Database Design and Development Final Project

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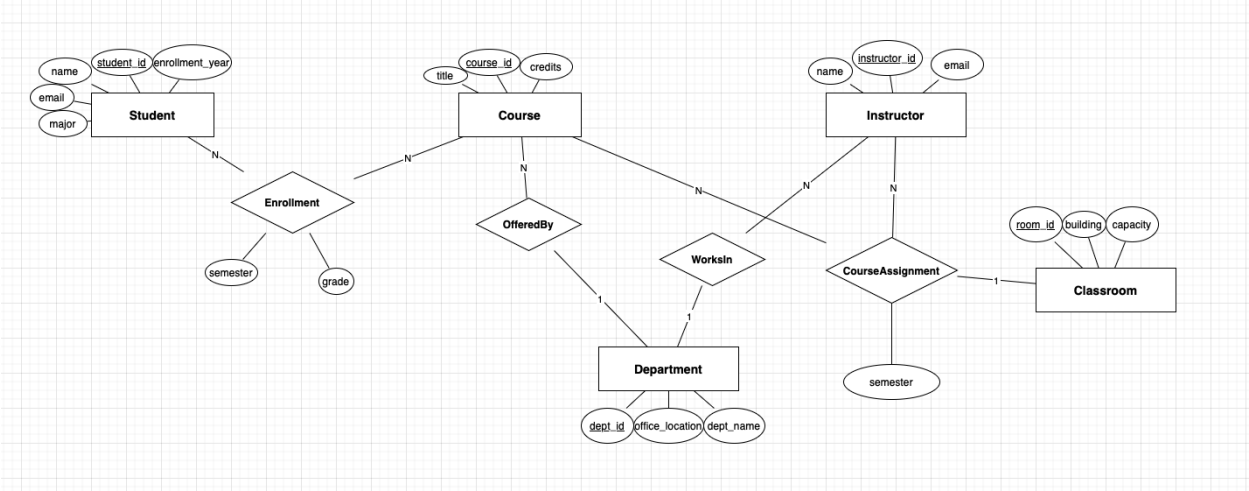
1. Requirements Grading

   University Course Registration System

   - Entities: Student, Course, Instructor, Enrollment, Classroom
   - Features: Students register for courses, instructors teach courses, classrooms are assigned to courses.
   - Why?: Natural many-to-many relationships, easy queries
2. ER Diagram



3. Schema Design:

   Department:

   Department(
   dept_id INT PRIMARY KEY,
   dept_name VARCHAR(100) NOT NULL,
   office_location VARCHAR(100)
)

   Instructor:

   Instructor(
   instructor_id INT PRIMARY KEY,
   name VARCHAR(100) NOT NULL,

```
    email          VARCHAR(100) UNIQUE NOT NULL,
    dept_id        INT,
    FOREIGN KEY (dept_id) REFERENCES Department(dept_id)
)
```

Student:

```
Student(
    student_id     INT PRIMARY KEY,
    name           VARCHAR(100) NOT NULL,
    email          VARCHAR(100) UNIQUE NOT NULL,
    major          VARCHAR(100),
    enrollment_year INT
)
```

Course:

```
Course(
    course_id      INT PRIMARY KEY,
    title          VARCHAR(100) NOT NULL,
    credits        INT,
    dept_id        INT,
    FOREIGN KEY (dept_id) REFERENCES Department(dept_id)
)
```

Classroom:

```
Classroom(
    room_id        INT PRIMARY KEY,
    building       VARCHAR(100) NOT NULL,
    capacity       INT NOT NULL
)
```

Enrollment:

```
Enrollment(
    student_id     INT,
    course_id      INT,
    semester       VARCHAR(20),
    grade          VARCHAR(2),
```

```
    PRIMARY KEY (student_id, course_id, semester),
    FOREIGN KEY (student_id) REFERENCES Student(student_id),
    FOREIGN KEY (course_id) REFERENCES Course(course_id)
)
```

Course/Assignment:

```
CourseAssignment(
    course_id      INT,
    instructor_id  INT,
    semester       VARCHAR(20),
    room_id        INT,
    PRIMARY KEY (course_id, instructor_id, semester),
    FOREIGN KEY (course_id) REFERENCES Course(course_id),
    FOREIGN KEY (instructor_id) REFERENCES Instructor(instructor_id),
    FOREIGN KEY (room_id) REFERENCES Classroom(room_id)
)
```