

Project 2: University Library Application

Entities:

Book, Member (Student/Professor), Staff, Borrows, Returns, Catalog.

Relations between entities:

- Members “borrows” and “returns” books. Members can borrow and return a single book or multiple books at a given time. So many to many relation exists between Member and Book.
- Staff is an entity which contains the employee information like Mobile Number, SSN, Address etc..
- Catalog - For each title in the library, a book description is kept in the catalog; the description ranges from one sentence to several pages. The reference librarians want to be able to access this description when members request information about a book.

Book Entity:

Attributes of book are:

- ISBN : a primary key which is an unique ID given for a book
- Subject : Refers to the subject area of the book
- Quantity : No of books available with respect to the ISBN
- Title : Represents the title of the book
- Binding : Refers to either hard cover or soft cover
- Author : Author of the book
- Type : Type of the book
- Rare_outofprint : No. of Books that cannot be lent
- Remaining_Quantity : No of books available with respect to the ISBN after lending
- Lent_Status : Status if book can be lent or not.
- Reason_Take : Reason for borrowing a book
- Interest_Take : Check if member is interested in borrowing a particular book.

Staff Entity:

Attributes of staff are:

- SSN : a primary key, social security number of the employee
- Phone : Mobile number of the employee
- Designation : Role of the Employee
- Address : residence details of the employee
- Name : Name of the Staff.

Member Entity:

Attributes of member are:

- SSN : social security number
- Card No : The card number issued to the member
- Join_date : The date on which member joined the library
- Name : Name of the member
- Campus_Address : The University campus where the member is residing
- Phone : Phone No of the member
- Address : staying address of the member
- Type : either a student or a professor
- No_Of_Books : Number of books borrowed by a member.
- Is_Active : Check if a member is an active member or not.
- Grace_Period : Time given to members to return books before notice is sent to them.
- Image : images of members.
- Is_renewal : Check if member wants to renew his membership.
- EXPIRY_DATE: Expiry date of membership.

SSN will be the primary key.

Borrows:

Attributes of this relation are:

- SSN : social security number
- ISBN : unique book ID
- Check-out : The date on which member borrowed the book
- Due_date : The date before which member has to return the book
- Notice_Sent : Check the notice status.

SSN and ISBN are the foreign keys

SSN and ISBN will form the primary key.

Returns:

Attributes of this relation are:

- ISBN : unique book ID
- SSN : social security number
- Return_date: The date on which member has returned the book
- Fine : Amount which has to be paid if member is past due (\$0.5 per day).

SSN and ISBN are foreign keys.

SSN and ISBN will form the primary key.

Catalog:

Attributes of this relation are:

- ISBN : unique book ID
- SSN : social security number
- Title : Represents the title of the book
- Description : A Brief Overview about the content of the book.

Assumptions:

- Book type stores the type of book like Maps/Telephone directory/Reference books.
- Member-Type column is introduced in the members table instead of creating two entities student and professor.
- Staff is a Relation without any connection to other entities but has access to them.
- Books which cannot be lent are handled in the code. For instance, if a user tries to borrow any of the fore mentioned books, he will be prompted with a message “He can’t be given these books”. No separate information regarding this is stored in the database.
- Card details are not stored in a separate entity, instead we store it in the date the member became the library member and create a trigger that alerts the member for renewing membership. One more trigger is created to alert professors of their expiring membership in the library.
- We have not created each entity in the database for chief librarian, check out staff, library assistants, reference librarians in the designation column as the attributes among them are assumed to be same.
- Returns is an entity that keeps track of returns issues by users. Return_date, fine of \$0.50 imposed on member past due_date.
- Borrows keep track of users who borrowed books.
- Book type stores type of book like Maps/Reference books.
- A catalog entity which holds the title of a book and the description of the book.