PUBLIC LIBRARY DATA AND INFORMATION MANAGEMENT SYSTEM

A Project Presented to the faculty of College of Computer, Information and Communication Technology

Cebu Technological University - Main Campus

Submitted in Partial Fulfillment

of the Requirements of Information Management for the degree

Bachelor of Science in Information Technology

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1. DATABASE INITIAL STUDY

a. Situation

This Public Library Management System helps book readers to easily access the books that they want to read and they can easily access this by just searching the book that they need. The features present in the system are the following:

USERS

- **Login and Sign up** for the users like the librarians and book borrowers.
- **Add, delete, update** functions for all of the data in the library.
- **View Books** function is intended for all, if the user have an account.
- **Borrow books** function for the users.
- **book issuing** function for the librarian.

ADMIN

- The admin can **view all of the data** in the whole system

b. Problems and Constraints

Since most of us are still experiencing the pandemic caused by COVID - 19. The government implemented in maintaining social distance and staying at home if you don't have something important to do outside. This system correlate with the implementation of the government and helping individuals whose need is to do research on certain information that are not fully given on the internet.

c. Objectives

This system is a user friendly as it provides search enable function to help the users in searching a certain type of book. The user doesn’t need to look for its certain book in the shelf but instead they only need to input the title of the book in the search bar. Also, when the user borrows a book, the librarian will process it so that the user will get the book directly in the library.

The system is organized by tables and the search bar has a function that will search the detail of the book whether for its book title, genre, author, publisher and book description.

d. Scope and Boundaries

- Librarians - This system will help librarians to easily done their work by using the library system. It will also lessen paper works because the system is computerized.

- Students - They will be the beneficiaries of the work of librarians because by the use of the system they just have to input the book that they are looking for.

- Teachers - They will be also the beneficiaries of the work of the librarians because by the use of the system

- Book Readers- This system will help book readers wherein they can find their favorite novels or books by just searching it or by filtering it according to the genre. It can also help them in finding the next part of the sequel that they are reading.

- Future researchers - They can get some information that they can use to build their study related to this project.

2. DATABASE DESIGN

a. Conceptual Design

i. Business Rules

- The Public Library decided to make an online book borrowing system that can manage all of the books in the library. The main functionalities of the system is view books, borrow books, user profile view and book management.

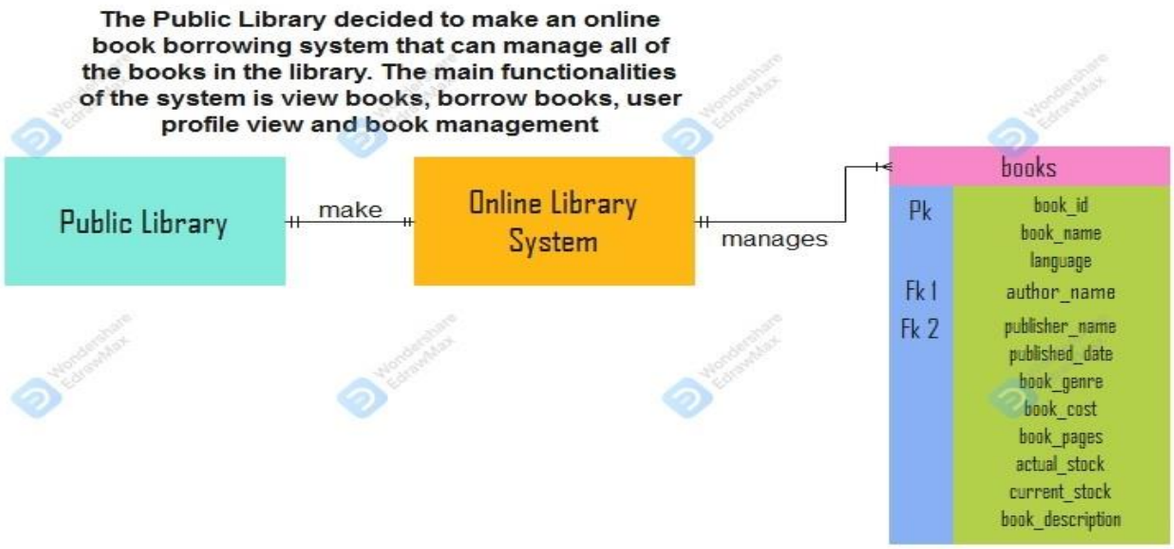
- The admin is the only one who can manage all of the data in the library. Like user management, the users are the librarian and the book borrowers. And also the book management.

