

Project Report

1. Project Overview

The project highlights a database management system for a small tutoring service. The system will track and manage the information of tutors, students, tutoring sessions, and topics of study.

The aim of this project is to create a relational, database management system that organizes and tracks all our session details, payments, and subject expertise into one place.

2. Mini-World and Requirement Gathering

The mini-world was around a tutor that has been tutored on different subjects (e.g., programming, grammar, cyber security).

The main items that were taken from the requirement gathering were:

Information on the tutors: id, name, contact, email, subject expertise, qualification, hours available.

Information on the students: id, name, age, contact, email, and address.

Information on the topics: id, topic name, subject area, description.

Information session details: id, tutor, student, topic, schedule, duration, online or in-person.

Information on payment: session id, amount, payment date, method of payment. These were recorded and used to develop the relational structure of the system.

3. ER Diagram Design

We created an ER diagram on paper, in Chen notation, a.k.a Entities-- Tutor, Student, Topic, Session, Payment etc.... Relationships-- using "teaches", "attends", "covers", "pays" with cardinality and participation constraints-- it is all modelled in the diagram.

We then created an ER diagram on Draw.io, which improved the detail of the structure and relationships.

4. Database Development

We implemented tables in Microsoft Access, including sample data (5-10 records per table for each table). We have included the Access database file your submission (PrivateTutor.accdb).

The Access database structure captures the structure of the ER diagram, and the relationships are implemented with primary keys and foreign keys. We subsequently exported the database to MySQL and created SQL scripts to create the tables using CREATE TABLE statements. The file sql_file.sql contains our scripts.

5. Challenges and Reflections

One challenge was defining the many-to-many relationships (e.g., students attending more than one session) and also normalizing the data to remove redundancy.

Another challenge was to ensure that referential integrity was maintained in Access and MySQL.

This project allowed me to get hands-on experience with data modeling, ER diagramming, and SQL scripting and showed me the importance of designing before developing the system.

6. Submission

The project includes:-

ER Diagram (using draw.io)

Access database (.accdb)

SQL scripts(.sql)

A short project report (1–2 pages summarizing your project and challenges)

The tutor I interview was Muhamed from computer science lab at Lehman college at 250 Bedford Park Blvd W, Bronx, NY 10468. The information I gather from the tutor is project topic is Private tutor. Tutor teaches to the student based on some topics like programming or cyber security. The topic has many sessions. in the database, tutor need to manage the student details, their payment details, topic details in Tutor, the basic information of Tutor or ID, name, their contact details, subject details, qualification details. the student details need to be managed. There's basic details, name, address, phone number, topic, basic details like topic ID, name, subject, topic, description.

tutoring session, Tutor will be conducting, what topic to which student. these three ID are required and under what date and time that session will be conducted, duration of the session and type of the session, whether it is online or offline, will be stored. Payment details will be stored for this session, will be providing some score to the student for a certain session.

Personal Details of Tutor are stored in Tutor. Table, personal details of student are stored in a student. Table, topic details are stored in topic. Table, session details are stored in session table payment details, or storing payment table and session progress detail, or stored in progress table for each attribute, qualification means qualification details of the Tutor. The challenges that I faced while creating the project is workbench password. I have learned to create database and execute the database.