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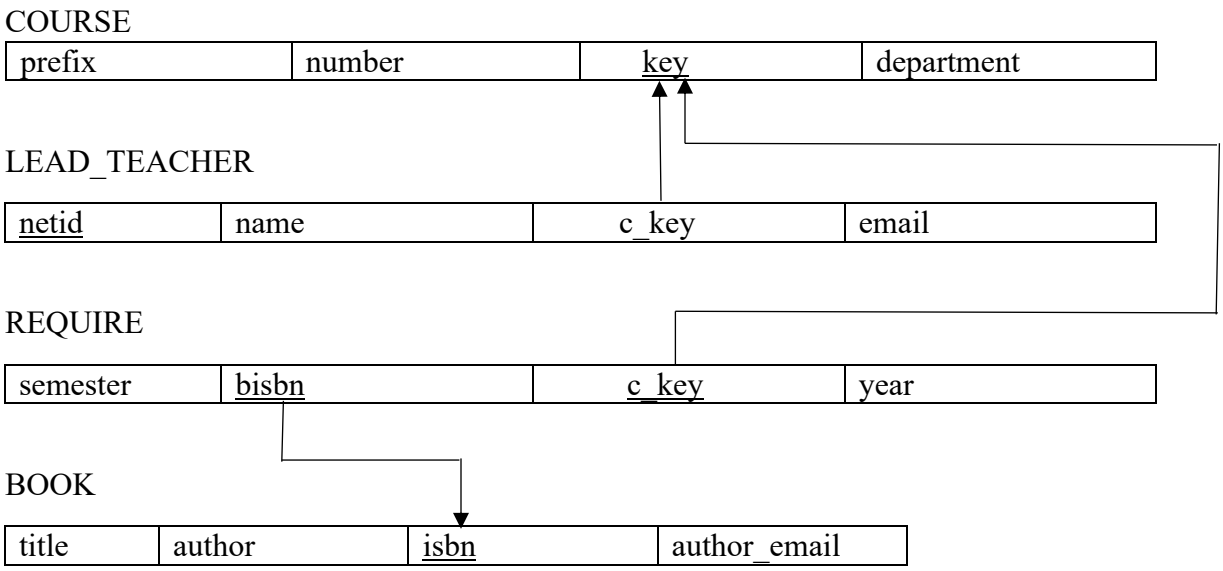
**CSE 4503: Project Part 2 Sample Project**

1. Create a relational schema for the above ER diagram.




The above relationship schema is based on the following information about the ERD:

Course and Teacher have **M:1 relationship** i.e., consider same relationship set enroll exist between entity sets lead_teacher and course. Here course is many side entity set while lead_teacher is one side entity set which means many student can enroll in one course.

Course(key, prefix, number, department)

Lead_Teacher(netid, name, email, c_key)

Course and Book have **M:N relationship** i.e., consider same relationship set enrolled exist between entity sets course and book ,which means multiple books is required in multiple courses.

