

CIS430– Lab Assignment 2_2

Name: Maitri Radhesh

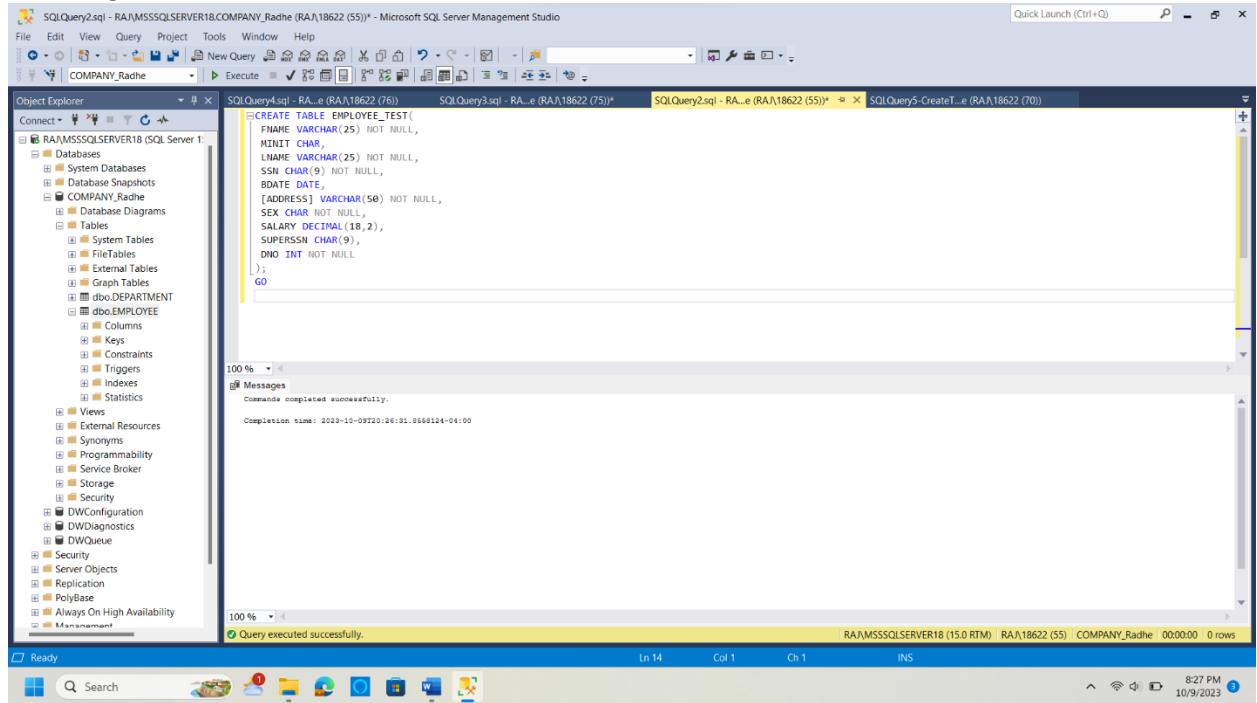
ID: 2831749

Object: Creating a Relational Database Schema from ER Diagram and Populating the Database

This assignment is divided into two parts.

1. In this part, I just had to alter my assignment 1 by adding NULL values, and by entering duplicate values into a table.

Attaching screenshots below:



The screenshot shows the Microsoft SQL Server Management Studio interface. The Object Explorer on the left shows the database structure for 'COMPANY_Radhe'. The central pane displays a SQL query window with the following code:

```
CREATE TABLE EMPLOYEE_TEST(
    FNAME VARCHAR(25) NOT NULL,
    MINIT CHAR,
    LNAME VARCHAR(25) NOT NULL,
    SSN CHAR(9) NOT NULL,
    BDATE DATE,
    [ADDRESS] VARCHAR(50) NOT NULL,
    SEX CHAR NOT NULL,
    SALARY DECIMAL (18,2),
    SUPERSSN CHAR(9),
    DNO INT NOT NULL
);
```

The status bar at the bottom indicates 'Query executed successfully.' and shows the completion time as 2023-10-09T20:26:31.8568124-04:00.

SQLQuery3.sql - RA\MSQLSERVER18.COMPANY_Radhe (RA\18622 (75))* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query Execute

COMPANY_Radhe

Object Explorer

RA\MSQLSERVER18 (SQL Server 1)

Databases

COMPANY_Radhe

Tables

dbo.DEPARTMENT

dbo.EMPLOYEE

Views

Programmability

Security

DWConfiguration

DWDiagnostics

DWQueue

Server Objects

Replication

PolyBase

Always On High Availability

Management

SQLQuery4.sql - RA_e (RA\18622 (76))

select * from EMPLOYEE_TEST;

Results Messages

FNAME	MINT	LNAME	SSN	BDATE	ADDRESS	SEX	SALARY	SUPERSSN	DNO

Query executed successfully.

RA\MSQLSERVER18 (15.0 RTM) | RA\18622 (75) | COMPANY_Radhe | 00:00:00 | 0 rows

Ready

Search

8:27 PM 10/9/2023

In 2 Col 1 Ch 1 INS

SQLQuery5.sql - RA\MSQLSERVER18.COMPANY_Radhe (RA\18622 (52))* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query Execute

COMPANY_Radhe

Object Explorer

RA\MSQLSERVER18 (SQL Server 1)

Databases

COMPANY_Radhe

Tables

dbo.DEPARTMENT

dbo.EMPLOYEE

Views

Programmability

Security

DWConfiguration

DWDiagnostics

DWQueue

Server Objects

Replication

PolyBase

Always On High Availability

Management

SQLQuery4.sql - RA_e (RA\18622 (76))

SQLQuery3.sql - RA_e (RA\18622 (75))

SQLQuery2.sql - RA_e (RA\18622 (55))

SQLQuery5.CreateT...e (RA\18622 (70))

USE COMPANY_Radhe;

```
INSERT INTO EMPLOYEE_TEST VALUES('James', 'E', 'Bor', '88866554', '10-Nov-1927', '975 Fire Oak, Humble, TX', 'M', 55000, NULL, 1);
INSERT INTO EMPLOYEE_TEST VALUES('James', 'E', 'Borg', ' ', '10-Nov-1927', '975 Fire Oak, Humble, TX', 'M', 55000, NULL, 1);
GO
```

Messages

(1 row affected)

(1 row affected)

Completion time: 2023-10-09T20:56:21.2296391-04:00

Query executed successfully.

