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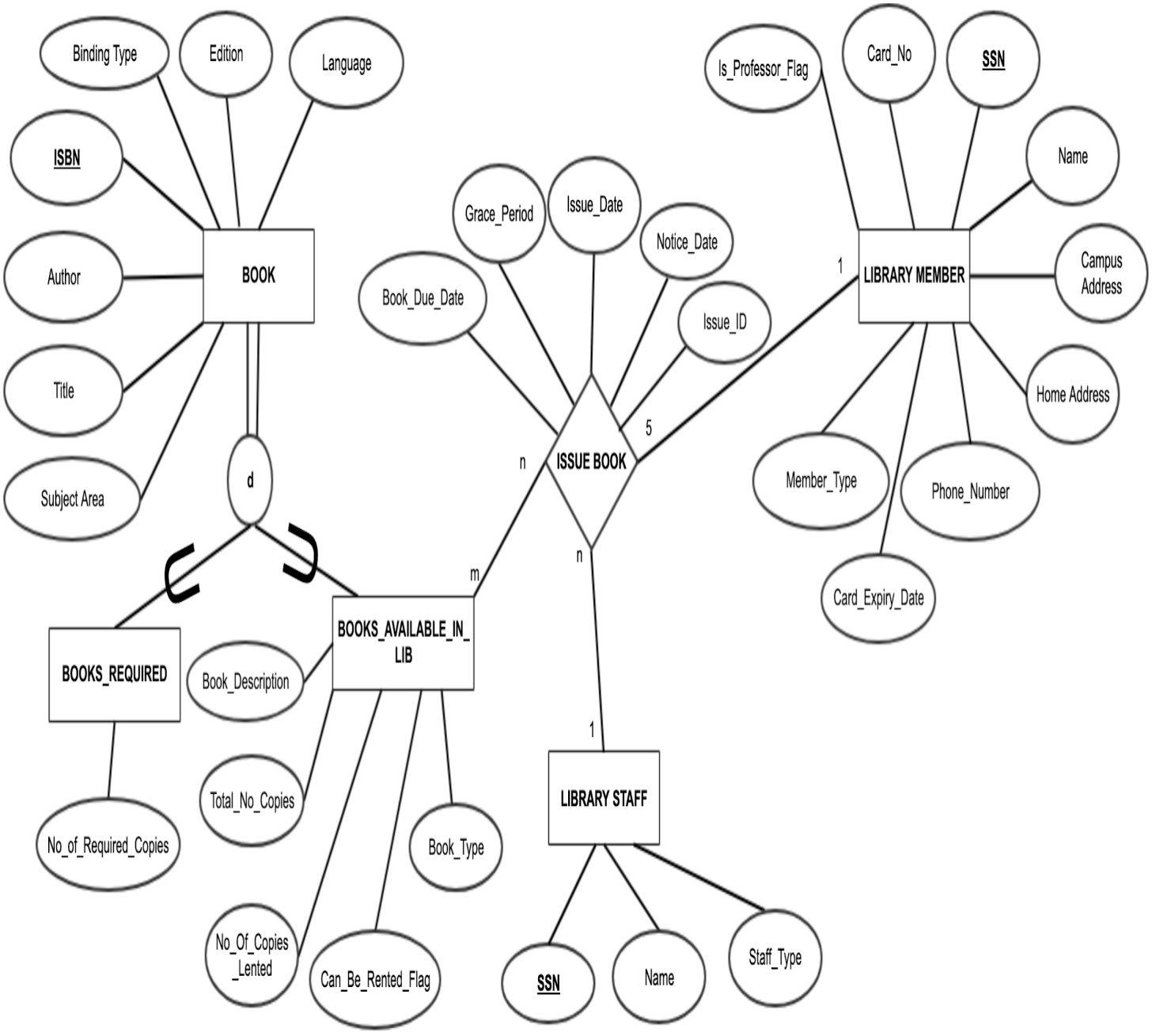
DATABASE SYSTEMS
CSE 5330-001
PROJECT 2 REPORT

EER DIAGRAM



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DESIGN CHOICES

BOOK -This relation/entity contains the attributes –
ISBN, Author, Title, Subject_Area, Binding_Type,Edition,Language.ISBN is the primary key.
This entity acts as a superclass for BOOKS_AVAILABLE_IN_LIB and BOOKS_REQUIRED.

