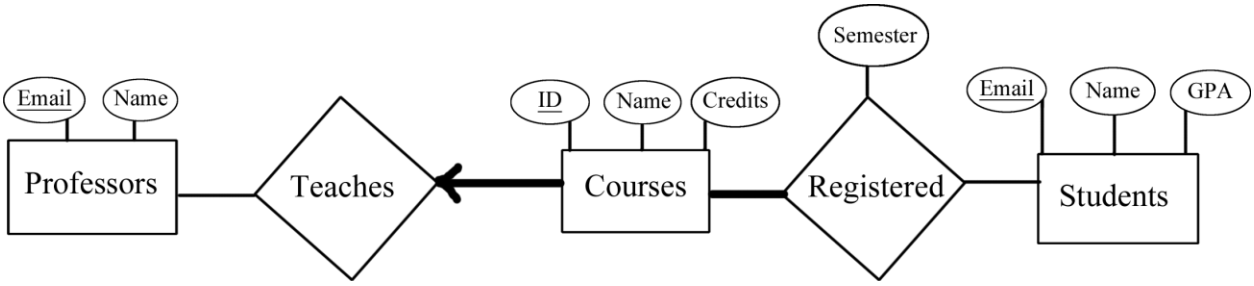
Wyatt Kormick

Kormi001 4932481

CSCI4707

2/8/17

1.A)



B)

CREATE TABLE Professors (email: CHAR(30), name: CHAR(20), PRIMARY KEY (email))

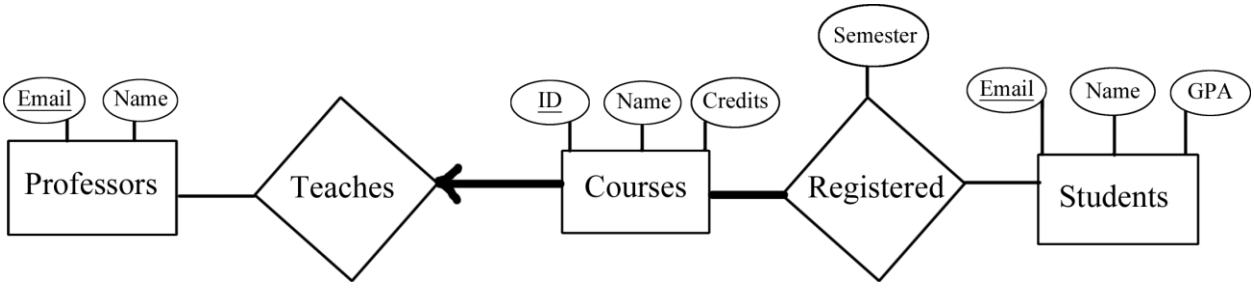
CREATE TABLE Courses (cid: CHAR(10), name: CHAR(20), Credits: INTEGER, professor_email: CHAR(30) NOT NULL, PRIMARY KEY (cid), FOREIGN KEY (professor_email) REFERENCES Professors (email))

CREATE TABLE Students (email: CHAR(30), name: CHAR(20), GPA: FLOAT(2), PRIMARY KEY (email))

CREATE TABLE Registered (student_email: CHAR(30), cid: CHAR(10), semester: CHAR(3), PRIMARY KEY (student_email, cid, semester), FOREIGN KEY (cid) REFERENCES Courses, FOREIGN KEY (student_email) REFERENCES Students (email))

Cannot Include the participation constraint in the courses:students Registered relation with current knowledge

2.A)



B)

