DATABASE DESIGN

ONLINE LEARNING PLATFORM

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Introduction

Online learning platforms provide access to wide segments of education to a wider group of customers regardless of geographical location. This facilitates students from across the world to gain education. Therefore, there is a high requirement of data in this process, creating a tailor-made database for providing a platform for strong data scalability is important to ensure smooth operations. The elaboration of database design to best suit the operations of online learning platform is defined in this document including necessary tools and resources for the process. In this article fake data for online learning platform has been derived to draft a tailor-made presentation.

Mission Statement

The sole mission is transforming education by building accessibility, flexibility and affordability for students globally. It also aims toward empowering students with necessary skills for adapting to the rotating economy.

Mission Objectives

- Access to education – Increasing global education reach to students for collective good in society
- Lifelong learning – Fostering continuous education to encourage students gain skills throughout their lives
- Learning flexibility – Self paced learning atmosphere, high portability for students to learn anywhere convenient
- Personalised learning experiences – Tailor made learning pathways for creating experiences based on individual user experience
- Student engagement – Interactive learning experiences for students along with consistent online feedback to keep students motivated
- Ensure security compliance – Ensuring personalised data is compliant with global regulations and to improve learning experiences through data privacy and transparency

Database Design Brief

Field Name	Type of Data	Particulars
submission_id	INT, Primary Key	Unique ID for each submission
assessment_id	INT, Foreign Key	ID of the assessments (Assessments.assessment_id)
student_id	INT, Foreign Key	ID of the student (Users.user_id)
score	INT	Marks scored by the student
submission_date	TIMESTAMP	Date and time of the submission

Tools Used for Database Design

Table for Users

Column Name	Data Type	Description
user_id	INT, Primary Key	Unique ID for each user
name	VARCHAR(200)	User's full name
email	VARCHAR(200)	User's email, must be unique
password	VARCHAR(200)	User's encrypted password
created_at	TIMESTAMP	Timestamp when the user was created

Table for Courses

Column Name	Data Type	Description
course_id	INT, Primary Key	Unique ID for each course
title	VARCHAR(200)	Course title
description	TEXT	Detailed course description
instructor_id	INT, Foreign Key	ID of the instructor (Users.user_id)
created_at	TIMESTAMP	Timestamp when the course was created

Table for Lessons

Column Name	Data Type	Description
lesson_id	INT, Primary Key	Unique ID for each lesson
course_id	INT, Foreign Key	ID of the course (Courses.course_id)
title	VARCHAR(200)	Title of the lesson
description	TEXT	Lesson content description

Table for Enrollments

Column Name	Data Type	Description
enrollment_id	INT, Primary Key	Unique enrollment ID
student_id	INT, Foreign Key	ID of the student (Users.user_id)
course_id	INT, Foreign Key	ID of the course (Courses.course_id)
enrollment_date	TIMESTAMP	Date and time of enrollment

Table for Submissions

Column Name	Data Type	Description
submission_id	INT, Primary Key	Unique ID for each submission
assessment_id	INT, Foreign Key	ID of the assessment (Assessments.assessment_id)
student_id	INT, Foreign Key	ID of the student (Users.user_id)
score	INT	Marks scored by the student
submission_date	TIMESTAMP	Date and time of the submission

Table for Videos

Column Name	Data Type	Description
video_id	INT, Primary Key	Unique ID for each video
lesson_id	INT, Foreign Key	ID of the lesson (Lessons.lesson_id)
title	VARCHAR(200)	Title of the video
video_url	VARCHAR(200)	URL or path to the video file