RA\MSQLSERVER18 (15.0 RTM) | RA\18622 (52) | COMPANY_Radhe | 00:00:00 | 0 rows

Ready

Search

8:37 PM 10/9/2023

In 4 Col 58 Ch 58 INS

SQLQuery4.sql - RA\MSQLSERVER18.COMPANY_Radhe (RA\18622 (76)) - Microsoft SQL Server Management Studio

```

File Edit View Query Project Tools Window Help
New Query Execute
COMPANY_Radhe | SQLQuery4.sql - RA...e (RA\18622 (76))| SQLQuery3.sql - RA...e (RA\18622 (75))| SQLQuery2.sql - RA...e (RA\18622 (55))
Object Explorer
RA\MSQLSERVER18 (SQL Server 1)
Databases System Databases Database Snapshots COMPANY_Radhe Database Diagrams Tables System Tables FileTables External Tables dbo.DEPARTMENT dbo.EMPLOYEE Columns Keys Constraints Triggers Indexes Statistics Views External Resources Synonyms Programmability Service Broker Storage Security DWConfiguration DWDiagnistics DWQueue Security Server Objects Replication PolyBase Always On High Availability Management
Connect Connect...
Connect to Server
Server Name: RA\MSQLSERVER18
Database: COMPANY_Radhe
Logon: sa
Advanced Options
OK Cancel
USE COMPANY_Radhe;

INSERT INTO EMPLOYEE_TEST VALUES('James', 'E', 'Borg', '888665555', '10-Nov-1927', '975 Fire Oak, Humble, TX', 'M', 55000, NULL, 1);
INSERT INTO EMPLOYEE_TEST VALUES('Jennifer', 'S', 'Wallace', '987654321', '20-Jun-1931', '291 Berry, Bellaire, TX', 'F', 43000, '888665555', 4);
INSERT INTO EMPLOYEE_TEST VALUES('Franklin', 'T', 'Wong', '333445555', '08-Dec-1945', '632 Voss, Houston, TX', 'M', 40000, '888665555', 5);
INSERT INTO EMPLOYEE_TEST VALUES('John', 'B', 'Smith', '123456789', '09-Jan-1955', '731 Fondren, Houston, TX', 'M', 30000, '987654321', 5);
INSERT INTO EMPLOYEE_TEST VALUES('Ahmad', 'V', 'Jabbar', '987987987', '29-Mar-1959', '988 Dallas, Houston, TX', 'M', 25000, '987654321', 4);
INSERT INTO EMPLOYEE_TEST VALUES('Alicia', 'J', 'Zelaya', '999887777', '19-Jul-1958', '3321 Castle, Spring, TX', 'F', 25000, '987654321', 4);
INSERT INTO EMPLOYEE_TEST VALUES('Rashmi', 'K', 'Narayan', '666884444', '15-Sep-1952', '975 Fire Oak, Humble, TX', 'M', 38000, '333445555', 5);
INSERT INTO EMPLOYEE_TEST VALUES('Alicia', 'A', 'English', '45345453', '21-Jul-1962', '5631 Rice, Houston, TX', 'M', 30000, '333445555', 5);
INSERT INTO EMPLOYEE_TEST VALUES('Joy', 'B', 'Worn', '45345453', '21-Jun-1968', '5635 Fire Oak, Houston, TX', 'M', 30000, '333445555', 5);

GO

```

Messages

```

(1 row affected)

Completion time: 2023-10-09T20:33:48.2978489-04:00

```

Query executed successfully.

RA\MSQLSERVER18 (15.0 RTM) RA\18622 (76) COMPANY_Radhe 00:00:00 0 rows

Ln 15 Col 1 Ch 1 INS

Ready Search 8:37 PM 10/9/2023

SQLQuery3.sql - RA\MSQLSERVER18.COMPANY_Radhe (RA\18622 (75)) - Microsoft SQL Server Management Studio

```

File Edit View Query Project Tools Window Help
New Query Execute
COMPANY_Radhe | SQLQuery5.sql - RA...e (RA\18622 (52))| SQLQuery4.sql - RA...e (RA\18622 (76))| SQLQuery3.sql - RA...e (RA\18622 (75))| SQLQuery2.sql - RA...e (RA\18622 (55))
SQLQuery3.sql - RA\MSQLSERVER18.COMPANY_Radhe (RA\18622 (75))
Object Explorer
RA\MSQLSERVER18 (SQL Server 1)
Databases System Databases Database Snapshots COMPANY_Radhe Database Diagrams Tables System Tables FileTables External Tables dbo.DEPARTMENT dbo.EMPLOYEE Columns Keys Constraints Triggers Indexes Statistics Views External Resources Synonyms Programmability Service Broker Storage Security DWConfiguration DWDiagnistics DWQueue Security Server Objects Replication PolyBase Always On High Availability Management
Connect Connect...
Connect to Server
Server Name: RA\MSQLSERVER18
Database: COMPANY_Radhe
Logon: sa
Advanced Options
OK Cancel
SELECT * FROM EMPLOYEE_TEST;

```

Results

FNAME	MINIT	LNAME	SSN	BDATE	ADDRESS	SEX	SALARY	SUPERSSN	DNO
James	E	Borg	888665555	1927-11-10	975 Fire Oak, Humble, TX	M	55000.00	NULL	1
Jennifer	S	Wallace	987654321	1931-06-20	291 Berry, Bellaire, TX	F	43000.00	888665555	
Franklin	T	Wong	333445555	1945-12-08	632 Voss, Houston, TX	M	40000.00	888665555	5
John	B	Smith	123456789	1955-01-09	731 Fondren, Houston, TX	M	30000.00	987654321	5
Ahmad	V	Jabbar	987987987	1959-03-29	988 Dallas, Houston, TX	M	25000.00	987654321	4
Alicia	J	Zelaya	999887777	1958-07-19	3321 Castle, Spring, TX	F	25000.00	987654321	4
Rashmi	K	Narayan	666884444	1952-09-15	975 Fire Oak, Humble, TX	M	30000.00	333445555	5
Joy	B	English	45345453	1962-07-21	5631 Rice, Houston, TX	M	30000.00	333445555	5
James	E	Borg	888665554	1968-06-21	5635 Fire Oak, Houston, TX	M	30000.00	333445555	5
James	E	Bor	888665554	1927-11-10	975 Fire Oak, Humble, TX	M	55000.00	NULL	1
James	E	Borg	1927-11-10	975 Fire Oak, Humble, TX	M	55000.00	NULL	1	

Messages

```

(12 rows affected)

Completion time: 2023-10-09T20:33:48.2978489-04:00

```

Query executed successfully.

RA\MSQLSERVER18 (15.0 RTM) RA\18622 (75) COMPANY_Radhe 00:00:00 12 rows

Ln 2 Col 1 Ch 1 INS

Ready Search 8:37 PM 10/9/2023

SQLQuery5.sql - RA\MSQLSERVER18.COMPANY_Radhe (RA\18622 (52)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Object Explorer

RA\MSQLSERVER18 (SQL Server 1)

Databases

COMPANY_Radhe

Tables

EMPLOYEE_TEST

GO

```
USE COMPANY_Radhe;
INSERT INTO EMPLOYEE_TEST VALUES('James', 'E', 'Bor', '88866554', '10-Nov-1927', '975 Fire Oak, Humble, TX', 'M', 55000, NULL, 1);
INSERT INTO EMPLOYEE_TEST VALUES('James', 'E', 'Borg', ' ', '10-Nov-1927', '975 Fire Oak, Humble, TX', 'M', 55000, NULL, 1);
INSERT INTO EMPLOYEE_TEST VALUES('James', 'E', 'Borg', NULL, '10-Nov-1927', '975 Fire Oak, Humble, TX', 'M', 55000, NULL, 1);
```

Messages

(1 row affected)

(1 row affected)

Msg 515, Level 16, State 2, Line 5
Cannot insert the value NULL into column 'SSN', table 'COMPANY_Radhe.dbo.EMPLOYEE_TEST'; column does not allow nulls. INSERT fails.
The statement has been terminated.

