**REPORT**

**Design Choices**

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| --- | --- | --- | --- |
| **S.No** | **Tables** | **Relationship** | **Reason** |
|  |  |  |  |
| 1 | lang-book | 1 to many | many books can have one language but one book will have only one language |
| 2 | binding-book | 1 to many | many books can have the same binding but one book will have only one binding type |
| 3 | subject\_area-book | 1 to many | many books can have the same subject area but one book will have one subject area |
| 4 | author-book | 1 to many | one author can have many books but one book will have one author |
| 5 | book\_category-book | 1 to many | one book category can have many books but one book can only have one category |
| 6 | interested\_to\_acquire-book | 1 to 1 | one book can has one category which can be 'interested to acquire' |
| 7 | reason-interested\_to\_acquire | 1 to many | many books can have the same reason for interest to acquire but one book can have only one reason |
| 8 | book-book\_member | 1 to many | one book title can be borrowed by many members |
| 9 | book\_member-member | 1 to many | one member can borrow many books |
| 10 | staff-employee | 1- many | one staff position can have multiple employee but one employee has one staff position |
| 11 | member\_type-member | 1- many | member\_type can be same for multiple members but one member can't have multiple member\_type |
| 12 | member\_status-member | 1- many | member\_status can be same for multiple members but one member can't have multiple member\_status |
| 13 | member-book\_member | 1- many | member can borrow for multiple books but one book cab be borrowed by  one  member only |
| 14 | book-book\_for\_lending | 1 to 1 | a book has one lent id but one lent\_id can't have many books |

The create table statements can be found in **create\_library.sql**

Part 1:

EER diagram for library Data Management consists for various tables.

It's representation is stored in EER-Schema-Diagram.png file.

Entity:Book = Holds information regarding book

Attributes: isbn primary key

Title

Description

Entity Book is mapped to other entities such as book\_category,author,subject\_area , lang,binding .These entities are connected to book with non-identifying relationship.

Entity author contains: attributes id and author\_name.

Entity subject\_area contains: attributes id and subject\_area .

This entity describes whether book is related to which subject.

Entity bind contains: attributes id and bind\_type.

It describes whether the book has hardcover or softcover.

Entity lang contains: attributes id and language\_name.

It describes the book is written in which language.

Entity book\_category contains: attributes id and book\_category.

It also describes the book as reference or rare book.

Entity interested\_to\_acquire contains id and is mapped to another reason entity to justify the reason where book is available to lent or not or interested to acquire.

Entity reason contains 2 attributes as id (Primary Key) and reason.

Entity book\_for\_lending: It provides the details on count of books lent to member or available.

Attributes: id primary key

loan\_count= No of borrowed copies of particular book

available\_count= No of available copies of particular book

Entity book\_member :It is similar to transaction receipt of book while borrowing.

This entity is mapped to book with foreign key related to isbn .

Attributes:last\_date\_of\_return = date till which book should be returned based on grace\_period limit.

date\_of\_borrowing = the day on which book is loaned out.

date\_of\_return= Actual date when book is returned to library.

Entity:Member: Information regarding the members of library.

It is mapped to book\_member for gaining the information on loaned books.It is also mapped to non-identifying relationships with member status and member type.

Attributes: id (primary key)

name

ssn

campus\_address

home\_address

phone\_no

card\_issue

card\_expiry

Member entity acts as superentity where it involves total participation into 2 categories as student and professor .

As professor and student has different set of limits regrading grace\_period and borrowing limit.

Entity member\_status: It states whether a member is active or inactive to issue book from library.

Attributes: id

member\_status

Entity member\_type : It classifies member as student or professor .

It contains some attributes which act as constraints too.

Attributes: id

member\_Type

grace\_period: no. of days book is allowed to borrow

book\_limit: No. of books allowed to borrow.

borrowing\_period\_limit

Entity:employee: Information regarding the person who work in a university.

It is mapped to staff.

Attributes: id

name

ssn

campus\_address

home\_address

phone\_no

cardissue

card\_expiry

joining\_date: Parameter introduced to have details for issuing library card and use it for expiry terms also when a new employee is added to system.

As employee is indirectly related to member because if employee is professor he is directly a member of library.

Staff contains employee which can be classified to

chief librarian, departmental associate librarians, reference librarians, check-out staff, and library assistants and professor.

Representation of One-to-Many or One-to-One,etc is represented in EER diagram itself.