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JOBSHEET

PRAKTIKUM BASIS DATA LANJUT

Jurusan Teknologi Informasi
POLITEKNIK NEGERI MALANG
2024



Week 2

SQL SERVER - SELECT, JOIN SORTING DAN FILTERING DATA

Team Teaching:

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Information Technology Department, Malang State Polytechnic

Jobsheet- 1 : Introduction to Transact-SQL and Statements SELECT, Join, Sorting, and Filtering data

Advanced Database Course

Supervisor: Advanced Database Teaching Team

September 2024

Topics

1. Introduction to T-SQL and *Query Select*
2. Querying Multiple Tables
3. Sorting and Filtering Data

Objective

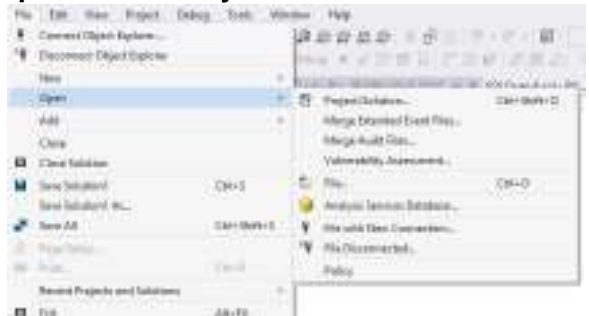
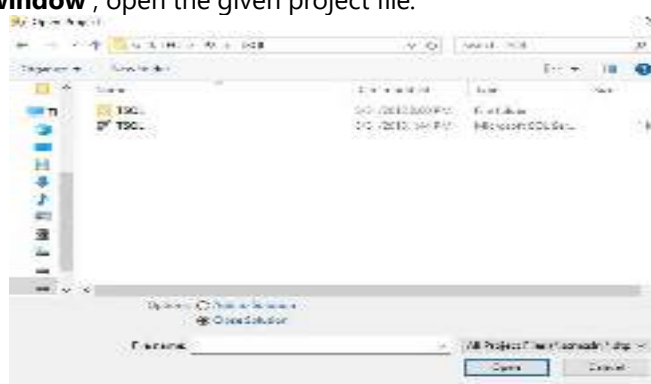
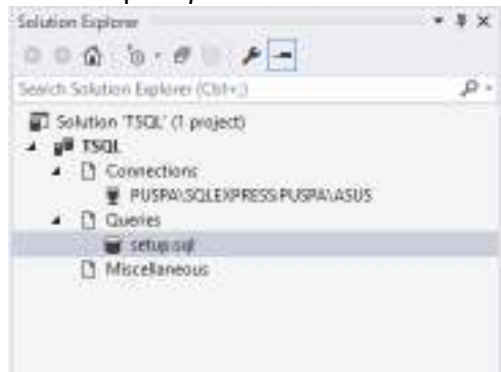
Students are expected to be able to:

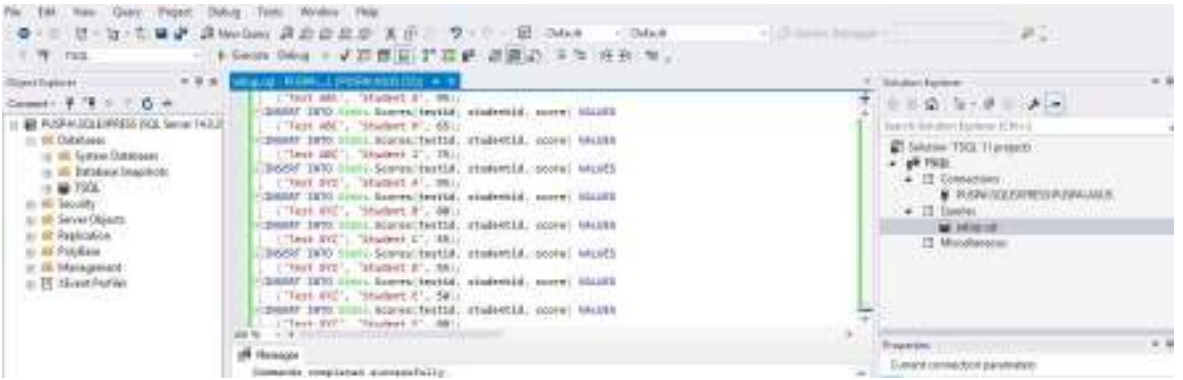
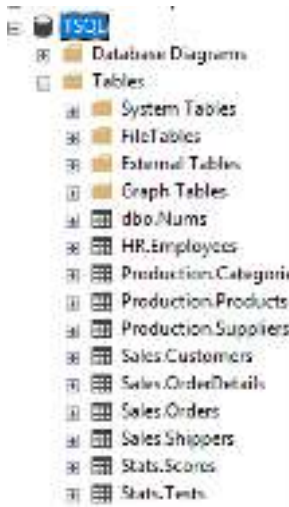

