Lab 04: ERD Design – Solution

Note: These are suggested solutions. Some alternate solutions may exist as long as they adhere to the requirements in the question as well as the rules of Entity relationship Modelling.

Scenario 1: Enrollment

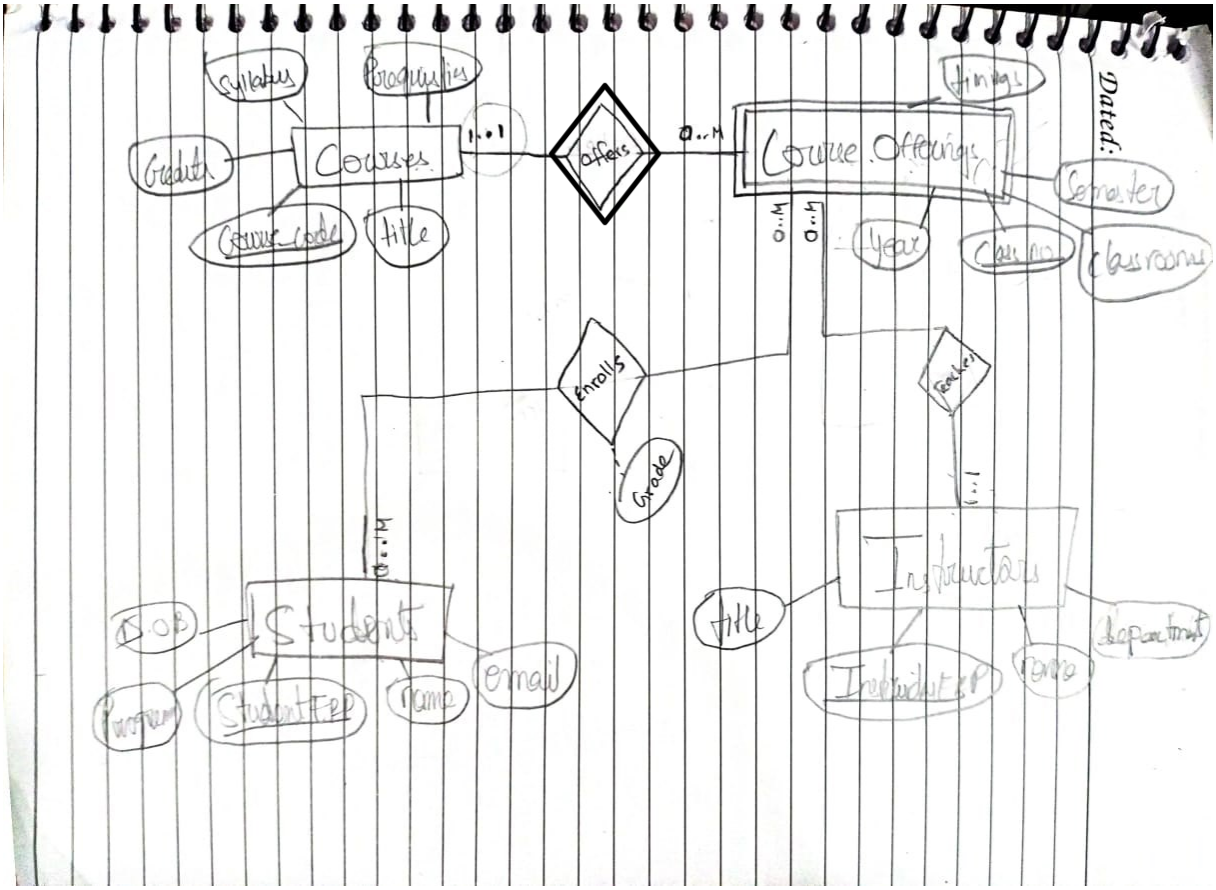
A university registrar's office maintains data about the following entities:

1. **Courses**, including course_code, title, credits, syllabus, and prerequisites.
2. **Course offerings**, including class_number, year, semester, timings, and classroom.
3. **Students**, including studentERP, name, email, D.O.B and program.
4. **Instructors**, including InstructorERP, name, department, and title.

