

Database

Monday, November 7, 2022 10:07 PM

Company Database Schema

Here is the schema of a company database, please implement it on any RDBMS you like and then try to create the following requests (queries): "create only the dependent table with all data and relations"

Employee:

Fname	Lname	SSN	BDATE	Addresss	Sex	Salary	Superss n	Dno
Ahmed	Ali	112233	1/1/1965	15 Ali fahmy St.Giza	M	1300	223344	10
Kamel	Mohamed	223344	15/10/1970	38 Mohy el dien abo el Ezz St.Cairo	M	1800	321654	10
Hanaa	Sobhy	123456	18/3/1973	38 Abdel Khalik Tharwat St. Downtown.Cairo	F	800	223344	10
Amr	Omran	321654	14/9/1963	44 Hilopolis.Cairo	M	2500	null	null
Noha	Mohamed	968574	1/2/1975	55 Orabi St. El Mohandiseen .Cairo	F	1600	321654	20
Edwar d	Hanna	512463	19/8/1972	18 Abaas El 3akaad St. Nasr City.Cairo	M	1500	321654	30
Maria m	Adel	669955	12/6/1982	269 El-Haram st. Giza	F	750	512463	20
Maged	Raoof	521634	6/4/1980	18 Kholosi st.Shobra.Cairo	M	1000	968574	30

Department

Dname	DNum	MGRSSN	MGRStart date
DP1	10	223344	1/1/2005
DP2	20	968574	1/3/2006
DP3	30	512463	1/6/2006

Works for

ESSN	Pno	Hours
223344	100	10
223344	200	10
223344	300	10
112233	100	40

968574	400	15
968574	700	15
968574	300	10
669955	400	20
223344	500	10
669955	700	7
669955	300	10
512463	500	10
512463	600	25
521634	500	10
521634	600	20
521634	300	6
521634	400	4

Project

Pname	Pnumber	Plocation	City	Dnum
AL Solimanah	100	Cairo_Alex Road	Alex	10
Al Rabwah	200	6 th of October City	Giza	10
Al Rawdah	300	Zaied City	Giza	10
Al Rowad	400	Cairo_Faiyom Road	Giza	20
Al Rehab	500	Nasr City	Cairo	30
Pitcho american	600	Maady	Cairo	30
Ebad El Rahman	700	Ring Road	Cairo	20

Dependent

ESSN	Dependent_name	Sex	Bdate
112233	Hala Saied Ali	F	18/10/1970
223344	Ahmed Kamel Shawki	M	27/3/1998
223344	Mona Adel Mohamed	F	25/4/1975
321654	Ramy Amr Omran	M	26/1/1990
321654	Omar Amr Omran	M	30/3/1993
321654	Sanaa Gawish	F	16/5/1973
512463	Sara Edward	F	15/9/2001
512463	Nora Ghaly	F	22/6/1976

* Try to create the following Queries:

Name: Karim Ali Ramadan**Lab : 120****Database Fundamentals - Lab 3 Solution**

1. Display the Department id, name and id and the name of its manager.

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

```
USE Company_SD;
GO
SELECT D.Dnum , D.Dname , E.SSN as [Manager ID] , (E.Fname + E.Lname) as [Manager Name]
FROM Employee E , Departments D
WHERE E.Dno = D.Dnum;
```

The results pane displays the output of the query, which lists 8 rows of data:

	Dnum	Dname	Manager ID	Manager Name
1	30	DP3	102660	JovanySami
2	30	DP3	102672	KarimAli
3	10	DP1	112233	AhmedAli
4	10	DP1	123456	HanaaSobhy
5	30	DP3	512463	EdwardHanna
6	30	DP3	521634	MagedRaof
7	20	DP2	669955	MariamAdel
8	20	DP2	968574	NohaMohamed

At the bottom of the results pane, it says "Query executed successfully." and shows statistics: Ln 3, Col 48, Ch 48, INS.

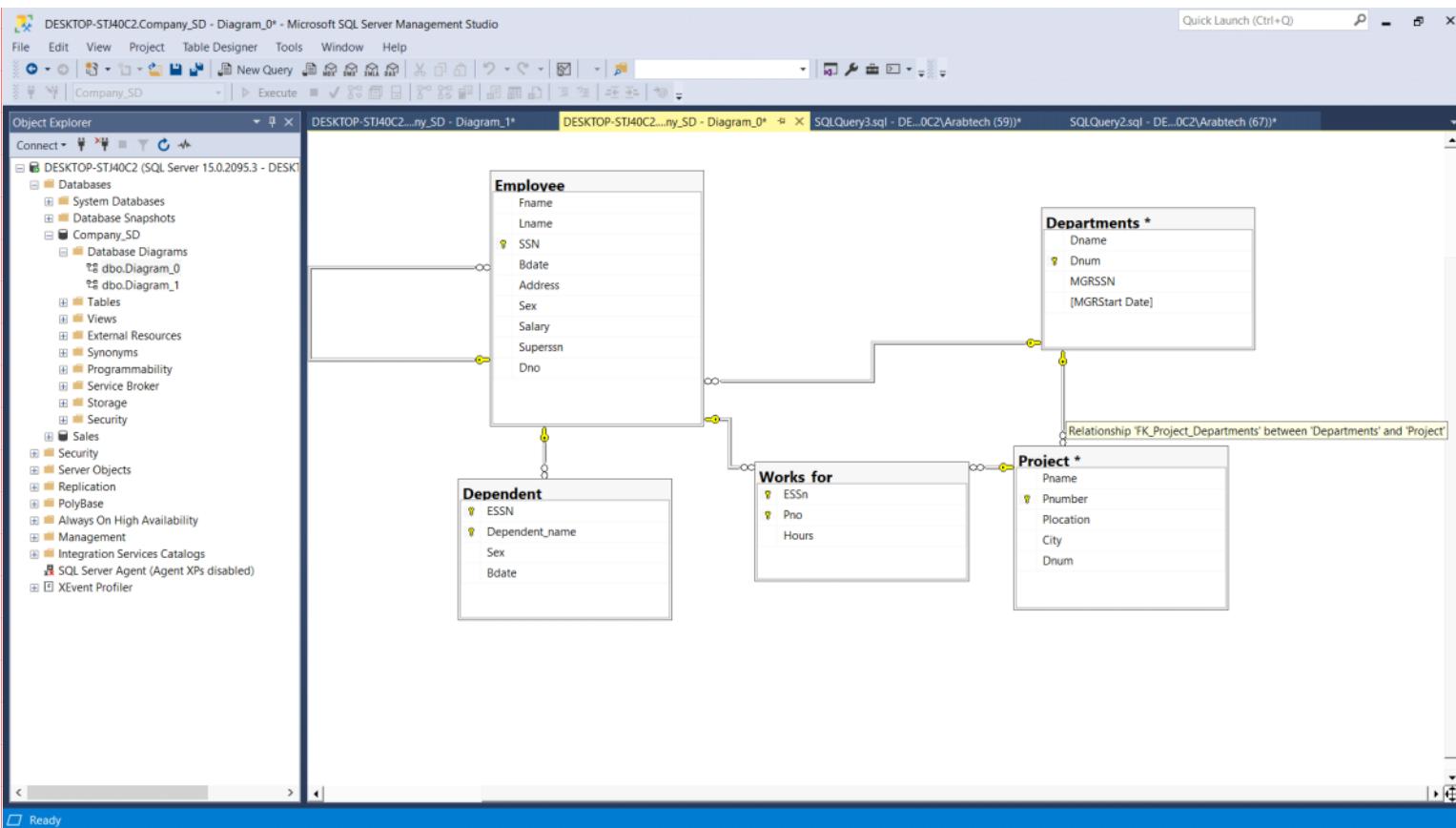
2. Display the name of the departments and the name of the projects under its control.

First : Add Dnum as foreign key from department to project

The screenshot shows the Microsoft SQL Server Management Studio interface. The Object Explorer on the left shows the database structure, including the Company_SD database and its tables. The central pane displays the following T-SQL code:

```
USE Company_SD;
GO
ALTER TABLE Project ADD FOREIGN KEY (Dnum) REFERENCES Departments(Dnum)
```

The status bar at the bottom indicates "Query executed successfully." and "0 rows".



