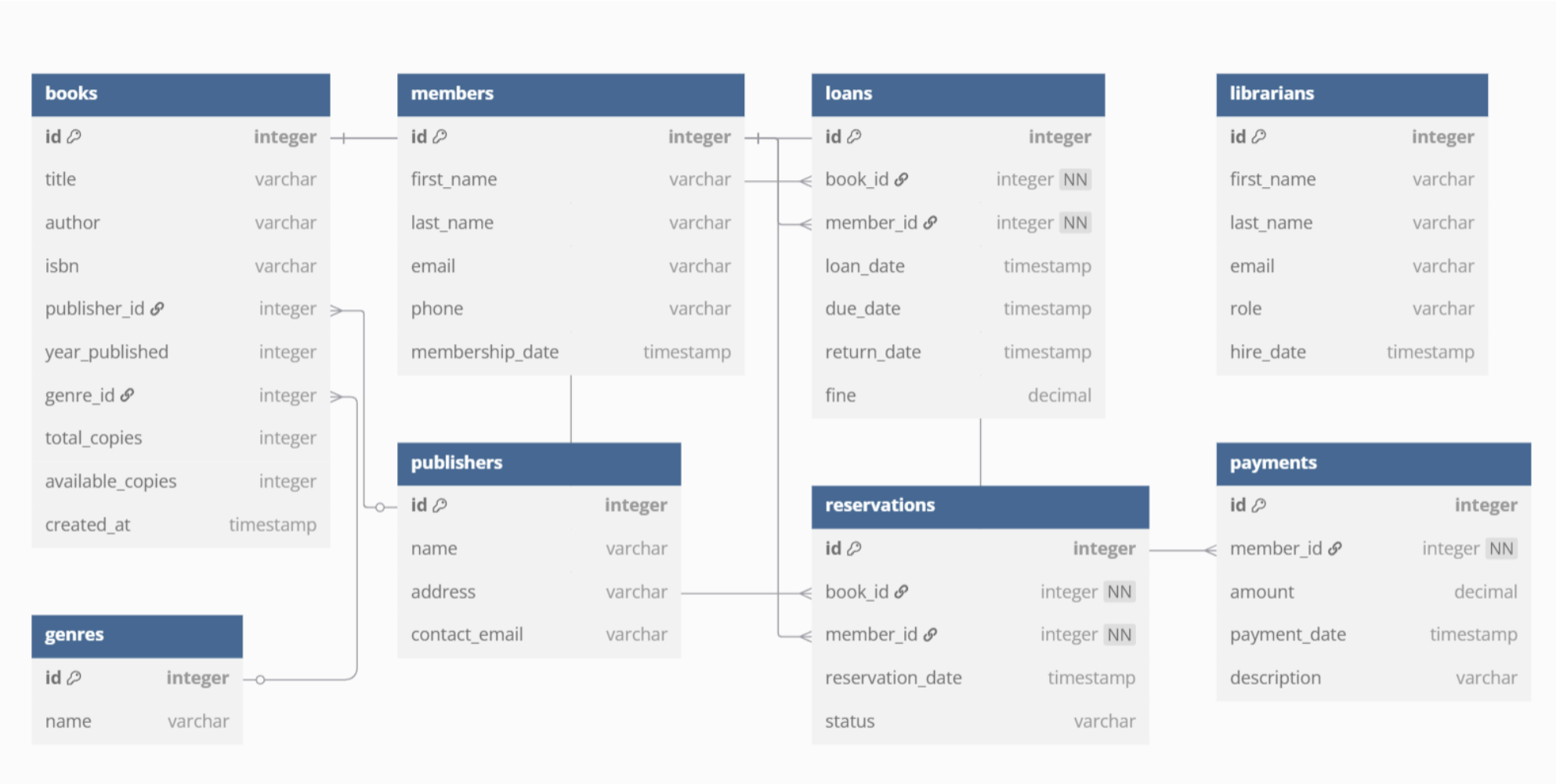
Library Management System



The library management diagram above has been developed to efficiently manage the core operations of a library. The diagram displays the organization of book inventory, member registration, loan transactions, reservations, and fine payments. The system allows librarians to catalog and update books, manage member information, monitor book loans, and handle overdue fines. Library members can borrow and return books, view their browsing history and place reservations. The library system keeps track of each book's availability, genre, total copies, and publisher information, this ensures an accurate and up-to-date record on all accounts. Furthermore, this distinguishes between librarians and members supporting role-based access control for secure management.

Note that this architecture is built on 3-tier management structure. The Presentation Layer makes up the first tier. This area is made up of the user interfaces used by the librarians and members. For example, this could be something like an application on a laptop/desktop where users can interact with the system to register to become members of the library or fulfill book orders. The Business Logic Layer makes up the second tier and this is where the application server lives. The core logic of the system is also handled here, which includes things like calculating member fines for books and processing member reservations for books. The Data Layer makes up the third and final layer and this is represented by the relational database. In this layer is the storage of all persistent such, members, books, loans, and payments. As members make requests, the data flows between these ensuring a concise separation of concerns, improved scalability, and maintainability of the system.

Forward thinking, the above system has been designed to address issues associated with manually managing library operations related to book inventory, member records, borrowing activities, and calculating and collecting member fines. We know libraries handle large volumes of books and member data which could easily make it challenging to track which books are available and when, which members have borrowed them, and when those books are supposed to be returned. Without an efficient system such as the one that has been designed, these tasks can result in inconsistencies in the data, lost books, and delays in service. The above diagram aims to address this problem by organizing the data into structured relationships and entities. This clear and structured approach eliminates any potential manual errors and streamlines the day to day library operations.