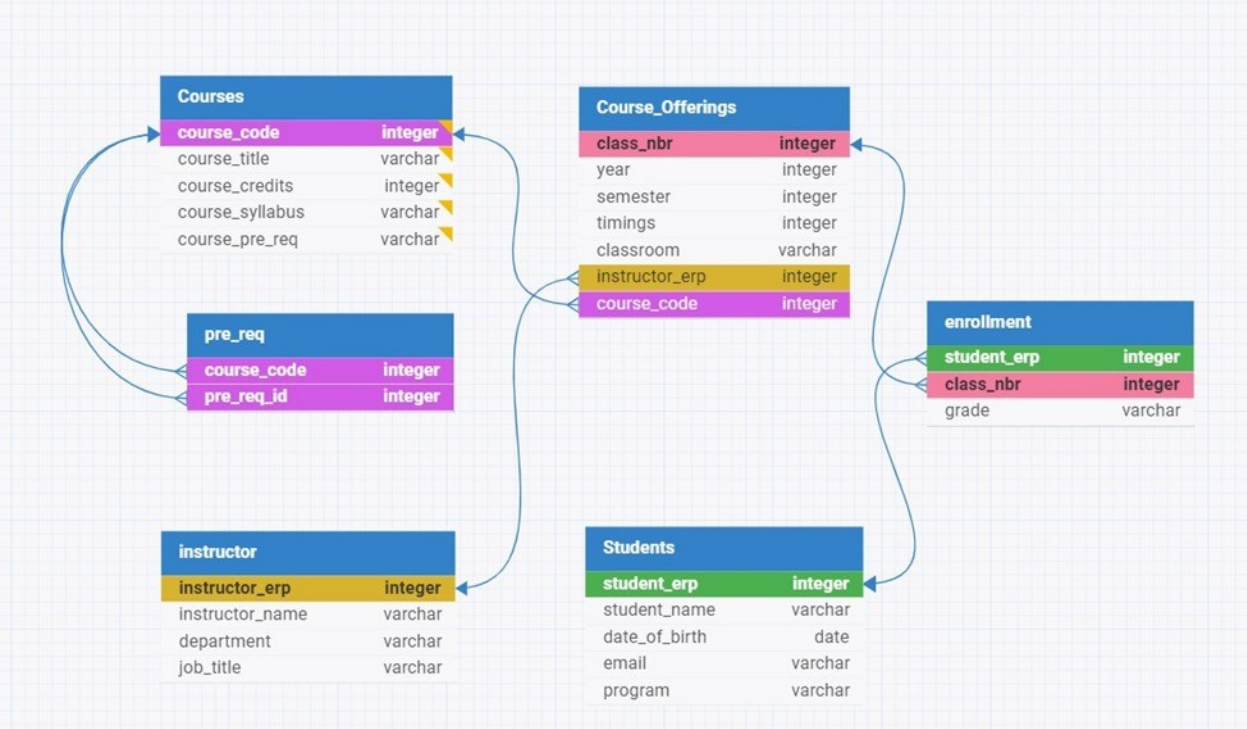
The students are enrolled in courses and are awarded grades.

Suggested Solution

Chen's ER-Mode



ERD on DB Designer



Task 3

Do you think some of these attributes could potentially be entities in the larger database? Pen down your thoughts briefly.

Ans: Yes. Some of the attributes like:

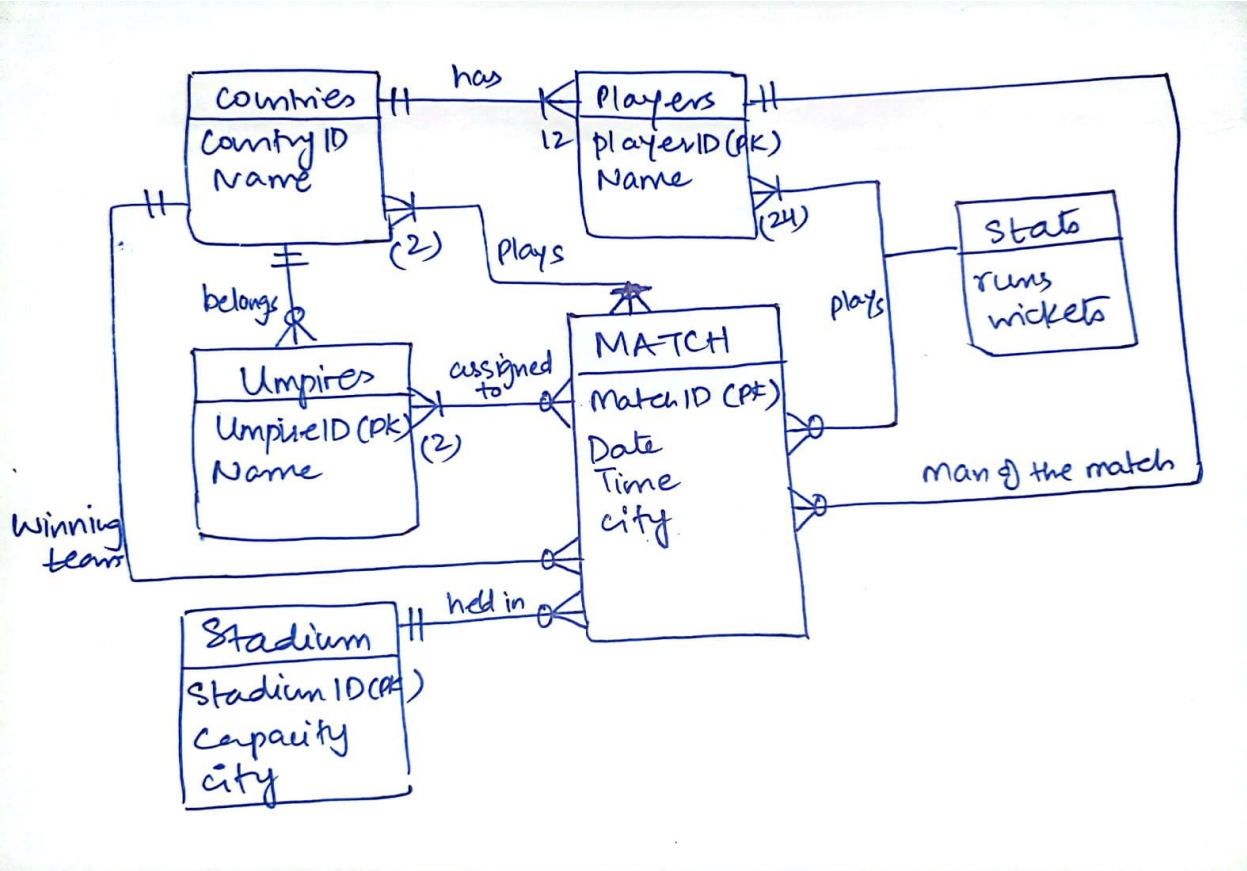
- Department attribute in Instructor can become its own entity.
- Classroom attribute in Course offering can become its own entity.
- Program attribute in Students can become its own entity.

