Middle East Technical University

Department of Computer Engineering

CENG 351

Data Management & File Structures

Fall 2023–2024

In Class Activity 1 — ER

1 Background

Imagine that you are working as a database administrator in the IT department of a sports TV channel. A system is needed to manage the results and statistics of volleyball matches for Volleyball Leagues. Results of the volleyball matches and statistics of the teams, players, coaches, and leagues should be easily queried and shared with TV viewers during the live broadcasts. Your task as a database administrator is to design a database for this system.

2 Specifications

This system contains the information of the current season only. You should not consider the previous year's information while creating your design. You should use the following information to complete this task.

Sportspersons in this system are either players, coaches, or referees. For sportspersons, information such as "sportsperson_name", "DOB (date of birth)", "PIN (personal identification number)", and "gender" should be stored. Note that "PIN" uniquely defines a sportsperson worldwide. For players, "height", and "weight" also should be stored. For coaches, "education" also should be stored. For referees, "level" also should be stored.

Leagues for volleyball are recorded with "league_name", "country", "gender", and unique "leagueID".

Teams should be recorded with "team_name", "foundation_year", "number_of_championships", and a unique "teamID". A team can attend at most one league, while a league must have at least one team.

For *Jerseys*, we record "jersey_no" and "position". Although "jersey_no" is unique in a team, different teams may have the jerseys with the same jersey_no.

A *Player* must play for at most one team with a specific jersey. Both the start date and the end date of the contract should be recorded.

Matches should be recorded with "date", "duration", "sets_home", "sets_away", and unique "matchID". The information "sets_home" refers to the total number of sets won by the home team during a match, and "sets_away" refers to the number of sets won by the away team. A match is played by two Teams, one is "home" and the other is "away". However, a team may play numerous matches, sometimes as an away team and sometimes as a home team for different matches. It's possible that some teams didn't play any matches, but each match is played exactly once.

Each match must be refereed by some referees. You should also record the role of the referee (e.g. first referee, second referee, first line referee, second line referee, and VAR (Video Assistant Referee)). A referee may have refereed several matches, but some referees may have not refereed any matches yet.

A *Coach* must train at most one team for a period between a start date and an end date. Both the start date and the end date should be recorded. However, a Team might be trained by many coaches with different roles (such as general coach and assistant coach).

Finally, *Sponsors* are kept with "description" and unique "sponsorID" information. Sponsors financially support the **training** of a Team by a Coach. The amount of support should also be recorded.

3 Output

a Draw the ER diagram corresponding to the above specifications

b List the schemata of the tables for the conceptual design you made.
E.g:
Employees (ssn, name, lot)
Dept_Mgr (did, dname, budget, ssn, since) ssn REFERENCES Employees (ssn)

Note: Try to use as small number of tables as possible. Do not forget to underline the primary keys (both in ER and schemata) of the tables and show the foreign keys (in schemata). You don't need to write SQL Create Table commands.