LIBRARY_MEMBER-This relation/entity contains the attributes - ***SSN, Name, Campus_Address, Home_Address,Phone_Number,Member_Type,Is_Professor_Flag,Card_No,Card_Expiry_Date***

LIBRARY_STAFF-This relation/entity contains the attributes - ***SSN,Name,Staff_Type***

ISSUE_BOOK-This is a ternary relationship between BOOK, LIBRARY_MEMBER and LIBRARY_STAFF which contains attributes -
Issue_ID,Book_Due_Date,Grace_Period,Issue_Date,Notice_Date

BOOKS_AVAILABLE_IN_LIB-This relation /entity is a subclass for the relation -BOOK which contains attributes -
Book_Description,Total_No_Copies,No_Of_Copies_Lented,Can_Be_Rented_Flag,Book_Type

BOOKS_REQUIRED-This relation/entity is a subclass for the superclass- BOOK which contains attributes-***No_Of_Required_Copies***

One library member can issue 5 books at maximum.
One library staff can issue N books.

ASSUMPTIONS/REQUIREMENT ISSUES

- Data of the professor is loaded into library_member directly.
- Book description is of one or two lines ,so that it can be stored as an attribute.
- Book_Type provides the information about the book -if it is a reference book,rare books, maps and books that can be lented.
- We can only issue books that are available in the library,so we have designed a relationship between a subclass and issue_book.
- We have grouped all the roles of the library_staff into Staff_Type avoiding specialization.
- We have taken Issue_id as the primary key for ISSUE_BOOK relation which provides unique number to each issue transaction.

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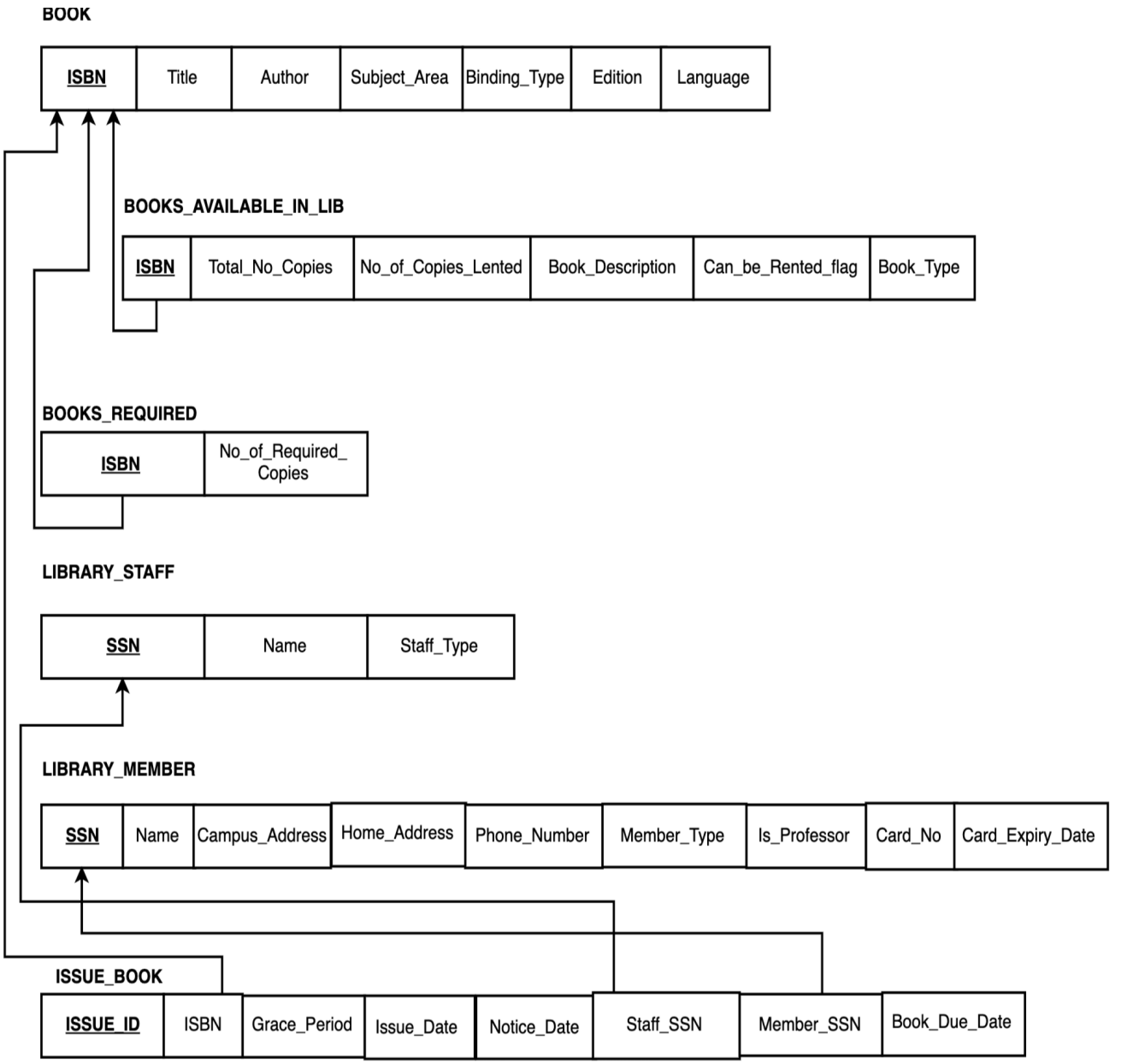
SCHEMA DIAGRAM

