Sample Questions on ERD

Draw ERD and transform the ERD into relation schema for the following questions:

Q. 3: All people working in an organization are called employees identified by employee id. All employees must have name, address, mobile and email. An employee must be one of the following: technical or non-technical. Technical employees have the trade and year of experience. Non-technical employees have highest degree and year of experience.

Q. 4: A person is described by id, name as first name, middle name, last name, multiple qualifications and trainings, present address (street no, street name, city) and permanent address (street no, street name, city).

Q. 5: There are many teachers in the university. Teacher has Id, name, salary. Among the teachers, Head of the department is appointed for a certain period of time (start date and end date). A teacher may be appointed Head many times. In different times, different teachers are appointed as Head.

Q6: A club can have many players and a player can join only one club for a period of time with a start date and end date. After completion of period, the player can join another club. A club has id, name and date of establishment. A Player has id, p-name and date of birth.

Q.7: A teacher can teach many courses and a course is taught by exactly one teacher. A teacher has id, name and degree. A course has course-id, title and credit.

Q.10: There are many foot ball teams participated in world cup 2018. A team has id and country. A team plays with another team in a particular date and a title of the play e.g., round 1, semi-final etc.

More problems

1. **Weak Entity set**

A course has course\_id, title and credit\_hour. A section has sec\_id, semester and year. A course has many sections and a section has exactly one course. The section id cannot identify the section uniquely a section because the same section id is used for different courses. The section id, semester and year jointly cannot identify a section uniquely. So section has no primary key.

Draw the ERD and transform the ERD into relational schema.

1. **Total and partial participation**

An instructor can advise many students but a student must have exactly one adviser. An instructor has id, name, dept\_name and salary. A student has id, name, street, city, CGPA and tot\_credit.

Draw ERD showing total and partial participation and transform the ERD into relational schema.

1. **ERD with complex constraints**

A student can enroll a maximum of 45 courses and a minimum of 3 courses. A course can be enrolled by minimum 15 students and a maximum of 35 students. A student has id, name, street, city, CGPA and tot\_credit. A course has course\_id, title and credit\_hour.

Draw the ERD and transform the ERD into relational schema.

1. **Non-Binary (Ternary Relationship)**

There are many projects developed by many students and supervised by instructors. An instructor can supervise many projects developed by many students but any project-student pair must be supervised by only one instructor. A project has P\_id, location and budget. A student has id, name, street, city, CGPA and tot\_credit. A superviser has s\_id, name, date of birth and salary.

Draw the ERD and transform the ERD into relational schema.

1. **General problem**

There are many employees working in many projects. Each project has a manager who is also an employee. An employee has e\_id, name, DOB and salary. A project has p\_id, p\_name and budget. An employee can work for many projects with a start\_date and end\_date and a project have many employees. Employees are two types: professional and non\_professionals. A professional has professional society and membership category. A non\_professional has field of study. A project has many tasks. A task has id and title. A task belongs to only one project. A task can be assigned to many employees and an employee can be assigned many tasks. Each assignment has a start date and end date. Each task of a project is supervised by an employee. Each employee gets bonus based on his performance. Each bonus has a bonus number, date and achievement. A bonus can only be identified uniquely when employee id is added to bonus.