**Part-2**

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Relational Schema:

A screenshot of a computer

Description automatically generated

**The Relational Schema from EER Diagram is created as follows-**

1. **All the Entities are defined except the subclasses:**

**Members Table:**

Primary Key: Member\_ID

A member can have a campus address, social security number, home address, phone number, and a count of borrowed books.

**Librarian Table:**

Primary Key: ID

Records the librarian's name and role within the library.

**Books Table:**

Primary Key: ISBN

Stores book information including title, author, subject area, total number of copies, and availability.

**Volumes Table:**

Primary Key: Volume\_ID

Associates a physical volume to an ISBN and records its status and location.

**Loan Table:**

Primary Key: Loan\_ID

Manages the relationship between members and the volumes they loan, including due dates, return dates, and issue dates.

1. **All the Sub class Entities are defined:**

**Catalog Table:**

This is the subclass of Books, so it has all attributes of Books along with its own attribute (i.e., Description).

Primary Key: Catalog\_ID

Connects a book's ISBN to its catalog description.

**Other\_Members Table:**

This is the subclass of member, so it has all attributes of members along with its own attributes (i.e., card expiration and issuance dates).

Primary Key: Member\_ID

Tracks members' library card expiration and issuance dates.

**Professor Table:**

This is the subclass of member, So it has all attributes of members along with its own attributes (i.e. issued and expired Dates)

Primary Key: Member\_ID

Links a member who is a professor with issued and expired Dates.

1. **All the Relations are Defined:**

**Inquiries Table:**

Composite Primary Key: Member\_ID, Librarian\_ID

Captures inquiries made by members to librarians.

**Manages Table:**

Composite Primary Key: Librarian\_ID, ISBN

Represents the relationship between librarians and the books they manage.

**Included\_in Table:**

Composite Primary Key: Volume\_id, Loan\_id

Represents the relationship between Volumes and loans.

**Borrows Table:**

Composite Primary Key: Loan\_id, Member\_ID

Represents the relationship between Members and loans.

In terms of EER-to-relational mapping, the key choices would include:

The use of composite keys in tables like Inquiries, included\_in, Borrows and Manages to represent many-to-many relationships.

All Subclasses are written to their corresponding Superclass.

The use of FOREIGN KEY constraints to maintain referential integrity between related tables.