Library Management Database Report

CSC-434

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I used the library management system because it was exciting for me and I have done multiple projects on Library arrangements and web applications on it so I thought It would be good to have a management system on it as well.

The Database contains 9 tables and all of them at least have 5 attributes and all of them are connected to each other. The tables are all in 3rd normal form as it was easier in that method to use them in the ER diagram as well as in relational the tables and their explanation is given below:

* Author: It contains information about the different authors. It has authorID, FirstName, LastName, Style. The primary key in this table is authorID and it relates to the table Books with the relation many to one. The only attribute I think I need to explain here is style. The style contains information about what type of thing authors like to write like romance, comedy, etc.
* Book: It contains all the information about the books. It has ISBN, Book\_title, authorID, Price. Its primary key is ISBN and it also has a foreign key of authorID which relates to author Table. It has one more relation apart for mention earlier with the book\_copies table with one to many relations. I think all the attributes here are self-explanatory.
* Book\_copies: It contains all the information about the books in any branch which they have excess to. It has bookID, ISBN, branchID, Status. It has a primary key of bookID while two foreign keys which are branchID and ISBN. It also has a functional dependence as the primary key is dependent on ISBN and branchID. It has two more relations apart from one mention earlier which are one on one with borrowed table and many to one with branch table. I think that the only attribute I need to explain is the status. Status stores the information about whether the book is in the library or have been borrowed. It has two values of 0 and1 which tell the information.
* Branch: It contains information about the branch. It has three attributes, branchID, Address, Manager. It has a primary key as branchID. It relates to one more relation apart from one mention earlier which is Employee with one to many ratios. All the attributes here are self-explanatory.
* Employee: It contains information about the employees working at different branches. It contains employeeID, FirstName, LastName, Email, AddressLine, City, and branchID. It has the primary key of employeeID and has a foreign key of branchID. It also has one more relationship with the borrowed table as one to many. I think all the attributes here are self-explanatory.
* Borrowed: It contains information about the books borrowed by people. It contains borrowedID, Cardnumber, employeeID, bookID, and Date\_issue. It has a borrowedID as a primary key and has Cardnumber, employeeID, and bookID as the foreign key. It has two more relationships apart from one mention earlier. It has a one-on-one relationship with the fine table and many to one relation with the LibCard table. The attribute Cardnumber gives you a unique number hold by the customer if he or she has a library card and Date of issue stores the date when the book was issued. The rest of the attributes are self-explanatory.
* Fine: It contains the records of the people who must pay fine as for late fees and stuff. It contains borrowedID, Cardnumber, number\_of\_days, and fine as its attributes. It does not have a primary key but has borrowedID and Cardnumber as its foreign key. Apart from a relation, I mentioned earlier it has one more relation with the LibCard table with many to one ratio. The attributes are self-explanatory here.
* LibCard: It contains information about people who have LibCard. It contains Cardnumber, customerID, Issue\_date, Valid\_till as its attributes. It has Cardnumber as its primary key and customerID as its foreign key. Apart from the relations mentioned earlier, it has one more relation with Customers with one to one relation. The attributes are self-explanatory.
* Customer: It contains information about the customer who has registered in the library. They may or may not have a library card. It has the following attributes: customerID, FirstName, LastName, Email, AddressLine, City, and Valid. It has customerID as its primary key. The Valid attributes store the information about whether your library card is still valid or not. It has two values 0 and 1. The rest of the attributes are self-explanatory.

Triggers

My code have4 triggers and each of them is listed below:

* books\_after\_insert: This trigger contains the information of when was the book entered in the database.
* Borrow\_list\_create: This trigger contains the information of when was the books borrowed.
* fine\_list\_create: this trigger helps to get information about all the fines we took in the database.
* Addauthor: This trigger checks whether the author is there in the parent table before entering the child which here would be its book.
* Statuschange: This system sent the message to employees so that customers with a library card can have their Valid=1.

Queries

All the queries can be found in the query file. We can run them to see how each of them is working. I have added the comments as well as result before the query and result we get after the query. I have also added the results we get from the trigger there as well.

Results



















