

Activity 04: Design a database for Yoobee College

1. Project Scope (Short Paragraph)

Write a story that defines the purpose and scope of the database. Describe the main entities (e.g., students, lecturers, etc.)

2. Entities and EER Diagram

List all entities with brief descriptions of their roles and attributes (e.g., Student, Course, Class, Lecturer, etc.)

3. Table Design

State how many tables are required after mapping the EER to a relational schema?

1. Project Scope (Short Paragraph) –

A. Purpose of the Database

This database is designed to manage core academic operations for an educational institution, specifically tracking:

- Student information and enrollment
- Course offerings and details
- Lecturer assignments and information
- Class scheduling and section management
- Student enrollment in classes with grade tracking

B. Scope of the Database

The database covers the following key academic functions:

a. Student Management

- Stores student personal information
- Tracks academic details
- Maintains a unique identifier for each student

b. Course Catalog

- Defines all available courses with codes, titles, and descriptions
- Tracks credit hours and departmental affiliation
- Supports prerequisite relationships

c. Lecturer Information

- Maintains faculty records with contact and departmental information
- Tracks office locations and employment dates

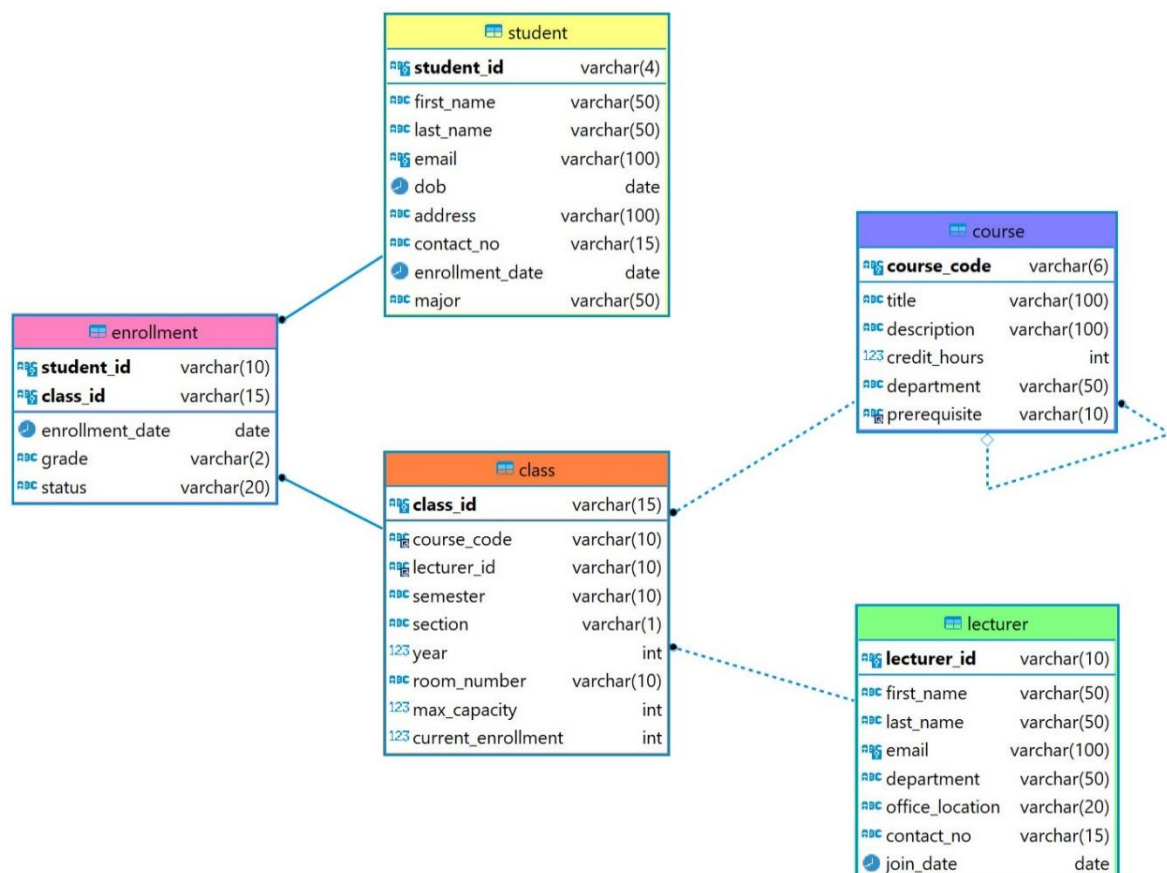
d. Class Scheduling

- Manages specific class instances of courses
- Assigns lecturers to classes
- Organizes by semester/year with section numbering
- Controls room assignments and capacity limits

e. Enrollment System

- Links students to classes they're taking
- Records enrollment dates and status
- Stores final grades for completed classes
- Tracks current enrollment numbers against class capacities

2. Entities and EER Diagram –



3. Table Design –

CREATE TABLE student

```
(
  student_id          VARCHAR(4)    PRIMARY KEY,
  first_name          VARCHAR(50)   NOT NULL,
  last_name           VARCHAR(50)   NOT NULL,
  email               VARCHAR(100)  UNIQUE NOT NULL,
  dob                 DATE,
  address              VARCHAR(100),
  contact_no          VARCHAR(15),
  enrollment_date     DATE          NOT NULL,
  major               VARCHAR(50)
);
```

CREATE TABLE course

```
(
  course_code         VARCHAR(6)    PRIMARY KEY,
  title               VARCHAR(100)  NOT NULL,
  description          VARCHAR(100),
  credit_hours        INT           NOT NULL,
  department           VARCHAR(50)  NOT NULL,
  prerequisite         VARCHAR(10),
  --FOREIGN KEY (prerequisite) REFERENCES course (course_code)
);
```

CREATE TABLE lecturer

```
(
  lecturer_id         VARCHAR(10)   PRIMARY KEY,
  first_name          VARCHAR(50)   NOT NULL,
  last_name           VARCHAR(50)   NOT NULL,
  email               VARCHAR(100)  UNIQUE NOT NULL,
  department           VARCHAR(50)  NOT NULL,
  office_location     VARCHAR(20),
  contact_no          VARCHAR(15),
  join_date           DATE          NOT NULL
);
```

CREATE TABLE class

```
(
  class_id          VARCHAR(15)  PRIMARY KEY,
  course_code       VARCHAR(10)  NOT NULL,
  lecturer_id       VARCHAR(10)  NOT NULL,
  semester          VARCHAR(10)  NOT NULL,
  section           VARCHAR(1)   NOT NULL,
  year              INT           NOT NULL,
  room_number       VARCHAR(10),
  max_capacity       INT,
  current_enrollment INT           DEFAULT 0,
  FOREIGN KEY (course_code) REFERENCES course (course_code),
  FOREIGN KEY (lecturer_id) REFERENCES lecturer (lecturer_id),
  CHECK (current_enrollment <= max_capacity)
);
```

CREATE TABLE enrollment

```
(
  student_id        VARCHAR(10)  NOT NULL,
  class_id          VARCHAR(15)  NOT NULL,
  enrollment_date    DATE         NOT NULL,
  grade             VARCHAR(2),
  status            VARCHAR(20)  DEFAULT 'Enrolled',
  PRIMARY KEY (student_id, class_id),
  FOREIGN KEY (student_id) REFERENCES student (student_id),
  FOREIGN KEY (class_id) REFERENCES class (class_id)
);
```