SQLQuery2.sql - DESKTOP-STJ40C2.Company_SD (DESKTOP-STJ40C2\Arabtech (67)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Quick Launch (Ctrl+Q)

Object Explorer

Connect ▾

DESKTOP-STJ40C2 (SQL Server 15.0.2095.3 - DESKTOP-STJ40C2) Databases System Databases Database Snapshots Company_SD Database Diagrams dbo.Diagram_0 dbo.Diagram_1 Tables Views External Resources Synonyms Programmability Service Broker Storage Security Sales Security Server Objects Replication PolyBase Always On High Availability Management Integration Services Catalogs SQL Server Agent (Agent XPs disabled) XEvent Profiler

DESKTOP-STJ40C2...ny_SD - Diagram_1* DESKTOP-STJ40C2...ny_SD - Diagram_0* SQLQuery3.sql - DE...0C2\Arabtech (59)* SQLQuery2.sql - DE...0C2\Arabtech (67)*

```

USE Company_SD;
GO
SELECT D.Dname , P.Pname
FROM Departments D , Project P
WHERE D.Dnum = P.Dnum
    
```

Results

Dname	Pname
DP1	AL Solimaniyah
DP1	Al Rabwah
DP1	Al Rawdah
DP2	Al Rowad
DP3	Al Rehab
DP3	Pitcho american
DP2	Ebad El Rahman

Messages

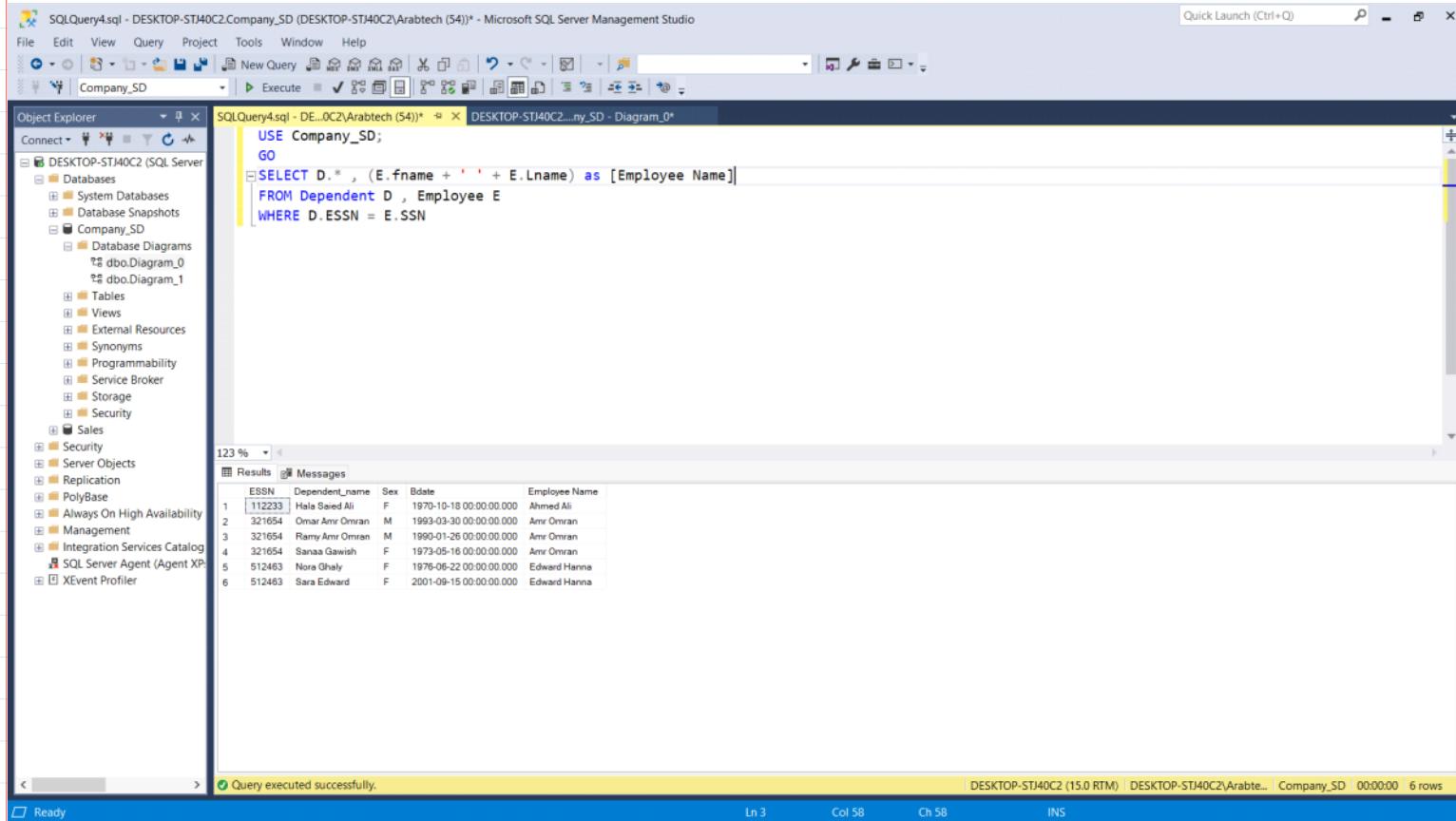
Query executed successfully.

Ln 5 Col 22 Ch 22 INS

DESKTOP-STJ40C2 (15.0 RTM) | DESKTOP-STJ40C2\Arabte... | Company_SD | 00:00:00 | 7 rows

Ready

3. Display the full data about all the dependence associated with the name of the employee they depend on him/her.



The screenshot shows the Microsoft SQL Server Management Studio interface. On the left is the Object Explorer pane, which lists the database structure for 'Company_SD'. In the center is the 'Results' grid displaying the output of a SQL query. The query retrieves data from the 'Dependent' and 'Employee' tables, joining them on the 'ESSN' and 'SSN' columns respectively. The results show six rows of data, each containing the Employee Name (concatenated from first and last names) and the Dependent's details (Dependent_name, Sex, Bdate).

	ESSN	Dependent_name	Sex	Bdate	Employee Name
1	112233	Hala Saied Ali	F	1970-10-18 00:00:00.000	Ahmed Ali
2	321654	Omar Amr Omran	M	1993-03-30 00:00:00.000	Amr Omran
3	321654	Ramy Amr Omran	M	1990-01-26 00:00:00.000	Amr Omran
4	321654	Sanaa Gawish	F	1973-05-16 00:00:00.000	Amr Omran
5	512463	Nora Ghaly	F	1976-06-22 00:00:00.000	Edward Hanna
6	512463	Sara Edward	F	2001-09-15 00:00:00.000	Edward Hanna

Query executed successfully.

REFERENCES

https://www.w3schools.com/sql/sql_union.asp

<https://www.tutorialspoint.com/sql/sql-unions-clause.htm>

The SQL UNION clause/operator is used to combine the results of two or more SELECT statements **without returning any duplicate rows**.

To use this UNION clause, each SELECT statement must have

- The same number of columns selected
- The same number of column expressions
- The same data type and
- Have them in the same order

But they need not have to be in the same length.

From <<https://www.tutorialspoint.com/sql/sql-unions-clause.htm>>

The UNION operator is used to combine the result-set of two or more SELECT statements.

- Every SELECT statement within UNION must have the same number of columns
- The columns must also have similar data types
- The columns in every SELECT statement must also be in the same order

From <https://www.w3schools.com/sql/sql_union.asp>

The UNION ALL Clause

The UNION ALL operator is used to combine the results of two SELECT statements **including duplicate rows**.

The same rules that apply to the UNION clause will apply to the UNION ALL operator.

Syntax

The basic syntax of the UNION ALL is as follows.

```
SELECT column1 [, column2 ]
FROM table1 [, table2 ]
[WHERE condition]
UNION ALL
SELECT column1 [, column2 ]
FROM table1 [, table2 ]
[WHERE condition]
```

From <<https://www.tutorialspoint.com/sql/sql-unions-clause.htm>>

4. Display (Using Union Function)

- a. The name and the gender of the dependence that's gender is Female and depending on Female Employee.
- b. And the male dependence that depends on Male Employee.

SQLQuery4.sql - DESKTOP-STJ40C2.Company_SD (DESKTOP-STJ40C2\Arabtech (62)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query Save All Close All Undo Redo Copy Paste Find Replace All Go To Object Explorer

Company_SD Execute OK Cancel Run Stop Refresh

Quick Launch (Ctrl+Q)

Object Explorer

Connect ▾

DESKTOP-STJ40C2 (SQL Server)
Databases
System Databases
Database Snapshots
Company_SD
Database Diagrams
dbo.Diagram_0
dbo.Diagram_1
Tables
Views
External Resources
Synonyms
Programmability
Service Broker
Storage
Security
Sales
Security
Server Objects
Replication
PolyBase
Always On High Availability
Management
Integration Services Catalog
SQL Server Agent (Agent XP)
XEvent Profiler

SQLQuery4.sql - DE...0C2\Arabtech (62)* DESKTOP-STJ40C2...ny_SD - Diagram_1* SQLQuery3.sql - DE...0C2\Arabtech (54) DESKTOP-STJ40C2...ny_SD - Diagram_0*

```
USE Company_SD;
GO
SELECT D.Dependent_name , D.Sex as [Dependent Gender] , E.Sex as [Employee Gender]
FROM Dependent D INNER JOIN Employee E
ON D.ESSN = E.SSN AND D.Sex = 'F' AND E.Sex = 'F'

UNION

SELECT D.Dependent_name , D.Sex as [Dependent Gender] , E.Sex as [Employee Gender]
FROM Dependent D INNER JOIN Employee E
ON D.ESSN = E.SSN AND D.Sex = 'M' AND E.Sex = 'M'
```

123 %

Results Messages

	Dependent_name	Dependent Gender	Employee Gender
1	Omar Amr Omran	M	M
2	Ramy Amr Omran	M	M

Query executed successfully.

