ANP-7971

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Database Design for

Online Exam System

ONLINE EXAM SYSTEM

The online exam system database is used to conduct exams in online through some conditions.This database contains five main tables: **Users**, **Exams**, **Questions**, **Options**, and **Results**. Each table serves a distinct purpose in managing users, exams, questions, answer options, and results.

1. Users Table

- **Purpose**: To store information about users (students, instructors, or admins).
- **Columns**:
    - user_id: A unique identifier for each user (Primary Key).
    - username: The user's name, which must be unique and cannot be null.
    - password: The user's password, which is required for authentication.

2. Exams Table

- **Purpose**: To manage details about different exams.
- **Columns**:
    - exam_id: A unique identifier for each exam (Primary Key).
    - exam_name: The name of the exam, which cannot be null.
    - duration: The duration of the exam in minutes, which cannot be null.

3. Questions Table

- **Purpose**: To store questions associated with specific exams.
- **Columns**:
    - question_id: A unique identifier for each question (Primary Key).
    - exam_id: A foreign key that links the question to a specific exam.
    - question_text: The text of the question, which cannot be null.
    - correct_option_id: An identifier for the correct option, which can be used for auto-grading.

4. Options Table

- **Purpose**: To store multiple-choice answer options for questions.
- **Columns**:
    - option_id: A unique identifier for each option (Primary Key).
    - question_id: A foreign key that links the option to a specific question.
    - option_text: The text of the option, which cannot be null.

5. Results Table

- **Purpose**: To store results of exams taken by users.
- **Columns**:
    - result_id: A unique identifier for each result entry (Primary Key).
    - user_id: A foreign key that links the result to a specific user.
    - exam_id: A foreign key that links the result to a specific exam.

Relationships

- **Users to Results**: A one-to-many relationship where one user can have multiple exam results.
- **Exams to Questions**: A one-to-many relationship where one exam can contain multiple questions.
- **Questions to Options**: A one-to-many relationship where each question can have multiple answer options.
- **Exams to Results**: A one-to-many relationship where one exam can have multiple results recorded for different users.

Users
- User_id
- username
- password

results
- result_id
- User_id
- Exam_id

Checks result (relationship between Users and results)

exams
- exam_id
- Exam_name
- duration

have (relationship between results and exams)

have (relationship between exams and questions)

questions
- question_id
- exam_id
- question_text
- Correct_option_id

have (relationship between questions and options)

options
- Option_id
- question_id
- option_text

users
- 🔑 user_id INT
- 🔷 username VARCHAR(50)
- 🔷 password VARCHAR(20)
- Indexes ▶

results
- 🔑 result_id INT
- 🔶 user_id INT
- 🔶 exam_id INT
- Indexes ▶

exams
- 🔑 exam_id INT
- 🔷 exam_name VARCHAR(5...
- 🔷 duration INT
- Indexes ▶

options
- 🔑 option_id INT
- 🔶 question_id INT
- 🔷 option_text VARCHAR(10...
- Indexes ▶

questions
- 🔑 question_id INT
- 🔶 exam_id INT
- 🔷 question_text VARCHAR(10...
- 🔷 correct_option_id INT
- Indexes ▶