CIS 244 – INTRO TO DATABASE MANAGEMENT

SPRING 2025

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PROJECT 1: PRIVATE TUTOR

1. PROJECT SELECTION

Project Topic: Private Tutor

A private tutor will be teaching the students directly for various topics like programming concepts or grammatical concepts or cybersecurity. A certain topic can have any number of sessions. The tutor needs to manage the student details, their tuition fee details and the topic details which is taught by the tutor to the specific student.

2. SYSTEM DESIGN REQUIREMENTS

Gather Requirements

1. Tutor Information

Tutor ID

First Name

Last Name

Contact Number

Email Address

Expert Subject

Qualification

Availability Schedule

2. Student Information

Student ID

First Name

Last Name

Age

Contact Number

Email Address

Address

3. Topic Information

Topic ID

Topic Name

Subject Name (like computer science or social or mathematcis)

Topic Description

4. Tutoring Session Details

Session ID

Tutor ID

Student ID

Topic ID

Date and Time

Duration (like two hours)

Type (Online/In-person)

5. Payment Information

Payment ID (unique identifier)

Session ID (linked)

Total Amount Paid

Payment Date

Payment Status (Like Paid, Pending)

Payment Mode (Cash, Online etc.)

6. Progress Tracking

Report ID

Session ID

Evaluation Date

Feedback

Score

Document Process

The tutor and the student are the two persons who are involved in the private tutor. The personal details of the tutor and the student will be included in the project.

Some of the personal details of the tutor are first name, last name, contact number, email address, subject in which they are expert, qualification details and their available schedule details.

Some of the personal details of the student are first name, last name, age, contact number, email address and their address details.

The topic details which the tutor teaches the students like the topic name, subject details which it belongs to and the topic description.

Session details like when the session will be conducted, duration and details like whether the session will be conducted online or in-person.

Some of the payment details like the total amount paid by the student for the certain session, payment date, status of the payment and the mode of the payment.

Each session which is attended by the student will be evaluated by the tutor and proper feedback and score will be provided to the student.

1. **Tutor Information**

Attribute Name	Description
Tutor_ID	It uniquely identifies each tutor
First_Name	It denotes the tutor's first name
Last_Name	It denotes the tutor's last name
Contact_Number	It denotes the tutor's Phone number for contacting the tutor
Email_Address	It denotes the tutor's email address
Expert_Subject	It denotes the tutor's expert subject
Qualifications	It denotes the tutor's educational or professional qualifications
Availability_Schedule	It denotes the tutor's available timing.

2. Student Information

Attribute Name	Description
Student_ID	It uniquely identifies each student
First_Name	It denotes the student's first name
Last_Name	It denotes the student's last name
Age	It denotes the student's age
Contact_Number	It denotes the student's phone number for contacting the student
Email_Address	It denotes the student's email address
Address	It denotes the student's residential address

3. **Topic Information**

Attribute Name	Description
Topic_ID	It uniquely identifies each topic
Topic_Name	It denotes the name of the topic being taught
Subject_Name	It denotes the subject to which the topic belongs (e.g., Math, Science)
Topic_Description	It denotes the brief explanation or overview of the topic

4. Tutoring Session Details

Attribute Name	Description
Session_ID	It uniquely identifies each tutoring session
Tutor_ID	It refers the tutor for the session
Student_ID	It refers the student attending the session
Topic_ID	It refers the topic taught during the session
Date_Time	Date and time of the tutoring session
Duration	Length of the session (e.g., 2 hours)
Type	Mode of session: Online or In-person

5. Payment Information

Attribute Name	Description
Payment_ID	It uniquely identifies each payment
Session_ID	It refers the session for which payment was made
Total_Amount_Paid	Total amount paid by the student
Payment_Date	Date when the payment was made
Payment_Status	Status of payment (e.g., Paid, Pending)
Payment_Mode	Mode of payment (e.g., Cash, Online)

6. Progress Tracking

Attribute Name	Description
Report_ID	It uniquely identifies each progress report
Session_ID	It refers the session being evaluated
Evaluation_Date	It denotes the date when the evaluation was conducted
Feedback	It denotes the comments provided by the tutor for the performance of the student.
Score	It denotes the score given to the student by the tutor.