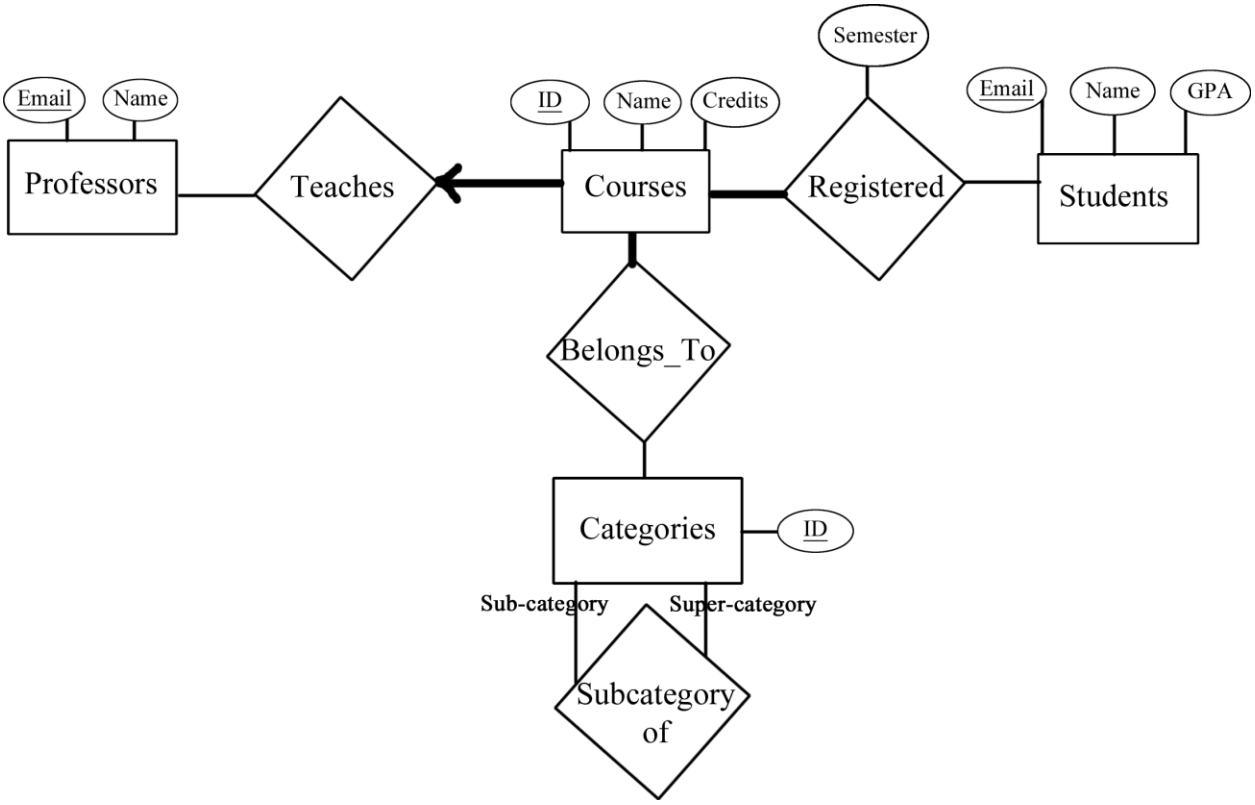
CREATE TABLE Professors (email: CHAR(30), name: CHAR(20), PRIMARY KEY (email))

CREATE TABLE Courses (cid: CHAR(10), name: CHAR(20), Credits: INTEGER, professor_email: CHAR(30) NOT NULL, PRIMARY KEY (cid), FOREIGN KEY (professor_email) REFERENCES Professors (email))

CREATE TABLE Students (email: CHAR(30), name: CHAR(20), GPA: FLOAT(2), PRIMARY KEY (email))

CREATE TABLE Registered (student_email: CHAR(30), cid: CHAR(10), semester: CHAR(3), PRIMARY KEY (student_email, cid), FOREIGN KEY (cid) REFERENCES Courses, FOREIGN KEY (student_email) REFERENCES Students (email))

3. A)



B)

CREATE TABLE Professors (email: CHAR(30), name: CHAR(20), PRIMARY KEY (email))

CREATE TABLE Courses (cid: CHAR(10), name: CHAR(20), Credits: INTEGER, professor_email: CHAR(30) NOT NULL, PRIMARY KEY (cid), FOREIGN KEY (professor_email) REFERENCES Professors (email))

CREATE TABLE Students (email: CHAR(30), name: CHAR(20), GPA: FLOAT(2), PRIMARY KEY (email))