Completion time: 2023-10-09T20:38:38.8925824-04:00

Query completed with errors.

RA\MSQLSERVER18 (15.0 RTM) RA\18622 (52) COMPANY_Radhe 00:00:00 0 rows

Ready Search 8:38 PM 10/9/2023

2. Here, I must create a database, **COMPANY_MAITRIRADHE** with tables for **Entities** in the database schema using SQL (Data Definition Language) statements in a MS SQL Server.

Initially, I used the **master** to create the database.

SQL Server Scripts1 - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

master

SQLQuery1.sql - RA...er (RA\18622 (65))

```
USE master;
IF DB_ID('COMPANY_Radhe') IS NULL
    CREATE DATABASE COMPANY_Radhe;
GO
```

Messages

Commands completed successfully.

Completion time: 2023-09-11T23:27:38.9890378-04:00

Query executed successfully.

RA\MSQLSERVER18 (15.0 RTM) RA\18622 (65) master 00:00:00 0 rows

Solution Explorer

Solution 'SQL Server Scripts1' (1 project)

SQL Server Scripts1

Queries

Miscellaneous

Miscellaneous Files

SQLQuery1.sql

Ready Search 64° 11:27 PM 9/11/2023

After the creation of the database, I had to create the tables and insert into them in accordance to the ER-Diagram:

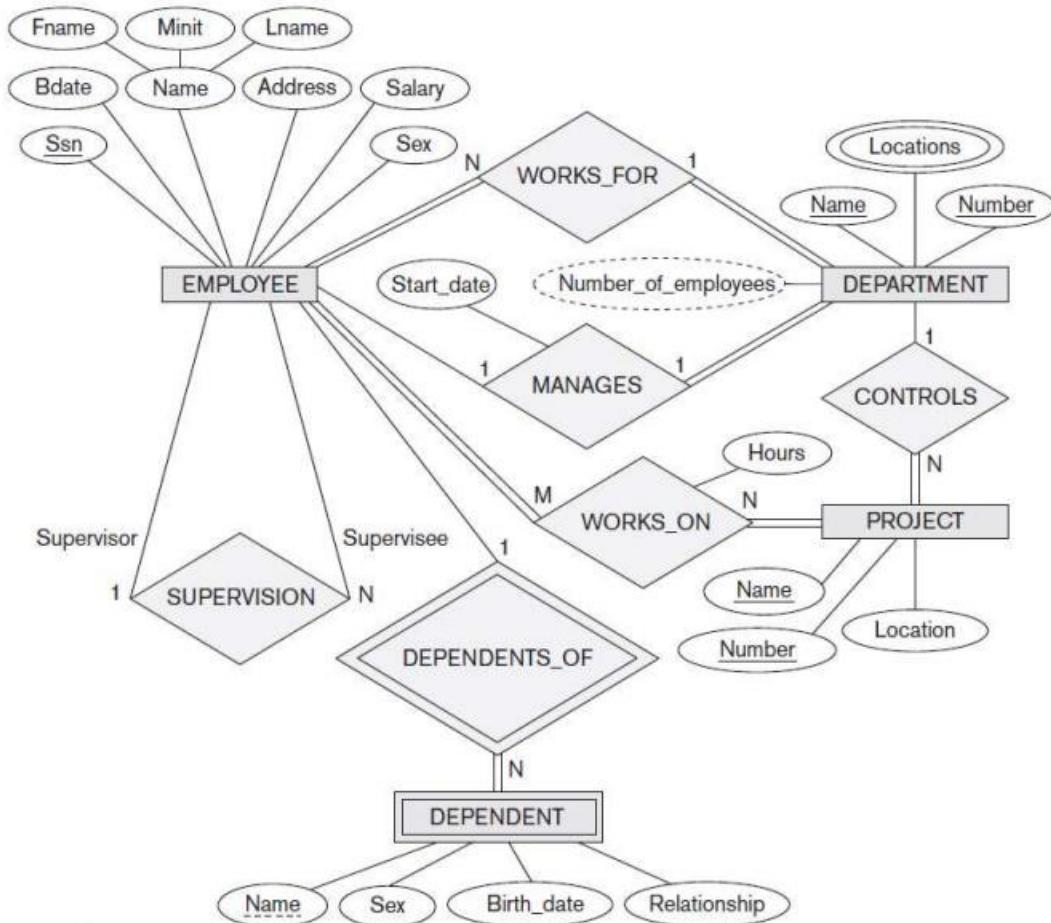


Figure 7.2

An ER schema diagram for the COMPANY database. The diagrammatic notation is introduced gradually throughout this chapter and is summarized in Figure 7.14.

All the attributes are in accordance to the ER diagram. The usage of **PRIMARY KEY** and **FOREIGN KEY** is the highlight of this assignment. The declaration of the **PRIMARY KEY** and **FOREIGN KEY** is in accordance to the ER diagram. I decoded the ER diagram first, to be able to create the tables and to understand which attribute should be a **PRIMARY KEY** and which attribute should be the **FOREIGN KEY**. Also, I understood which of the attributes cannot support **NULL** values, which of the attributes cannot support **DUPLICATE** values, what are the restrictions to declare an attribute as the **PRIMARY KEY**, how to convert the symbols of an ER Diagram into Queries, and many such things.

The 1st table that I created was EMPLOYEE

SQLQuery1.sql - RAJ\SQLSERVER18.COMPANY_MAITRIRADHE (RA\18622 (55)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Quick Launch (Ctrl+Q) P X

Object Explorer

RAJ\SQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)

Databases

COMPANY_Maitri

COMPANY_MAITRIRADHE

Tables

EMPLOYEE

SQLQuery11-LAB2_P_(RA\18622 (57))

```
USE COMPANY_MAITRIRADHE;
CREATE TABLE EMPLOYEE(
    FNAME VARCHAR(25) NOT NULL,
    MINIT CHAR,
    LNAME VARCHAR(25) NOT NULL,
    SSN CHAR(9) NOT NULL,
    BDATE DATE,
    [ADDRESS] VARCHAR(50) NOT NULL,
    SEX CHAR NOT NULL,
    SALARY DECIMAL(18,2),
    SUPER_SSN CHAR(9),
    DNO INT NOT NULL,
    PRIMARY KEY (SSN),
    FOREIGN KEY (SUPER_SSN)
        REFERENCES dbo.EMPLOYEE(SSN)
);
GO
```

Messages

Commands completed successfully.

Compilation time: 2023-10-13T18:55:86.8882461-04:00

Query executed successfully.