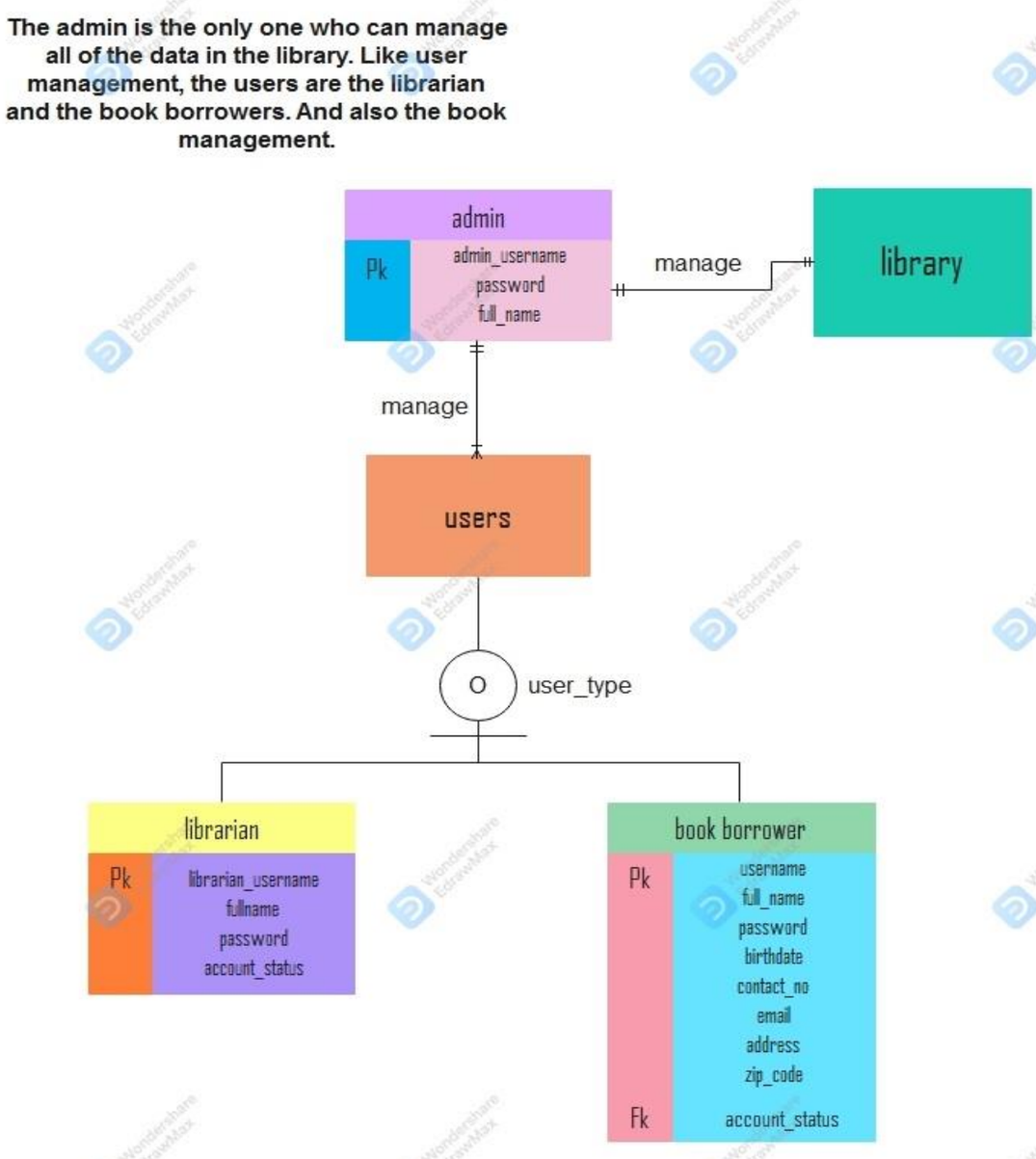
- The librarian has the same functionality as the admin but the librarian cannot view details of the book borrowers. The librarian can only view the book management. (The book management functions are book inventory management, author management, and publisher management.)

