**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 –**

One-to-Many: A role can be provided-to-zero or many users. A user is associated with one and only role.

1. **User-Feedback Relationship –**

One-To-Many: A user can provide zero or many feedback. But a feedback can be given by one and only one user.

1. **User-Announcement Relationship –**

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.

1. **User-Profile Relationship –**

One-to-One: A user has zero or one profile. A profile is associated with one and only user.

1. **User-QuizFeedback-Quiz Relationship –** 
   1. **User-QuizFeedback -**

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.

* 1. **QuizFeeback-Quiz –**

One-to-One: A quiz feedback is given to one and only one quiz for a particular user.

1. **User-Badge-Quiz Relationship -** 
   1. **User-Badge –**

Many-to-Many: Zero or many users can win zero or many badges associated with zero or many quizzes.

* 1. **Badge-Quiz –**

Many-to-Many: Zero or Many badges can be associated with zero or many quizzes won by zero or many users.

1. **User-QuizAttempt Relationship –**

One-to-Many: A user can have zero or many quiz attempts. A quiz attempt is associated with only one user.

1. **User-Course Relationship –**

Many-to-Many: A users should enroll in one or many course. A course can be enrolled by zero or many users.

1. **QuizAttempt-Result –**

One-to-One: A Quiz Attempt has one and only one Result. One and Only result is associated with a quiz attempt.

1. **Profile-Department Relationship –**

Many-to-One: A department can be associated with zero or many profiles. But A profile is associated with one and only department.

1. **Department-Course Relationship –**

Many-to-Many: A Department will have to one or many courses. A course will belong to one or many departments.

1. **Course-Announcement Relationship –**

One-to-Many: An announcement must belong to one and only one course. But A course can have zero or many announcements.

1. **QuizAttempt-Quiz Relationship**

Many-to-One: A QuizAttempt will be associated with one and only Quiz. But A Quiz should have one or many attempts.

1. **Quiz-Question Relationship –**

One-to-Many: A quiz must contain one or many questions. But a question is associated with one and only one quiz.

1. **Question-Media Relationship –**

One-to-Many: A question can have zero or many Media files. But a media belongs to one and only one question.

1. **Question-Option Relationship –**

One-to-Many: A question will have one or many options. An option is associated with one and only one Question.

**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)

**Note:** The above details may change as the project progresses.