CREATE TABLE Registered (student_email: CHAR(30), cid: CHAR(10), semester: CHAR(3), PRIMARY KEY (student_email, cid), FOREIGN KEY (cid) REFERENCES Courses, FOREIGN KEY (student_email) REFERENCES Students (email))

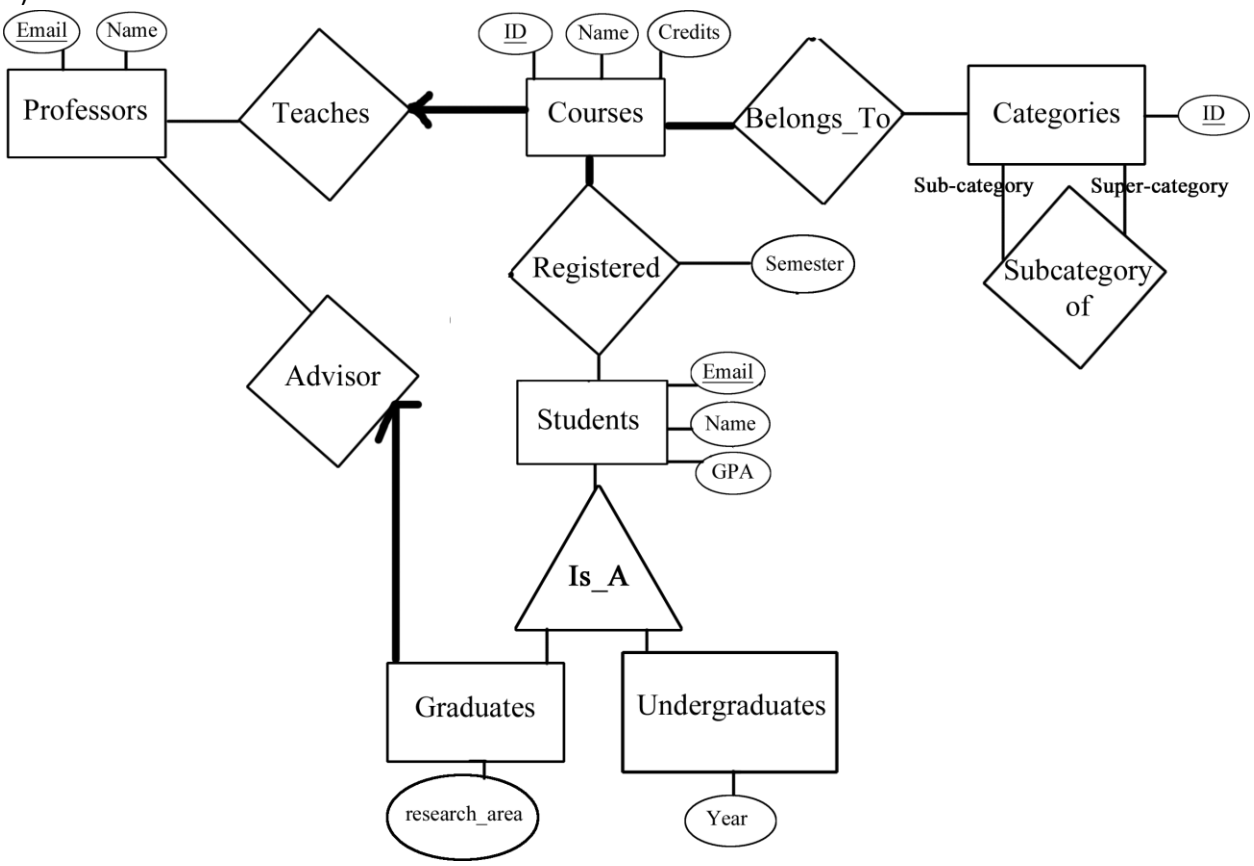
CREATE TABLE Categories (catid: CHAR(10), PRIMARY KEY (catid))

CREATE TABLE Belongs_To (catid: CHAR(10), cid: CHAR(10), PRIMARY KEY (cid, catid), FOREIGN KEY (catid) REFERENCES Categories, FOREIGN KEY (cid) REFERENCES Courses)

CREATE TABLE Subcategory_Of (sub_id: CHAR(10), super_id: CHAR(10), PRIMARY KEY(sub_id, super_id), FOREIGN KEY (sub_id) REFERENCES Categories (catid), FOREIGN KEY (super_id) REFERENCES Categories (catid))

4.

