

q1)

Suppose you are given the following requirements for a simple database for the NBA: ·

NBA has many teams,

each team has a name, a city, a coach, a captain, and a set of players

each player belongs to only one team, ·

each player has a name,id, a position (such as point guard ,shooting guard etc), a skill level, and a set of injury records (having attributes as id, description),

The injuries records are dependent on players

a team captain is also a player,

a game is played between two teams (referred to as host_team and guest_team) and has a date (such as May 11th, 1999) and a score (such as 114 to 112).

Draw ER Diagram for the above scenario

Q2)

Consider the following information about a university database:

Professors have an SSN, a name, an age, a rank, and a research specialty.

Projects have a project number, a sponsor name (e.g., NSF), a starting date, an ending date, and a budget.

Graduate students have an SSN, a name, an age, and a degree program (e.g., M.S. or Ph.D.).

Each project is managed by one professor (known as the project's principal investigator).

Each project is worked on by one or more professors (known as the project's co-investigators).

Professors can manage and/or work on multiple projects.

Each project is worked on by one or more graduate students (known as the project's research assistants).

When graduate students work on a project, a professor must supervise their work on the project. Graduate students can work on multiple projects, in which case they will have a (potentially different) supervisor for each one.

Departments have a department number, a department name, and a main office.

Departments have a professor (known as the chairman) who runs the department.

Professors work in one or more departments, and for each department that they work in, a time percentage is associated with their job.

Graduate students have one major department in which they are working on their degree.

Each graduate student has another, more senior graduate student (known as a student advisor) who advises him or her on what courses to take.

Design and draw an ER diagram that captures the information about the university. Use only the basic ER model here; that is, entities, relationships, and attributes. Be sure to indicate any key and participation constraints.

Q3)

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

1. courses, including number, title, credits, syllabus, and prerequisites;
2. course offerings, including course number, year, semester, section number, instructor(s), timings, and classroom;
3. students, including student-id, name, and program;
4. instructors, including identification number, name, department, and title.

Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled. Construct an E-R diagram for the registrar's office. Document all assumptions that you make about the mapping constraints.

Note: Some entity sets in the real world naturally depend on some other entity set. They can be uniquely identified only if combined with another entity set. These are called weak entity sets, and are represented by a double rectangle. All relations of a weak entity set are also enclosed in a double diamond for identification.

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