ENTITY-RELATIONSHIP (ER) DIAGRAMS

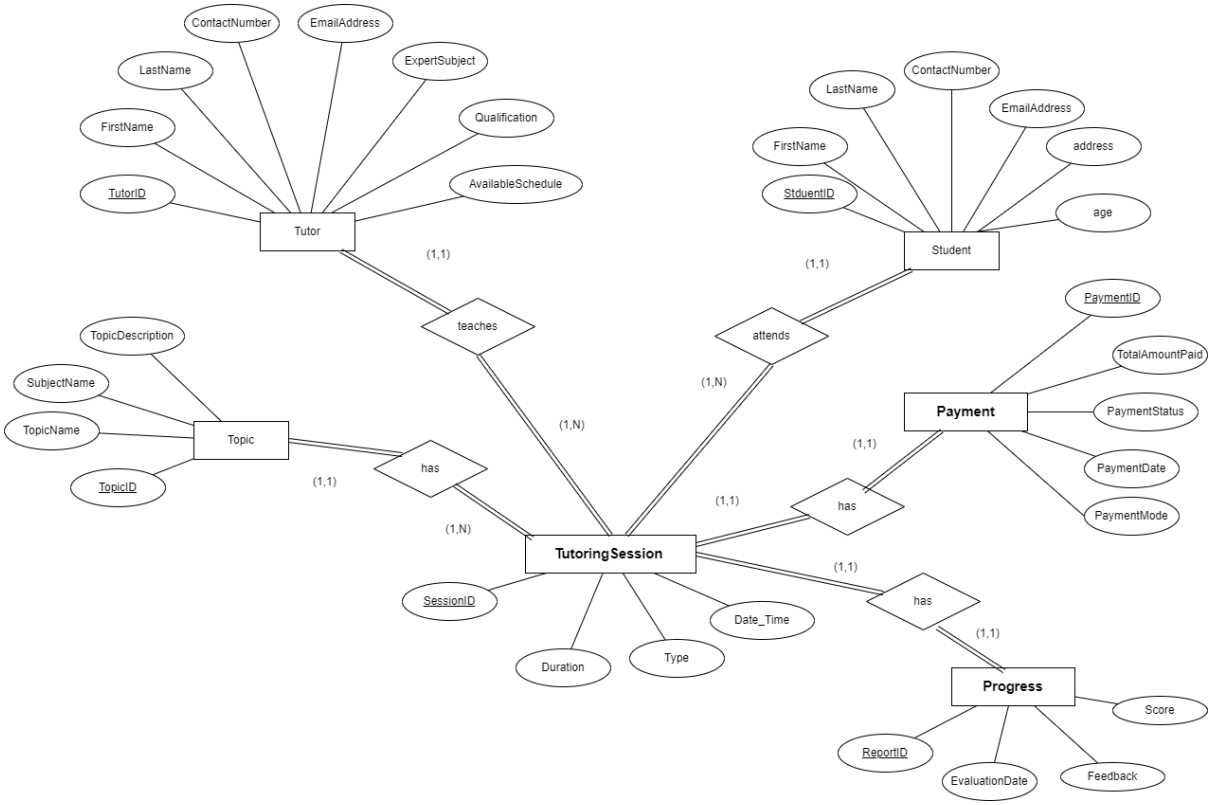


Figure: Chen Notation ER Diagram

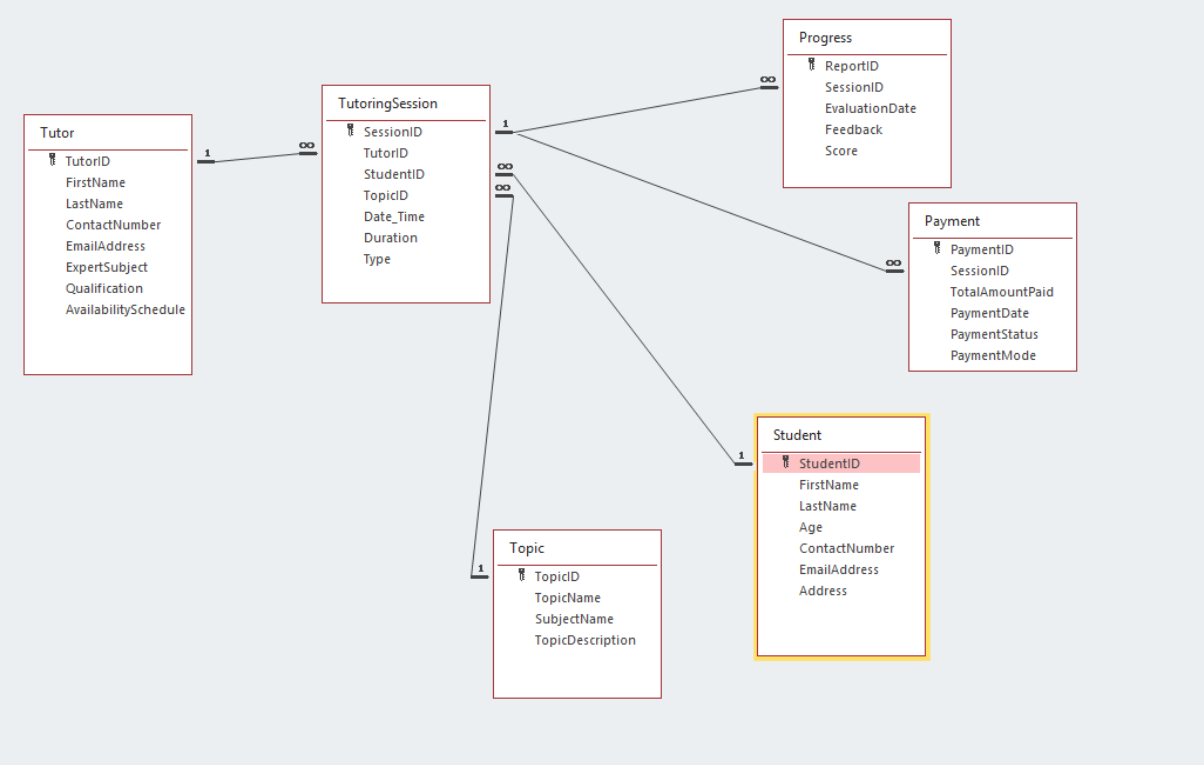
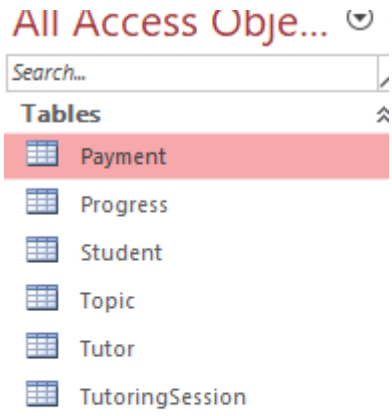


