

Database Design Project: Training Center Management System

Project Description:

You are tasked with designing an Entity-Relationship (ER) database for a training center that manages students, instructors, courses, and session attendance. The training center offers multiple courses that students can register for, and each course consists of several sessions, which can be taught by more than one instructor. Attendance of both students and instructors is recorded for every session. Based on attendance, a billing system calculates payments for students and instructors. Additionally, assignments are given in each session, and students receive scores that contribute to their final course score.

Requirements:

1. Courses:

- Each course has a unique course ID, name, description, rate, and consists of multiple sessions.
- A course can have multiple instructors assigned to it.

2. Sessions:

- Each course consists of multiple sessions, each with a unique session ID, title, content, and assignments.
- Each session has one or more assignments that need to be evaluated and scored.
- Both student and instructor attendance must be recorded for each session.

3. Students:

- Students can register for multiple courses, and their attendance must be recorded for each session.
- Their final score for the course is based on the average of their assignment scores from all sessions.
- The total bill for a student is calculated by multiplying the course rate by the number of sessions they attended.

4. Instructors:

- Each course can have more than one instructor.

- Instructor attendance must be recorded for each session, and their bill is calculated by multiplying the course rate, the number of sessions attended, and their personal level.
- The instructor's personal level is a multiplier used to adjust their pay rate.

5. **Assignments:**

- Each session may have one or more assignments.
- Each assignment is evaluated and scored.
- A student's final score for the course is the average of their assignment scores.

6. **Billing:**

- Student bills are calculated based on the number of sessions they attended multiplied by the course rate.
- Instructor payments are calculated based on the number of sessions attended multiplied by both the course rate and their personal level.

Task:

You are required to design an ER diagram that meets the above requirements. Your design should include the following:

- **Entities** for Courses, Sessions, Students, Instructors, Assignments, and Attendance.
- **Relationships** to represent how students register for courses, how instructors are assigned to courses, and how attendance and assignments are managed.
- **Attributes** for each entity that capture essential data such as course rate, session title, assignment score, student and instructor attendance.
- **Cardinality** to define how many instances of each entity can relate to others (e.g., a course can have multiple sessions, students can attend multiple courses).

Deliverables:

- A complete ER diagram illustrating the training center's structure, including course sessions, assignments, attendance, and billing.

- A brief explanation of the design decisions made for entities, relationships, and cardinality.
- A DDL file to create the database in MySQL
- A SQL file to insert test data into MySQL. There are at least 5 students, 5 instructors, 10 courses. Each courses should have at least 5 sessions and each session should have at least 1 assignment.
- ALL FILE MUST BE NAMED AS FOLLOW: TEAM#_FILE_TYPE.SQL
For example:
 - Team 5: 5_DDL.SQL ; 5_INSERT.SQL; 5_DIAGRAM.PNG;
5_EXPLAIN.PDF
- Prepare to explain (all members) and answer sql queries based on your team project