Sample Scenarios for ERD

Practice at class

Draw ERD and transform the ERD into relational schema and write SQL DDL for the following:

Q1: Cricket Players and Clubs Information System is given below:

The aim of this system is to keep information of all the cricket players and clubs of Bangladesh. There are many cricket clubs in Bangladesh. A club has many players. A club participates as a team to many matches organized in different venues. The clubs, the players, the matches and the venues are identified by club id, player id, match id and venue id respectively. A match is held always in between two teams of two clubs. A match must have the date and the man of the match. You also need to record the number of runs and the number of wickets by each player in that match. You can assume any attribute or entity you need

Q.2: 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. 3: 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. 4: 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.

ERD: Practice at home

1. Many to Many relationship with descriptive attributes:

A teacher can teach many courses and a course can be taught by many teachers. A course has course_id, title and credit_hour and a teacher has T_id, name, designation salary. You have to record the semester and year of teaching of these courses by the teachers. Draw the ERD and transform the ERD into relational schema.

2. One to many or Many to one relationship

A mother can have many children and a child must have only one child. A mother has birth registration (M_BRN) number and a child have also birth registration number (C_BRN). A mother is described by date of birth, profession and income. A child is described by date of birth, height and weight. Draw the ERD and transform the ERD into relational schema.

3. One to one relationship

An apartment can be owned by exactly one person and a person can own maximum one apartment. There are many persons having no apartment. A person has NID, name, date of birth, street, city and income. An apartment has app_id, size, app_name, floor_number, location and price. Draw the ERD and transform the ERD into relational schema.

4. 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.

5. 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.

6. 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.

7. 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.

8. Converting Non-Binary (Ternary Relationship) into binary 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.