**DB Schema and DB code**

The database for the Quiz App project serves as a storage mechanism for various types of data, including user profiles, quiz questions, quiz results, and other relevant information. It allows the application to store and retrieve data efficiently, facilitating user interaction and maintaining data integrity.

**Database Schema:**

The database schema outlines the structure of the database, including tables, fields, relationships, and constraints. Below is a high-level overview of the proposed database schema for the Quiz App project:

1. **User Table:**
   * Fields: UserID (Primary Key), Username, Email, PasswordHash, ProfilePictureURL, RegistrationDate
   * Description: This table stores information about registered users, including their unique user IDs, usernames, email addresses, hashed passwords for authentication, profile picture URLs, and registration dates.
2. **Quiz Table:**
   * Fields: QuizID (Primary Key), UserID (Foreign Key), CategoryID (Foreign Key), Difficulty, TimeLimit, StartTime, EndTime, Score
   * Description: The Quiz table represents individual quiz sessions initiated by users. It includes details such as the quiz ID, user ID of the quiz taker, category ID of the quiz questions, difficulty level, time limit per question, start time, end time, and the user's score.
3. **Question Table:**
   * Fields: QuestionID (Primary Key), CategoryID (Foreign Key), QuestionText, CorrectAnswer, IncorrectAnswers
   * Description: This table stores individual quiz questions along with their corresponding category IDs, question texts, correct answers, and a list of incorrect answer options. Each question is associated with a specific category to facilitate quiz generation based on user preferences.
4. **Category Table:**
   * Fields: CategoryID (Primary Key), CategoryName
   * Description: The Category table contains a list of quiz categories available in the application. It includes unique category IDs and corresponding category names to categorize quiz questions and facilitate user selection of quiz topics.
5. **UserQuizResult Table:**
   * Fields: ResultID (Primary Key), UserID (Foreign Key), QuizID (Foreign Key), Score, AttemptDate
   * Description: This table records the results of individual quiz sessions completed by users. It includes details such as the result ID, user ID, quiz ID, score achieved, and the date of the quiz attempt. Each entry represents a user's performance in a specific quiz session.
6. **UserLeaderboard Table:**
   * Fields: LeaderboardID (Primary Key), UserID (Foreign Key), Score, Rank, EntryDate
   * Description: The UserLeaderboard table maintains a leaderboard of users based on their quiz scores. It includes details such as the leaderboard ID, user ID, score achieved, rank position, and the date of entry. The leaderboard allows users to compare their quiz scores with others and track their performance over time.

This database schema provides a structured framework for storing and managing data related to user profiles, quiz sessions, quiz questions, quiz results, categories, and leaderboard entries. It enables the Quiz App project to deliver a seamless and personalized quiz experience for users while ensuring data integrity and scalability.

Code:

-- Create User Table

CREATE TABLE User (

UserID INT PRIMARY KEY AUTO\_INCREMENT,

Username VARCHAR(50) NOT NULL,

Email VARCHAR(100) NOT NULL UNIQUE,

PasswordHash VARCHAR(100) NOT NULL,

ProfilePictureURL VARCHAR(255),

RegistrationDate TIMESTAMP DEFAULT CURRENT\_TIMESTAMP

);

-- Create Category Table

CREATE TABLE Category (

CategoryID INT PRIMARY KEY AUTO\_INCREMENT,

CategoryName VARCHAR(50) NOT NULL

);

-- Create Quiz Table

CREATE TABLE Quiz (

QuizID INT PRIMARY KEY AUTO\_INCREMENT,

UserID INT,

CategoryID INT,

Difficulty VARCHAR(20),

TimeLimit INT,

StartTime TIMESTAMP,

EndTime TIMESTAMP,

Score INT,

FOREIGN KEY (UserID) REFERENCES User(UserID),

FOREIGN KEY (CategoryID) REFERENCES Category(CategoryID)

);

-- Create Question Table

CREATE TABLE Question (

QuestionID INT PRIMARY KEY AUTO\_INCREMENT,

CategoryID INT,

QuestionText TEXT NOT NULL,

CorrectAnswer VARCHAR(255) NOT NULL,

IncorrectAnswers TEXT,

FOREIGN KEY (CategoryID) REFERENCES Category(CategoryID)

);

-- Create UserQuizResult Table

CREATE TABLE UserQuizResult (

ResultID INT PRIMARY KEY AUTO\_INCREMENT,

UserID INT,

QuizID INT,

Score INT,

AttemptDate TIMESTAMP DEFAULT CURRENT\_TIMESTAMP,

FOREIGN KEY (UserID) REFERENCES User(UserID),

FOREIGN KEY (QuizID) REFERENCES Quiz(QuizID)

);

-- Create UserLeaderboard Table

CREATE TABLE UserLeaderboard (

LeaderboardID INT PRIMARY KEY AUTO\_INCREMENT,

UserID INT,

Score INT,

Rank INT,

EntryDate TIMESTAMP DEFAULT CURRENT\_TIMESTAMP,

FOREIGN KEY (UserID) REFERENCES User(UserID)

);

**ER Diagram:**

