

Let me do a final comprehensive check:

Tables and Their Columns:

1. Users

- `userID` (PK, INT, auto-increment)
- `username` (STRING, len: 3-50)
- `email` (STRING, unique)
- `password` (STRING, len: 6-100)
- `refreshToken` (STRING, nullable)
- `resetPasswordToken` (STRING, nullable)
- `resetPasswordExpires` (DATE, nullable)
- `createdAt` (DATE)
- `updatedAt` (DATE)

2. Sessions

- `sessionID` (PK, INT, auto-increment)
- `sessionCode` (STRING, unique, len: 6)
- `hostID` (FK -> Users.userID)
- `quizID` (FK -> Quizzes.quizID)
- `isActive` (BOOLEAN)
- `createdAt` (DATE)
- `updatedAt` (DATE)

3. Participants

- `participantID` (PK, INT, auto-increment)
- `sessionID` (FK -> Sessions.sessionID)
- `userID` (FK -> Users.userID)
- `status` (ENUM: 'waiting', 'approved')
- `createdAt` (DATE)
- `updatedAt` (DATE)

4. Quizzes

- `quizID` (PK, INT, auto-increment)
- `quizName` (STRING, len: 3-255)
- `description` (TEXT, len: 10-1000)
- `visibility` (ENUM: 'private', 'public')

- `topicID` (FK -> `Topics.topicID`)
- `createdBy` (FK -> `Users.userID`)
- `maxParticipants` (INT, range: 1-1000)
- `startAt` (DATE)
- `status` (ENUM: 'draft', 'ready')
- `createdAt` (DATE)
- `updatedAt` (DATE)

5. Questions

- `questionID` (PK, INT, auto-increment)
- `questionText` (TEXT, len: 10-1000)
- `questionType` (ENUM: 'MCQ', 'TRUE_FALSE', 'SHORT_ANSWER', 'FILL_IN_THE_BLANKS')
- `correctAns` (TEXT)
- `difficulty` (ENUM: 'easy', 'medium', 'hard')
- `timeLimit` (INT, range: 5-300)
- `subtopicID` (FK -> `Subtopics.subtopicID`)
- `createdAt` (DATE)
- `updatedAt` (DATE)

6. Topics

- `topicID` (PK, INT, auto-increment)
- `topicName` (STRING, len: 2-100)
- `createdAt` (DATE)
- `updatedAt` (DATE)

7. Subtopics

- `subtopicID` (PK, INT, auto-increment)
- `subtopicName` (STRING, len: 2-100)
- `topicID` (FK -> `Topics.topicID`)
- `createdAt` (DATE)
- `updatedAt` (DATE)

8. Options

- `optionID` (PK, INT, auto-increment)
- `optionText` (STRING, len: 1-255)
- `isCorrect` (BOOLEAN)
- `questionID` (FK -> `Questions.questionID`)
- `createdAt` (DATE)
- `updatedAt` (DATE)

9. Quiz_Questions (Junction Table)

- `quizID` (FK -> Quizzes.`quizID`)
- `questionID` (FK -> Questions.`questionID`)
- `createdAt` (DATE)
- `updatedAt` (DATE)

Associations:

1. User Associations:

- One-to-Many `with Sessions` (`as host`)
- One-to-Many `with Participants`
- One-to-Many `with Quizzes` (`as creator`)

2. Session Associations:

- Belongs-to `User` (`host`)
- One-to-Many `with Participants`
- Belongs-to `Quiz`

3. Quiz Associations:

- One-to-Many `with Sessions`
- Belongs-to `Topic`
- Many-to-Many `with Questions` (through `Quiz_Questions`)
- Belongs-to `User` (`creator`)

4. Topic Associations:

- One-to-Many `with Quizzes`
- One-to-Many `with Subtopics`

5. Question Associations:

- Many-to-Many `with Quizzes` (through `Quiz_Questions`)
- Belongs-to `Subtopic`
- One-to-Many `with Options`

Key Validations in Place:

1. User Model:

- Username length (3-50 chars)
- Email format validation
- Password length (6-100 chars)
- Date validation for resetPasswordExpires

2. Quiz Model:

- Quiz name length (3-255 chars)
- Description length (10-1000 chars)
- Valid visibility options
- Maximum participants range (1-1000)
- Future date validation for startAt

3. Question Model:

- Question text length (10-1000 chars)
- Valid question types
- Valid difficulty levels
- Time limit range (5-300 seconds)

4. Session Model:

- Session code length (exactly 6 chars)
- Alphanumeric session code

5. Topic/Subtopic Models:

- Name length validations (2-100 chars)

6. Option Model:

- Option text length (1-255 chars)

Everything appears to be consistent and properly structured. Would you like me to elaborate on any specific aspect?