DESKTOP-STJ40C2 (15.0 RTM) DESKTOP-STJ40C2\Arabte... Company_SD 00:00:00 2 rows

Ready

Ln 11 Col 51 Ch 51 INS

5. Display the Id, name and location of the projects in Cairo or Alex city.

LIKE OPERATOR REFERENCE <https://www.sqlservertutorial.net/sql-server-basics/sql-server-like/>

```

USE Company_SD;
GO
SELECT P.Pnumber , P.Pname , P.City
FROM Project P
WHERE P.City IN('Alex','Cairo');

```

	Pnumber	Pname	City
1	100	AL Solimaniah	Alex
2	500	AI Rehab	Cairo
3	600	Pitcho american	Cairo
4	700	Ebad El Rahman	Cairo

Query executed successfully.

SQLQuery5.sql - DESKTOP-STJ40C2.Company_SD (DESKTOP-STJ40C2\Arabtech (61)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query New Item Object Explorer Task List Home Back Forward Stop Refresh

Company_SD Execute

SQLQuery5.sql - DE...0C2\Arabtech (61) SQLQuery1.sql - DE...0C2\Arabtech (55)

```
USE Company_SD;
GO
SELECT P.Pnumber , P.Pname , P.Plocation
FROM Project P
WHERE P.Plocation LIKE 'Cairo%' OR P.Plocation LIKE 'Alex%';
```

102 %

Results Messages

	Pnumber	Pname	Plocation
1	100	AL Solimaniah	Cairo_Alex Road
2	400	AI Rowad	Cairo_Faiyom Road

Query executed successfully.

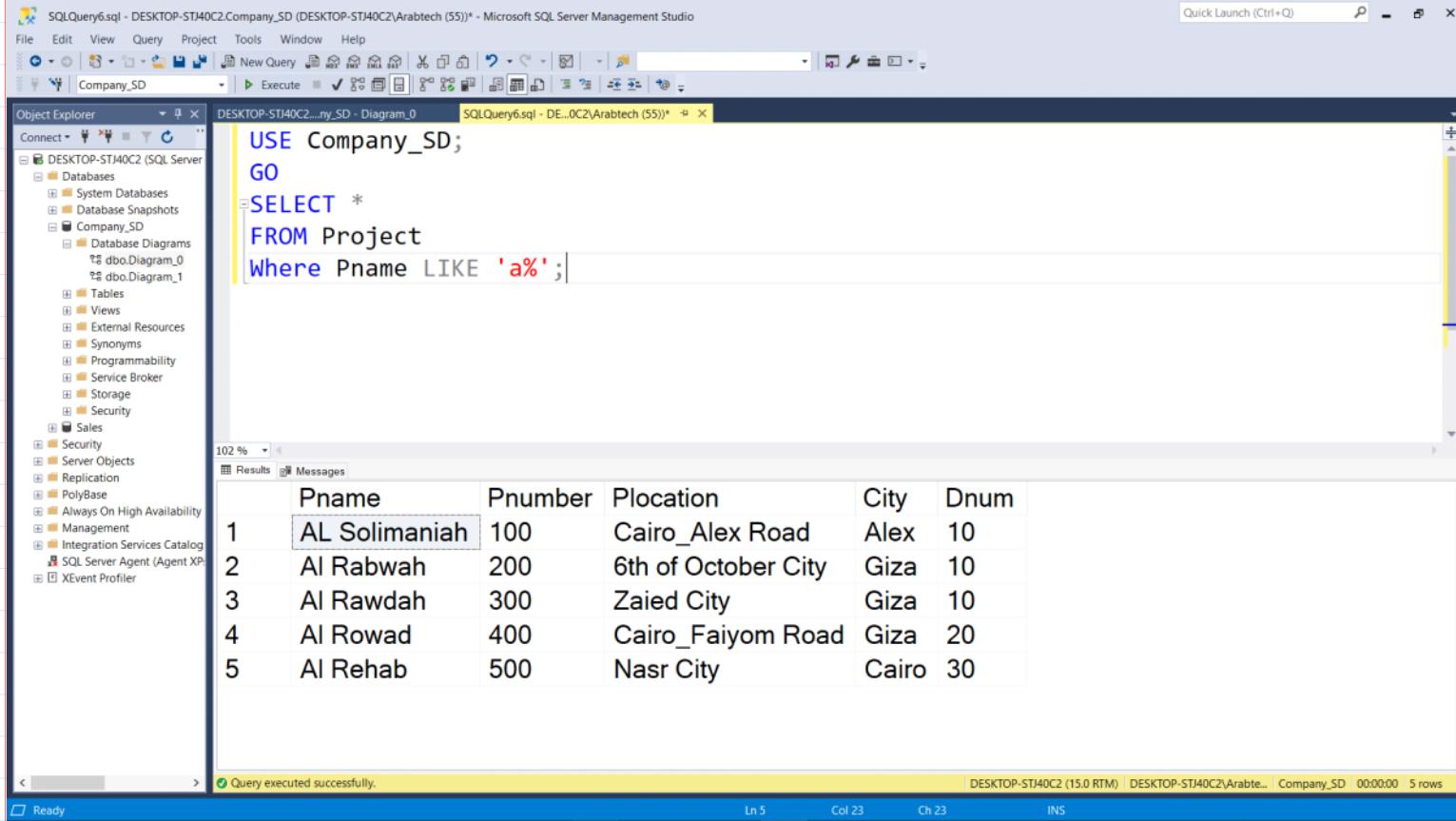
DESKTOP-STJ40C2 (15.0 RTM) DESKTOP-STJ40C2\Arabte... Company_SD 00:00:00 2 rows

Ready

Ln 1 Col 1 Ch 1 INS

6. Display the Projects full data of the projects with a name starts with "a" letter.

LIKE OPERATOR REFERENCE <https://www.sqlservertutorial.net/sql-server-basics/sql-server-like/>



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

```
USE Company_SD;
GO
SELECT *
FROM Project
Where Pname LIKE 'a%';
```

The results pane shows a table with the following data:

	Pname	Pnumber	Plocation	City	Dnum
1	AL Solimaniah	100	Cairo_Alex Road	Alex	10
2	AI Rabwah	200	6th of October City	Giza	10
3	AI Rawdah	300	Zaied City	Giza	10
4	AI Rowad	400	Cairo_Faiyom Road	Giza	20
5	AI Rehab	500	Nasr City	Cairo	30

At the bottom of the results pane, a message states: "Query executed successfully."

7. display all the employees in department 30 whose salary from 1000 to 2000 LE monthly

BETWEEN REFERENCE

https://www.w3schools.com/sql/sql_between.asp

<https://www.sqlservertutorial.net/sql-server-basics/sql-server-between/>

ALL REFERENCE

<https://www.sqlservertutorial.net/sql-server-basics/sql-server-all/#:~:text=The%20SQL%20Server%20ALL%20operator%20is%20a%20logical%20operator%20that,values%20returned%20by%20a%20subquery.&text=In%20this%20syntax%3A,scalar%20expression%20is%20any%20valid%20expression.>

https://www.w3schools.com/sql/sql_any_all.asp

```

USE Company_SD;
GO
SELECT E.*
FROM Employee E , Departments D
WHERE E.Dno = D.Dnum
HAVING E.Salary BETWEEN 1000 AND 2000

```

Messages

Msg 8111, Level 16, State 1, Line 4
Column 'Employee.Salary' is invalid in the HAVING clause because it is not contained in either an aggregate function or the GROUP BY clause.
Msg 8111, Level 16, State 1, Line 6
Column 'Employee.Salary' is invalid in the HAVING clause because it is not contained in either an aggregate function or the GROUP BY clause.

Completion time: 2022-11-08T10:14:00.6964926+02:00

Ready

Ln 7 Col 1 Ch 1 INS

DESKTOP-STJ40C2 (15.0 RTM) | DESKTOP-STJ40C2\Arabtech... | Company_SD | 00:00:00 | 0 rows

SQLQuery7.sql - DESKTOP-STJ40C2.Company_SD (DESKTOP-STJ40C2\Arabtech (67)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query New Item Task List Object Explorer

Company_SD

SQLQuery7.sql - DE...0C2\Arabtech (67)*

```
USE Company_SD;
GO
SELECT E.*
FROM Employee E , Departments D
WHERE E.Dno = D.Dnum
Having E.Salary BETWEEN 1000 AND 2000
```

102 %

Messages

.n the HAVING clause because it is not contained in either an aggregate function or the GROUP BY clause.

.n the HAVING clause because it is not contained in either an aggregate function or the GROUP BY clause.

