVD ID, Title, release date, Qty, Publisher, Price, Director)
6. CD (CD ID, Title, release date, Qty, Publisher, Price, Composer)
7. Room (Room number, Description, Time session)
8. Issues (Issue number, issuing item, Date of issue, return date, Customer)
9. Return (Return number, returning item, Date of return, Customer)
10. Reserve (Reserve number, Reserving item, Date of Reserve, Available date)
11. Fines (Fine number, Fine Price, Violation List)
12. Authorization (Authorization Code, Email, Password)
13. Publisher (Publisher ID, Year of Publication, name)
14. Components (Component Number, Name, Price, Maker)
15. Renting Equipment (Renting Equipment number, Name, Qty, Price)
16. Appointment (Appointment ID, Customer ID, Date of Appointment, Description)
17. Violation List (Violation number, Description, Fine Price)

### **3. Typical scenarios and functionalities that you will implement (7 typical scenarios)**

#### **Find Customer & Add Customer**

Librarian/Staff can try to find a customer with a customer name or customer id to check their information. If customer is not registered in the database, staff can add them to database by adding them to Customer Entity

#### **Borrowing Books**

Customers can try to borrow book by scanning the barcode of a book, DVD, or CD, which new data will be input in the Issues Entity. However, they must be registered in the database system

#### **Reserve a Book**

Customers can Reserve a book if it is not available now. Customer must be registered in the system.

#### **Returning a Book**

Any book that is issued can be returned to the system. Both Librarians and customer can return any book.

#### **Customer Pay Fine**

If issued book is overdue, fines will be added to customer's account. It must be resolved before it allows customer to borrow any other book.

#### **Find a book**

Customers and Librarians can both search where book is located.

#### **Customers make appointment for empty study room & renting equipment**

Customers can make appointment to study room and rent any equipment that is available if no fines are on their account.

**4. Analytical queries that deeply dive and analyze the data to retrieve interesting information (5 queries)**

1. Find a book that has not been issued for a month
2. Find most frequent violation that customer had over a year
3. In a certain location, what category type of book is most frequently issued?
4. Find a book that has average time of issued under 7 days
5. Find a publisher that give most frequently issued book

**5. Business logic that is specific to the application you are developing**

- Customers cannot be issued more than 15 items (books, CD, DVD, Magazine) per account.
- If any of the issued book is overdue, customers cannot make any other transactions until it is resolved.
- Librarian/Staff can view customer's authorization entity (username, password) but they cannot see other employee's authorization.
- Renting equipment only can be issued up to 3 per customer, and it must be returned by 3 days.
- DBSM should try its best to eliminate redundancy
- When customer is registering, system should check existing customer information to check if they are in the same household.
- Customer can only borrow study room one time session in one day.