

SPECIFICATION DOCUMENT

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- **System Overview**

System Functions

1. Create User

Inputs:

Username, Password

Function:

User Creation is performed using inputs.

2. User Authentication

Inputs:

Username, Password

Function:

Respective user can login using unique username and password to perform user functions unto book database

3. Admin Authentication

Inputs:

Admin Id, Admin password

Function:

Respective Admin can login using unique admin id and admin password to perform administrator functions onto database

4. User Management

Input:

NIL

Function:

Modify username(User Module)

Modify password(User module)

Delete user(Admin module)

5. Create Books

Input:

Bookid(auto-generated)

Bookname

Borrow_date

Return_date

Status(Borrowed/Returned)

Function:

Creates a new book entry or a new copy of an old book to book table

6. User Functions

Input:

User Id

Function:

Borrow Book

Return Book

View Books

7. Admin Functions:

Function:

View user/books

Delete user from user table

Add old/new book to book table

Delete books from book table

User Classes and Characteristics

Operating Environment

Language used: Python

• Functional Requirements

1. Admin Module

Features:

1. Admin Authentication

```
~~~ Welcome to Library Management System ~~~
1.Admin Authentication
2.User Authentication
3.Exit
Enter:1█
```

```
----Admin Authentication:----  
Enter Administrator ID:2000  
Enter Administrator password:admin_0  
Admin no:2000 has been given access to Library  
Press ENTER
```

2. Users Table

```
---ADMINISTRATOR FUNCTIONS---
```

- 1.Users Table
- 2.Books Table
- 3.Borrow Table
- 4.Exit

Enter:1

USER_ID	**	USER_NAME	**	PASS	**	FINE	**	BOOKS_BORROWED
1000	**	def_0	**	def_0	**	0	**	0
1001	**	def_1	**	def_1	**	0	**	0
1002	**	def_2	**	def_2	**	0	**	0
1003	**	def_3	**	def_3	**	0	**	0
1004	**	def_4	**	def_4	**	0	**	0

- 1.Delete User
- 2.Return

Enter:1

Enter user id to delete:1000

Removed..(Press ENTER)

2. Books table

2.1 ADD BOOK

---ADMINISTRATOR FUNCTIONS---

- 1.Users Table
- 2.Books Table
- 3.Borrow Table
- 4.Exit

Enter:2

BOOK_ID	**	BOOK_NAME	**	AVAILABLE_BOOKS	**	TOTAL_BOOKS
3000	**	book_0	**	2	**	3
3001	**	book_1	**	1	**	3
3002	**	book_2	**	3	**	3
3003	**	book_3	**	1	**	3
3004	**	book_4	**	2	**	3

- 1.Add Book
- 2.Delete Book
- 3.Return

Enter:1

Enter new bookid:3000

book added

Press ENTER to return

2.2 Return Book

---ADMINISTRATOR FUNCTIONS---

- 1.Users Table
- 2.Books Table
- 3.Borrow Table
- 4.Exit

Enter:2

BOOK_ID	**	BOOK_NAME	**	AVAILABLE_BOOKS	**	TOTAL_BOOKS
3000	**	book_0	**	3	**	4
3001	**	book_1	**	1	**	3
3002	**	book_2	**	3	**	3
3003	**	book_3	**	1	**	3
3004	**	book_4	**	2	**	3

- 1.Add Book
- 2.Delete Book
- 3.Return

Enter:2

Enter book id to delete:3001

Removed..(Press ENTER)

Final Book Table

---ADMINISTRATOR FUNCTIONS---

- 1.Users Table
- 2.Books Table
- 3.Borrow Table
- 4.Exit

Enter:2

BOOK_ID	**	BOOK_NAME	**	AVAILABLE_BOOKS	**	TOTAL_BOOKS
3000	**	book_0	**	3	**	4
3002	**	book_2	**	3	**	3
3003	**	book_3	**	1	**	3
3004	**	book_4	**	2	**	3

- 1.Add Book
- 2.Delete Book
- 3.Return

Enter:█

3. Borrow Table

---ADMINISTRATOR FUNCTIONS---

- 1.Users Table
- 2.Books Table
- 3.Borrow Table
- 4.Exit

Enter:3

BOOK_ID	**	USER_ID	**	BORROW_DATE	**	DUE_DATE	**	RETURN_DATE	**	FINE	**	STATUS
3000	**	1000	**	0020-12-12	**	0020-12-22	**	0020-12-22	**	0	**	R
3001	**	1001	**	0020-12-12	**	0020-12-22	**	0020-12-22	**	0	**	R
3001	**	1001	**	0020-12-12	**	0020-12-22	**	0020-12-22	**	0	**	R
3003	**	1003	**	0020-12-12	**	0020-12-22	**	0020-12-22	**	0	**	R
3003	**	1003	**	0020-12-12	**	0020-12-22	**	0020-12-22	**	0	**	R
3004	**	1004	**	0020-12-12	**	0020-12-22	**	0020-12-22	**	0	**	R

Returned Book id:

3000
3001
3001
3003
3003
3004

- 1.Delete Returned Books from Borrow table
- 2.Return

ENTER:1

Removed Books.

Press ENTER to return█

2. User Module

Features:

1. User Authentication