7006632+02:00

Item(s) Saved

Ln 7 Col 1 Ch 1 INS

Query completed with errors.

DESKTOP-STJ40C2 (15.0 RTM) | DESKTOP-STJ40C2\Arabte... | Company_SD | 00:00:00 | 0 rows

SQLQuery7.sql - DESKTOP-STJ40C2.Company_SD (DESKTOP-STJ40C2\Arabtech (67)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query New Item Task List Object Explorer

Company_SD

SQLQuery7.sql - DE...0C2\Arabtech (67)*

```
USE Company_SD;
GO
SELECT E.*
FROM Employee E , Departments D
WHERE E.Dno = D.Dnum AND (E.Salary BETWEEN 1000 AND 2000)
```

102 %

Results Messages

	Fname	Lname	SSN	Bdate	Address	Sex	Salary	Superssn	Dno
1	Ahmed	Ali	112233	1965-01-01 00:00:00.000	15 Ali fahmy St.Giza	M	1300	102660	10
2	Edward	Hanna	512463	1972-08-19 00:00:00.000	18 Abaas El 3akaad St. Nasr City.Cairo	M	1500	321654	30
3	Maged	Raoof	521634	1980-06-04 00:00:00.000	18 Kholosi st.Shobra.Cairo	M	1000	968574	30
4	Noha	Mohamed	968574	1975-01-02 00:00:00.000	55 Orabi St. El Mohandiseen .Cairo	F	1600	321654	20

Query executed successfully.

DESKTOP-STJ40C2 (15.0 RTM) | DESKTOP-STJ40C2\Arabte... | Company_SD | 00:00:00 | 4 rows

Ready

Ln 1 Col 1 Ch 1 INS

8. Retrieve the names of all employees in department 10 who works more than or equal 10 hours per week on "AL Rabwah" project.

The screenshot shows the Microsoft SQL Server Management Studio interface. The left pane displays the Object Explorer with the database 'Company_SD' selected. The center pane contains a query window with the following T-SQL code:

```
USE Company_SD;
GO
SELECT *
FROM Employee E , Project P , Works_for W
WHERE E.Dno = 10 AND E.SSN = W.ESSn AND P.Pnumber = W.Pno AND W.Hours >= 10 AND P.Pname = 'AL Solimaniah';
```

The right pane shows the results of the query execution. The results grid has the following columns: Fname, Lname, SSN, Bdate, Address, Sex, S..., S..., Dno, Pname, Pnumber, Plocation, City, Dnum, ESSn, Pno, Hours. There is one row of data:

	Fname	Lname	SSN	Bdate	Address	Sex	S...	S...	Dno	Pname	Pnumber	Plocation	City	Dnum	ESSn	Pno	Hours
1	Ahmed	Ali	112233	1965-01-15	Ali ...	M	1...	1...	10	AL Solimaniah	100	Cairo_Alex...	Alex	10	112233	100	40

At the bottom of the results pane, a message says "Query executed successfully." and the status bar indicates "DESKTOP-STJ40C2 (15.0 RTM) | DESKTOP-STJ40C2\Arabte... | Company_SD | 00:00:00 | 1 rows".

SQLQuery8.sql - DESKTOP-STJ40C2.Company_SD (DESKTOP-STJ40C2\Arabtech (67))* - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query Object Explorer Task List Object Explorer Solution Explorer Properties

Company_SD Execute

SQLQuery9.sql - DE...0C2\Arabtech (56) DESKTOP-STJ40C2...ny_SD - Diagram_1 SQLQuery8.sql - DE...0C2\Arabtech (67)*

```
USE Company_SD;
GO
SELECT E.* 
FROM Employee E , Project P , Works_for W
WHERE E.Dno = 10 AND E.SSN = W.ESSn AND P.Pnumber = W.Pno AND W.Hours >= 10 AND P.Pname = 'AL Solimaniah';
```

Results Messages

	Fname	Lname	SSN	Bdate	Address	Sex	Salary	Superssn	Dno
1	Ahmed	Ali	112233	1965-01-01 00:00:00.000	15 Ali fahmy St.Giza	M	1300	102660	10

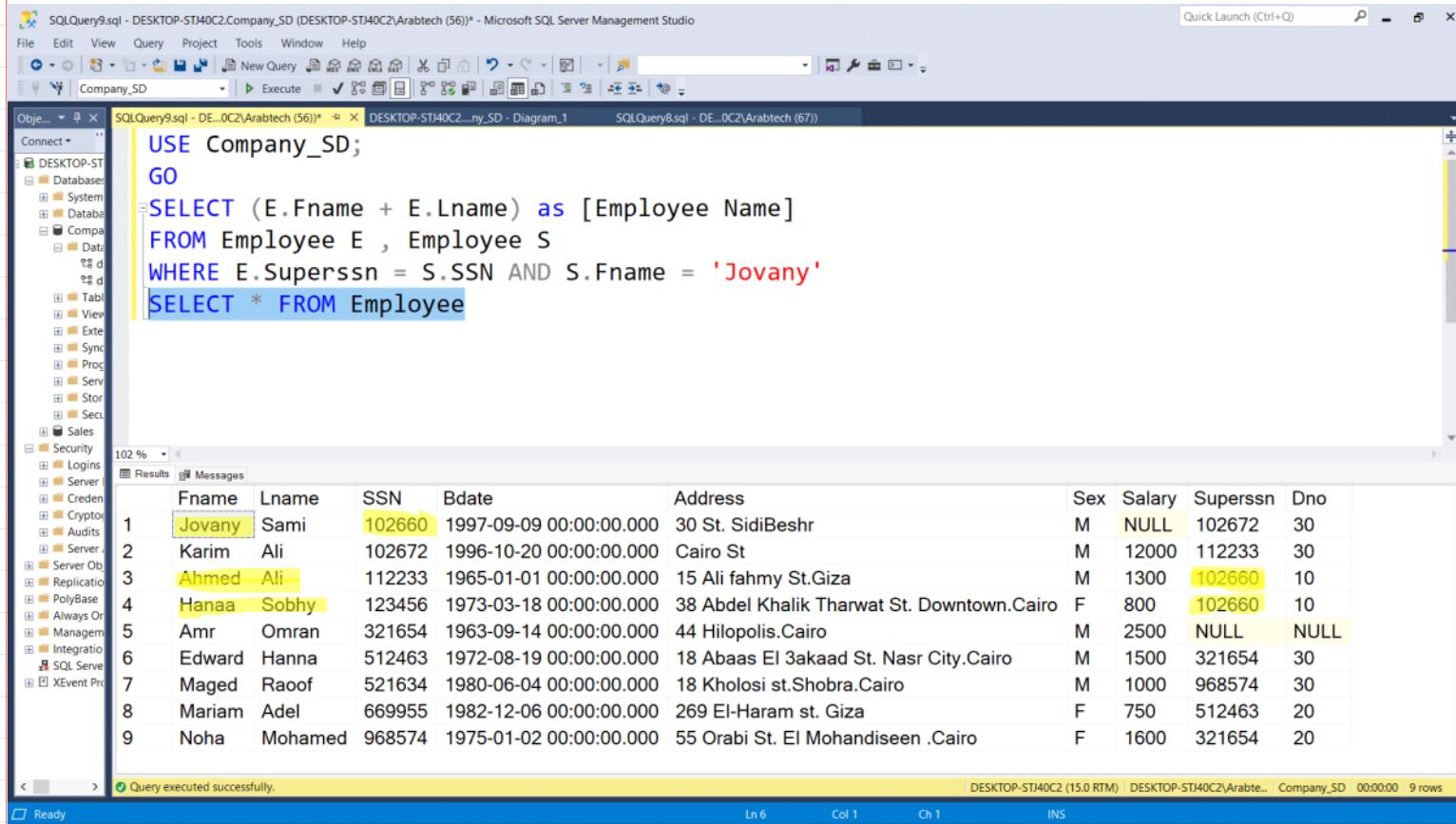
Query executed successfully.

