REPORT

Design Choices

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.