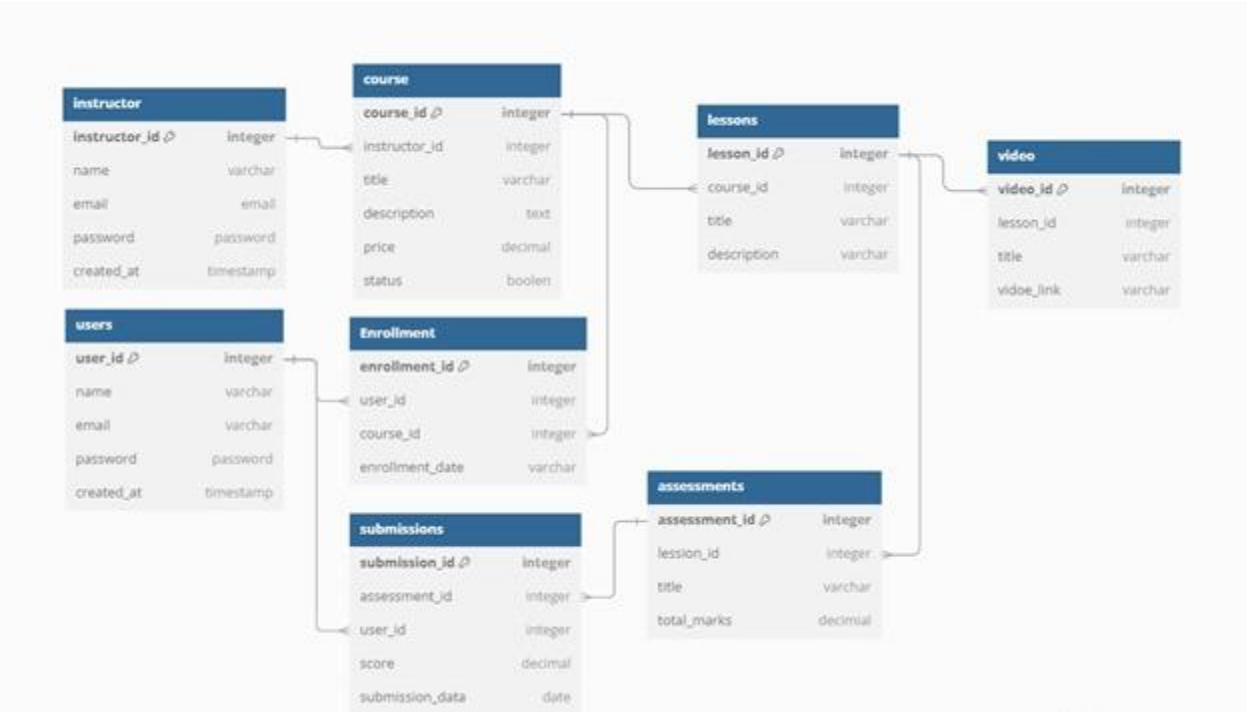
Table for Assessments

Column Name	Data Type	Description
assessment_id	INT, Primary Key	Unique ID for each assessment
lesson_id	INT, Foreign Key	ID of the lesson (Lessons.lesson_id)
title	VARCHAR(200)	Title of the assessment
total_marks	INT	Maximum marks for the assessment