DESKTOP-STJ40C2 (15.0 RTM) DESKTOP-STJ40C2\Arabte... Company_SD 00:00:00 1 rows

Ready

Ln 5 Col 107 Ch 107 INS

9. Find the names of the employees who directly supervised with Kamel Mohamed.



The screenshot shows the Microsoft SQL Server Management Studio interface. On the left, the Object Explorer displays the database structure for 'Company_SD'. In the center, a query window contains the following T-SQL code:

```

USE Company_SD;
GO
SELECT (E.Fname + E.Lname) as [Employee Name]
FROM Employee E , Employee S
WHERE E.Superssn = S.SSN AND S.Fname = 'Jovany'
SELECT * FROM Employee

```

The results grid below the code shows a list of employees. The employee with SSN 102660 is highlighted in yellow. The results are as follows:

	Fname	Lname	SSN	Bdate	Address	Sex	Salary	Superssn	Dno
1	Jovany	Sami	102660	1997-09-09 00:00:00.000	30 St. SidiBeshr	M	NULL	102672	30
2	Karim	Ali	102672	1996-10-20 00:00:00.000	Cairo St	M	12000	112233	30
3	Ahmed	Ali	112233	1965-01-01 00:00:00.000	15 Ali fahmy St.Giza	M	1300	102660	10
4	Hanaa	Sobhy	123456	1973-03-18 00:00:00.000	38 Abdel Khalik Tharwat St. Downtown.Cairo	F	800	102660	10
5	Amr	Omran	321654	1963-09-14 00:00:00.000	44 Hilopolis.Cairo	M	2500	NULL	NULL
6	Edward	Hanna	512463	1972-08-19 00:00:00.000	18 Abaas El Zakaad St. Nasr City.Cairo	M	1500	321654	30
7	Maged	Raoof	521634	1980-06-04 00:00:00.000	18 Kholosi st.Shobra.Cairo	M	1000	968574	30
8	Mariam	Adel	669955	1982-12-06 00:00:00.000	269 El-Haram st. Giza	F	750	512463	20
9	Noha	Mohamed	968574	1975-01-02 00:00:00.000	55 Orabi St. El Mohandiseen .Cairo	F	1600	321654	20

At the bottom of the results grid, a message states "Query executed successfully." and shows the session details: DESKTOP-STJ40C2 (15.0 RTM) | DESKTOP-STJ40C2\Arabtech | Company_SD | 00:00:00 | 9 rows.

SQLQuery9.sql - DESKTOP-STJ40C2.Company_SD (DESKTOP-STJ40C2\Arabtech (56)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Quick Launch (Ctrl+Q)

Object Explorer

SQLQuery9.sql - DE...0C2\Arabtech (56)* X DESKTOP-STJ40C2\ny_SD - Diagram..1 SQLQuery8.sql - DE...0C2\Arabtech (67)

```
USE Company_SD;
GO
SELECT (E.Fname + E.Lname) as [Employee Name]
FROM Employee E , Employee S
WHERE E.Superssn = S.SSN AND S.Fname = 'Jovany'
```

Results Messages

	Employee Name
1	AhmedAli
2	HanaaSobhy

Query executed successfully.

LN 6 Col 1 Ch 1 INS

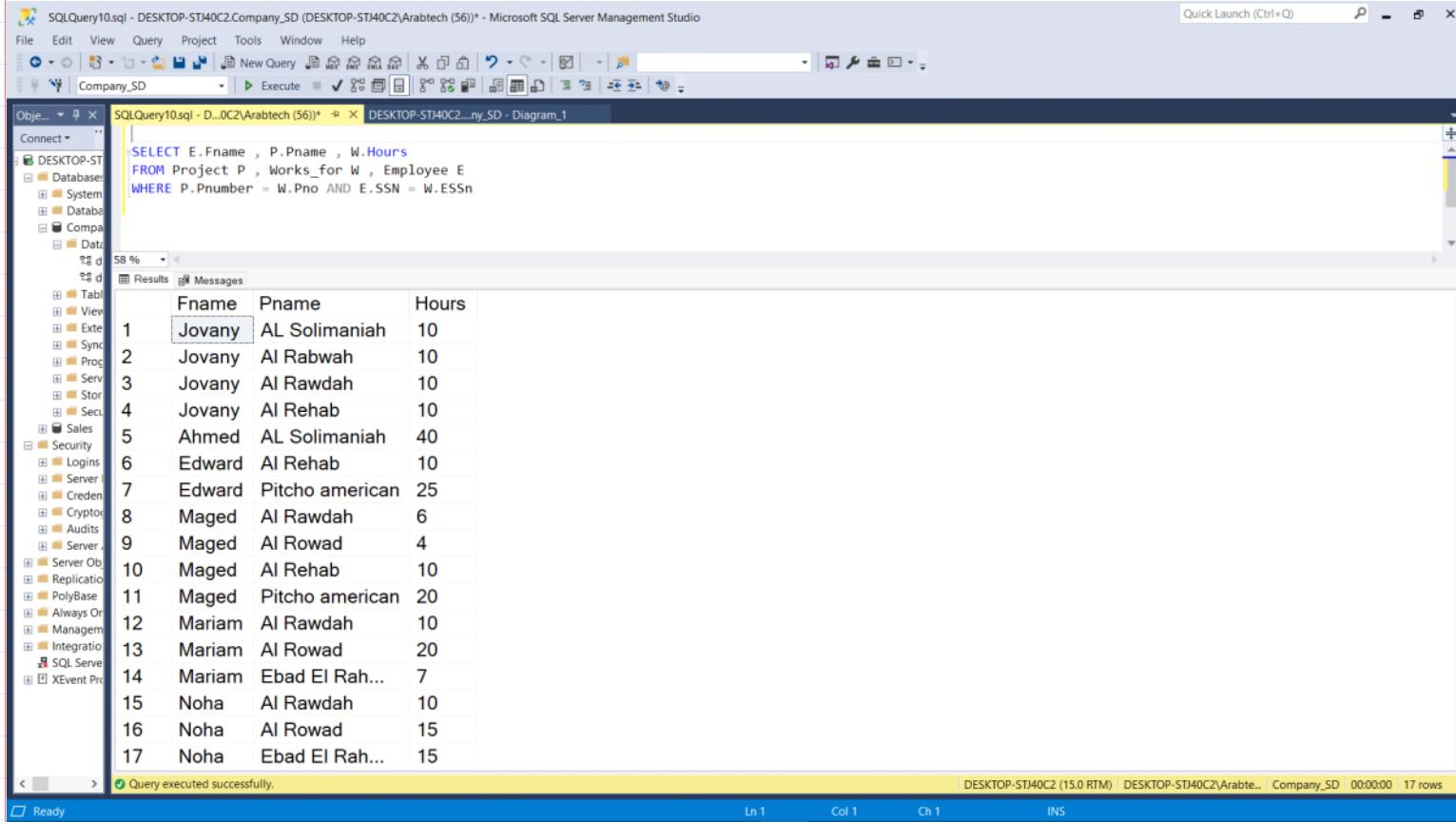
DESKTOP-STJ40C2 (15.0 RTM) DESKTOP-STJ40C2\Arabte... Company_SD 00:00:00 2 rows

10. For each project, list the project name and the total hours per week (for all employees) spent on that project.

Sum REFERENCE

https://www.w3schools.com/sql/func_sqlserver_sum.asp

<https://www.sqlservertutorial.net/sql-server-aggregate-functions/sql-server-sum/>



The screenshot shows the Microsoft SQL Server Management Studio interface. On the left is the Object Explorer tree, which is collapsed. In the center is a results grid titled 'Results'. The query executed was:

```
SELECT E.Fname , P.Pname , W.Hours
FROM Project P , Works_for W , Employee E
WHERE P.Pnumber = W.Pno AND E.SSN = W.ESSn
```

The results grid displays 17 rows of data:

	Fname	Pname	Hours
1	Jovany	AL Solimaniah	10
2	Jovany	Al Rabwah	10
3	Jovany	Al Rawdah	10
4	Jovany	Al Rehab	10
5	Ahmed	AL Solimaniah	40
6	Edward	Al Rehab	10
7	Edward	Pitcho american	25
8	Maged	Al Rawdah	6
9	Maged	Al Rowad	4
10	Maged	Al Rehab	10
11	Maged	Pitcho american	20
12	Mariam	Al Rawdah	10
13	Mariam	Al Rowad	20
14	Mariam	Ebad El Rah...	7
15	Noha	Al Rawdah	10
16	Noha	Al Rowad	15
17	Noha	Ebad El Rah...	15

At the bottom of the results grid, a message says "Query executed successfully." and shows the execution details: DESKTOP-STJ40C2 (15.0 RTM) DESKTOP-STJ40C2\Arabte.. Company_SD 00:00:00 17 rows.

SQLQuery10.sql - DESKTOP-STJ40C2.Company_SD (DESKTOP-STJ40C2\Arabtech (56)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

New Query New Item New Database New File New Table New View New Diagram New Script New Report

Execute Save All Save As Save Copy All Copy All As Copy All As Diagram Copy All As Text Copy All As XML Copy All As Script Copy All As XMLEdit All

Company_SD Diagram_1

USE Company_SD;

GO

SELECT P.Pname , Sum (W.Hours) as [Total Working Hours]
FROM Project P , Works_for W , Employee E
WHERE P.Pnumber = W.Pno AND E.SSN = W.ESSn
GROUP BY Pname

123 % Results Messages

	Pname	Total Working Hours
1	AI Rabwah	10
2	AI Rawdah	36
3	AI Rehab	30
4	AI Rowad	39
5	AL Solimaniah	50
6	Ebad El Rahman	22
7	Pitcho american	45

Query executed successfully.