Figure: Cleaner Version Using Access

DATABASE CREATION

Development in Access



Tutor

TutorID	FirstName	LastName	ContactNum	EmailAddre	ExpertSubje	Qualificatio	Availability	Click to Add
1	Alice	Johnson	1234567890	alice@exampl	Mathematics	M.Sc Math	Mon-Fri 5PM-8	
2	Bob	Smith	1234567891	bob@example	Physics	M.Sc Physics	Sat-Sun 10AM-	
3	Carol	Davis	1234567892	carol@exampl	English	M.A English	Mon-Fri 3PM-6	
4	David	Wilson	1234567893	david@examp	Chemistry	PhD Chemistry	Weekdays 6PM	
5	Eva	Taylor	1234567894	eva@example	Biology	M.Sc Biology	Weekends 10A	
6	Frank	Thomas	1234567895	frank@exampl	History	M.A History	Mon-Wed 5PM	
7	Grace	Lee	1234567896	grace@examp	Geography	M.Sc Geograph	Tue-Thu 6PM-8	
8	Henry	Martin	1234567897	henry@examp	Computer Scie	MCA	Weekdays 9AM	
9	Irene	Clark	1234567898	irene@examp	Economics	M.A Economics	Weekends 11A	
10	Jack	Lewis	1234567899	jack@example	Political Scien	M.A Political S	Evenings only	

Tutor | Student

StudentID	FirstName	LastName	Age	ContactNum	EmailAddre	Address	Click to Add
1	Tom	Anderson	17	9988776655	tom@student.	123 Main St	
2	Sara	Miller	18	9988776656	sara@student.	456 Elm St	
3	Ben	White	16	9988776657	ben@student.	789 Oak St	
4	Lily	Brown	17	9988776658	lily@student.c	321 Pine St	
5	Mike	Green	19	9988776659	mike@studen	654 Cedar St	
6	Nina	Adams	15	9988776660	nina@student	987 Maple St	
7	Jake	Hall	18	9988776661	jake@student.	159 Birch St	
8	Emma	Scott	16	9988776662	emma@stude	753 Willow St	
9	Alex	King	17	9988776663	alex@student.	852 Spruce St	
10	Kate	Wright	18	9988776664	kate@student	951 Fir St	

Topic

TopicID	TopicName	SubjectNam	TopicDescri	Click to Add
1	Algebra Basics	Mathematics	Introduction to	
2	Newton's Laws	Physics	Detailed expla	
3	Grammar Rule	English	Overview of gr	
4	Organic Chemi	Chemistry	Study of carbo	
5	Cell Biology	Biology	Structure and f	
6	World War II	History	Causes, events	
7	Continents and	Geography	Earth's contine	
8	Python Prograi	Computer Scie	Basics of Pytho	
9	Supply and De	Economics	Principles of su	
10	Political Theor	Political Scienc	Key theories a	

TutoringSession

SessionID	TutorID	StudentID	TopicID	Date_Time	Duration	Type	Click to Add
1	1	1	1	01-10-2024 17:00:00	2 hours	Online	
2	2	2	2	02-10-2024 10:00:00	1.5 hours	In-person	
3	3	3	3	03-10-2024 15:00:00	1 hour	Online	
4	4	4	4	04-10-2024 18:00:00	2 hours	Online	
5	5	5	5	05-10-2024 11:00:00	1 hour	In-person	
6	6	6	6	06-10-2024 16:00:00	2 hours	In-person	
7	7	7	7	07-10-2024 19:00:00	1.5 hours	Online	
8	8	8	8	08-10-2024 09:00:00	2 hours	In-person	
9	9	9	9	09-10-2024 12:00:00	1 hour	Online	
10	10	10	10	10-10-2024 17:00:00	1.5 hours	In-person	