EER TO RELATIONAL MAPPING



TABLES/RELATIONS

BOOK,LIBRARY_MEMBER,LIBRARY_STAFF,ISSUE_BOOK,BOOKS_AVAILABLE_IN_LIB,BOOKS_REQUIRED

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Mapping of Subclasses and Super Classes-We have designed separate relations for superclass-BOOK and subclasses- BOOKS_AVAILABLE_IN_LIB and BOOKS_REQUIRED

We have designed a relation for ISSUE_BOOK relationship mapping attributes for the related entities.

CREATE TABLES QUERIES

CREATE TABLE BOOK (ISBN varchar(10) NOT NULL, Title varchar(20) NOT NULL, AUTHOR varchar(20) NOT NULL, SUBJECT_AREA varchar(25) NOT NULL,LANGUAGE varchar(10) NOT NULL, BINDING_TYPE varchar(10) NOT NULL, EDITION varchar(10) NOT NULL, Primary key(ISBN));

CREATE TABLE BOOKS_AVAILABLE_IN_LIB(ISBN varchar(10) NOT NULL,
CAN_BE_RENTED_FLAG boolean NOT NULL,TOTAL_NO_COPIES int NOT NULL,NO_OF_COPIES_LENTED int NOT NULL, BOOK_DESCRIPTION varchar(40), BOOK_TYPE varchar(40) ,Primary key(ISBN));

CREATE TABLE BOOKS_REQUIRED(ISBN varchar(10) NOT NULL, NO_OF_REQUIRED_COPIES int NOT NULL, Primary key(ISBN));

CREATE TABLE LIBRARY_MEMBER (SSN varchar(10) NOT NULL, NAME varchar(30) NOT NULL, CAMPUS_ADDRESS varchar(40) NOT NULL,HOME_ADDRESS varchar(40) NOT NULL, PHONE_NUMBER varchar(10) NOT NULL,CARD_NUMBER varchar(10) NOT NULL,CARD_EXPIRY_DATE date NOT NULL, IS_PROFESSOR_FLAG Boolean , Member_Type VARCHAR(30) ,primary key(SSN));

CREATE TABLE LIBRARY_STAFF (SSN varchar(10) NOT NULL, Name varchar(40) NOT NULL, Staff_Type varchar(20) NOT NULL, Primary Key(SSN));

CREATE TABLE ISSUE_BOOK(ISSUE_ID int NOT NULL, MEMBER_SSN varchar(10) NOT NULL, STAFF_SSN varchar(10) NOT NULL,ISBN varchar(10) NOT NULL,
ISSUE_DATE date NOT NULL, NOTICE_DATE date NOT NULL, GRACE_PERIOD int NOT NULL,BOOK_DUE_DATE date , Primary key(ISSUE_ID)
, FOREIGN KEY (MEMBER_SSN) REFERENCES LIBRARY_MEMBER(SSN) , FOREIGN KEY (STAFF_SSN) REFERENCES LIBRARY_STAFF(SSN), FOREIGN KEY (ISBN) REFERENCES BOOK(ISBN));