CSCE 5350: Fundamentals of Database Systems

Quiz Management System - ER Diagram

Group – 13:

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A diagram of a software company

Description automatically generated

Assumption for Cardinality:

1. **Role-User Relationship –** 
   1. One-to-Many: A role can be provided-to-zero or many users. A user is associated with one and only role.
2. **User-Feedback Relationship –**
   1. One-To-Many: A user can provide zero or many feedback. But a feedback can be given by one and only one user.
3. **User-Announcement Relationship –**
   1. One-to-Many: A user can post zero or many announcements. But an announcement will be made by one and only one user at a time.
4. **User-Profile Relationship –**
   1. One-to-One: A user has zero or one profile. A profile is associated with one and only user.
5. **User-QuizFeedback-Quiz Relationship –** 
   1. **User-QuizFeedback -** 
      1. One-to-One: A user can give zero or one quiz feedback for a particular quiz. Quiz feedback is associated with one and only one User for a particular quiz.
   2. **QuizFeeback-Quiz –** 
      1. One-to-One: A quiz feedback is given to one and only one quiz for a particular user.
6. **User-Badge-Quiz Relationship -** 
   1. User-Badge –
      1. Many-to-Many: Zero or many users can win zero or many badges associated with zero or many quizzes.
   2. Badge-Quiz –
      1. Many-to-Many: Zero or Many badges can be associated with zero or many quizzes won by zero or many users.
7. **User-QuizAttempt Relationship –** 
   1. One-to-Many: A user can have zero or many quiz attempts. A quiz attempt is associated with only one user.
8. **User-Course Relationship -**
   1. Many-to-Many: A users should enroll in one or many course. A course can be enrolled by zero or many users.
9. **QuizAttempt-Result –**
   1. One-to-One: A Quiz Attempt has one and only one Result. One and Only result is associated with a quiz attempt.
10. **Profile-Department Relationship –**
    1. Many-to-One: A department can be associated with zero or many profiles. But A profile is associated with one and only department.
11. **Department-Course Relationship –**
    1. Many-to-Many: A Department will have to one or many courses. A course will belong to one or many departments.
12. **Course-Announcement Relationship –** 
    1. One-to-Many: An announcement must belong to one and only one course. But A course can have zero or many announcements.
13. **QuizAttempt-Quiz Relationship**
    1. Many-to-One: A QuizAttempt will be associated with one and only Quiz. But A Quiz should have one or many attempts.
14. **Quiz-Question Relationship –** 
    1. One-to-Many: A quiz must contain one or many questions. But a question is associated with one and only one quiz.
15. **Question-Media Relationship –** 
    1. One-to-Many: A question can have zero or many Media files. But a media belongs to one and only one question.
16. **Question-Option Relationship –** 
    1. One-to-Many: A question will have one or many options. An option is associated with one and only one Question.

Sure, I'll include foreign keys where applicable. Here are the entities with their attributes, SQL data types, and foreign keys:

**Entities and Attribution Description:**

1. Role:

- RoleID: (Primary key, Integer)

- RoleType: (Varchar)

2. User:

- UserID: (Primary key, Integer)

- UserName: (Varchar)

- Password: (Varchar)

- Email: (Varchar)

- RoleID: (Foreign key referencing Role(RoleID))

3. Profile:

- ProfileID: (Primary key, Integer)

- FirstName: (Varchar)

- LastName: (Varchar)

- PhoneNumber: (Varchar)

- Photo: (Varchar - URL or file path)

- StreetNumber: (Varchar)

- StreetName: (Varchar)

- AptNumber: (Varchar)

- City: (Varchar)

- State: (Varchar)

- Zip: (Varchar)

- Country: (Varchar)

- DOB: (Date)

- Age(): (Derived attribute - not stored in the database, can be calculated based on DOB)

- UserID: (Foreign key, Integer)

- DepartID: (Foreign Key, Varchar)

4. Department:

- DeptID: (Primary key, Varchar)

- DeptName: (Varchar)

5. QuizFeedback:

- FeedbackID: (Primary key, Integer)

- FeedbackText: (Varchar)

- FeedbackDate: (Date)

- UserID: (Foreign key referencing User(UserID))

- QuizID: (Foreign key referencing Quiz(QuizID))

6. Announcement:

- AnnouncementID: (Primary key, Integer)

- Title: (Varchar)

- Content: (Text)

- DateTime: (Datetime)

- UserID: (Foreign key referencing User(UserID)) [user who made the announcement]

- CourseID: (Foreign key referencing Course(CourseID))

7. Quiz:

- QuizID: (Primary key, Integer)

- Title: (Varchar)

- Duration: (Integer - representing minutes)

- NumberOfAttempts: (Integer)

- AccessCode: (Varchar)

- CreatedDate: (Date)

- EndDate: (Date)

- EndTime: (Time)

- Instructions: (Varchar)

8. Badge:

- BadgeID: (Primary key, Integer)

- BadgeTitle: (Varchar)

- BadgeDescription: (Varchar)

- BadgeType: (Varchar)

9. Result:

- ResultID: (Primary key, Integer)

- ResultScore: (Integer)

- AttemptID: (Foreign key referencing QuizAttempt(AttemptID))

10. QuizAttempt:

- AttemptID: (Primary key, Integer)

- AttemptNumber: (Integer)

- StartTime: (Time)

- EndTime: (Time)

- AttemptDate: (Date)

- UserID: (Foreign key referencing User(UserID))

- QuizID: (Foreign key referencing Quiz(QuizID))

11. Course:

- CourseID: (Primary key, Integer)

- CourseTitle: (Varchar)

12. Media:

- MediaID: (Primary key, Integer)

- MediaLink: (Varchar)

- QuestionID: (Foreign key referencing Question(QuestionID))

13. Question:

- QuestionID: (Primary key, Integer)

- QuestionText: (Text)

- Type: (Varchar)

- QuizID: (Foreign key referencing Quiz(QuizID))

14. Option:

- OptionID: (Primary key, Integer)

- OptionText: (Text)

- IsCorrect: (Boolean)

- QuestionID: (Foreign key referencing Question(QuestionID))

15. Feedback:

- FeedbackID: (Primary key, Integer)

- FeedbackText: (Text)

- FeedbackDate: (Date)

- FeedbackTime: (Time)

- UserID: (Foreign key, Integer)

Many to Many Relation Tables with User and Course:

16. Enrolls

- UserID: (Foreign key referencing User(UserID))

- CourseID: (Foreign key referencing Course (CourseID))

- Primary Key(UserID, CourseID)

17. Belongs\_To

- CourseID: (Foreign key referencing Course (CourseID))

- DeptID: (Foreign key referencing Course (DeptID))

- Primary Key(DeptID, CourseID)

18. Wins

- QuizID: (Foreign key referencing Quiz(QuizID))

- BadgeID: (Foreign key referencing Badge(BadgeID))

- UserID: (Foreign key referencing User(UserID))

- Primary Key(BadgeID,UserID, CourseID)