LIBRARY MANAGEMENT SYSTEM

INPUT OUTPUT DESIGN

Patron database: Contains the information of patrons (student/faculty) such as the patron id where patron id are alphanumeric with 6 characters, position, patron_name and fine.

Pat_id	Position	Patron_name	Fine
p#	Student/faculty	pname	0.0

where pat_id is the id of the student or the faculty, position indicates a student or faculty, patron_name is the name and fine is the pending due amount to be paid by the patron respectively.

Book database: Contains the information of books such as ISBN number, book title, author, book_code, category, availability and shelf no. Here the ISBN number is a thirteen digit number and book_code is an alphanumeric of length 2.

ISBN	Code	Category	Title	Author	Shelf_no	Availability
xxxxxxxx	C6	Library/Pardon	ABC	XYZ	s#	Yes/No

where ISBN is the ISBN number of the book, category represents whether it's a library copy or not, and shelf no represents the number of the shelf.

Librarian database: Contains the details of the librarian such as librarian_id, librarian_name and password.

Librarian_id	Librarian_name	Password
xxxx	ABC	xxxxxx

where librarian_id is a four digit number and password is an alphanumeric of length 6.

Book - Patron Relationship Table: Contains the information such as ISBN number of the book, patron_id, issue and return dates of the books where issue and return dates are valid dates of the form dd/mm/yyyy and fine amount for each issue of the book.

ISBN	Pat_id	Issue_date	Return_date	Fine
xxxxxxxx	p#	dd/mm/yyyy	dd/mm/yyyy	0.0

Input_form_1: Patron registration

This form is used to register a new patron. This form requires information related to the patron such as patron name and user type i.e. faculty or student. The form looks like this:

Patron_id	Patron_name	User_type
21a234	ABC	Student
22w235	XYZ	Faculty

Input_form_2: Librarian Login

This form is for the librarian to login so that they can execute the necessary functionality requested by the patron. It requires information related to the librarian such as librarian id and librarian name. It has the following structure:

Librarian_id	Password
2101	326XF0
2203	893@19

Input_form_3: Book Issue

This form is used while issuing a book to the patron. It requires information related to the book (ISBN number) and the patron (patron id) and the date of issue i.e. the current system date. The structure of the form is in the following manner:

Patron_id	ISBN	Date_of_return
21a234	9783161789021	12/11/2022
22w235	9785436272978	31/02/2023

Input_form_4: Book Return

This form is used when the patron returns the book. It requires information such as patron id, ISBN number and return date i.e. the current system date. The structure of the form is as follows:

Patron_id	ISBN	Date_of_return
21a234	9783161789021	23/11/2022
22w235	9785436272978	06/02/2023

Input_form_5: Book Search

This form is used when the patron wants to search for a particular book based on its title or author name. The structure of the form is as follows:

Book_title (or) author_name

ABC   XYZ

Output_1: Displays the date to be returned for the book that has been issued.

Output_2: The return_date is updated with the return date of the book for the patron and the fine is imposed accordingly if the return_date is not within 15 days from the issue_date.

Output_3: The display of the information of the requested book including its ISBN number, book id, book title, author name, category, availability and its shelf number.

Output_4: Books not available and the reason for unavailability should be stated .

Output_5:

Error messages. At the minimum, the following error messages are to be given:

e1: Invalid patron information

e1.1: Patron number has wrong format

e1.2: Patron position is invalid

e2: Invalid book information

e2.1: Invalid ISBN number

e2.2: Invalid book number

e2.3: No such book title exists

e2.4: No such author with the book title

e3: Requested book is not available for issue

e3.1: Requested book is for library use only

e3.2: Copies unavailable for the requested book

e4: Book borrow date is invalid or has wrong format

Output_6: A report is generated for each patron when they are issued a book. The report consists of the books they have borrowed along with their respective return dates.

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