Archives of Babel

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Database Management Systems
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Library Database

Motivation and Problem

The purpose of this project is to create a database application that models a library. The database will aim to model a library, with a focus on the inventory and transactions. Additionally, the database will include a user-interface and the ability to run queries to generate reports to help employees of the library carry out their daily work. These reports will be able to give insight into the inventory of the library with DVDs and books along with members of the library. The generated reports coming from this database will be useful for members looking to borrow items from the library, the members, loans and return history.

Planned Schema

	Table Names	Attributes
1	Book	BookID, Title, AuthorID, NumofCopies, BookCost, LocationID
2	Loan	LoanID, LoanDate, LoanFee, MemberID, LibrarianID
3	Location	LocationID, Genre, Section, RowNumber, Shelf
4	DVD	Title, Producer, DVDID, DVDCost, NumofCopies, LocationID
5	Member	MemberID, FirstName, LastName, DOB, Street, State, ZipCode, City
6	Employee	EmployeeID, FirstName, LastName, DOB, PayRate, Street, State, ZipCode, City, ReportsTo
7	Return	ReturnID, DaysLate, LateFee, MemberID, LibrarianID
8	DVDLine	DVDLine, DVDID, LoanID, ReturnID
9	BookLine	BookLineID, BookID, LoanID, ReturnID
10	Author	AuthorID, FirstName, LastName

Query Examples

The following are examples of queries that the team foresees asking the database in order to generate relevant and meaningful reports.

1. List all employees by first name and last name that lent out books and how many books they each lent out. Ordered by amount of books lent out.
2. Where was the book located in the library that Kendall Jenner took out on September 1st, 2016?
3. Shows books and their genres which have been loaned more than once recently, based on the loans still in the database
4. Show the number of books for each genre that is lifestyle, mystery, and food.
5. Show all members member id, first name, last name and the numbers of days late; ordered by the highest amount of days late descending.

Digital Artifact

To design the user interface the programming language to be used will be Java. Java is open source and platform independent. The platform independence allows the program to run on any operating system making Java a preferable choice for documentation.

Database Management System

The DBMS which has been selected to be used for this project is SQLite. Since SQLite is fast and serverless, users will not have to install, configure, or connect to servers. This database's uses will be mostly internal to the Library's staff and its financial employees, so it would be impractical to host a server for the database. SQLite databases are stored in a single file that can be read from any directory, so the database can be given to each employee at the library who requires it to do their job. Additionally, SQLite is cross-platform, so it will not require any specific piece of hardware.

Anticipated Workload Delegation

The plan for the team is to have Amy doing the documentation, Sean will do the database design/creation and Ryan will do the GUI piece. Every individual on the team will collaborate together if one needs help. The presentation will be created by the whole team together. The work will be put into Google Docs for the team to read and make sure information is correct. The code will be sent to the entire team for testing and proof reading.