DESKTOP-STJ40C2 (15.0 RTM) | DESKTOP-STJ40C2\Arabte... | Company_SD | 00:00:00 | 7 rows

Ready

Ln 8 Col 1 Ch 1 INS

11. Retrieve the names of all employees and the names of the projects they are working on, sorted by the project name.

The screenshot shows the Microsoft SQL Server Management Studio interface. On the left is the Object Explorer tree, which includes nodes for DESKTOP-STJ40C2, Company_SD, and various database objects like Tables, Views, and Procedures. The main window contains a query editor tab titled 'SQLQuery11.sql' and a results tab titled 'DESKTOP-STJ40C2\Arabtech (60)* - Diagram_1'. The query is:

```
USE Company_SD;
GO
SELECT E.fname , P.Pname
FROM Employee E , Project P , Works_for W
WHERE E.SSN = W.ESSn AND P.Pnumber = W.Pno
ORDER BY Pname
```

The results grid displays 17 rows of data:

	fname	Pname
1	Jovany	Al Rabwah
2	Jovany	Al Rawdah
3	Maged	Al Rawdah
4	Mariam	Al Rawdah
5	Noha	Al Rawdah
6	Jovany	Al Rehab
7	Edward	Al Rehab
8	Maged	Al Rehab
9	Maged	Al Rowad
10	Mariam	Al Rowad
11	Noha	Al Rowad
12	Jovany	AL Soli...
13	Ahmed	Al Soli...

At the bottom of the results grid, a message says 'Query executed successfully.' and shows statistics: DESKTOP-STJ40C2 (15.0 RTM) | DESKTOP-STJ40C2\Arabte... | Company_SD | 00:00:00 | 17 rows.

12. Display the data of the department which has the smallest employee ID over all employees' ID.

The screenshot shows the Microsoft SQL Server Management Studio interface. The left pane displays the Object Explorer with the 'Company_SD' database selected. The right pane contains a query window with the following T-SQL code:

```
USE Company_SD;
GO
--12
SELECT D.*
FROM Departments D , Employee E
WHERE D.Dnum = E.Dno
AND E.SSN = (SELECT MIN(SSN) FROM Employee)
```

The results pane shows a single row of data from the 'Employees' table:

	Dname	Dnum	MGRSSN	MGRStart Date
1	DP3	30	512463	2006-01-06 00:00:00.000

At the bottom of the interface, a message bar indicates "Query executed successfully." and shows the session details: DESKTOP-STJ40C2 (15.0 RTM) | DESKTOP-STJ40C2\Arabtech | Company_SD | 00:00:00 | 1 rows.

13. For each department, retrieve the department name and the maximum, minimum and average salary of its employees.

The screenshot shows the Microsoft SQL Server Management Studio interface. The left sidebar displays the Object Explorer with the 'Company_SD' database selected. The main window contains two tabs: 'SQLQuery12.sql' and 'SQLQuery6.sql'. The 'SQLQuery6.sql' tab is active and contains the following T-SQL code:

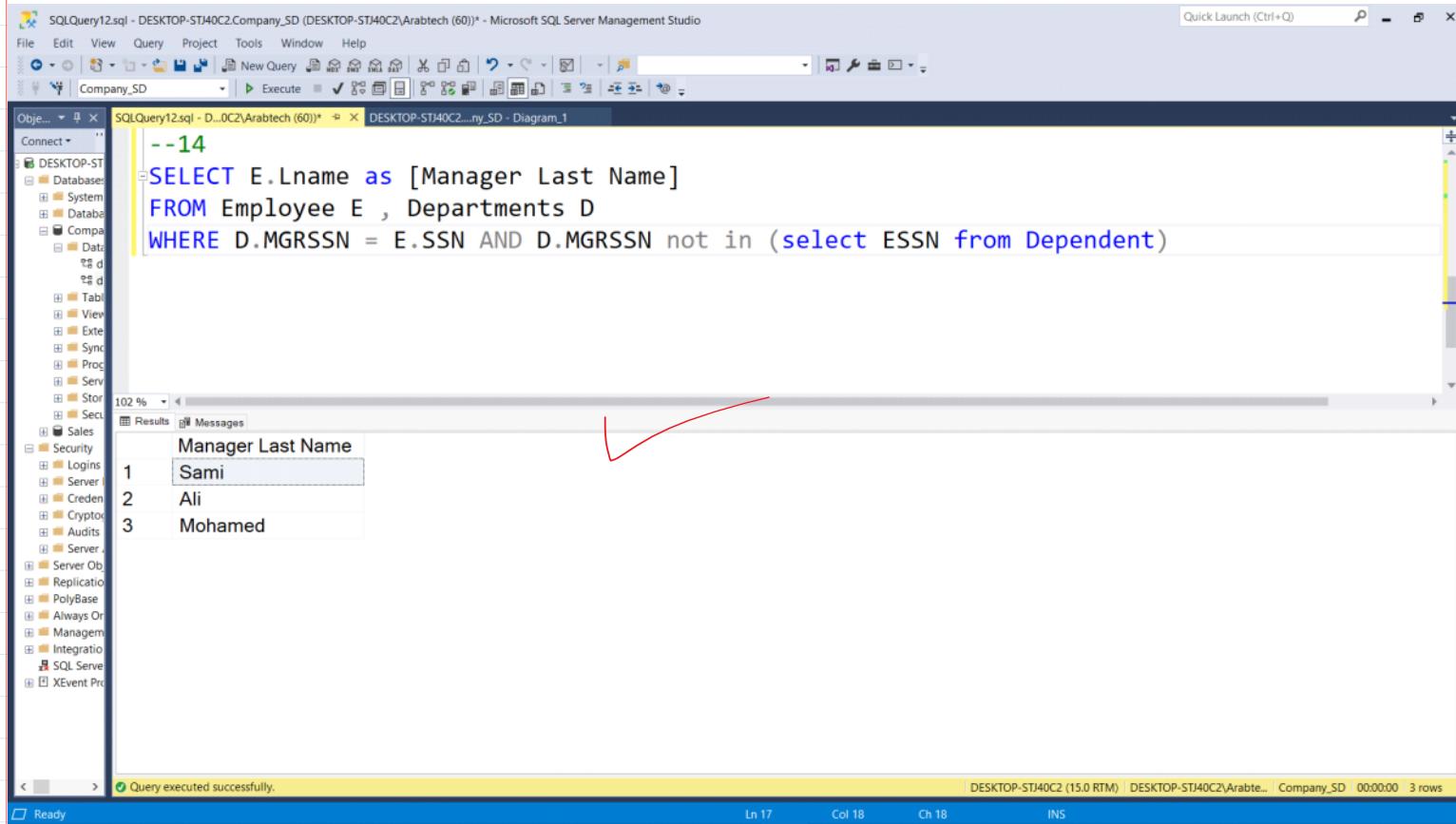
```
SELECT D.*  
FROM Departments D , Employee E  
WHERE D.Dnum = E.Dno  
AND E.SSN = (SELECT MIN(SSN) FROM Employee)  
--13  
SELECT D.Dname , Max(E.Salary) as Max , Min(E.Salary) as Min , AVG(E.Salary) as Avg  
FROM Employee E , Departments D  
WHERE E.Dno = D.Dnum  
GROUP BY D.Dname;
```

The results pane shows a table with four columns: Dname, Max, Min, and Avg. The data is as follows:

	Dname	Max	Min	Avg
1	DP1	1300	800	1050
2	DP2	1600	750	1175
3	DP3	12000	1000	4833

At the bottom of the results pane, a message indicates: "Query executed successfully." The status bar at the bottom right shows: DESKTOP-STJ40C2 (15.0 RTM) | DESKTOP-STJ40C2\Arabte... | Company_SD | 00:00:00 | 3 rows.

14. List the last name of all managers who have no dependents.



--14

```
SELECT E.Lname as [Manager Last Name]
FROM Employee E , Departments D
WHERE D.MGRSSN = E.SSN AND D.MGRSSN not in (select ESSN from Dependent)
```

	Manager Last Name
1	Sami
2	Ali
3	Mohamed

Query executed successfully.

SQLQuery12.sql - DESKTOP-STJ40C2.Company_SD (DESKTOP-STJ40C2\Arabtech (60)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Toolbox Object Explorer Task List Results Messages

Company_SD

SQLQuery12.sql - D...0C2\Arabtech (60)* DESKTOP-STJ40C2\...y_SD - Diagram_1

--14

```
SELECT E.Lname as [Manager Last Name]
FROM Employee E , Departments D
WHERE D.MGRSSN = E.SSN AND D.MGRSSN NOT IN (select ESSN from Dependent)
```

Results Messages

	Manager Last Name
1	Sami
2	Ali
3	Mohamed

102 %

Query executed successfully.