1. Understanding the basic differences between Transact-SQL (T-SQL) and ANSI SQL.
2. Understanding how to create *a database* from an existing SQL file
3. Understand how to execute part or all of a SQL *script* from an existing file.
4. Understanding the concept of using '*comments*' in T-SQL.
5. Understand the concept of using the SELECT statement to analyze existing tables in *a database* .
6. Understanding how to display data in a *unique / distinct manner* .
7. Understand how to use *ALIAS* for table names and column names.
8. Understand the concept of *CASE* expressions and how to use them.
9. Students understand how to query multiple tables in a SELECT clause using JOIN.
10. Students understand how to write INNER JOIN , OUTER JOIN , SELF-JOIN and CROSS JOIN queries .
11. Students understand how to do Data Sorting , Data Filtering with predicates , Data Filtering with TOP and OFFSET-FETCH
12. Students understand how to handle missing and unknown values in real data.

General Instructions

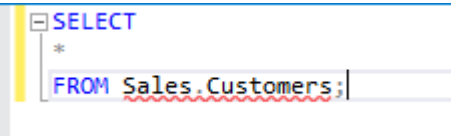
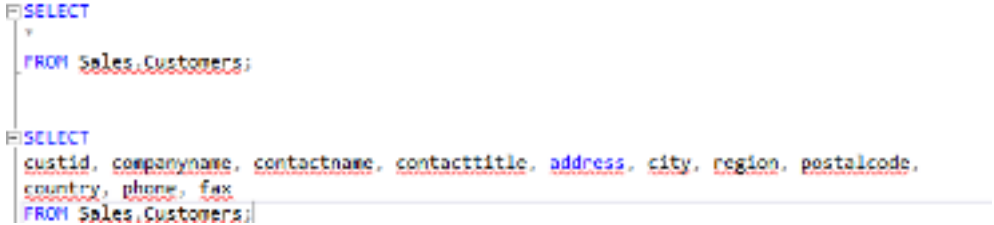
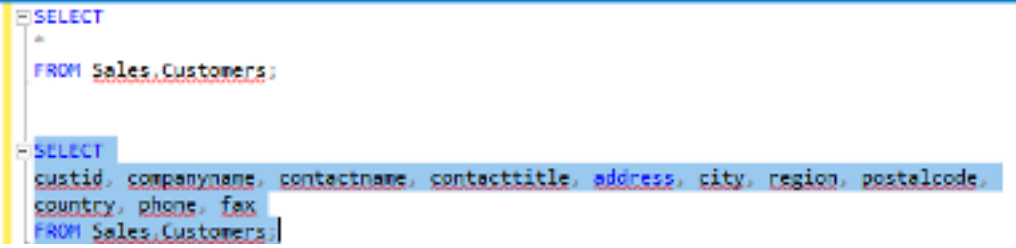
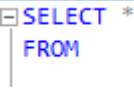
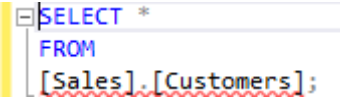
1. Follow the steps in the practical sections in the order given.
2. Answer all questions marked **[Question-X]** that are found in certain steps in each part of the practicum.
3. In each step of the practicum, there is an explanation that will help you answer the questions in instruction number 3, so read and do all the practicum parts in this jobsheet.
4. Write the answers to the questions in the instructions number 3 in a report that is done using a word processing application (Word, OpenOffice, or other similar). Export as a **PDF file** with the following name format:
 - **BDL_Class_03_YourFullName** .pdf
 - Collect the PDF files as a practical report to the supervising lecturer.
 - In addition to the file name, also include your identity on the first page of the report.