- The user can view the book details in the inventory. The user can also borrow as many books as they want to borrow. And if the user cannot return the books within the due date. The librarian will put a fine 10 pesos per day.

ii. ERD

1. External Model





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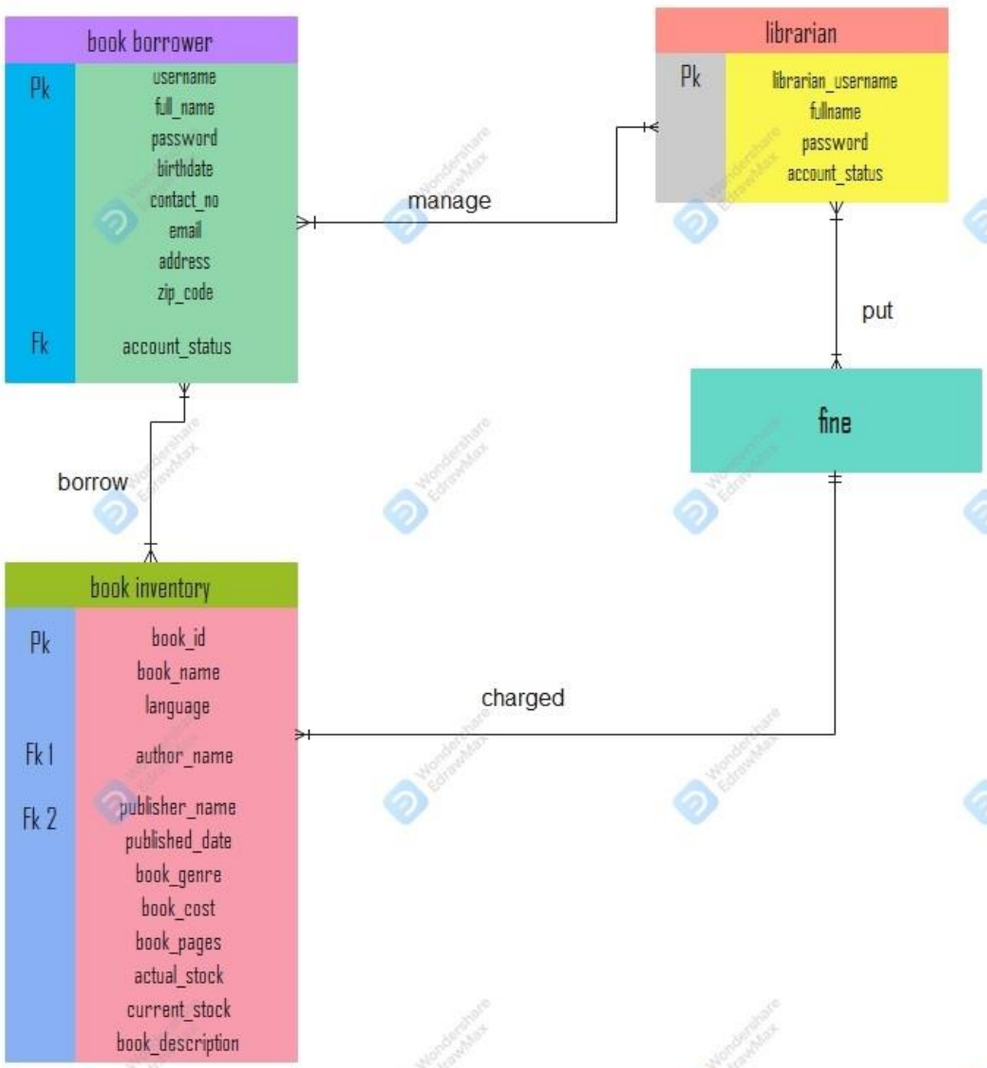
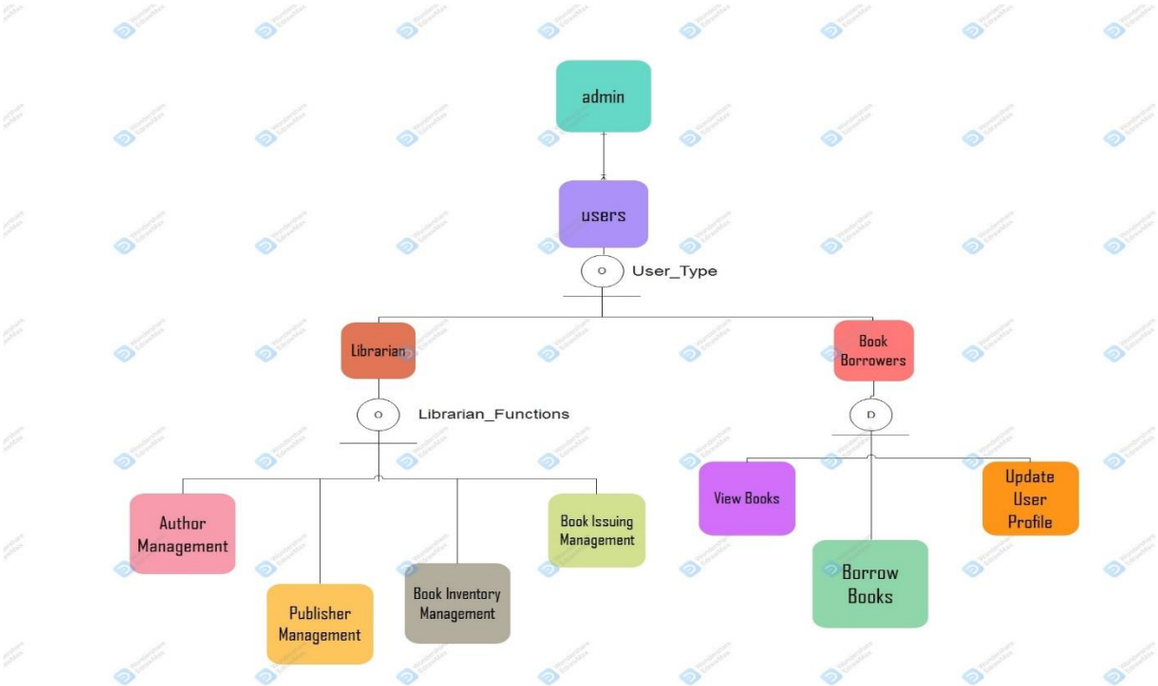
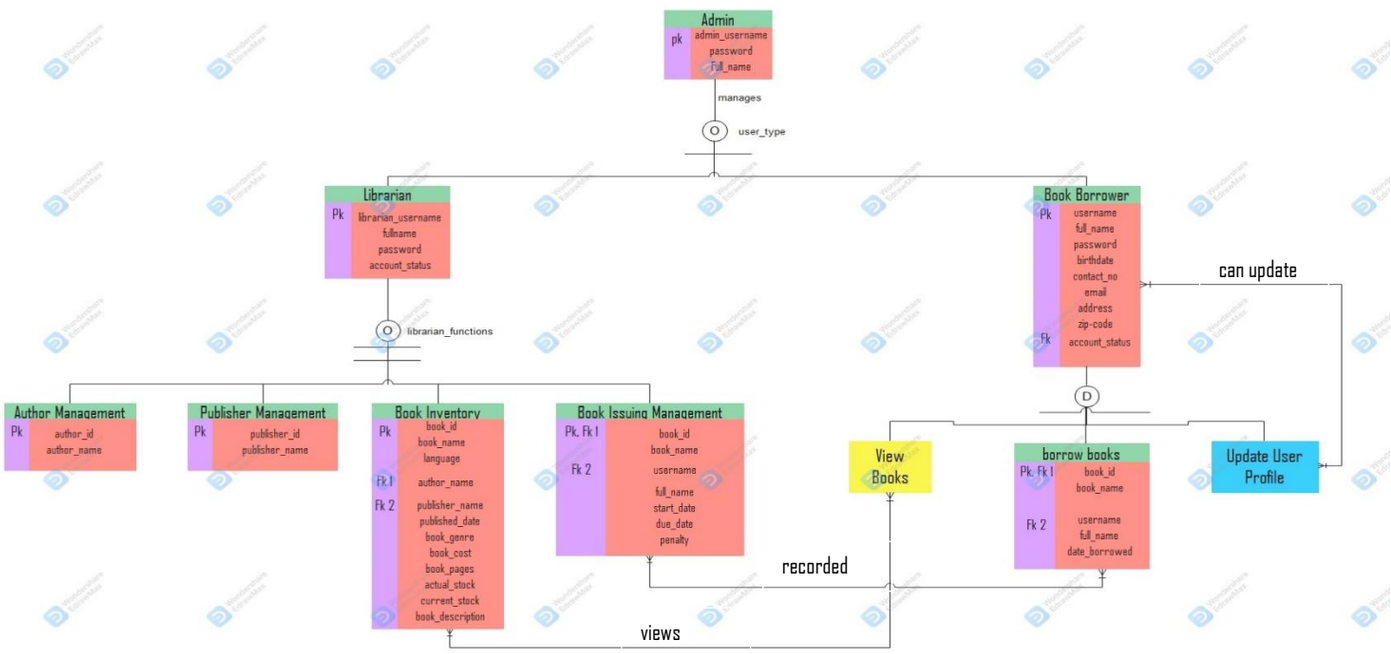


