

CASE STUDY 2: Library Management System

BACKGROUND OF THE CASE

Library Management Systems (LMS) are crucial in managing the efficient organization of books, records, and resources for any community library. In the case of the 4pm Bookstacks—a mysterious and somewhat secretive section of Kamome Academy's library—it becomes even more challenging as the section is known to house rare, restricted, and sometimes even cursed books. The library staff, particularly the head librarian Tsuchigomori, is tasked with maintaining the order and security of the 4pm Bookstacks, ensuring that these special collections are neither tampered with nor borrowed without proper authorization. However, the existing manual record-keeping system using paper logs has led to inefficiencies, making it difficult to track the borrowing, returning, and securing of these valuable resources.

BOOK RECORDS

When new books are acquired for the 4pm Bookstacks, the librarian collects essential information before they are cataloged. Information gathered includes the book title, author, and publication details such as publisher, publication year, edition, and ISBN number. For this database, assume that a book can only have one author. They are also assigned a unique Book ID, used by the librarian to locate the book in the system and on the shelves. Additionally, each book is tagged with its physical location within the hidden aisles of the 4pm Bookstacks, such as the aisle number, shelf number, and section (e.g., Restricted Folklore, Ancient Spells, etc.) Because of the supernatural nature of some books, the head librarian records notable details to be kept in mind for future reference. For each book, the head librarian notes the following warnings: if the books can only be read in specific areas, if it contains dangerous spells, if borrowing requires staff supervision, or if reading may induce hallucinations. Each book may have any number of warnings.

PATRON RECORDS

Before a student, faculty member, or authorized visitor can access the 4pm Bookstacks, they must register with the librarian. Personal details, including full name, school ID number, date of birth, and contact information (which includes their email and phone number). Due to the sensitive nature of the books, patrons are also required to submit a recommendation letter from another library patron. The database is only required to keep track of the recommender's ID and not the specific details about the recommendation letter. Each patron's school ID is linked to their borrowing history. Patrons with previous violations or overdue books are flagged, limiting their access to certain materials.

BOOK BORROWING AND RETURN

Books in the 4pm Bookstacks are not freely available for borrowing. Each book that is borrowed requires prior approval from the head librarian, and the borrowing process involves detailed record-keeping. When a book is borrowed, a Borrowing Transaction Record is generated, with the date borrowed, the due date, and the status (On Loan, Returned, Lost, or Damaged). The librarian also records the Patron ID of the borrower and the Book ID. When a book is returned, it undergoes an inspection to confirm its condition. If the book shows signs of damage, additional notes are added, and the patron may face fines or restricted borrowing privileges in the future.

VIOLATIONS AND PENALTIES

There are strict penalties for any violations associated with the 4pm Bookstacks. Violations can include overdue books, attempting to access restricted materials without permission, or tampering with enchanted seals on certain volumes. The librarian keeps a log of such incidents, recording the Patron ID, the Book ID involved, the nature of the violation, and any disciplinary actions taken (e.g., fines, temporary suspension from accessing the library, or in severe cases, referral to school authorities).

BOOK RESERVATIONS

Due to the limited access to the 4pm Bookstacks, patrons can place reservations for certain restricted books. A reservation record includes the Patron ID, Book ID, reservation date, and status (Pending, Approved, Rejected, Canceled). Only a limited number of reservations are allowed per patron to prevent hoarding of resources. Patrons are notified via email when their reservation is ready for collection. Failure to pick up the reserved book within a specified time frame results in automatic cancellation of the reservation.