RRAJ\SQLSERVER18 (15.0 RTM) RA\18622 (55) COMPANY_MAITRIRADHE 00:00:00 0 rows

Ln 10 Col 20 Ch 20 INS

Ready

Search

6:56 PM 10/13/2023

SQLQuery1.sql - RAJ\SQLSERVER18.COMPANY_MAITRIRADHE (RA\18622 (55)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Quick Launch (Ctrl+Q) P X

Object Explorer

RAJ\SQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)

Databases

COMPANY_Maitri

COMPANY_MAITRIRADHE

Tables

EMPLOYEE

SQLQuery1.sql - RA_E (RA\18622 (55))

```
use COMPANY_MAITRIRADHE
select * from EMPLOYEE;
```

Results

FNAME	MINIT	LNAME	SSN	BDATE	ADDRESS	SEX	SALARY	SUPER_SSN	DNO

Query executed successfully.

RRAJ\SQLSERVER18 (15.0 RTM) RA\18622 (55) COMPANY_MAITRIRADHE 00:00:00 0 rows

Ln 2 Col 7 Ch 7 INS

Ready

Search

6:57 PM 10/13/2023

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, the database 'COMPANY_MAITRIRADHE' is selected. In the center pane, a query window displays the following T-SQL code:

```
use COMPANY_MAITRIRADHE
select * from EMPLOYEE
```

The results pane shows the output of the query:

	FNAME	MINIT	LNAME	SSN	BDATE	ADDRESS	SEX	SALARY	SUPER_SSN	DNO
1	John	B	Smith	123456789	1955-01-09	731 Fondren, Houston, TX	M	30000.00	987654321	5
2	Franklin	T	Wong	333445555	2045-12-08	638 Voss, Houston, TX	M	40000.00	888665555	5
3	Joyce	A	English	453453453	1962-07-21	5631 Rice, Houston, TX	M	30000.00	333445555	5
4	Ramash	K	Narayan	666884444	1952-09-15	975 Fire Oak, Humble, TX	M	38000.00	333445555	5
5	James	E	Borg	888665555	2027-11-10	450 Stone, Houston, TX	M	55000.00	NULL	1
6	Jennifer	S	Wallace	987654321	1931-06-20	291 Berry, Bellaire, TX	F	43000.00	888665555	4
7	Ahmad	V	Jabbar	987987987	1959-03-29	980 Dallas, Houston, TX	M	25000.00	987654321	4
8	Alicia	J	Zelaya	999887777	1958-07-19	3321 Castle, Spring, TX	F	25000.00	987654321	4

Below the results, a message indicates: "Query executed successfully." The status bar at the bottom shows "RA\18622 (55) COMPANY_MAITRIRADHE 00:00:00 8 rows".

The 2nd table that I created was **DEPARTMENT**

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, the database 'COMPANY_MAITRIRADHE' is selected. In the center pane, a query window displays the following T-SQL code:

```
use COMPANY_MAITRIRADHE
CREATE TABLE DEPARTMENT(
    DNAME VARCHAR(15) NOT NULL,
    DNUMBER INT NOT NULL,
    MGR_SSN CHAR(9) NOT NULL,
    MGR_START_DATE DATE,
    PRIMARY KEY (DNUMBER),
    FOREIGN KEY (MGR_SSN)
        REFERENCES dbo.EMPLOYEE(SSN)
);
GO
```

The results pane shows the message: "Commands completed successfully." The status bar at the bottom shows "RA\18622 (55) COMPANY_MAITRIRADHE 00:00:00 0 rows".

SQLQuery2.sql - RA\1MSSQLSERVER18\COMPANY_MAITRIRADHE (RA\18622 (55)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Object Explorer

Connect ▾ RA\1MSSQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)

Databases

System Databases

COMPANY_Matri

COMPANY_MAITRIRADHE

COMPANY_Radhe

DWConfiguration

DW.Diagnostics

DWQueue

Security

Server Objects

Replication

PolyBase

Always On High Availability

Management

Integration Services Catalogs

SQL Server Agent (Agent XPs disabled)

XEvent Profiler

SQLQuery2-LAB2_P... (RA\18622 (53))

```
use COMPANY_MAITRIRADHE
select * from department;
```

Results Messages

DNAME	DNUMBER	MGR_SSN	MGR_START_DATE
-------	---------	---------	----------------

Query executed successfully.

RA\1MSSQLSERVER18 (15.0 RTM) RA\18622 (55) COMPANY_MAITRIRADHE 00:00:00 0 rows

Ln 2 Col 26 Ch 26 INS

Ready

Search

File Edit View Query Project Tools Window Help

Object Explorer

Connect ▾ RA\1MSSQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)

Databases

System Databases

COMPANY_Matri

COMPANY_MAITRIRADHE

COMPANY_Radhe

DWConfiguration

DW.Diagnostics

DWQueue

Security

Server Objects

Replication

PolyBase

Always On High Availability

Management

Integration Services Catalogs

SQL Server Agent (Agent XPs disabled)

XEvent Profiler

SQLQuery3.sql - RA\1MSSQLSERVER18\COMPANY_MAITRIRADHE (RA\18622 (65)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Object Explorer

Connect ▾ RA\1MSSQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)

Databases

System Databases

COMPANY_Matri

COMPANY_MAITRIRADHE

COMPANY_Radhe

DWConfiguration

DW.Diagnostics

DWQueue

Security

Server Objects

Replication

PolyBase

Always On High Availability

Management

Integration Services Catalogs

SQL Server Agent (Agent XPs disabled)

XEvent Profiler

SQLQuery24-LAB2_P... (RA\18622 (66))

```
use COMPANY_MAITRIRADHE
INSERT INTO DEPARTMENT VALUES ('Headquarters', '1', '888665555', '19-Jun-71');
```

Results Messages

(1 row affected)

Completion time: 2023-10-10T19:13:33.6287096-04:00

Query executed successfully.

RA\1MSSQLSERVER18 (15.0 RTM) RA\18622 (65) COMPANY_MAITRIRADHE 00:00:00 0 rows

Ln 3 Col 1 Ch 1 INS

Ready

Search

SQLQuery3.sql - RAJ\MSSQLSERVER18\COMPANY_MAITRIRADHE (RA\18622 (65)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Quick Launch (Ctrl+Q) P X

Object Explorer

Connect ▾ RAJ\MSSQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)

Databases

System Databases

COMPANY_Maitri

COMPANY_MAITRIRADHE

COMPANY_Radhe

DWConfiguration

DWDiagnostics

DWQueue

Security

Server Objects

Replication

PolyBase

Always On High Availability

Management

Integration Services Catalogs

SQL Server Agent (Agent XPs disabled)

XEvent Profiler

SQLQuery26-LAB2-P... (RA\18622 (58)) SQLQuery24-LAB2-P... (RA\18622 (66)) SQLQuery3.sql - RA_E (RA\18622 (65)) SQLQuery13-LAB2-P... (RAJ\18622 (54))

```
use COMPANY_MAITRIRADHE
INSERT INTO DEPARTMENT VALUES ('Administration', '4', '987654321', '01-Jan-85');
INSERT INTO DEPARTMENT VALUES ('Research', '5', '333445555', '22-May-78');
INSERT INTO DEPARTMENT VALUES ('Automation', '7', '123456789', '06-Oct-05');
```