Progress

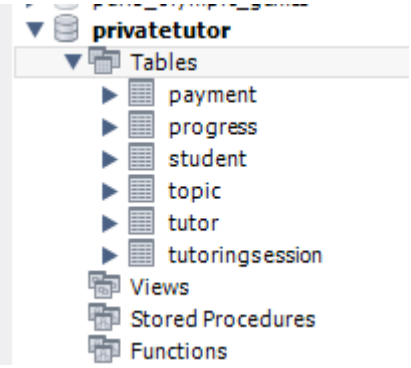
ReportID	SessionID	EvaluationD	Feedback	Score	Click to Add
1	1	01-10-2024	Good understa	85.5	
2	2	02-10-2024	Needs improv	60	
3	3	03-10-2024	Excellent perf	95	
4	4	04-10-2024	Average effort	70	
5	5	05-10-2024	Well done	88	
6	6	06-10-2024	Below expecta	55	
7	7	07-10-2024	Great participa	90	
8	8	08-10-2024	Fair performar	75	
9	9	09-10-2024	Excellent effor	92	
10	10	10-10-2024	Good progress	80	

Sort & Filter | Records | Find | Text Formatting

Payment

PaymentID	SessionID	TotalAmour	PaymentDat	PaymentSta	PaymentMc	Click to Add
1	1	50	01-10-2024	Paid	Online	
2	2	40	02-10-2024	Pending	Cash	
3	3	30	03-10-2024	Paid	Online	
4	4	60	04-10-2024	Paid	Cash	
5	5	25	05-10-2024	Pending	Online	
6	6	55	06-10-2024	Paid	Cash	
7	7	45	07-10-2024	Paid	Online	
8	8	65	08-10-2024	Pending	Cash	
9	9	35	09-10-2024	Paid	Online	
10	10	40	10-10-2024	Paid	Online	

Export to MySQL



SQL Scripts:

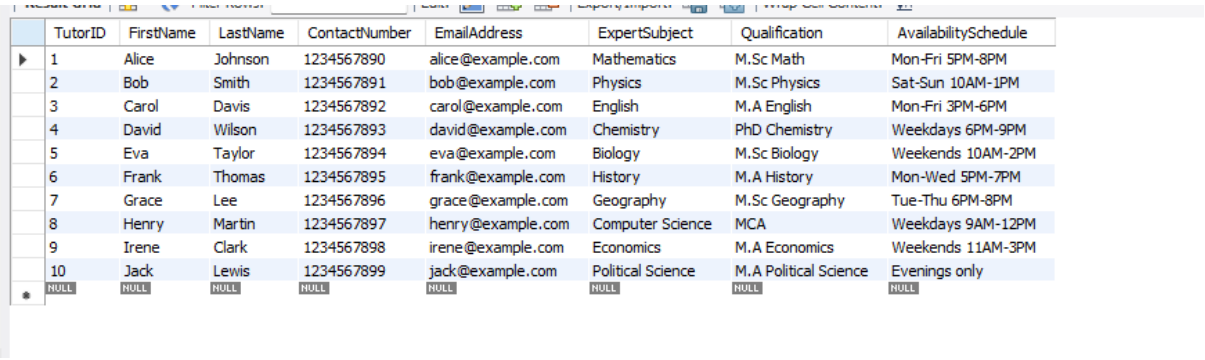
```
drop database if  exists PrivateTutor;

create database if not exists PrivateTutor;
use PrivateTutor;

CREATE TABLE Tutor (
   TutorID INT PRIMARY KEY,
   FirstName VARCHAR(50),
   LastName VARCHAR(50),
   ContactNumber VARCHAR(15),
   EmailAddress VARCHAR(100),
   ExpertSubject VARCHAR(100),
   Qualification TEXT,
   AvailabilitySchedule TEXT
);

CREATE TABLE Student (
   StudentID INT PRIMARY KEY,
   FirstName VARCHAR(50),
   LastName VARCHAR(50),
   Age INT,
   ContactNumber VARCHAR(15),
   EmailAddress VARCHAR(100),
   Address TEXT
);
```

```
CREATE TABLE Topic (
  TopicID INT PRIMARY KEY,
  TopicName VARCHAR(100),
  SubjectName VARCHAR(100),
  TopicDescription TEXT
);

CREATE TABLE TutoringSession (
  SessionID INT PRIMARY KEY,
  TutorID INT,
  StudentID INT,
  TopicID INT,
  Date_Time DATETIME,
  Duration VARCHAR(20),
  Type VARCHAR(20),
  FOREIGN KEY (TutorID) REFERENCES Tutor(TutorID),
  FOREIGN KEY (StudentID) REFERENCES Student(StudentID),
  FOREIGN KEY (TopicID) REFERENCES Topic(TopicID)
);


CREATE TABLE Payment (
  PaymentID INT PRIMARY KEY,
  SessionID INT,
  TotalAmountPaid DOUBLE,
  PaymentDate DATE,
  PaymentStatus VARCHAR(20),
  PaymentMode VARCHAR(20),
  FOREIGN KEY (SessionID) REFERENCES TutoringSession(SessionID)
);
```

```
CREATE TABLE Progress (
  ReportID INT PRIMARY KEY,
  SessionID INT,
  EvaluationDate DATE,
  Feedback TEXT,
  Score DOUBLE,
  FOREIGN KEY (SessionID) REFERENCES TutoringSession(SessionID)
);
```

```
INSERT INTO Tutor VALUES (1, 'Alice', 'Johnson', '1234567890', 'alice@example.com', 'Mathematics', 'M.Sc Math', 'Mon-Fri 5PM-8PM');

INSERT INTO Tutor VALUES (2, 'Bob', 'Smith', '1234567891', 'bob@example.com', 'Physics', 'M.Sc Physics', 'Sat-Sun 10AM-1PM');

INSERT INTO Tutor VALUES (3, 'Carol', 'Davis', '1234567892', 'carol@example.com', 'English', 'M.A English', 'Mon-Fri 3PM-6PM');

INSERT INTO Tutor VALUES (4, 'David', 'Wilson', '1234567893', 'david@example.com', 'Chemistry', 'PhD Chemistry', 'Weekdays 6PM-9PM');

INSERT INTO Tutor VALUES (5, 'Eva', 'Taylor', '1234567894', 'eva@example.com', 'Biology', 'M.Sc Biology', 'Weekends 10AM-2PM');

INSERT INTO Tutor VALUES (6, 'Frank', 'Thomas', '1234567895', 'frank@example.com', 'History', 'M.A History', 'Mon-Wed 5PM-7PM');

INSERT INTO Tutor VALUES (7, 'Grace', 'Lee', '1234567896', 'grace@example.com', 'Geography', 'M.Sc Geography', 'Tue-Thu 6PM-8PM');

INSERT INTO Tutor VALUES (8, 'Henry', 'Martin', '1234567897', 'henry@example.com', 'Computer Science', 'MCA', 'Weekdays 9AM-12PM');

INSERT INTO Tutor VALUES (9, 'Irene', 'Clark', '1234567898', 'irene@example.com', 'Economics', 'M.A Economics', 'Weekends 11AM-3PM');

INSERT INTO Tutor VALUES (10, 'Jack', 'Lewis', '1234567899', 'jack@example.com', 'Political Science', 'M.A Political Science', 'Evenings only');
```