Ln 17 Col 72 Ch 72 INS

Ready

SQLQuery12.sql - DESKTOP-STJ40C2.Company_SD (DESKTOP-STJ40C2\Arabtech (60)) - Microsoft SQL Server Management Studio

File Edit View Query Project Tools Window Help

Toolbox Object Explorer Task List Results Messages

Company_SD

SQLQuery12.sql - D...0C2\Arabtech (60)* DESKTOP-STJ40C2\...y_SD - Diagram_1

```
SELECT E.Lname as [Manager Last Name]
FROM Employee E , Departments D , Dependent DE
WHERE D.MGRSSN = E.SSN AND NOT (E.SSN = DE.ESSN)
```

Results Messages

	Manager Last Name
1	Sami
2	Sami
3	Sami
4	Sami
5	Sami
6	Sami
7	Ali
8	Ali
9	Ali
10	Ali
11	Ali
12	Ali
13	Hanna
14	Hanna
15	Hanna
16	Hanna
17	Mohamed
18	Mohamed

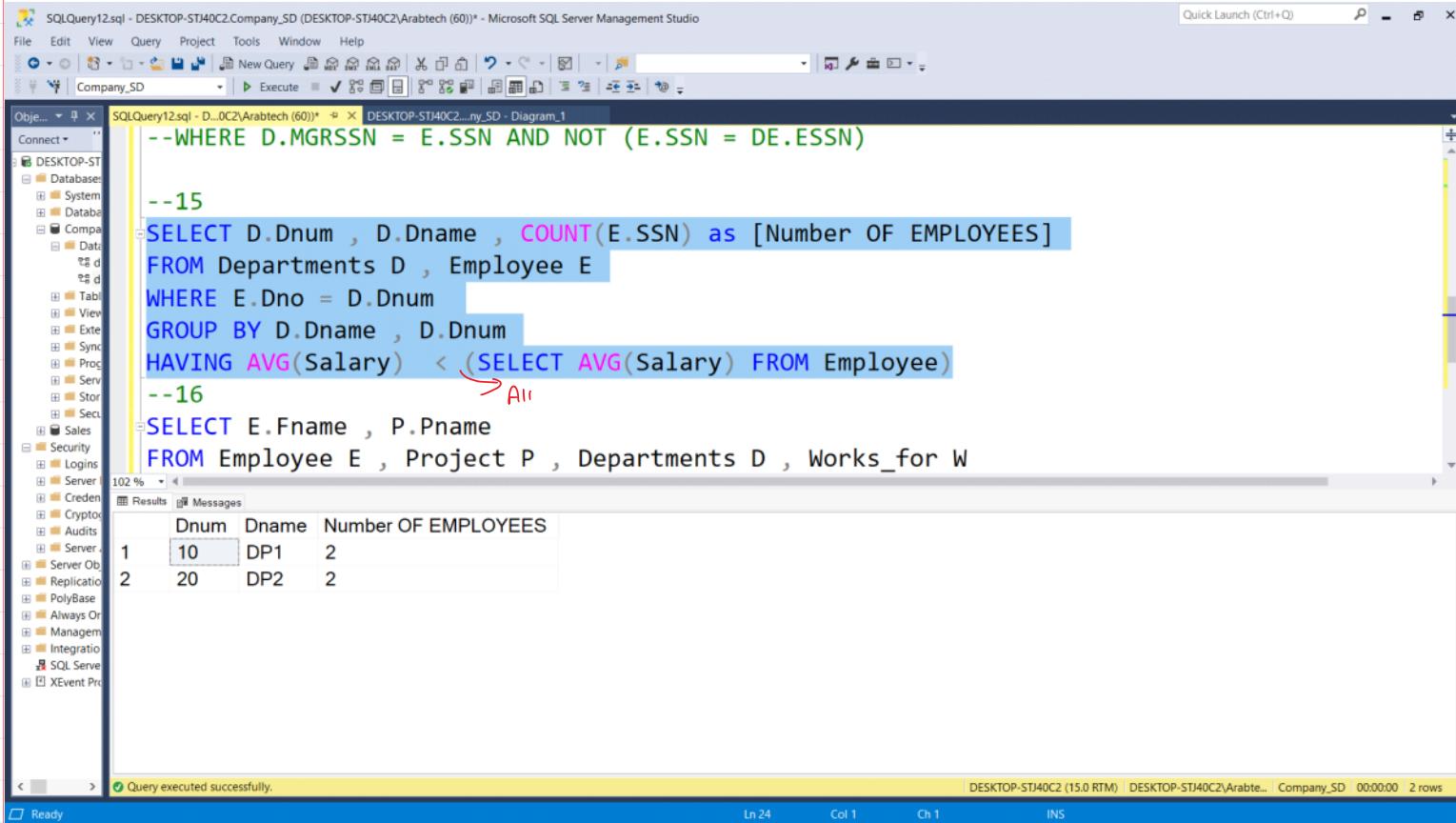
102 %

Query executed successfully.

Ln 19 Col 1 Ch 1 INS

Ready

15. For each department--
 if its average salary is less than the average salary of all employees--
 display its number, name and number of its employees.



The screenshot shows the Microsoft SQL Server Management Studio interface. In the Object Explorer on the left, under the 'Company_SD' database, there are several objects listed: Database, Table, View, Extent, Sync, Proc, Serv, Stor, Secu, Sales, Security, Logins, Server, Creden, Crypto, Audits, Server Obj, Replicatio, PolyBase, Always On, Managem, Integratio, and SQL Server XEvent Pro. The 'Tables' node is expanded, showing 'Employee', 'Departments', 'Project', 'Works_for', and 'Audit'. The 'Employee' table is selected.

In the main query editor window, the following SQL code is displayed:

```
--WHERE D.MGRSSN = E.SSN AND NOT (E.SSN = DE.ESSN)

--15
SELECT D.Dnum , D.Dname , COUNT(E.SSN) as [Number OF EMPLOYEES]
FROM Departments D , Employee E
WHERE E.Dno = D.Dnum
GROUP BY D.Dname , D.Dnum
HAVING AVG(Salary) < (SELECT AVG(Salary) FROM Employee)
--16
SELECT E.Fname , P.Pname
FROM Employee E , Project P , Departments D , Works_for W
```

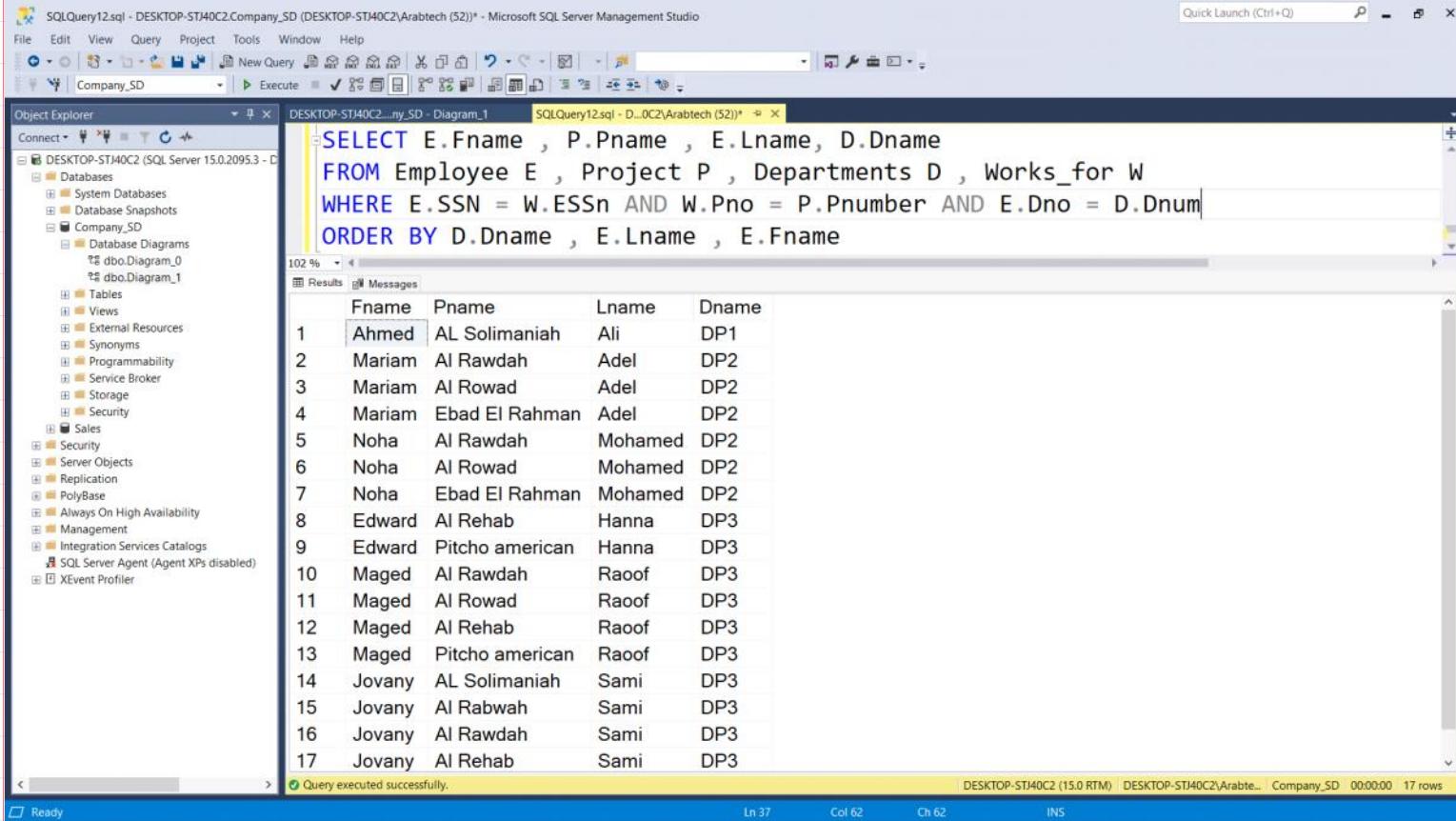
A red arrow points from the text 'All' in the HAVING clause to the word 'All' in the SELECT statement below it.