Practical Preparation: Creating a Database from Existing SQL


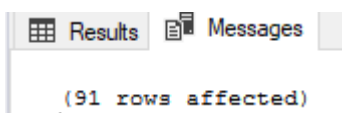
Step	Information
1	Create a TSQL database <pre>CREATE DATABASE TSQL;</pre>
2	On the File menu , click Open and click Project/Solution . 
3	In the Open Project window , open the given project file. 
4	Next, the Solution Explorer window will display the following display. Then please open the “Setup” file. This file contains the sql <i>script</i> to create the tables needed for this practicum. 
5	After the setup file is opened, a display like the image below will appear. Then click <i>Execute</i> and please wait until the process is complete.

																																																	
6	<p>After the process is successful, several tables will be formed, as shown in the image below.</p> 																																																
7	<p>For example, to check <i>records</i> in the Sales.Customers table, please execute the command below:</p> <pre>USE [Sales] GO SELECT [custid] ,[companyname] ,[contactname] ,[contacttitle] ,[address] ,[city] ,[region] ,[postalcode] ,[country] ,[phone] ,[fax] FROM [Sales].[Customers] GO</pre>																																																
8	<p>The results of the SQL command above are as follows</p>  <table><thead><tr><th></th><th>custid</th><th>companyname</th><th>contactname</th><th>contacttitle</th><th>address</th><th>city</th><th>region</th></tr></thead><tbody><tr><td>1</td><td>1</td><td>Customer NR288</td><td>Allen, Michael</td><td>Sales Representative</td><td>Obers Str. 0123</td><td>Berlin</td><td>NULL</td></tr><tr><td>2</td><td>2</td><td>Customer MLTDN</td><td>Hassall, Mark</td><td>Owner</td><td>Avda. de la Constitución 5678</td><td>México D.F.</td><td>NULL</td></tr><tr><td>3</td><td>3</td><td>Customer KDUDE</td><td>Peoples, John</td><td>Owner</td><td>Mataderos 7890</td><td>México D.F.</td><td>NULL</td></tr><tr><td>4</td><td>4</td><td>Customer HFBZG</td><td>Andt, Torsten</td><td>Sales Representative</td><td>7890 Hanover Sq.</td><td>London</td><td>NULL</td></tr><tr><td>5</td><td>5</td><td>Customer HGVLZ</td><td>Higginbotham, Tom</td><td>Order Administrator</td><td>Berguvsvägen 5678</td><td>Luleå</td><td>NULL</td></tr></tbody></table>		custid	companyname	contactname	contacttitle	address	city	region	1	1	Customer NR288	Allen, Michael	Sales Representative	Obers Str. 0123	Berlin	NULL	2	2	Customer MLTDN	Hassall, Mark	Owner	Avda. de la Constitución 5678	México D.F.	NULL	3	3	Customer KDUDE	Peoples, John	Owner	Mataderos 7890	México D.F.	NULL	4	4	Customer HFBZG	Andt, Torsten	Sales Representative	7890 Hanover Sq.	London	NULL	5	5	Customer HGVLZ	Higginbotham, Tom	Order Administrator	Berguvsvägen 5678	Luleå	NULL
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Practical – Part 1: Executing part or all of a SQL script

Step	Information
1	<p>Please type the following <i>query in your query panel</i> then click <i>execute</i> . Note the results displayed.</p> 
2	<p>Please add the following <i>query to your query panel</i> then click <i>execute</i> . Note the results displayed</p> 
3	<p>Make a selection on one of the existing <i>queries</i> then click <i>execute</i> . Note the results displayed. What is the difference with the results in the second step above? (Question 1)</p> <p>My Answer :</p> <ul style="list-style-type: none"> - it's the same, because * means to select all columns in the Sales.Customers table 
4	<p>In <i>the query panel</i> please type</p> 
5	<p>then on the Object Explorer tab – Tables please find the Sales.Customers table. Click the table and drag it to the query pane I . The result is as shown below, after that add a semicolon after the name of the table in question and click execute.</p> 

Practical – Part 2: Using the SELECT statement for specific columns

Step	Information
1	In the query panel, please type the script below <pre>SELECT contactname, address, postalcode, city, country FROM Sales.Customers;</pre>
2	<i>Highlights query above and click execute</i>
3	<p>Please observe the results. How many <i>rows</i> are produced? To find out, you can do it on the results tab as shown in the image below</p>  <p>Or you can also go to the messages tab as shown in the image below.</p> 