100 % Messages

(1 row affected)

(1 row affected)

(1 row affected)

Completion time: 2023-10-13T19:17:19.8818717-04:00

Ready

Search

Ln 4 Col 74 Ch 74 INS

7:17 PM 10/13/2023

SQLQuery3.sql - RAJ\MSSQLSERVER18\COMPANY_MAITRIRADHE (RA\18622 (65)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Quick Launch (Ctrl+Q) P X

Object Explorer

Connect ▾ RAJ\MSSQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)

Databases

System Databases

COMPANY_Maitri

COMPANY_MAITRIRADHE

COMPANY_Radhe

DWConfiguration

DWDiagnostics

DWQueue

Security

Server Objects

Replication

PolyBase

Always On High Availability

Management

Integration Services Catalogs

SQL Server Agent (Agent XPs disabled)

XEvent Profiler

SQLQuery26-LAB2-P... (RA\18622 (58)) SQLQuery24-LAB2-P... (RA\18622 (66)) SQLQuery3.sql - RA_E (RA\18622 (65)) SQLQuery13-LAB2-P... (RAJ\18622 (54))

```
use COMPANY_MAITRIRADHE
SELECT * FROM DEPARTMENT;
```

100 % Results Messages

DNNAME	DNUMBER	MGR_SSN	MGR_START_DATE
Headquarters	1	888665555	1971-06-19
Administration	4	987654321	1985-01-01
Research	5	333445555	1976-05-22
Automation	7	123456789	2005-10-06

Query executed successfully.

RAJ\MSSQLSERVER18 (15.0 RTM) RA\18622 (65) COMPANY_MAITRIRADHE 00:00:00 | 4 rows

Ready

Search

Ln 3 Col 1 Ch 1 INS

7:17 PM 10/13/2023

The 3rd table that I created was DEPT_LOCATIONS

Screenshot of Microsoft SQL Server Management Studio showing the creation of the DEPT_LOCATIONS table. The Object Explorer shows the database structure. The SQL Editor window contains the following T-SQL code:

```
use COMPANY_MAITRIRADHE
CREATE TABLE DEPT_LOCATIONS(
    DNUMBER INT NOT NULL,
    DLOCATION VARCHAR(15) NOT NULL,
    PRIMARY KEY (DNUMBER, DLOCATION),
    FOREIGN KEY (DNUMBER)
        REFERENCES dbo.DEPARTMENT (DNUMBER)
);
GO
```

The Messages pane shows the command completed successfully at 2023-10-13T19:18:42.045981-04:00.

Screenshot of Microsoft SQL Server Management Studio showing the execution of a query against the DEPT_LOCATIONS table. The Object Explorer shows the database structure. The SQL Editor window contains the following T-SQL code:

```
use COMPANY_MAITRIRADHE
SELECT * FROM DEPT_LOCATIONS;
```

The Results pane shows the following output:

DNUMBER	DLOCATION

The Messages pane shows the query executed successfully at 2023-10-13T19:18:42.045981-04:00.

SQLQuery3.sql - RA\MSQLSERVER18.COMPANY_MAISTRRADHE (RA\18622 (65)) - Microsoft SQL Server Management Studio

```

File Edit View Query Project Tools Window Help
New Query Execute
Object Explorer Quick Launch (Ctrl+Q) P X
Connect COMPANY_MAISTRRADHE Execute (F5)
RAJ\MSQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)
Databases
System Databases
Database Snapshots
COMPANY_Maitri
COMPANY_MAISTRRADHE
COMPANY_Radhe
DWConfiguration
DW.Diagnostics
DWQueue
Security
Server Objects
Replication
PolyBase
Always On High Availability
Management
Integration Services Catalogs
SQL Server Agent (Agent XPs disabled)
XEvent Profiler

```

SQLQuery3.sql - RA_E (RA\18622 (65)) * SQLQuery13-LAB2-P_(RA\18622 (54)) SQLQuery12-LAB2-P_(RA\18622 (53)) SQLQuery2.sql - RA_E (RA\18622 (55)) *

```

use COMPANY_MAISTRRADHE
INSERT INTO DEPT_LOCATIONS VALUES('1', 'Houston');
INSERT INTO DEPT_LOCATIONS VALUES('4', 'Stafford');
INSERT INTO DEPT_LOCATIONS VALUES('5', 'Bellaire');
INSERT INTO DEPT_LOCATIONS VALUES('5', 'Sugarland');
INSERT INTO DEPT_LOCATIONS VALUES('5', 'Houston');

```

Messages

```

(1 row affected)

Completion time: 2023-10-13T19:22:08.7949542-04:00

```

Query executed successfully.

Ready

Search

Ln 6 Col 37 Ch 37 INS

7:22 PM 10/13/2023

SQLQuery3.sql - RA\MSQLSERVER18.COMPANY_MAISTRRADHE (RA\18622 (65)) - Microsoft SQL Server Management Studio

```

File Edit View Query Project Tools Window Help
New Query Execute (F5)
COMPANY_MAISTRRADHE Execute
RAJ\MSQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)
Databases
System Databases
Database Snapshots
COMPANY_Maitri
COMPANY_MAISTRRADHE
COMPANY_Radhe
DWConfiguration
DW.Diagnostics
DWQueue
Security
Server Objects
Replication
PolyBase
Always On High Availability
Management
Integration Services Catalogs
SQL Server Agent (Agent XPs disabled)
XEvent Profiler

```

SQLQuery3.sql - RA_E (RA\18622 (65)) * SQLQuery13-LAB2-P_(RA\18622 (54)) SQLQuery12-LAB2-P_(RA\18622 (53)) SQLQuery2.sql - RA_E (RA\18622 (55)) *

```

use COMPANY_MAISTRRADHE
SELECT * FROM DEPT_LOCATIONS;

```

Results

DNUMBER	LOCATION
1	Houston
2	Stafford
3	Sugarland
4	Bellaire
5	Houston

Query executed successfully.

Ready

Search

Ln 3 Col 1 Ch 1 INS

7:22 PM 10/13/2023

Later, I realized that I had to add another **FOREIGN KEY** in the employee table.

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, the database 'COMPANY_MAITRIRADHE' is selected. In the center pane, a query window displays the following T-SQL code:

```
ALTER TABLE EMPLOYEE
ADD CONSTRAINT FK_EMPLOYEE_DNO FOREIGN KEY (DNO)
REFERENCES dbo.DEPARTMENT(DNUMBER);
```

The status bar at the bottom indicates 'Query executed successfully.' and 'Completion time: 2023-10-13T19:29:53.9876030-04:00'. The taskbar at the bottom right shows the date and time as 10/13/2023 7:29 PM.

