

ANP-C7971

AF0400809

GANESH RALLA

Database Design for
Online Examination System

Introduction

The Online Examination System is a platform that facilitates online learning and assessments for users. The system manages users, courses, exams, questions, and results in a structured manner, allowing efficient tracking and analysis of performance.

Objective

To create a database for an online examination platform that:

- Stores and organizes user, course, exam, and result data.
- Enables users to join courses and attempt exams.
- Tracks and calculates exam results efficiently.

Database Schema

Database Name: **Online exam system**

Tables and Their Descriptions

1. Users Table

- **Purpose:** Stores user information.
- **Fields:**
 - user_id: Unique ID for each user.
 - username: User's login name.
 - fullname: Full name of the user.
 - email: User's email address.
 - password: User's password (encrypted in the real-world application).

2. Courses Table

- **Purpose:** Manages available courses.
- **Fields:**
 - course_id: Unique ID for each course.
 - course_name: Name of the course.
 - duration: Duration of the course.
 - trainer: Name of the course trainer.

3. JoinCourse Table

- **Purpose:** Links users with the courses they have joined.
- **Fields:**
 - join_id: Unique ID for each user-course association.
 - user_id: Reference to the user in the users table.
 - course_id: Reference to the course in the courses table.

4.Exam Table

- **Purpose:** Stores information about exams related to courses.
- **Fields:**
 - exam_id: Unique ID for each exam.
 - exam_name: Name of the exam.
 - course_id: Reference to the course associated with the exam.

5.Questions Table

- **Purpose:** Stores questions and options for exams.
- **Fields:**
 - question_id: Unique ID for each question.
 - question_text: Text of the question.
 - optionA, optionB, optionC, optionD: Answer options.
 - correctoption: Correct answer option.
 - score: Score allocated for the correct answer.
 - exam_id: Reference to the related exam.

6.Result Table

- **Purpose:** Tracks exam results for users.
- **Fields:**
 - result_id: Unique ID for each result record.
 - user_id: Reference to the user in the users table.
 - course_id: Reference to the course in the courses table.
 - exam_id: Reference to the exam in the exam table.
 - score: User's score for the exam.

Key Features

1. User Management:

- Add, update, and manage user data.

2. Course Management:

- Add courses and assign trainers.
- Enable users to join specific courses.

3. Exam Management:

- Create and link exams to specific courses.
- Store exam questions and their respective answers.

4. Result Management:

- Record and store exam results.
- Generate user performance reports.

Workflow

1. User Registration:

- Users register and log in to the system.

2. Course Enrolment:

- Users join courses of their interest.

3. Exam Participation:

- Users attempt exams associated with their courses.

4. Result Generation:

- System calculates and stores results for completed exams.

Relations in the Online Examination System Database

The database contains six main tables, each of which has specific relationships with others to maintain data integrity and enable efficient data operations. Below is a description of these relations:

1. Users Table

- Relation with joincourse:
 - Type: One-to-Many
 - Each user (user_id) can join multiple courses through the joincourse table.
 - Foreign Key: user_id in joincourse references user_id in users.
- Relation with result:
 - Type: One-to-Many
 - Each user (user_id) can have multiple exam results recorded in the result table.
 - Foreign Key: user_id in result references user_id in users.

2. Courses Table

- Relation with joincourse:
 - Type: One-to-Many
 - Each course (course_id) can have multiple users enrolled via the joincourse table.
 - Foreign Key: course_id in joincourse references course_id in courses.
- Relation with exam:
 - Type: One-to-Many
 - Each course (course_id) can have multiple exams associated with it.
 - Foreign Key: course_id in exam references course_id in courses.
- Relation with result:
 - Type: One-to-Many
 - Each course (course_id) can have multiple exam results recorded in the result table.
 - Foreign Key: course_id in result references course_id in courses.

3. JoinCourse Table

- Relation with users:
 - Type: Many-to-One
 - The user_id field in joincourse links to a single user in the users table.
- Relation with courses:
 - Type: Many-to-One
 - The course_id field in joincourse links to a single course in the courses table.

This table acts as an associative entity (junction table) to establish a many-to-many relationship between users and courses.

4. Exam Table

- Relation with courses:
 - Type: Many-to-One
 - Each exam (exam_id) belongs to a single course (course_id).
 - Foreign Key: course_id in exam references course_id in courses.

- Relation with questions:
 - Type: One-to-Many
 - Each exam (exam_id) can have multiple questions associated with it.
 - Foreign Key: exam_id in questions references exam_id in exam.
- Relation with result:
 - Type: One-to-Many
 - Each exam (exam_id) can have multiple results recorded for different users.
 - Foreign Key: exam_id in result references exam_id in exam.

5. Questions Table

- Relation with exam:
 - Type: Many-to-One
 - Each question (question_id) belongs to a single exam (exam_id).
 - Foreign Key: exam_id in questions references exam_id in exam.

This table contains all the questions linked to their respective exams.

6. Result Table

- Relation with users:
 - Type: Many-to-One
 - Each result (result_id) belongs to a single user (user_id).
 - Foreign Key: user_id in result references user_id in users.
- Relation with courses:
 - Type: Many-to-One
 - Each result (result_id) is associated with a single course (course_id).
 - Foreign Key: course_id in result references course_id in courses.
- Relation with exam:
 - Type: Many-to-One
 - Each result (result_id) belongs to a single exam (exam_id).
 - Foreign Key: exam_id in result references exam_id in exam.

This table consolidates the user's performance data for exams across different courses.