select * from Tutor;



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3	Carol	Davis	1234567892	carol@example.com	English	M.A English	Mon-Fri 3PM-6PM
4	David	Wilson	1234567893	david@example.com	Chemistry	PhD Chemistry	Weekdays 6PM-9PM
5	Eva	Taylor	1234567894	eva@example.com	Biology	M.Sc Biology	Weekends 10AM-2PM
6	Frank	Thomas	1234567895	frank@example.com	History	M.A History	Mon-Wed 5PM-7PM
7	Grace	Lee	1234567896	grace@example.com	Geography	M.Sc Geography	Tue-Thu 6PM-8PM
8	Henry	Martin	1234567897	henry@example.com	Computer Science	MCA	Weekdays 9AM-12PM
9	Irene	Clark	1234567898	irene@example.com	Economics	M.A Economics	Weekends 11AM-3PM
10	Jack	Lewis	1234567899	jack@example.com	Political Science	M.A Political Science	Evenings only
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

INSERT INTO Student VALUES (1, 'Tom', 'Anderson', 17, '9988776655', 'tom@student.com', '123 Main St');

INSERT INTO Student VALUES (2, 'Sara', 'Miller', 18, '9988776656', 'sara@student.com', '456 Elm St');

INSERT INTO Student VALUES (3, 'Ben', 'White', 16, '9988776657', 'ben@student.com', '789 Oak St');

INSERT INTO Student VALUES (4, 'Lily', 'Brown', 17, '9988776658', 'lily@student.com', '321 Pine St');

INSERT INTO Student VALUES (5, 'Mike', 'Green', 19, '9988776659', 'mike@student.com', '654 Cedar St');

INSERT INTO Student VALUES (6, 'Nina', 'Adams', 15, '9988776660', 'nina@student.com', '987 Maple St');

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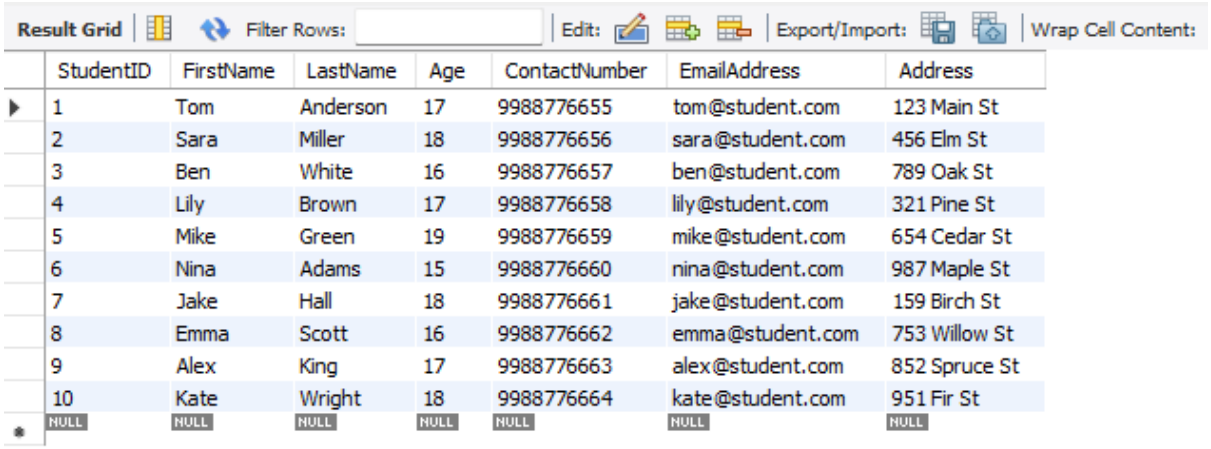
INSERT INTO Student VALUES (8, 'Emma', 'Scott', 16, '9988776662', 'emma@student.com', '753 Willow St');