Practical – Part 3: Using the SELECT statement to display data *uniquely* / *DISTINCT*

Step	Information
1	<p>In the query panel, please type the script below</p> <pre>SELECT country FROM Sales.Customers;</pre>
2	<p>Highlights query above and click <i>execute</i></p>
3	<p>Please observe the results. <i>Is there any duplicate data? If YES, why? Capture the results of executing the SQL script above (Question 2)</i></p> <p>My Answer :</p> <ul style="list-style-type: none"> - Yes, because select takes all rows in a specified column in the table.
4	<p>In the query pane, please type the script below.</p> <pre>SELECT DISTINCT country FROM Sales.Customers;</pre> <p>Please click <i>execute</i> and observe the results.</p>
5	<p><i>Is there any duplicate data? Explain the difference in results in step 4 and step 3!? What are the benefits of the DISTINCT command? Capture the results of executing the SQL script above (Question 3)</i></p> <p>My Answer :</p> <ul style="list-style-type: none"> - No, because distinct will remove duplicates and return only unique rows from the column.

Practical – Part 4: Using *ALIAS* for table names and column names

Step	Information																																																																																																																														
1	<p>In the query panel, please type the script below</p> <pre>SELECT c.contactname, c.contacttitle FROM Sales.Customers AS c;</pre>																																																																																																																														
2	<p>Highlights query above and click execute. Observe the results</p>																																																																																																																														
3	<p>In the query panel, please type the script below.</p> <pre>SELECT c.contactname AS Name, c.contacttitle AS Title, c.companyname AS [Company Name] FROM Sales.Customers AS c;</pre>																																																																																																																														
4	<p>Highlights query above and click execute . Observe the results.</p>																																																																																																																														
5	<p>What is the difference between the execution results of the query stage 1 and stage 3 above? What are the benefits of the AS command? Please explain! Capture the results of the SQL script execution above (Question 4)</p> <div><div><p>Results Messages</p><table><tr><th></th><th>contactname</th><th>contacttitle</th></tr><tr><td>1</td><td>Allen, Michael</td><td>Sales Representative</td></tr><tr><td>2</td><td>Hassell, Mark</td><td>Owner</td></tr><tr><td>3</td><td>Peoples, John</td><td>Owner</td></tr><tr><td>4</td><td>Arndt, Torsten</td><td>Sales Representative</td></tr><tr><td>5</td><td>Higginbotham, Tom</td><td>Order Administrator</td></tr><tr><td>6</td><td>Poland, Carole</td><td>Sales Representative</td></tr><tr><td>7</td><td>Bansal, Dushyant</td><td>Marketing Manager</td></tr><tr><td>8</td><td>Ilyina, Julia</td><td>Owner</td></tr><tr><td>9</td><td>Raghav, Amritansh</td><td>Owner</td></tr><tr><td>10</td><td>Bassols, Pilar Colome</td><td>Accounting Manager</td></tr><tr><td>11</td><td>Jaffe, David</td><td>Sales Representative</td></tr><tr><td>12</td><td>Ray, Mike</td><td>Sales Agent</td></tr><tr><td>13</td><td>Benito, Almudena</td><td>Marketing Manager</td></tr><tr><td>14</td><td>Jelitto, Jacek</td><td>Owner</td></tr><tr><td>15</td><td>Richardson, Shawn</td><td>Sales Associate</td></tr><tr><td>16</td><td>Birkby, Dana</td><td>Sales Representative</td></tr><tr><td>17</td><td>Leone, Tiffany</td><td>Order Administrator</td></tr></table><p>Query executed successfully.