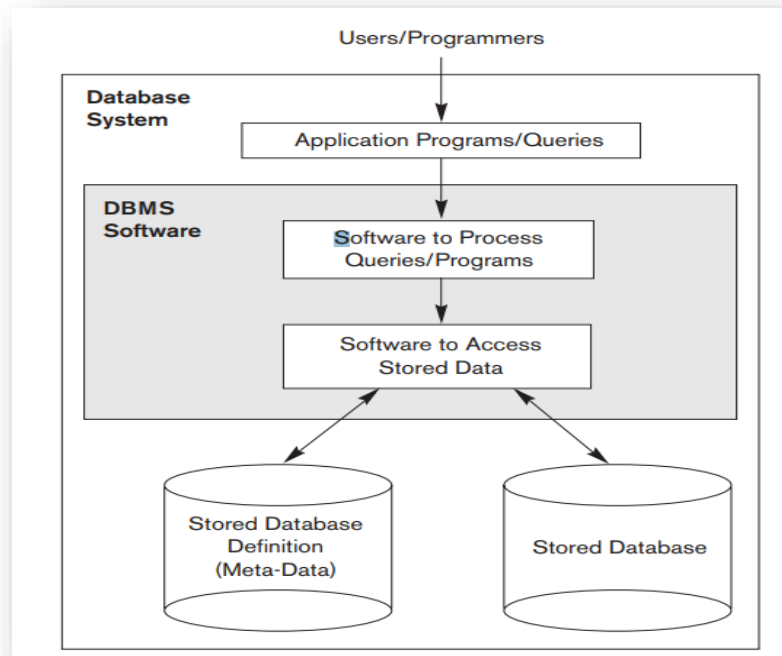# INDIVIDUAL PROJECT

Abhinava Bharamasagara Nanjundaiah

Description

This SQL programming project involves the creation of a database host application that interfaces with a backend SQL database implementing a Library Management System. Users of the system are understood to be librarians (not book borrowers).

Structure/Architecture

This database will essentially follow a 2-tier architecture where we work with the View Level and the conceptual Level ignoring the complexities present in the Internal and Database Software Level. We design a Library management System to manage daily work flow of Library of Searching for required book search, check of book availability, borrow the book and return the book back to the library and pay fine if any. The schema looks something like below image.

Programming language

- **Python 3.8.10**
- **HTML**
- **CSS**
- **JavaScript**

Library / framework / Database

- **Django 4.1.3**
- **PostgresSQL@11**

Data Normalization

1. A separate Table BookAuthor was created to handle multiple authors for a Book by creating a foreign key relation to Author and Book table. Now we can support multiple authors for each book which intern helps ease book-based search based on author.
2. A separate Publisher table was created to normalize publisher data. Where in Book table Foreign Key of the Publisher was added instead of having Publisher name or text.

Project Information

The Library Management Tool is built of Django. Where RDBMS tables were created on PostgresSQL. Tables listed below were created to handle data storage.

1. Library_Book
2. Library_BookAuthor
3. Library_Publisher
4. Library_Loan
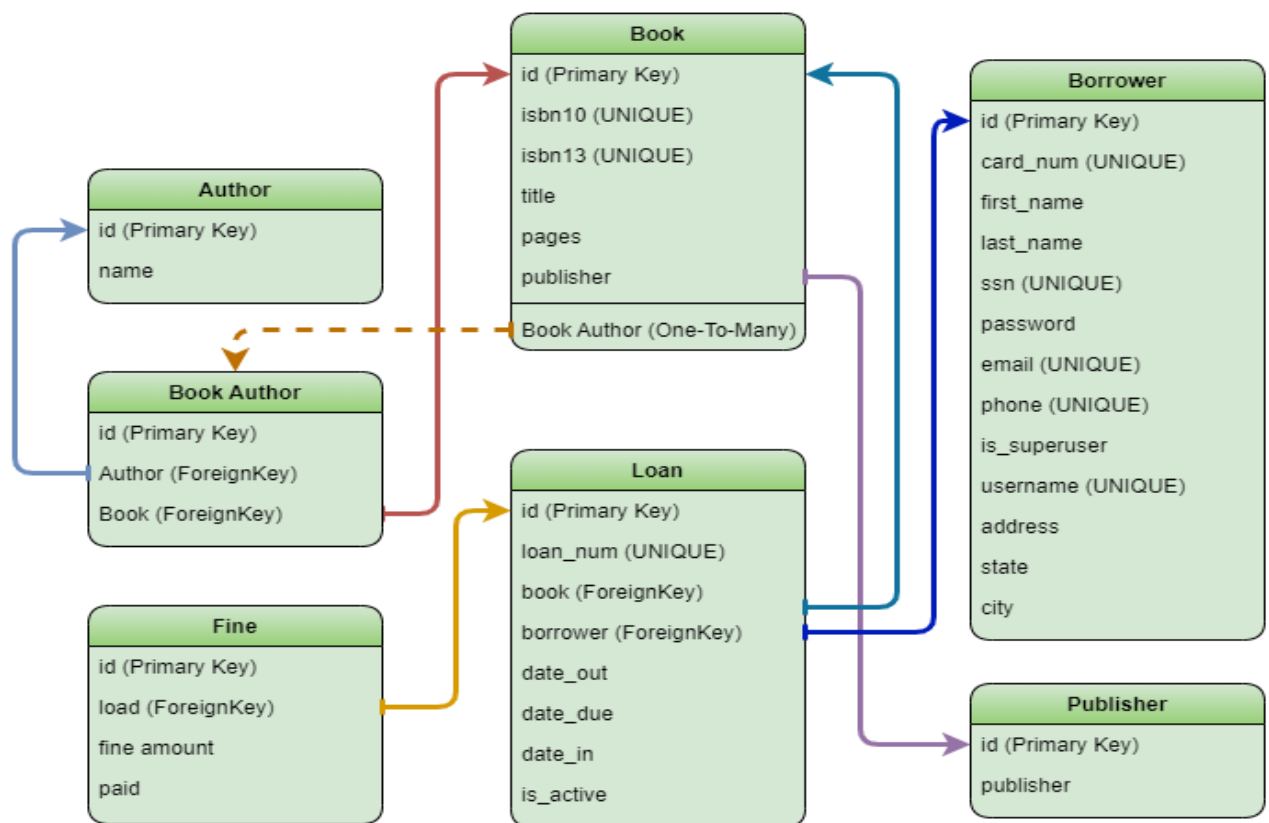5. Library_Fine
6. Library_Borrower

Fig 1. Represents the database structure of Library System.

Above figure describes the data being stored in each table. The System is built for Librarian management as well as for Self-checkout of book with custom borrower interface. Librarian has the complete control of the System whereas Students or Teachers have Restricted access to the System. This is done by creating access Groups. The System was built based on the Specification of the Individual Project Description with extra features such as Student and Teacher login access. Information about running the Code is described in the ReadME.md File. Please refer to that for executing the program.