INSERT INTO Student VALUES (9, 'Alex', 'King', 17, '9988776663', 'alex@student.com', '852 Spruce St');

INSERT INTO Student VALUES (10, 'Kate', 'Wright', 18, '9988776664', 'kate@student.com', '951 Fir St');

select * from Student;



Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

StudentID	FirstName	LastName	Age	ContactNumber	EmailAddress	Address
1	Tom	Anderson	17	9988776655	tom@student.com	123 Main St
2	Sara	Miller	18	9988776656	sara@student.com	456 Elm St
3	Ben	White	16	9988776657	ben@student.com	789 Oak St
4	Lily	Brown	17	9988776658	lily@student.com	321 Pine St
5	Mike	Green	19	9988776659	mike@student.com	654 Cedar St
6	Nina	Adams	15	9988776660	nina@student.com	987 Maple St
7	Jake	Hall	18	9988776661	jake@student.com	159 Birch St
8	Emma	Scott	16	9988776662	emma@student.com	753 Willow St
9	Alex	King	17	9988776663	alex@student.com	852 Spruce St
10	Kate	Wright	18	9988776664	kate@student.com	951 Fir St
NULL	NULL	NULL	NULL	NULL	NULL	NULL

INSERT INTO Topic VALUES (1, 'Algebra Basics', 'Mathematics', 'Introduction to algebra concepts and equations');

INSERT INTO Topic VALUES (2, 'Newton’s Laws', 'Physics', 'Detailed explanation of Newton’s laws of motion');

INSERT INTO Topic VALUES (3, 'Grammar Rules', 'English', 'Overview of grammar and sentence structure');

INSERT INTO Topic VALUES (4, 'Organic Chemistry', 'Chemistry', 'Study of carbon compounds and reactions');

INSERT INTO Topic VALUES (5, 'Cell Biology', 'Biology', 'Structure and function of cells');

INSERT INTO Topic VALUES (6, 'World War II', 'History', 'Causes, events, and aftermath of WWII');

INSERT INTO Topic VALUES (7, 'Continents and Oceans', 'Geography', 'Earth’s continents, oceans, and features');

INSERT INTO Topic VALUES (8, 'Python Programming', 'Computer Science', 'Basics of Python language and syntax');

INSERT INTO Topic VALUES (9, 'Supply and Demand', 'Economics', 'Principles of supply, demand, and pricing');

INSERT INTO Topic VALUES (10, 'Political Theories', 'Political Science', 'Key theories and ideologies in politics');

select * from Topic;

TopicID	TopicName	SubjectName	TopicDescription
1	Algebra Basics	Mathematics	Introduction to algebra concepts and equations
2	Newton's Laws	Physics	Detailed explanation of Newton's laws of motion
3	Grammar Rules	English	Overview of grammar and sentence structure
4	Organic Chemistry	Chemistry	Study of carbon compounds and reactions
5	Cell Biology	Biology	Structure and function of cells
6	World War II	History	Causes, events, and aftermath of WWII
7	Continents and Oceans	Geography	Earth's continents, oceans, and features
8	Python Programming	Computer Science	Basics of Python language and syntax
9	Supply and Demand	Economics	Principles of supply, demand, and pricing
10	Political Theories	Political Science	Key theories and ideologies in politics
NULL	NULL	NULL	NULL

INSERT INTO TutoringSession VALUES (1, 1, 1, 1, '2024-10-01 17:00', '2 hours', 'Online');

INSERT INTO TutoringSession VALUES (2, 2, 2, 2, '2024-10-02 10:00', '1.5 hours', 'In-person');

INSERT INTO TutoringSession VALUES (3, 3, 3, 3, '2024-10-03 15:00', '1 hour', 'Online');

INSERT INTO TutoringSession VALUES (4, 4, 4, 4, '2024-10-04 18:00', '2 hours', 'Online');

INSERT INTO TutoringSession VALUES (5, 5, 5, 5, '2024-10-05 11:00', '1 hour', 'In-person');

INSERT INTO TutoringSession VALUES (6, 6, 6, 6, '2024-10-06 16:00', '2 hours', 'In-person');