2. Conceptual Model



iii. EERD



iv. DATA DICTIONARY

COLUMN	DATA TYPE	DESCRIPTION
admin_username	string	Admin username
password	string	Password
full_name	string	Full name
librarian_username	string	Librarian username
account_status	string	Account status
username	string	Username
birthdate	string	Birthdate
contact_no	string	Contact number
email	string	Email
address	string	Address
zip_code	int	Zip code
author_id	int	Author ID
author_name	string	Author name
publisher_id	int	Publisher ID
publisher_name	string	Publisher name
book_id	int	Book ID
book_name	string	Book name
language	string	Language
published_date	string	Published date
book_genre	string	Book genre
book_cost	string	Book cost
book_pages	string	Book pages
actual_stock	int	Actual stock
current_stock	int	Current stock
book_description	string	Book description
start_date	string	Start date
due_date	string	Due date
penalty	string	Penalty
date_borrowed	string	Date borrowed

b. DBMS SELECTION

- SQL Server Management Studio - And it is also easy to use than the other database management systems. We used this type of database management system because it has the advantages that we're finding for the manipulation of data. It is easy to install, it has enhanced performance, several SQL Server Editions, it is highly secured, it has excellent data restoration and recovery mechanism, and lower cost of ownership. Also, it has the functions like Object Explorer, which allows you to view and manage all objects in a SQL Server instance; Template Explorer, which creates and manages text files that can be reused to speed up query and script development; and Solution Explorer, which creates projects for managing administration items like queries and scripts.

c. LOGICAL DESIGN

i. Internal model

```
CREATE TABLE admin_tbl(
admin_username       nvarchar(50) PRIMARY KEY,
admin_fullname       nvarchar(50),
admin_password       nvarchar(50)
);



CREATE TABLE author_manage_tbl(
author_id     nvarchar(50) PRIMARY KEY,
author_name   nvarchar(50)
);

CREATE TABLE book_inv_tbl(
book_id       nvarchar(50) PRIMARY KEY,
book_name nvarchar(MAX),
language nvarchar(50),
author_name   nvarchar(50) REFERENCES author_manage_tbl,
publisher_name nvarchar(50) REFERENCES publisher_manage_tbl,
published_date nvarchar(50),
book_genre nvarchar(50),
edition       nvarchar(50),
book_cost nvarchar(50),
book_pages nvarchar(50),
actual_stock nvarchar(50),
current_stock nvarchar(50),
book_description nvarchar(MAX),
book_img_link nvarchar(50)
);

CREATE TABLE book_issue_tbl(
book_id nvarchar(50) FOREIGN KEY REFERENCES book_inv_tbl,
book_name nvarchar(50) REFERENCES book_inv_tbl,
username nvarchar(50) FOREIGN KEY REFERENCES usersign_up_tbl,
full_name nvarchar(50) REFERENCES usersign_up_tbl,
start_date nvarchar(50),
due_date nvarchar(50),
penalty       nvarchar(50)
);

CREATE TABLE borrow_book_tbl(
book_id nvarchar(50) FOREIGN KEY REFERENCES book_inv_tbl,
book_name nvarchar(50) REFERENCES book_inv_tbl,
username nvarchar(50) FOREIGN KEY REFERENCES usersign_up_tbl,
full_name nvarchar(50) REFERENCES usersign_up_tbl,
date_borrowed nvarchar(50)
);

CREATE TABLE  librarian_manage_tbl(
librarian_username nvarchar(50) PRIMARY KEY,
librarian_fullname nvarchar(50),
librarian_password nvarchar(50),
librarian_account_status nvarchar(50)
);

CREATE TABLE publisher_manage_tbl(
publisher_id nvarchar(50) PRIMARY KEY,
publisher_name nvarchar(50)
);

CREATE TABLE usersign_up_tbl(
full_name nvarchar(50),
contact_no nvarchar(50),
```

```
birthdate nvarchar(50),
email nvarchar(50),
address nvarchar(MAX),
zip_code nvarchar(50),
username nvarchar(50) PRIMARY KEY,
password nvarchar(50),
account_status nvarchar(50)
);
```

d. PHYSICAL DESIGN

i. User, Roles

- **Admin –** the admin is the one who manages all of the data that is seen or stored in the system, especially the user's and book's data.
- **Librarian –** the librarian is the first user next to the admin. The role of the librarian is to manage the book's data just like the admin, but the librarian's role is limited to book management like the borrowing of books or book information related data, only the admin can manage the user's data.
- **Normal User (Book Borrowers) –** the book borrowers is one of the main users of the system. The book borrower's role are to view and borrow books.

ii. SQL Statements

- **SELECT * FROM**
- **SELECT**
- **INSERT INTO**
- **DELETE FROM**
- **UPDATE**