</p></div><div><p>Results Messages</p><table><tr><th></th><th>Name</th><th>Title</th><th>Company Name</th></tr><tr><td>1</td><td>Allen, Michael</td><td>Sales Representative</td><td>Customer NRZBB</td></tr><tr><td>2</td><td>Hassell, Mark</td><td>Owner</td><td>Customer MLTDN</td></tr><tr><td>3</td><td>Peoples, John</td><td>Owner</td><td>Customer KBUDE</td></tr><tr><td>4</td><td>Arndt, Torsten</td><td>Sales Representative</td><td>Customer HFBZG</td></tr><tr><td>5</td><td>Higginbotham, Tom</td><td>Order Administrator</td><td>Customer H3VLZ</td></tr><tr><td>6</td><td>Poland, Carole</td><td>Sales Representative</td><td>Customer XHXJV</td></tr><tr><td>7</td><td>Bansal, Dushyant</td><td>Marketing Manager</td><td>Customer QXVLA</td></tr><tr><td>8</td><td>Ilyina, Julia</td><td>Owner</td><td>Customer QUHWH</td></tr><tr><td>9</td><td>Raghav, Amritansh</td><td>Owner</td><td>Customer RTXGC</td></tr><tr><td>10</td><td>Bassols, Pilar Colome</td><td>Accounting Manager</td><td>Customer EEALV</td></tr><tr><td>11</td><td>Jaffe, David</td><td>Sales Representative</td><td>Customer UBHAU</td></tr><tr><td>12</td><td>Ray, Mike</td><td>Sales Agent</td><td>Customer PSNMQ</td></tr><tr><td>13</td><td>Benito, Almudena</td><td>Marketing Manager</td><td>Customer VMLOG</td></tr><tr><td>14</td><td>Jelitto, Jacek</td><td>Owner</td><td>Customer WNMAF</td></tr><tr><td>15</td><td>Richardson, Shawn</td><td>Sales Associate</td><td>Customer JUWXX</td></tr><tr><td>16</td><td>Birkby, Dana</td><td>Sales Representative</td><td>Customer GYBBY</td></tr><tr><td>17</td><td>Leone, Tiffany</td><td>Order Administrator</td><td>Customer EEBML</td></tr></table><p>Query executed successfully.</p></div></div>		contactname	contacttitle	1	Allen, Michael	Sales Representative	2	Hassell, Mark	Owner	3	Peoples, John	Owner	4	Arndt, Torsten	Sales Representative	5	Higginbotham, Tom	Order Administrator	6	Poland, Carole	Sales Representative	7	Bansal, Dushyant	Marketing Manager	8	Ilyina, Julia	Owner	9	Raghav, Amritansh	Owner	10	Bassols, Pilar Colome	Accounting Manager	11	Jaffe, David	Sales Representative	12	Ray, Mike	Sales Agent	13	Benito, Almudena	Marketing Manager	14	Jelitto, Jacek	Owner	15	Richardson, Shawn	Sales Associate	16	Birkby, Dana	Sales Representative	17	Leone, Tiffany	Order Administrator		Name	Title	Company Name	1	Allen, Michael	Sales Representative	Customer NRZBB	2	Hassell, Mark	Owner	Customer MLTDN	3	Peoples, John	Owner	Customer KBUDE	4	Arndt, Torsten	Sales Representative	Customer HFBZG	5	Higginbotham, Tom	Order Administrator	Customer H3VLZ	6	Poland, Carole	Sales Representative	Customer XHXJV	7	Bansal, Dushyant	Marketing Manager	Customer QXVLA	8	Ilyina, Julia	Owner	Customer QUHWH	9	Raghav, Amritansh	Owner	Customer RTXGC	10	Bassols, Pilar Colome	Accounting Manager	Customer EEALV	11	Jaffe, David	Sales Representative	Customer UBHAU	12	Ray, Mike	Sales Agent	Customer PSNMQ	13	Benito, Almudena	Marketing Manager	Customer VMLOG	14	Jelitto, Jacek	Owner	Customer WNMAF	15	Richardson, Shawn	Sales Associate	Customer JUWXX	16	Birkby, Dana	Sales Representative	Customer GYBBY	17	Leone, Tiffany	Order Administrator	Customer EEBML
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<p>My Answer :</p> <ul style="list-style-type: none">- The difference is in the use of AS during column selection, the function of AS is to shorten and rename the column only temporarily when the query is run.																																																																																																																															

Practicum – Part 5: Use of CASE

Step	Information
1	<p>In the query panel, please type the script below</p> <pre>SELECT p.categoryid, p.productname FROM Production.Products AS p;</pre>
2	<p>Highlights query above and click execute. Observe the results</p>
3	<p>In the query panel, please type the script below.</p> <pre>SELECT p.categoryid, p.productname, CASE WHEN p.categoryid = 1 THEN 'Beverages' WHEN p.categoryid = 2 THEN 'Condiments' WHEN p.categoryid = 3 THEN 'Confections' WHEN p.categoryid = 4 THEN 'Dairy Products' WHEN p.categoryid = 5 THEN 'Grains/Cereals' WHEN p.categoryid = 6 THEN 'Meat/Poultry' WHEN p.categoryid = 7 THEN 'Produce' WHEN p.categoryid = 8 THEN 'Seafood' ELSE 'Other' END AS categoryname FROM Production.Products AS p;</pre>
4	<p>Highlights query above and click execute . Observe the results.</p>
5	<p><i>What is the difference between the execution results of the query stage 1 and stage 3 above? What are the benefits of the CASE command? Please explain! Capture the results of the SQL script execution above (Question 5)</i></p>