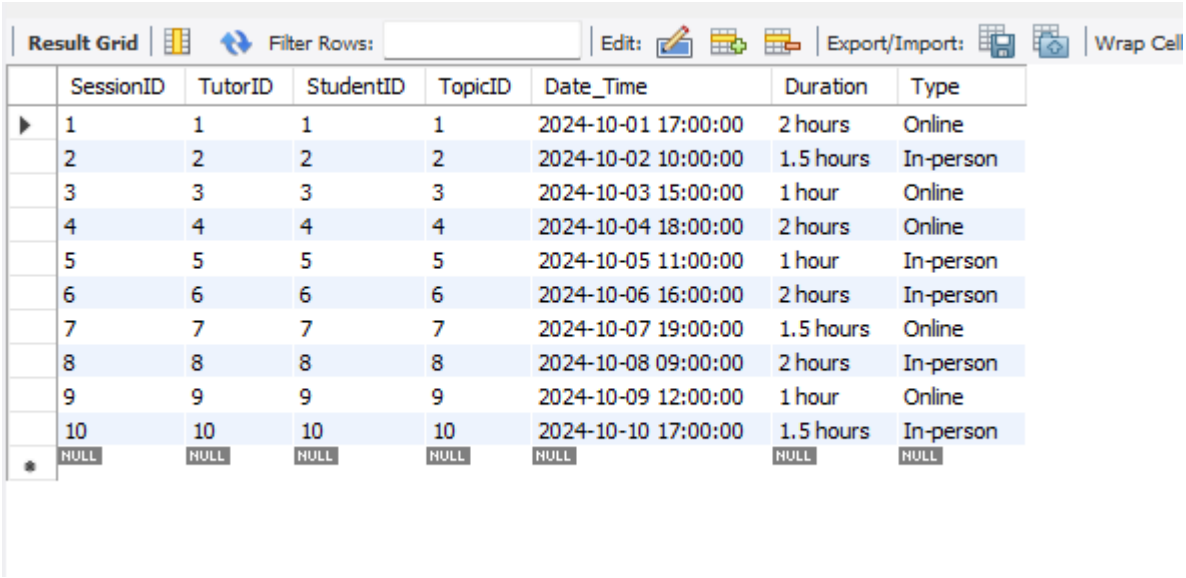
INSERT INTO TutoringSession VALUES (7, 7, 7, 7, '2024-10-07 19:00', '1.5 hours', 'Online');

INSERT INTO TutoringSession VALUES (8, 8, 8, 8, '2024-10-08 09:00', '2 hours', 'In-person');

INSERT INTO TutoringSession VALUES (9, 9, 9, 9, '2024-10-09 12:00', '1 hour', 'Online');

INSERT INTO TutoringSession VALUES (10, 10, 10, 10, '2024-10-10 17:00', '1.5 hours', 'In-person');

select * from TutoringSession;



Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell

SessionID	TutorID	StudentID	TopicID	Date_Time	Duration	Type
1	1	1	1	2024-10-01 17:00:00	2 hours	Online
2	2	2	2	2024-10-02 10:00:00	1.5 hours	In-person
3	3	3	3	2024-10-03 15:00:00	1 hour	Online
4	4	4	4	2024-10-04 18:00:00	2 hours	Online
5	5	5	5	2024-10-05 11:00:00	1 hour	In-person
6	6	6	6	2024-10-06 16:00:00	2 hours	In-person
7	7	7	7	2024-10-07 19:00:00	1.5 hours	Online
8	8	8	8	2024-10-08 09:00:00	2 hours	In-person
9	9	9	9	2024-10-09 12:00:00	1 hour	Online
10	10	10	10	2024-10-10 17:00:00	1.5 hours	In-person
NULL	NULL	NULL	NULL	NULL	NULL	NULL

INSERT INTO Payment VALUES (1, 1, 50.00, '2024-10-01', 'Paid', 'Online');

INSERT INTO Payment VALUES (2, 2, 40.00, '2024-10-02', 'Pending', 'Cash');

INSERT INTO Payment VALUES (3, 3, 30.00, '2024-10-03', 'Paid', 'Online');

INSERT INTO Payment VALUES (4, 4, 60.00, '2024-10-04', 'Paid', 'Cash');

INSERT INTO Payment VALUES (5, 5, 25.00, '2024-10-05', 'Pending', 'Online');

INSERT INTO Payment VALUES (6, 6, 55.00, '2024-10-06', 'Paid', 'Cash');

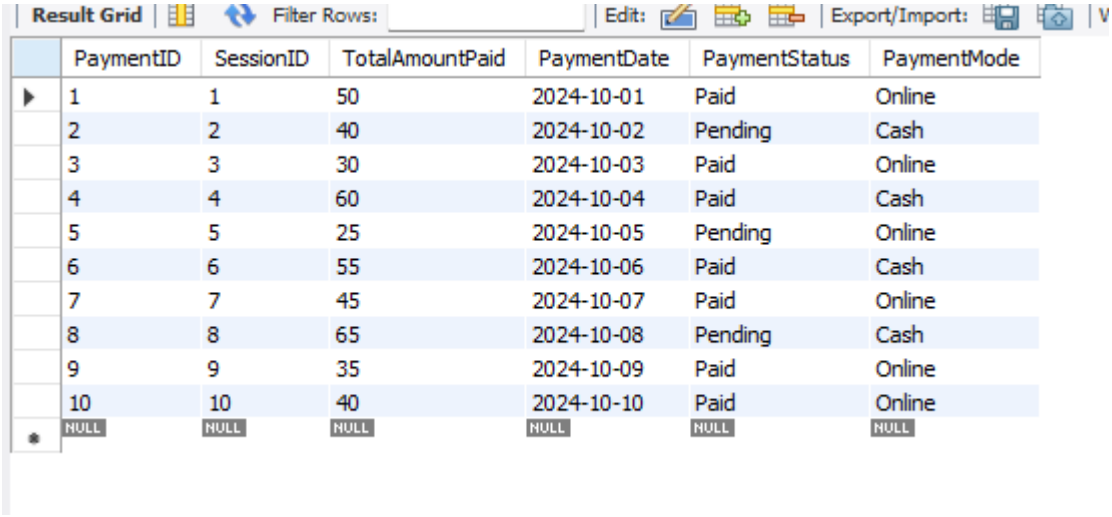
INSERT INTO Payment VALUES (7, 7, 45.00, '2024-10-07', 'Paid', 'Online');