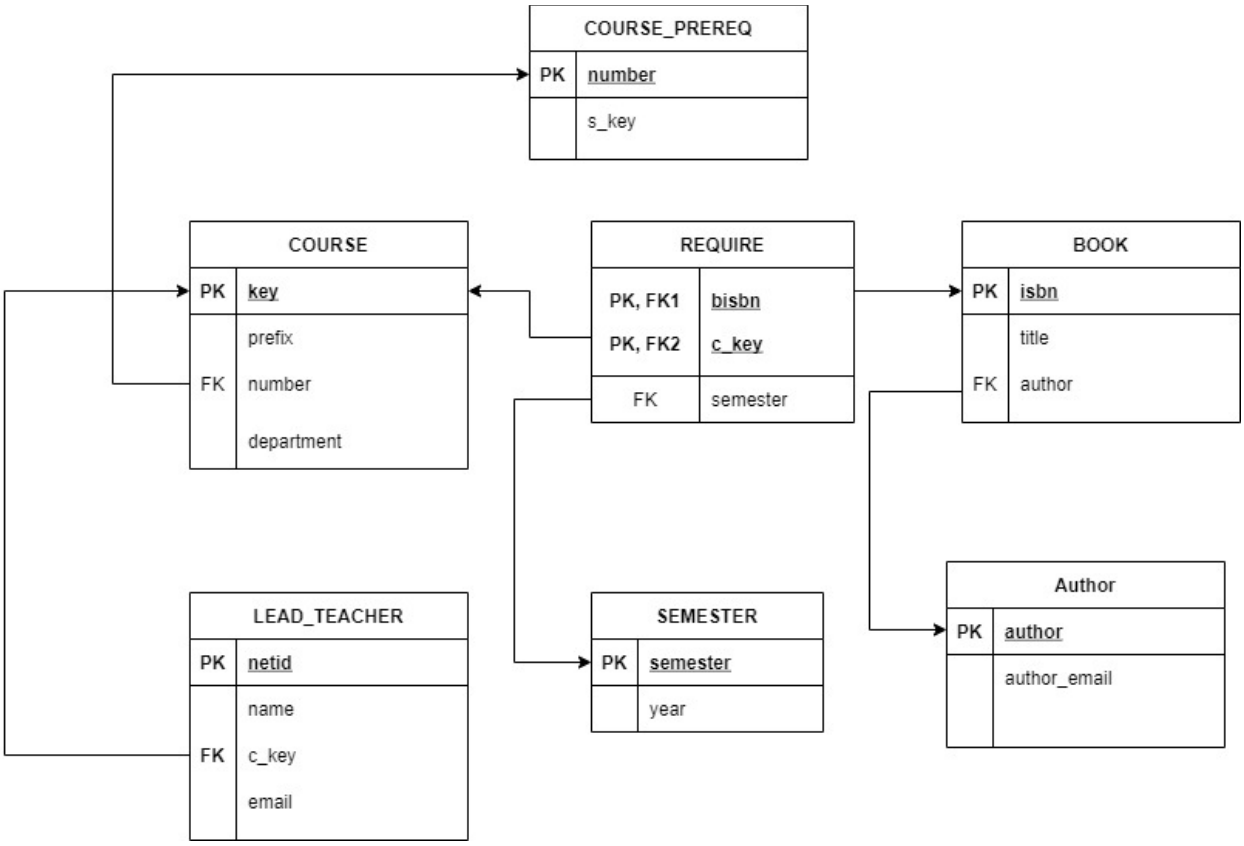
Require(c_key, bisbn, semester, year)

Course(key, prefix, number, department)

Book(isbn, title, author, author_email)

Course also has a M:N **recursive relationship** with itself let us consider number to be the primary key.

2. Normalize the schema to 3NF.




3. Write CREATE TABLE statements for the normalized schema.

```
CREATE TABLE COURSE
(key            int             not null,
prefix          varchar (5)             ,
number          int               not null,
department      varchar (10)    not null,
PRIMARY KEY (key),
FOREIGN KEY(number)
);

CREATE TABLE LEAD_TEACHER
(netid          varchar (6)     not null,
name            varchar (25)    not null,
c_key           int               not null,
email           varchar (25)    not null,
PRIMARY KEY (netID),
FOREIGN KEY(c_key)
);

CREATE TABLE BOOK
```

```
(ISBN          int              not null,
title          varchar (50)     not null,
author         varchar (25)     not null,
PRIMARY KEY (ISBN),
FOREIGN KEY (author)
);


CREATE TABLE REQUIRE
(number        int              not null,
semester       varchar (15)     not null,
bisbn          int                       ,
c_key            int                 not null,
PRIMARY KEY (number),
FOREIGN KEY (bisbn) REFERENCES BOOK(isbn),
FOREIGN KEY(c_key) REFERENCES COURSE(key)
);

CREATE TABLE SEMESTER
(semester      varchar (15)            not null,
year           int                     ,
PRIMARY KEY (semester),
);

CREATE TABLE COURSE_PREREQ
(number        int      not null,
s_key          int      not null,
PRIMARY KEY (super_key)
);

CREATE TABLE AUTHOR
(author        varchar(15)   not null,
author_email   varchar(30)   not null,
PRIMARY KEY(author)
);
```