The 4th table that I created was **PROJECT**

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, the database 'COMPANY_MAITRIRADHE' is selected. In the center pane, a query window displays the following T-SQL code:

```
CREATE TABLE PROJECT(
    PNAME VARCHAR(30) NOT NULL,
    PNUMBER INT NOT NULL,
    PLOCATION VARCHAR(15) NOT NULL,
    DNUM INT NOT NULL,
    PRIMARY KEY (PNUMBER),
    FOREIGN KEY (DNUM)
    REFERENCES dbo.DEPARTMENT (DNUMBER)
);

GO
```

The status bar at the bottom indicates 'Query executed successfully.' and 'Completion time: 2023-10-13T19:29:31.6902818-04:00'. The taskbar at the bottom right shows the date and time as 10/13/2023 7:23 PM.

SQLQuery3.sql - RAJ\MSSQLSERVER18.COMPANY_MAITRIRADHE (RA\18622 (65)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Object Explorer

Connect - RAJ\MSSQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)

Databases

System Databases

COMPANY_Maitri

COMPANY_MAITRIRADHE

COMPANY_Radhe

DWConfiguration

DWDiagnostics

DWQueue

Security

Server Objects

Replication

PolyBase

Always On High Availability

Management

Integration Services Catalogs

SQL Server Agent (Agent XPs disabled)

XEvent Profiler

SQLQuery15-LAB2_C... (RA\18622 (57))

```
use COMPANY_MAITRIRADHE
SELECT * FROM PROJECT;
```

Results Messages

PNAME	PNUMBER	PLOCATION	DNUM

Query executed successfully.

RAJ\MSSQLSERVER18 (15.0 RTM) RA\18622 (65) COMPANY_MAITRIRADHE 00:00:00 0 rows

Ready Search 7:23 PM 10/13/2023

SQLQuery3.sql - RAJ\MSSQLSERVER18.COMPANY_MAITRIRADHE (RA\18622 (65)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Object Explorer

Connect - RAJ\MSSQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)

Databases

System Databases

COMPANY_Maitri

COMPANY_MAITRIRADHE

COMPANY_Radhe

DWConfiguration

DWDiagnostics

DWQueue

Security

Server Objects

Replication

PolyBase

Always On High Availability

Management

Integration Services Catalogs

SQL Server Agent (Agent XPs disabled)

XEvent Profiler

SQLQuery27-LAB2_1.E (RA\18622 (51))

```
use COMPANY_MAITRIRADHE
INSERT INTO PROJECT VALUES ('ProductX', 1, 'Bellaire', 5);
INSERT INTO PROJECT VALUES ('ProductY', 2, 'Sugarland', 5);
INSERT INTO PROJECT VALUES ('ProductZ', 3, 'Houston', 5);
INSERT INTO PROJECT VALUES ('Computerization', 10, 'Stafford', 4);
INSERT INTO PROJECT VALUES ('Reorganization', 20, 'Houston', 1);
INSERT INTO PROJECT VALUES ('Newbenefits', 30, 'Stafford', 4);
```

Results Messages

```
(1 row affected)
```

Completion time: 2023-10-13T19:24:27.9599845-04:00

Query executed successfully.

RAJ\MSSQLSERVER18 (15.0 RTM) RA\18622 (65) COMPANY_MAITRIRADHE 00:00:00 0 rows

Ready Search 7:24 PM 10/13/2023

SQLQuery3.sql - RAJ\MSSQLSERVER18.COMPANY_MAITRIRADHE (RA\18622 (65)) - Microsoft SQL Server Management Studio

```
use COMPANY_MAITRIRADHE
SELECT * FROM PROJECT;
```

Results Messages

PNAME	PNUMBER	PLOCATION	DNUM
ProductX	1	Bellare	5
ProductY	2	Sugeland	5
ProductZ	3	Houston	5
Computerization	10	Stafford	4
Reorganization	20	Houston	1
Newbenefits	30	Stafford	4

Query executed successfully.

The 5th table that I created was **WORKS_ON**

SQLQuery3.sql - RAJ\MSSQLSERVER18.COMPANY_MAITRIRADHE (RA\18622 (65)) - Microsoft SQL Server Management Studio

```
use COMPANY_MAITRIRADHE
CREATE TABLE WORKS_ON(
    ESSN CHAR(9) NOT NULL,
    PNO INT NOT NULL,
    [HOURS] DECIMAL(5,1),
    PRIMARY KEY (ESSN, PNO),
    FOREIGN KEY (ESSN)
        REFERENCES dbo.EMPLOYEE(SSN),
    FOREIGN KEY (PNO)
        REFERENCES dbo.PROJECT(PNUMBER)
);
GO
```

Messages

Commands completed successfully.

Completion time: 2023-10-13T19:27:27.7061021-04:00

Query executed successfully.

SQLQuery3.sql - RAJ\MSSQLSERVER18.COMPANY_MAITRIRADHE (RA\18622 (65)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Object Explorer

Connect ▾ RAJ\MSSQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)

Databases

System Databases

COMPANY_Maitri

COMPANY_MAITRIRADHE

DWConfiguration

DWDiagnostics

DWQueue

Security

Server Objects

Replication

PolyBase

Always On High Availability

Management

Integration Services Catalogs

SQL Server Agent (Agent XPs disabled)

XEvent Profiler

SQLQuery16-LAB2_C... (RA\18622 (57))

use COMPANY_MAITRIRADHE
SELECT * FROM WORKS_ON;

Invalid object name 'WORKS_ON'.

Results Messages

ESSN PHO HOURS

Query executed successfully.

RAJ\MSSQLSERVER18 (15.0 RTM) RA\18622 (65) COMPANY_MAITRIRADHE 00:00:00 0 rows

Ln 3 Col 1 Ch 1 INS

Ready Search 7:25 PM 10/13/2023

SQLQuery3.sql - RAJ\MSSQLSERVER18.COMPANY_MAITRIRADHE (RA\18622 (65)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Object Explorer

Connect ▾ RAJ\MSSQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)

Databases

System Databases

COMPANY_Maitri

COMPANY_MAITRIRADHE

DWConfiguration

DWDiagnostics

DWQueue

Security

Server Objects

Replication

PolyBase

Always On High Availability

Management

Integration Services Catalogs

SQL Server Agent (Agent XPs disabled)

XEvent Profiler

SQLQuery28-LAB2-L_E (RA\18622 (69))

use COMPANY_MAITRIRADHE

```
INSERT INTO WORKS_ON VALUES (123456789, 1, 32, 5);
INSERT INTO WORKS_ON VALUES (123456789, 2, 7, 5);
INSERT INTO WORKS_ON VALUES (333445555, 2, 10);
INSERT INTO WORKS_ON VALUES (333445555, 3, 10);
INSERT INTO WORKS_ON VALUES (333445555, 10, 10);
INSERT INTO WORKS_ON VALUES (333445555, 20, 10);
INSERT INTO WORKS_ON VALUES (453453453, 1, 20);
INSERT INTO WORKS_ON VALUES (453453453, 2, 20);
INSERT INTO WORKS_ON VALUES (666884444, 3, 40);
INSERT INTO WORKS_ON VALUES (888665555, 20, NULL);
INSERT INTO WORKS_ON VALUES (987654321, 20, 15);
INSERT INTO WORKS_ON VALUES (987654321, 30, 20);
INSERT INTO WORKS_ON VALUES (987987987, 10, 35);
INSERT INTO WORKS_ON VALUES (987987987, 30, 5);
INSERT INTO WORKS_ON VALUES (999887777, 10, 10);
INSERT INTO WORKS_ON VALUES (999887777, 30, 30);
```

Messages

(1 row affected)

Query executed successfully.