Results		Messages	
	categoryid	productname	categoryname
1	1	Product HHYDP	Beverages
2	1	Product RECZE	Beverages
3	2	Product IMEHJ	Condiments
4	2	Product KSBRM	Condiments
5	2	Product EPEIM	Condiments
6	2	Product VAIIV	Condiments
7	7	Product HMLNI	Produce
8	2	Product WUJFP	Condiments
9	6	Product AQZBW	MeatPoultry
10	8	Product YI-XGE	Seafood
11	4	Product QMVUN	Dairy Products
12	4	Product OSFNS	Dairy Products
13	8	Product POXFU	Seafood
14	7	Product PWCJB	Produce
15	2	Product KSZOI	Condiments
16	3	Product PAFRH	Confections
17	6	Product BL-CAY	MeatPoultry

Query executed successfully.

My Answer :

- The CASE expression goes through conditions and returns a value when the first condition is met (like an if-then-else statement). So, once a condition is true, it will stop reading and return the result. If no conditions are true, it returns the value in the ELSE clause.

6

In the query panel, please type the script below.

```
SELECT
  p.categoryid, p.productname,
  CASE
    WHEN p.categoryid = 1 THEN 'Beverages'
    WHEN p.categoryid = 2 THEN 'Condiments'
    WHEN p.categoryid = 3 THEN 'Confections'
    WHEN p.categoryid = 4 THEN 'Dairy Products'
    WHEN p.categoryid = 5 THEN 'Grains/Cereals'
    WHEN p.categoryid = 6 THEN 'Meat/Poultry'
    WHEN p.categoryid = 7 THEN 'Produce'
    WHEN p.categoryid = 8 THEN 'Seafood'
    ELSE 'Other'
  END AS categoryname,
  CASE
    WHEN p.categoryid IN (1, 7, 8) THEN 'Campaign Products'
    ELSE 'Non-Campaign Products'
  END AS iscampaign
FROM Production.Products AS p;
```

7

Please capture the results, what data is obtained from the query command above? Explain (Question 6)

Results		Messages		
	categoryid	productname	categoryname	iscampaign
1	1	Product HHYDP	Beverages	Campaign Products
2	1	Product RECZE	Beverages	Campaign Products
3	2	Product IMEHJ	Condiments	Non-Campaign Products
4	2	Product KSBRM	Condiments	Non-Campaign Products
5	2	Product EPEIM	Condiments	Non-Campaign Products
6	2	Product VAIIV	Condiments	Non-Campaign Products
7	7	Product HMLNI	Produce	Campaign Products
8	2	Product WJFJP	Condiments	Non-Campaign Products
9	6	Product AOZBW	Meat/Poultry	Non-Campaign Products
10	8	Product YHXGE	Seafood	Campaign Products
11	4	Product QMVUN	Dairy Products	Non-Campaign Products
12	4	Product OSFNS	Dairy Products	Non-Campaign Products
13	8	Product POXFU	Seafood	Campaign Products
14	7	Product PWCJB	Produce	Campaign Products
15	2	Product KSZOI	Condiments	Non-Campaign Products
16	3	Product PAFRH	Confections	Non-Campaign Products
17	8	Product QI QBY	Meat/Poultry	Non-Campaign Products

Query executed successfully.

My Answer :

- a condition with value (1, 7, 8) will be justified and this expression will stop reading and return the result by printing whether the product is a campaign product or non-campaign product.

8

Based on question number 6, please display data that is in the 'seafood' category only and use the *ALIAS* command to change the column name as shown in the image below.

