Lecture 9: Basic SQL

Introduction

This lecture provides a hands-on guide to working with **SQL databases** in **Azure Data Studio**. We will cover:

- How to **create a database** using SQL.
- How to **create tables** in the database.
- How to **insert data** into tables.
- How to verify that the data has been successfully inserted.

Creating a Database in Azure Data Studio

To create a new database in Azure Data Studio, open a new SQL query editor and run the following command:

```
CREATE DATABASE FRE521D;
GO
```

Explanation:

- `CREATE DATABASE FRE521D;` – Creates a new database named **FRE521D**.
- `GO` – Executes the batch of commands in SQL Server.

After executing the command, refresh the database list in Azure Data Studio to see the newly created **FRE521D**.

Creating Tables

Now that we have a database, let's create four tables: **Jobs, Employees, Departments, and Locations**.

Creating the Jobs Table

Run the following SQL command in the **FRE521D** database:

```
USE FRE521D;
GO

CREATE TABLE Jobs (
    job_id VARCHAR(10) PRIMARY KEY,
    job_title VARCHAR(35),
    min_salary INT,
    max_salary INT
);
GO
```

Explanation:

- `USE FRE521D;` – Ensures that all queries run inside the **FRE521D** database.
- `CREATE TABLE Jobs (...);` – Creates the **Jobs** table with the following fields:
  - `job_id` – Unique identifier for each job.
  - `job_title` – Name of the job position.
  - `min_salary, max_salary` – Salary range for the job.
- `PRIMARY KEY (job_id);` – Ensures each job ID is unique.

Creating the Employees Table

Next, create the **Employees** table:

```
CREATE TABLE Employees (
    Employee_Id INT PRIMARY KEY,
    First_Name VARCHAR(20),
    Last_Name VARCHAR(25) NOT NULL,
    Email VARCHAR(25) NOT NULL,
    Phone_Number VARCHAR(15),
    Hire_Date DATE NOT NULL,
    Job_Id VARCHAR(10) NOT NULL,
    Salary DECIMAL(8,2),
    Commission_pct DECIMAL(2,2),
    Manager_id INT,
    Department_Id INT
);
GO
```

Explanation:

- `Employee_Id` – Unique identifier for each employee.
- `Job_Id` – Foreign key that links to the **Jobs** table.
- `Hire_Date` – The employee's start date.
- `Salary, Commission_pct` – Salary and commission details.
- `Manager_id` – Stores the ID of the manager (nullable).

Creating the Departments Table

```
CREATE TABLE Departments (
    Department_id INT PRIMARY KEY,
    Department_Name VARCHAR(30) NOT NULL,
    Manager_id INT,
    Location_id INT
);
GO
```

Explanation:

- `Department_id` – Unique identifier for each department.
- `Department_Name` – Name of the department.
- `Manager_id` – ID of the department manager.

Creating the Locations Table

```
CREATE TABLE Locations (
    Location_id INT PRIMARY KEY,
    Street_Address VARCHAR(40),
    Postal_Code VARCHAR(12),
    City VARCHAR(30) NOT NULL,
    State_Province VARCHAR(25),
    Country_ID CHAR(2)
);
GO
```

Explanation:

- `Location_id` – Unique identifier for each office location.
- `City, State_Province, Country_ID` – Stores the geographical location.

Inserting Data into Tables

Now, let's insert some sample data into the tables.

Inserting Data into Jobs

```
INSERT INTO Jobs VALUES ('AD_PRES', 'President', 20000, 40000);
INSERT INTO Jobs VALUES ('AC_MGR', 'Account Manager', 8200,
   16000);
GO
```

Explanation: Adds job records for **President** and **Account Manager**.

Inserting Data into Employees

```
INSERT INTO Employees VALUES (100, 'Steven', 'King', 'SKING', '
   515.123.4567', '2006-06-17', 'AD_PRES', 24000, NULL, NULL, 90)
   ;
INSERT INTO Employees VALUES (101, 'Neena', 'Kochar', 'NKOCHAR',
   '515.123.4568', '2008-09-21', 'AC_MGR', 17000, NULL, 100, 90);
GO
```

Explanation: Adds employees **Steven King** and **Neena Kochar**.

Verifying Inserted Data

To check if the data has been successfully inserted, run:

```
SELECT * FROM Employees;
GO
```

Expected Output: Returns all rows from the **Employees** table.

Conclusion

This lecture covered:

- Creating a database in **Azure Data Studio**.
- Creating tables and defining constraints.
- Inserting data into tables.
- Verifying data integrity with SQL queries.