```
PS D:\Library_Management_> python -u "d:\Library_Management_\user_auth.py"
~~~ Welcome to Library Management System ~~~
1.Admin Authentication
2.User Authentication
3.Exit
Enter:2
----User Authentication:----
1.New User
2.Login
Enter:2
Enter Username:def_0
Enter password:def_0
def_0 has been given access to Library
Press ENTER
```

2. View all books

```
---USER LIBRARY---
1.View All Books
2.Borrow a book
3.Return Books
4.User Status
5.Exit
Enter:1
BOOK_ID ** BOOK_NAME ** AVAILABLE_BOOKS ** TOTAL_BOOKS
3000    book_0  2      3
3001    book_1  1      3
3002    book_2  3      3
3003    book_3  1      3
3004    book_4  2      3
Press Enter to go Back.
```

3. Borrow a book

---USER LIBRARY---

- 1.View All Books
- 2.Borrow a book
- 3.Return Books
- 4.User Status
- 5.Exit

Enter:2

BOOK_ID	**	BOOK_NAME	**	AVAILABLE_BOOKS	**	TOTAL_BOOKS
3000		book_0	2	3		
3001		book_1	1	3		
3002		book_2	3	3		
3003		book_3	1	3		
3004		book_4	2	3		

Do you wish to borrow books(y/n):y

You can borrow 3 books.

Enter Book id(press X to Exit):3000

Book Borrowed.

Enter Book id(press X to Exit):x

Number of books taken is 1

----Current User Status:----

Total number of books taken:1

BOOK_ID	**	USER_ID	**	BORROW_DATE	**	DUE_DATE	**	RETURN_DATE	**	FINE	**	STATUS
3000	**	def_0	**	2024-07-02	**	2024-07-12	**	None	**	0	**	B

Press Enter to return.█

4. Return a book

---USER LIBRARY---

- 1.View All Books
- 2.Borrow a book
- 3.Return Books
- 4.User Status
- 5.Exit

Enter:3

---- Books with User:----

Number of books taken:1

BOOK_ID	**	USER_ID	**	BORROW_DATE	**	DUE_DATE	**	RETURN_DATE	**	FINE	**	STATUS
3000	**	def_0	**	2024-07-02	**	2024-07-12	**	None	**	0	**	B

Which Book would you like to return:(Book id)3000

Book 3000 is returned.

Fine:0

No fine pending

Press ENTER to exit█

Features (search/view books, borrow/return books, user login/registration)

- **Database Design**

- Schema
- Tables and Relationships

- **Interface Design**

- Admin Interface
- User Interface

- **Appendices**

- References:

<https://i.pinimg.com/originals/cb/7b/c5/cb7bc57d5f2a7471bcda3ec55df848f8.png>

- Abbreviations:
B: Borrowed
R: Returned