INSERT INTO Payment VALUES (8, 8, 65.00, '2024-10-08', 'Pending', 'Cash');

INSERT INTO Payment VALUES (9, 9, 35.00, '2024-10-09', 'Paid', 'Online');

INSERT INTO Payment VALUES (10, 10, 40.00, '2024-10-10', 'Paid', 'Online');

select * from Payment;



Result Grid | Filter Rows: | Edit: | Export/Import:

PaymentID	SessionID	TotalAmountPaid	PaymentDate	PaymentStatus	PaymentMode
1	1	50	2024-10-01	Paid	Online
2	2	40	2024-10-02	Pending	Cash
3	3	30	2024-10-03	Paid	Online
4	4	60	2024-10-04	Paid	Cash
5	5	25	2024-10-05	Pending	Online
6	6	55	2024-10-06	Paid	Cash
7	7	45	2024-10-07	Paid	Online
8	8	65	2024-10-08	Pending	Cash
9	9	35	2024-10-09	Paid	Online
10	10	40	2024-10-10	Paid	Online
NULL	NULL	NULL	NULL	NULL	NULL

INSERT INTO Progress VALUES (1, 1, '2024-10-01', 'Good understanding', 85.5);

INSERT INTO Progress VALUES (2, 2, '2024-10-02', 'Needs improvement', 60.0);

INSERT INTO Progress VALUES (3, 3, '2024-10-03', 'Excellent performance', 95.0);

INSERT INTO Progress VALUES (4, 4, '2024-10-04', 'Average effort', 70.0);

INSERT INTO Progress VALUES (5, 5, '2024-10-05', 'Well done', 88.0);

INSERT INTO Progress VALUES (6, 6, '2024-10-06', 'Below expectations', 55.0);

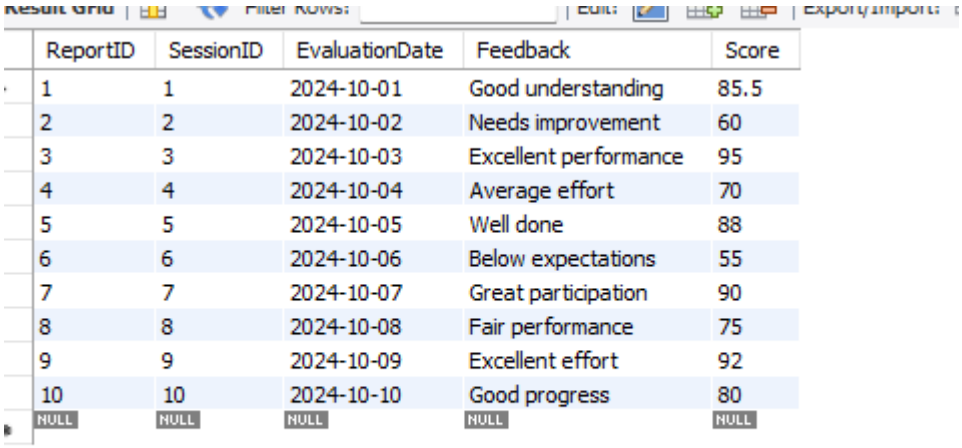
INSERT INTO Progress VALUES (7, 7, '2024-10-07', 'Great participation', 90.0);

INSERT INTO Progress VALUES (8, 8, '2024-10-08', 'Fair performance', 75.0);

INSERT INTO Progress VALUES (9, 9, '2024-10-09', 'Excellent effort', 92.0);

INSERT INTO Progress VALUES (10, 10, '2024-10-10', 'Good progress', 80.0);

select * from Progress;



ReportID	SessionID	EvaluationDate	Feedback	Score
1	1	2024-10-01	Good understanding	85.5
2	2	2024-10-02	Needs improvement	60
3	3	2024-10-03	Excellent performance	95
4	4	2024-10-04	Average effort	70
5	5	2024-10-05	Well done	88
6	6	2024-10-06	Below expectations	55
7	7	2024-10-07	Great participation	90
8	8	2024-10-08	Fair performance	75
9	9	2024-10-09	Excellent effort	92
10	10	2024-10-10	Good progress	80
NULL	NULL	NULL	NULL	NULL