RAJ\MSSQLSERVER18 (15.0 RTM) RA\18622 (65) COMPANY_MAITRIRADHE 00:00:00 0 rows

Ln 22 Col 1 Ch 1 INS

Ready Search 7:26 PM 10/13/2023

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, a database named 'COMPANY_MAITRIRADHE' is selected. In the center pane, a query window displays the following SQL code:

```
use COMPANY_MAITRIRADHE
SELECT * FROM WORKS_ON
```

The results pane shows a table with three columns: ESSN, PNO, and HOURS. The data is as follows:

ESSN	PNO	HOURS
123456789	1	32.5
123456789	2	7.5
333445555	2	10.0
333445555	3	10.0
333445555	10	10.0
333445555	20	10.0
453453453	1	20.0
453453453	2	20.0
666666666	10	0.0
888888888	20	NULL
987654321	20	15.0
987654321	30	20.0
987987987	10	35.0
987987987	30	5.0
999887777	10	10.0
999887777	30	30.0

At the bottom of the results pane, it says "Query executed successfully." and shows the execution time as 00:00:00 with 16 rows.

The 6th table that I created was **DEPENDENT**

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, a database named 'COMPANY_MAITRIRADHE' is selected. In the center pane, a query window displays the following SQL code:

```
use COMPANY_MAITRIRADHE
CREATE TABLE [DEPENDENT]
(
    E_SSN CHAR(9) NOT NULL,
    DEPENDENT_NAME VARCHAR(20) NOT NULL,
    SEX CHAR NOT NULL,
    B_DATE DATE,
    RELATIONSHIP VARCHAR(15) NOT NULL,
    PRIMARY KEY (E_SSN, DEPENDENT_NAME),
    FOREIGN KEY (E_SSN)
        REFERENCES dbo.EMPLOYEE(SSN)
);
```

The results pane shows a message: "Commands completed successfully." and the completion time: 2023-10-18T19:28:01.8235819-04:00.

At the bottom of the results pane, it says "Query executed successfully." and shows the execution time as 00:00:00 with 0 rows.

SQLQuery3.sql - RAJ\MSSQLSERVER18.COMPANY_MAISTRRADHE (RA\18622 (65)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Quick Launch (Ctrl+Q) P X

Object Explorer

Connect ▾ RAJ\MSSQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)

Databases

- System Databases
- Database Snapshots
- COMPANY_Maitri
- COMPANY_MAISTRRADHE**
- COMPANY_Radhe
- DWConfiguration
- DW.Diagnostics
- DWQueue
- Security
- Server Objects
- Replication
- PolyBase
- Always On High Availability
- Management
- Integration Services Catalogs
- SQL Server Agent (Agent XPs disabled)
- XEvent Profiler

SQLQuery17-LAB2_C... (RA\18622 (57)) SQLQuery3.sql - RAJ\18622 (65)* SQLQuery13-LAB2_P... (RA\18622 (54)) SQLQuery12-LAB2_P... (RA\18622 (53))

```
use COMPANY_MAISTRRADHE
SELECT * FROM [DEPENDENT];
```

Results Messages

E_SSN	DEPENDENT_NAME	SEX	B_DATE	RELATIONSHIP
-------	----------------	-----	--------	--------------

Query executed successfully.

RRAJ\18622 (65) COMPANY_MAISTRRADHE 00:00:00 0 rows

Ln 2 Col 27 Ch 27 INS

Ready Search 7:28 PM 10/13/2023

SQLQuery3.sql - RAJ\MSSQLSERVER18.COMPANY_MAISTRRADHE (RA\18622 (65)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Quick Launch (Ctrl+Q) P X

Object Explorer

Connect ▾ RAJ\MSSQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)

Databases

- System Databases
- Database Snapshots
- COMPANY_Maitri
- COMPANY_MAISTRRADHE**
- COMPANY_Radhe
- DWConfiguration
- DW.Diagnostics
- DWQueue
- Security
- Server Objects
- Replication
- PolyBase
- Always On High Availability
- Management
- Integration Services Catalogs
- SQL Server Agent (Agent XPs disabled)
- XEvent Profiler

SQLQuery29-LAB2_L... (RA\18622 (69)) SQLQuery3.sql - RAJ\18622 (65)* SQLQuery13-LAB2_P... (RA\18622 (54)) SQLQuery12-LAB2_P... (RA\18622 (53))

```
USE COMPANY_MAISTRRADHE
INSERT INTO [DEPENDENT] VALUES (123456789, 'Alice', 'F', '31-Dec-78', 'Daughter');
INSERT INTO [DEPENDENT] VALUES (123456789, 'Elizabeth', 'F', '05-Nov-57', 'Spouse');
INSERT INTO [DEPENDENT] VALUES (123456789, 'Michael', 'M', '01-Jan-78', 'Son');
INSERT INTO [DEPENDENT] VALUES (333445555, 'Alice', 'F', '05-Apr-76', 'Daughter');
INSERT INTO [DEPENDENT] VALUES (333445555, 'Joy', 'F', '03-May-48', 'Spouse');
INSERT INTO [DEPENDENT] VALUES (333445555, 'Theodore', 'M', '25-Oct-73', 'Son');
INSERT INTO [DEPENDENT] VALUES (987654321, 'Abner', 'M', '29-Feb-32', 'Spouse');
```

Messages

(1 row affected)

Completion time: 2023-10-13T19:29:07.9312681-04:00

Query executed successfully.

RRAJ\18622 (65) COMPANY_MAISTRRADHE 00:00:00 0 rows

Ln 9 Col 1 Ch 1 INS

Ready Search 7:29 PM 10/13/2023

SQLQuery3.sql - RA\1MSSQLSERVER18.COMPANY_MAITRIRADHE (RA\18622 (65))* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

... COMPANY_MAITRIRADHE Execute New Query Object Explorer

Object Explorer

RA\1MSSQLSERVER18 (SQL Server 15.0.2104.1 - Raj\18622)

Databases

COMPANY_Maitri COMPANY_MAITRIRADHE COMPANY_Radhe DWConfiguration DWQueue Security Server Objects Replication PolyBase Always On High Availability Management Integration Services Catalogs SQL Server Agent (Agent XPs disabled) XEvent Profiler

SQLQuery3.sql - RA..E (RA\18622 (65))

use COMPANY_MAITRIRADHE

SELECT * FROM DEPENDENT

Results Messages

E_SSN	DEPENDENT_NAME	SEX	B_DATE	RELATIONSHIP
123456789	Alice	F	1970-12-31	Daughter
123456789	Elizabeth	F	1957-05-05	Spouse
123456789	Michael	M	1970-01-01	Son
333445555	Theodore	M	1970-10-25	Son
333445555	Alice	F	1970-04-05	Daughter
333445555	Joy	F	2045-05-03	Spouse
987654321	Abner	M	2032-02-29	Spouse

Query executed successfully.