A)



B)

CREATE TABLE Professors (email: CHAR(30), name: CHAR(20), PRIMARY KEY (email))

CREATE TABLE Courses (cid: CHAR(10), name: CHAR(20), Credits: INTEGER, professor_email: CHAR(30) NOT NULL, PRIMARY KEY (cid), FOREIGN KEY (professor_email) REFERENCES Professors (email))

CREATE TABLE Students (email: CHAR(30), name: CHAR(20), GPA: FLOAT(2), PRIMARY KEY (email))

CREATE TABLE Registered (student_email: CHAR(30), cid: CHAR(10), semester: CHAR(3), PRIMARY KEY (student_email, cid), FOREIGN KEY (cid) REFERENCES Courses, FOREIGN KEY (student_email) REFERENCES Students (email))

CREATE TABLE Categories (catid: CHAR(10), PRIMARY KEY (catid))

CREATE TABLE Belongs_To (catid: CHAR(10), cid: CHAR(10), PRIMARY KEY (cid, catid), FOREIGN KEY (catid) REFERENCES Categories, FOREIGN KEY (cid) REFERENCES Courses)

CREATE TABLE Subcategory_Of (sub_id: CHAR(10), super_id: CHAR(10), PRIMARY KEY(sub_id, super_id), FOREIGN KEY (sub_id) REFERENCES Categories (catid), FOREIGN KEY (super_id) REFERENCES Categories (catid))

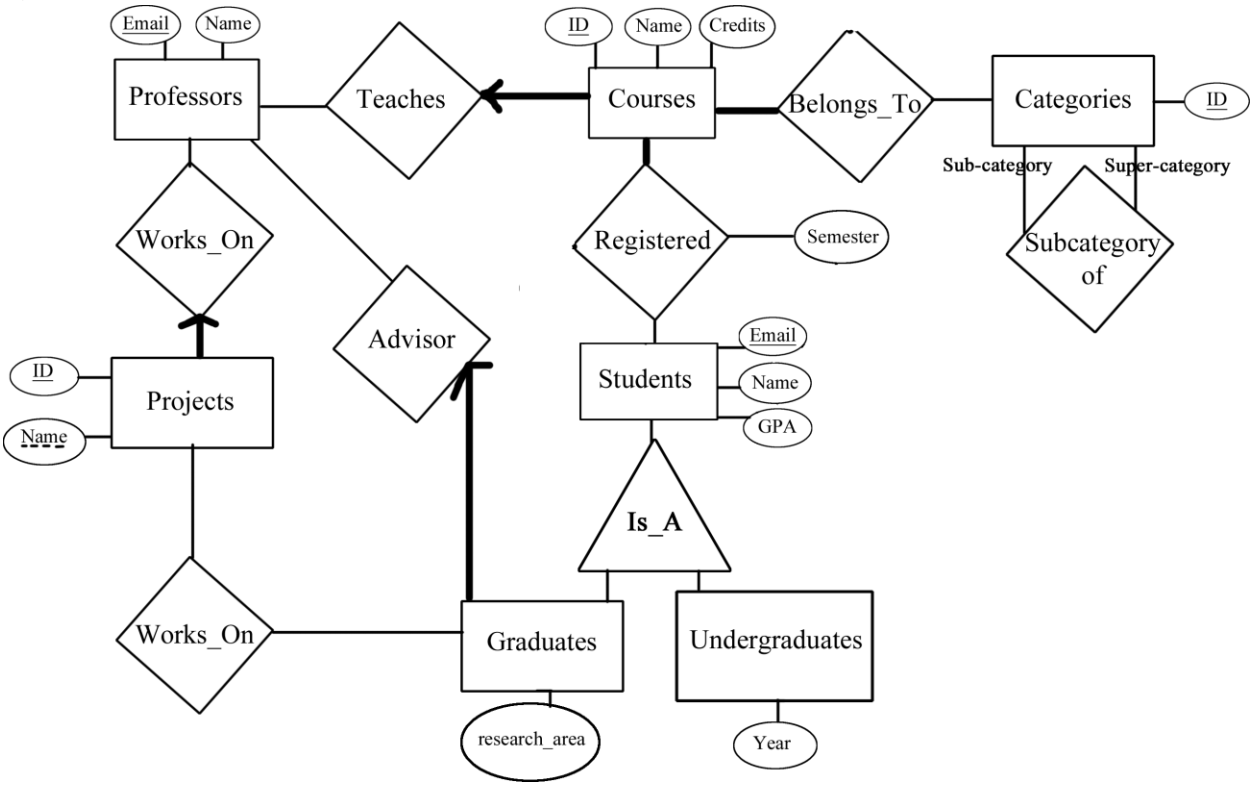
CREATE TABLE Undergraduates (email: CHAR(30), year: CHAR(10), PRIMARY KEY (email), FOREIGN KEY (email) REFERENCES Students ON DELETE CASCADE)