The results grid shows the following data:

	Dnum	Dname	Number OF EMPLOYEES
1	10	DP1	2
2	20	DP2	2

At the bottom of the screen, a message bar indicates: 'Query executed successfully.' and 'DESKTOP-STJ40C2 (15.0 RTM) | DESKTOP-STJ40C2\Arabte... | Company_SD | 00:00:00 | 2 rows'.

16. Retrieve a list of employees and the projects they are working on ordered by department and within each department, ordered alphabetically by last name, first name.

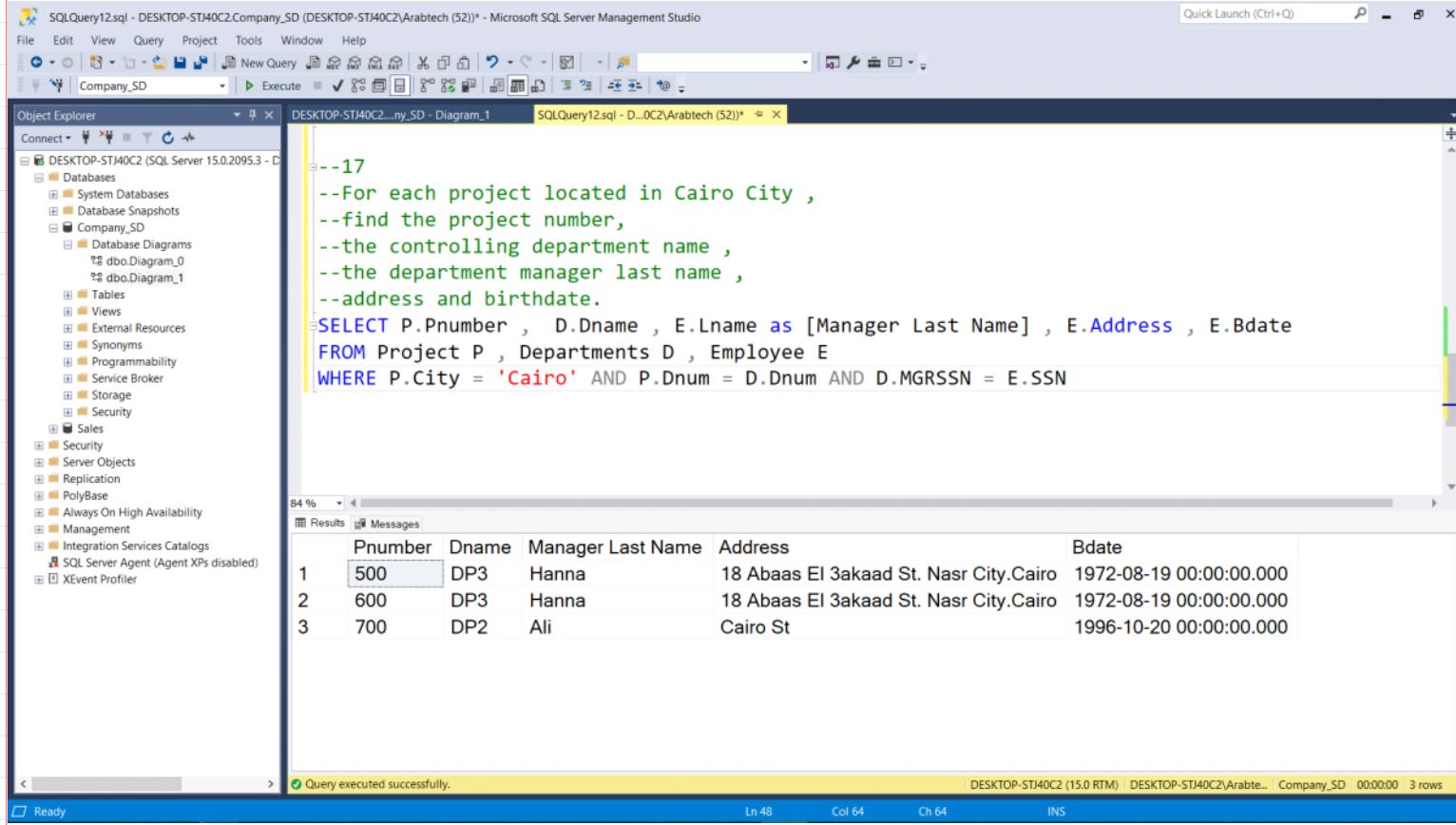


```

SQLQuery12.sql - DESKTOP-STJ40C2.Company_SD (DESKTOP-STJ40C2\Arabtech (52)) - Microsoft SQL Server Management Studio
File Edit View Query Project Tools Window Help
New Query Object Explorer DESKTOP-STJ40C2...ny_SD - Diagram_1 SQLQuery12.sql - D...C2\Arabtech (52)* x
Quick Launch (Ctrl+Q)
Object Explorer Connect x
File DESKTOP-STJ40C2 (SQL Server 15.0.2095.3 - D...
Databases System Databases Database Snapshots Company_SD Database Diagrams dbo.Diagram_0 dbo.Diagram_1 Tables Views External Resources Synonyms Programmability Service Broker Storage Security Sales Security Server Objects Replication PolyBase Always On High Availability Management Integration Services Catalogs SQL Server Agent (Agent XPs disabled) XEvent Profiler
Connect x
File DESKTOP-STJ40C2...ny_SD - Diagram_1 SQLQuery12.sql - D...C2\Arabtech (52)* x
SELECT E.Fname , P.Pname , E.Lname , D.Dname
FROM Employee E , Project P , Departments D , Works_for W
WHERE E.SSN = W.ESSn AND W.Pno = P.Pnumber AND E.Dno = D.Dnum
ORDER BY D.Dname , E.Lname , E.Fname
Results Messages
Fname Pname Lname Dname
1 Ahmed AL Solimanah Ali DP1
2 Mariam Al Rawdah Adel DP2
3 Mariam Al Rowad Adel DP2
4 Mariam Ebad El Rahman Adel DP2
5 Noha Al Rawdah Mohamed DP2
6 Noha Al Rowad Mohamed DP2
7 Noha Ebad El Rahman Mohamed DP2
8 Edward Al Rehab Hanna DP3
9 Edward Pitcho american Hanna DP3
10 Maged Al Rawdah Raoof DP3
11 Maged Al Rowad Raoof DP3
12 Maged Al Rehab Raoof DP3
13 Maged Pitcho american Raoof DP3
14 Jovany AL Solimanah Sami DP3
15 Jovany Al Rabwah Sami DP3
16 Jovany Al Rawdah Sami DP3
17 Jovany Al Rehab Sami DP3
Query executed successfully.
DESKTOP-STJ40C2 (15.0 RTM) DESKTOP-STJ40C2\Arabte... Company_SD 00:00:00 17 rows
Ready Ln 37 Col 62 Ch 62 INS

```

17. For each project located in Cairo City ,
 find the project number ,
 the controlling department name ,
 the department manager last name ,
 address and birthdate .



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

```
-- 17
--For each project located in Cairo City ,
--find the project number,
--the controlling department name ,
--the department manager last name ,
--address and birthdate.
SELECT P.Pnumber , D.Dname , E.Lname as [Manager Last Name] , E.Address , E.Bdate
FROM Project P , Departments D , Employee E
WHERE P.City = 'Cairo' AND P.Dnum = D.Dnum AND D.MGRSSN = E.SSN
```

The results pane below shows the output of the query:

Pnumber	Dname	Manager Last Name	Address	Bdate
1	DP3	Hanna	18 Abaas El 3akaad St. Nasr City.Cairo	1972-08-19 00:00:00.000
2	DP3	Hanna	18 Abaas El 3akaad St. Nasr City.Cairo	1972-08-19 00:00:00.000
3	DP2	Ali	Cairo St	1996-10-20 00:00:00.000

At the bottom of the results pane, a message says "Query executed successfully." The status bar at the bottom right indicates "Ln 48 Col 64 Ch 64 INS".