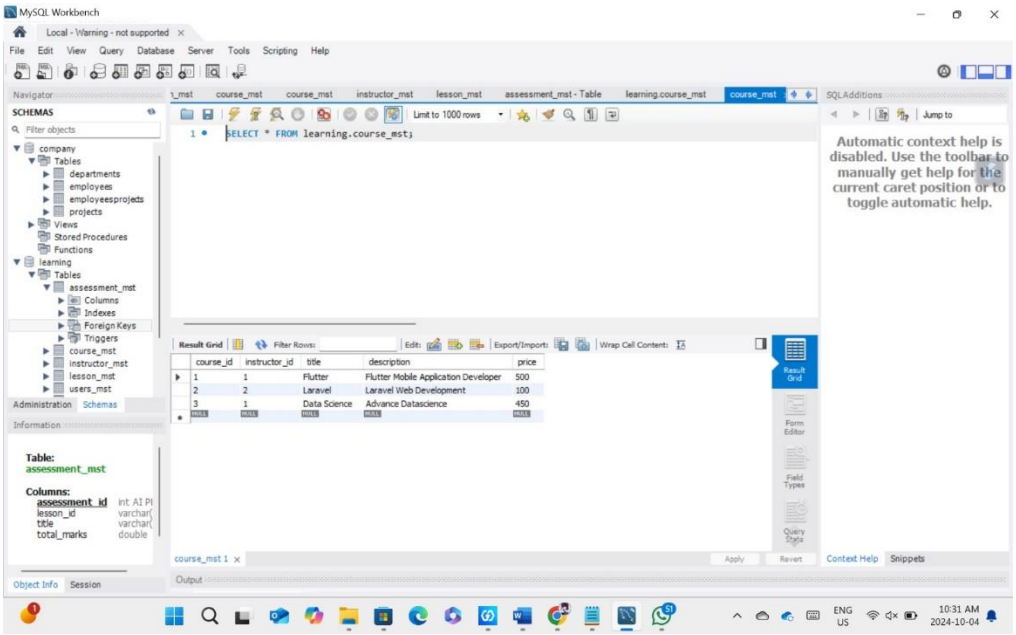
Entity Relationships

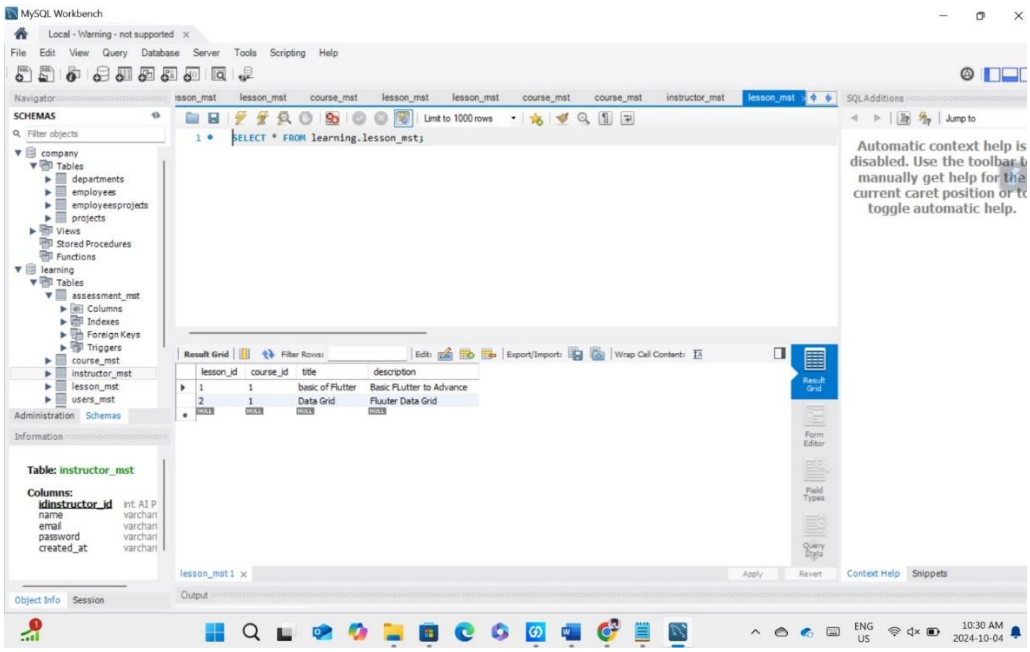
Users ↔ Courses: Teachers create several programs, but there is only one teacher for every course, creating a one-to-many relationship.
Students ↔ Courses: Students may sign up for more than one course, and courses may have a large enrollment. This Enrollments database manages this many-to-many relationship.
Courses ↔ Lessons: Every course has several lessons that are connected one to many.
Lessons ↔ Videos: A one-to-many link can be established by including many videos in each lesson.
Lessons ↔ Assessments: A one-to-many relationship can be created by having many assessments for each lesson.
Students ↔ Assessments: Through the Submissions table, a many-to-many relationship is formed between students as they submit many tests, each of which can be taken by students.

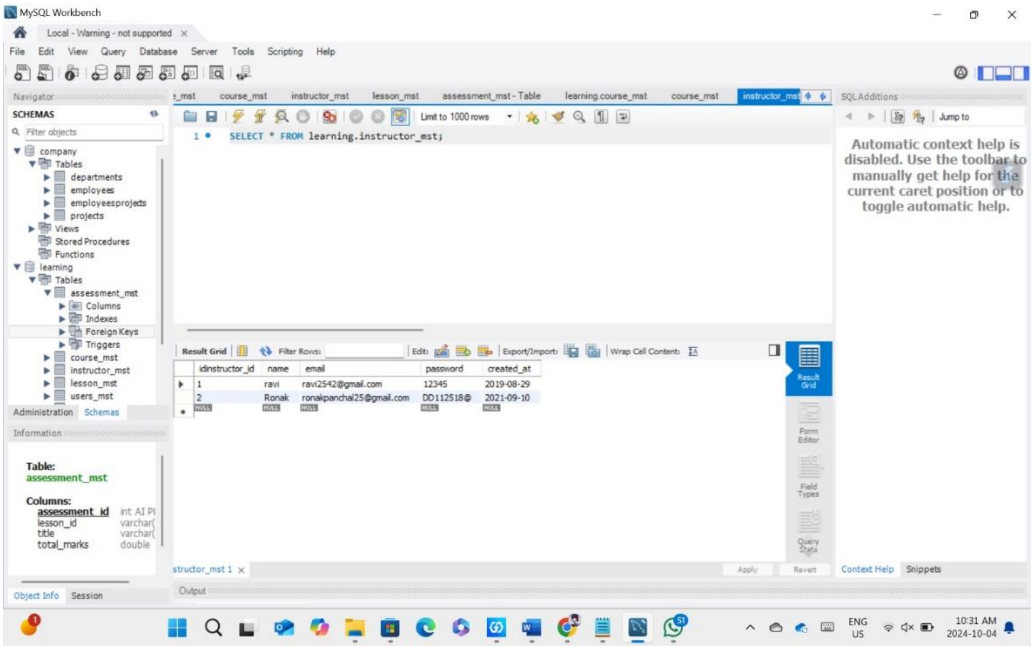
Entity Diagram



Running Databases




MySQL Workbench
SELECT * FROM learning.lesson_mst;
lesson_id course_id title description
1 1 basic of Flutter Basic FLutter to Advance
2 1 Data Grid Fluuter Data Grid


MySQL Workbench
SELECT * FROM learning.instructor_mst;
idinstructor_id name email password created_at
1 ravi ravi2542@gmail.com 12345 2019-08-29
2 Ronak ronakpanchal25@gmail.com DD112518@ 2021-09-10

Conclusion

An online learning platform's essential functions are handled by the way this database is structured. While preserving scalability and data integrity, it facilitates the creation of courses by numerous instructors, the enrollment and progression of students in these courses, and the platform's tracking of evaluations and submissions. The table relationships guarantee flexibility in handling user interactions and course material. A dynamic and captivating learning environment can be built on top of the database by carefully planning and maintaining these relationships.