CREATE TABLE Graduates (email: CHAR(30), research_area: CHAR(20), advisor_email: CHAR(30) NOT NULL, PRIMARY KEY (email), FOREIGN KEY (email) REFERENCES Students ON DELETE CASCADE, FOREIGN KEY (advisor_email) REFERENCES Professors (email))

Cannot enforce an exclusivity between undergraduates and graduates with this method

5.

A)



B)

CREATE TABLE Professors (email: CHAR(30), name: CHAR(20), PRIMARY KEY (email))

CREATE TABLE Courses (cid: CHAR(10), name: CHAR(20), Credits: INTEGER, professor_email: CHAR(30) NOT NULL, PRIMARY KEY (cid), FOREIGN KEY (professor_email) REFERENCES Professors (email))

CREATE TABLE Students (email: CHAR(30), name: CHAR(20), GPA: FLOAT(2), PRIMARY KEY (email))

CREATE TABLE Registered (student_email: CHAR(30), cid: CHAR(10), semester: CHAR(3), PRIMARY KEY (student_email, cid), FOREIGN KEY (cid) REFERENCES Courses, FOREIGN KEY (student_email) REFERENCES Students (email))

CREATE TABLE Categories (catid: CHAR(10), PRIMARY KEY (catid))

CREATE TABLE Belongs_To (catid: CHAR(10), cid: CHAR(10), PRIMARY KEY (cid, catid), FOREIGN KEY (catid) REFERENCES Categories, FOREIGN KEY (cid) REFERENCES Courses)

CREATE TABLE Subcategory_Of (sub_id: CHAR(10), super_id: CHAR(10), PRIMARY KEY(sub_id, super_id), FOREIGN KEY (sub_id) REFERENCES Categories (catid), FOREIGN KEY (super_id) REFERENCES Categories (catid))

CREATE TABLE Undergraduates (email: CHAR(30), year: CHAR(10), PRIMARY KEY (email), FOREIGN KEY (email) REFERENCES Students ON DELETE CASCADE)

CREATE TABLE Graduates (email: CHAR(30), research_area: CHAR(20), advisor_email: CHAR(30) NOT NULL, PRIMARY KEY (email), FOREIGN KEY (email) REFERENCES Students ON DELETE CASCADE, FOREIGN KEY (advisor_email) REFERENCES Professors (email))

CREATE TABLE Projects (pid: CHAR(10), pname: CHAR(20), professor_email: CHAR(30) NOT NULL, PRIMARY KEY(pname, pid), FOREIGN KEY (professor_email) REFERENCES Professors (email))

CREATE TABLE Works_On (grad_email: CHAR(30), pid: CHAR(10), PRIMARY KEY(grad_email, pid), FOREIGN KEY (grad_email) REFERENCES Graduates (email), FOREIGN KEY (pid) REFERENCES Projects)