Scenario 2: Cricket Tournament

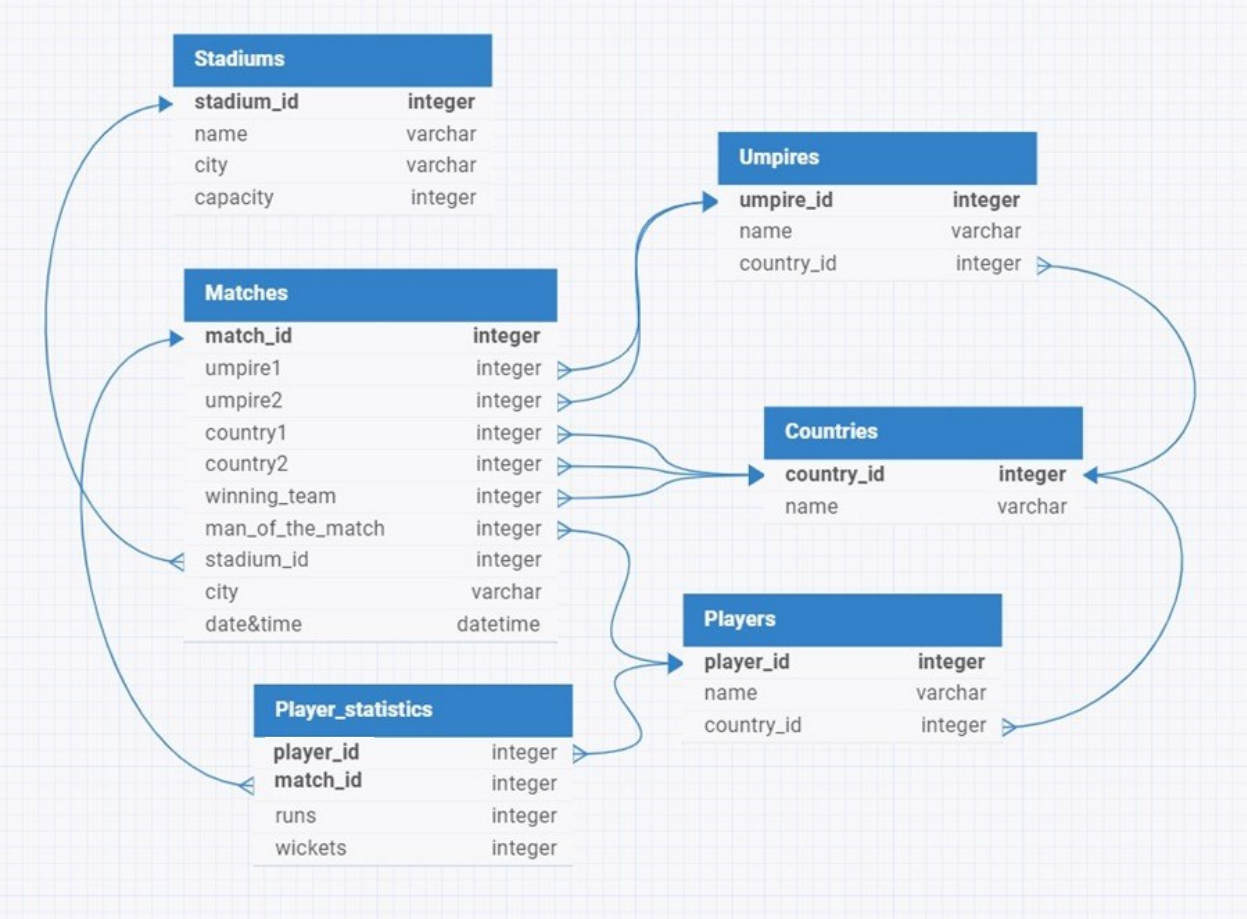
A cricket tournament is being held in Pakistan in which 8 different countries are participating. Each country has nominated its 12 players who will participate in the tournament. The system keeps a record of different stadiums of the country, the city they are in and their capacities. A panel of umpires, belonging to different countries, has been established. For each match, any two umpires will be selected from the panel. A schedule of matches will be published describing the date and time of each match, participating teams, selected umpires, name of the city and the stadium where the match will be held, the winning team and man of the match. The system keeps a record of total runs scored and total wickets taken by each player in every match.

Suggested Solution

Crow's Foot ER-Model



Final ERD for Implementation (DB Designer)



Scenario 3: Hotel Management System

A hotel management system keeps information about rooms, floors and halls in a hotel and their arrangements. A data model must be designed for this system based on the following information:

The hotel has several rooms (RoomNo, Description) located in a multi-floored building and a limited number of dining halls (HallNo, Description) located on different floors.

Each room is assigned a certain occupancy type (i.e., Single, Double, Twin, Triple, Quad) and a category (e.g. A, B, C etc). The category defines facilities available in that room (e.g., internet access, laundry service, pickup, drop-off etc).

Each room is assigned a dining hall for breakfast/lunch/dinner.

The same dining hall can be assigned to multiple rooms and same or different halls can be assigned to a single room for breakfast, lunch and dinner.

Each floor contains rooms of any one category (e.g. this is not possible to have both category A and B rooms located on the same floor.)

Room charges are defined on a per night basis for each category and occupancy type. E.g., All rooms belonging to category 'A' and occupancy type 'Double' have same per night charges.

Suggested Solution

Final ERD for Implementation (DB Designer)