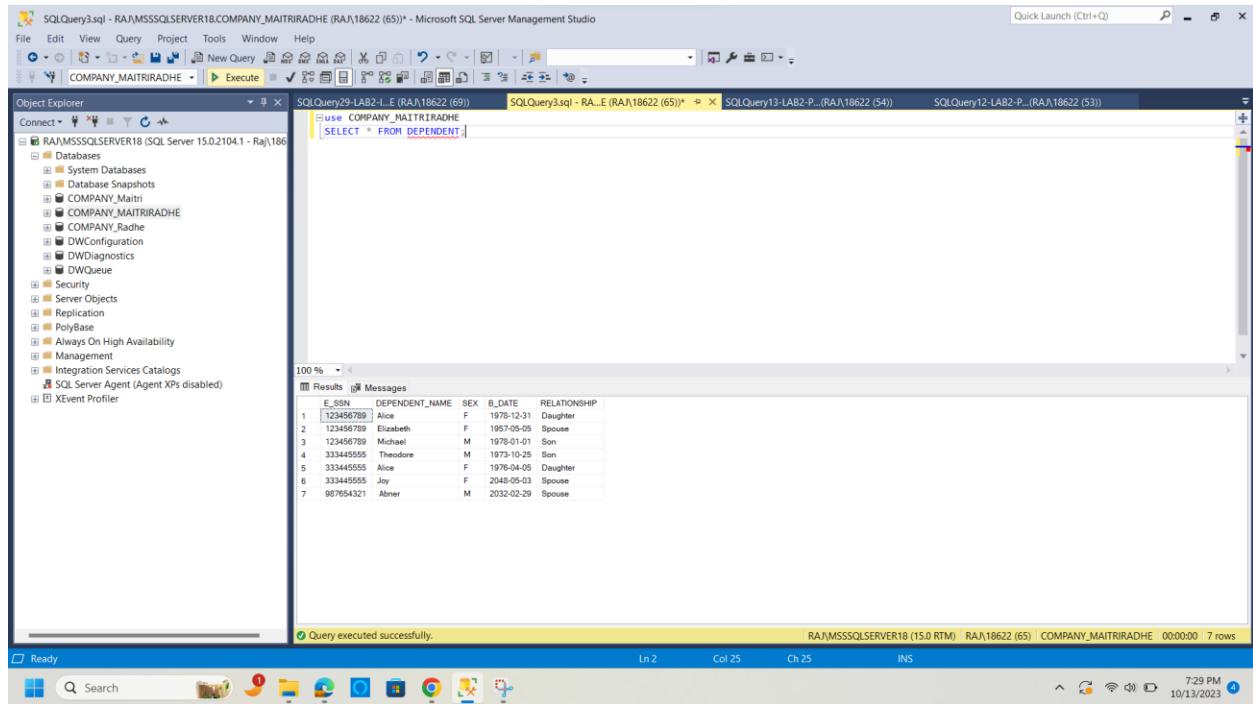
RRA\1MSSQLSERVER18 (15.0 RTM) RA\18622 (65) COMPANY_MAITRIRADHE 00:00:00 | 7 rows

Ready

Search

Ln 2 Col 25 Ch 25 INS

7:29 PM 10/13/2023



If we try to insert into any of the tables now, which specifies “**NOT NULL**” or any duplicate entry into the “**PRIMARY KEY**” fields, then we shall get an error message.

Ex 1: I tried to insert a **NULL** value in the **EMPLOYEE** table for the **FNAME** which was mentioned as “**NOT NULL**”

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, the database 'RAJ\SQLSERVER2022.COMPANY_MAITRIRADHE' is selected. In the center pane, a query window titled 'SQLQuery7.sql - RAJ\SQLSERVER2022.COMPANY_MAITRIRADHE (Raj\Anish Raj (53))' contains the following SQL code:

```
USE COMPANY_MAITRIRADHE;
INSERT INTO EMPLOYEE VALUES(NULL, 'X', 'Sim', '123456799', '9-Feb-55', '734 Fondren, Houston, TX', 'M', 40000, '987654321', 5);
```

The 'Messages' tab in the results pane displays the following error message:

```
Msg 511, Level 16, State 2, Line 3
Cannot insert the value NULL into column 'FNAME', table 'COMPANY_MAITRIRADHE.dbo.EMPLOYEE'; column does not allow nulls. INSERT fails.
The statement has been terminated.
```

Below the messages, a yellow bar indicates "Query completed with errors". A tooltip for "Input Switch Notification" is visible in the bottom right corner.

Ex 2: I tried to insert a **DUPPLICATE** value in the **EMPLOYEE** table for the **SSN** which was mentioned as “**PRIMARY KEY**”

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, the database 'RAJ\SQLSERVER2022.COMPANY_MAITRIRADHE' is selected. In the center pane, a query window titled 'SQLQuery7.sql - RAJ\SQLSERVER2022.COMPANY_MAITRIRADHE (Raj\Anish Raj (53))' contains the following SQL code:

```
USE COMPANY_MAITRIRADHE;
INSERT INTO EMPLOYEE VALUES('John', 'X', 'Sim', '123456789', '9-Feb-55', '734 Fondren, Houston, TX', 'M', 40000, '987654321', 5);
```

The 'Messages' tab in the results pane displays the following error message:

```
Msg 2627, Level 14, State 5, Line 3
Violation of PRIMARY KEY constraint 'PK_EMPLOYEE__CAFFEEDF90C9BCE'. Cannot insert duplicate key in object 'dbo.EMPLOYEE'. The duplicate key value is (123456789).
The statement has been terminated.
```

Below the messages, a yellow bar indicates "Query completed with errors".

Ex 3: Ex 2: I tried to insert a *DIFFERENT* value: **13** in the **EMPLOYEE** table for the **DNO** which was mentioned as “**FOREIGN KEY**” for the **DEPARTMENT** table for the column **DNUMBER** which only had entries: **1,4,5, and 7**

The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer, the database 'RAJ\SQLSERVER2022 (SQL Server 16.0.11)' is selected. In the center pane, a query window titled 'SQLQuery11.sql - RAJ\SQLSERVER2022.COMPANY_MAITRIRADHE (Raj\Anish Raj (57))' contains the following SQL code:

```
USE COMPANY_MAITRIRADHE;
INSERT INTO EMPLOYEE VALUES('John','B','Smith','123456799','9-Jan-55','731 Fondren, Houston, TX','M',30000,'987654321',13);
```

The status bar at the bottom indicates 'Ready'. Below the status bar, a yellow bar displays the message 'Query completed with errors.' A red error message is visible in the main pane:

Msg 547, Level 16, State 0, Line 3
The INSERT statement conflicted with the FOREIGN KEY constraint "FK_CONSTRAINT_DNO". The conflict occurred in database "COMPANY_MAITRIRADHE", table "dbo.DEPARTMENT", column 'DNUMBER'.
The statement has been terminated.

Completion time: 2023-11-01T21:08:51.9012102-04:00