

## Library management system :-

### ① Problem statement :-

conventional methods of storing/ retrieving information is inefficient. This usually faces lot of challenges due to manual aggregation of data without labelling. many libraries to maintain makes it difficult to manage without misplacing data. ~~admin server issues~~ (overloading of server due to poor management).

### ② Scope :-

This can be managed through proper labelling. use of proper search of data to ensure no mixing of data (inefficient data). use of proper databases provides accurate retrieval of data. It will provide the user many facilities to make the UI user friendly and design.

### ③ General description :-

user objective is to provide easy retrieval of data. some of the features included are admin authority (to enable him to oversee all the documents) and user-user file sharing system. to facilitate a ~~or~~ system of sharing article. ~~the~~ article can be

### ④ Functional requirements :-

#### ① User registration and login:-

Members and librarians must be able to register and log in securely. Different roles will have different access rights.

#### ② search and Browse:-

use search engine to browse books.

#### ③ Borrowing and returning:-

librarian can record who borrowed which book, update the availability status

### ⑤ Fines management :-

System calculates and tracks fines for overdue items.

### ⑥ User interface :-

#### User Interface :-

- System will have a sub-interface that is available from any device. They can add books, view their account.

#### Admin Interface :-

- Librarians will access an admin panel to manage the catalog, user transactions and generate reports. Features like adding or removing books, tracking fines and overdue management will be available.

### ⑦ Performance requirements :-

#### 1) Response time

- Search queries within 2 seconds

#### 2) System load

- support at least 500 concurrent users with minimal performance degradation.

### Design Constraints :-

1) Hardware integration :-

must be compatible barcode scanners.

2) Database :-

A relational database (postgresql) need to store all data.

### Non functional attributes

1) Security -

all user data, including personal and borrowing history.

2) Reliability :-

should maintain a 99.9% up time to ensure users can access library services without interruption.

### Schedule and Budget

Timeline :-

Completed over a 6 month period

Budget :-

estimated budget of ₹ 50,000, covering development costs and hardware integration.