

Database Design and Development Final Project

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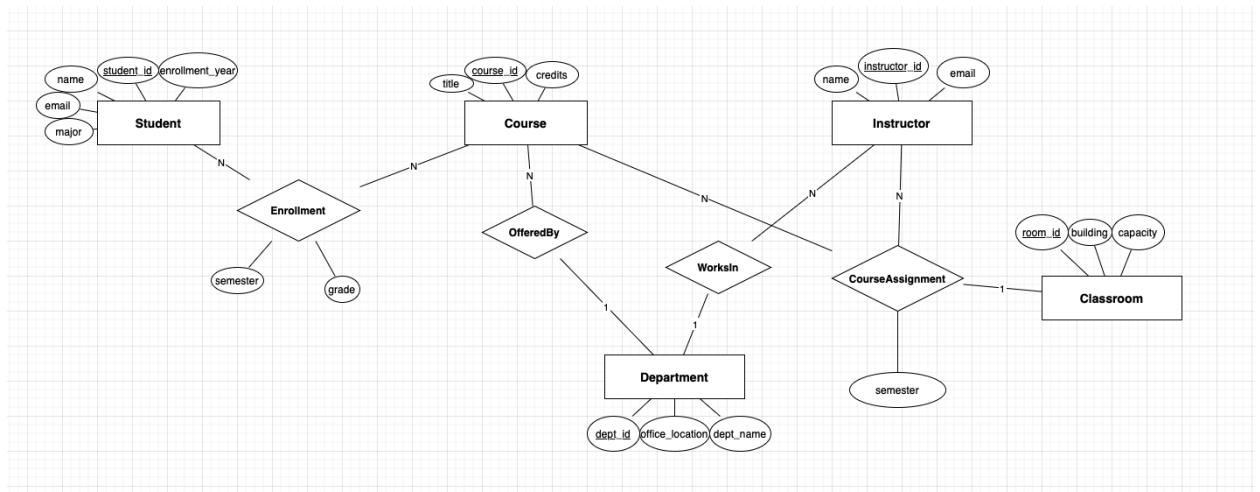
Demo Link: [Video](#)

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)  
)
```