Capture your SQL command and how many rows are produced (Question 7)

	ID_KATEGORI	NAMA_PRODUK	NAMA_KATEGORI	STATUS
1	8	Product ACRVI	Seafood	Campaign Products
2	8	Product AQOKR	Seafood	Campaign Products
3	8	Product CBRRL	Seafood	Campaign Products
4	8	Product CKEDC	Seafood	Campaign Products
5	8	Product EVFFA	Seafood	Campaign Products
6	8	Product GMKIJ	Seafood	Campaign Products
7	8	Product LYERX	Seafood	Campaign Products
8	8	Product POXFU	Seafood	Campaign Products
9	8	Product TTEEX	Seafood	Campaign Products

```

SQLQuery2.sql - LVL: van Diantha F (52): * - X
SELECT
  p.categoryid,
  p.productname,
  CASE
    WHEN p.categoryid = 1 THEN 'Beverages'
    WHEN p.categoryid = 2 THEN 'Condiments'
    WHEN p.categoryid = 3 THEN 'Confections'
    WHEN p.categoryid = 4 THEN 'Dairy Products'
    WHEN p.categoryid = 5 THEN 'Grains/Cereals'
    WHEN p.categoryid = 6 THEN 'Meat/Poultry'
    WHEN p.categoryid = 7 THEN 'Produce'
    WHEN p.categoryid = 8 THEN 'Seafood'
    ELSE 'Other'
  END AS categoryname,
  CASE
    WHEN p.categoryid IN (1, 7, 8) THEN 'Campaign Products'
    ELSE 'Non-Campaign Products'
  END AS iscampaign
FROM
  Production.Products AS p
WHERE
  p.categoryid = 8;

```

My Answer :

- With use syntax where filtered to show only category 8

9

Display employee data from HR.Employees table that comes from country 'USA' and city 'Seattle', use ALIAS command to change column name as shown below. **Capture your SQL command (Question 8)**

	FIRST_NAME	LAST_NAME	CITY	COUNTRY
1	Sara	Davis	Seattle	USA
2	Maria	Cameron	Seattle	USA

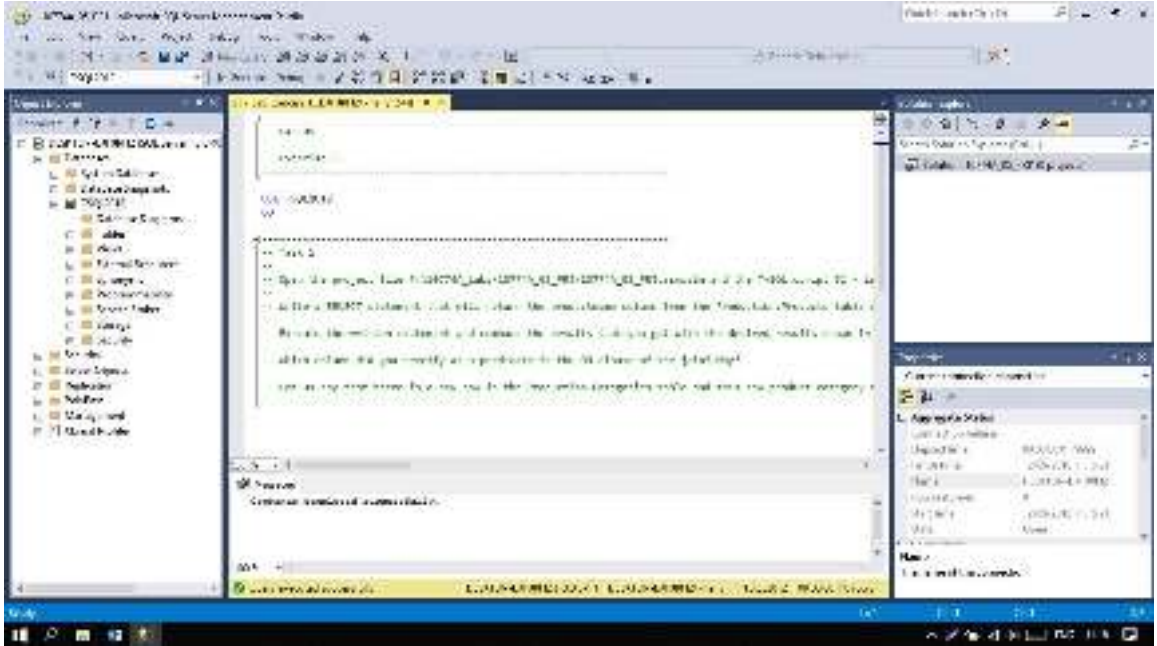
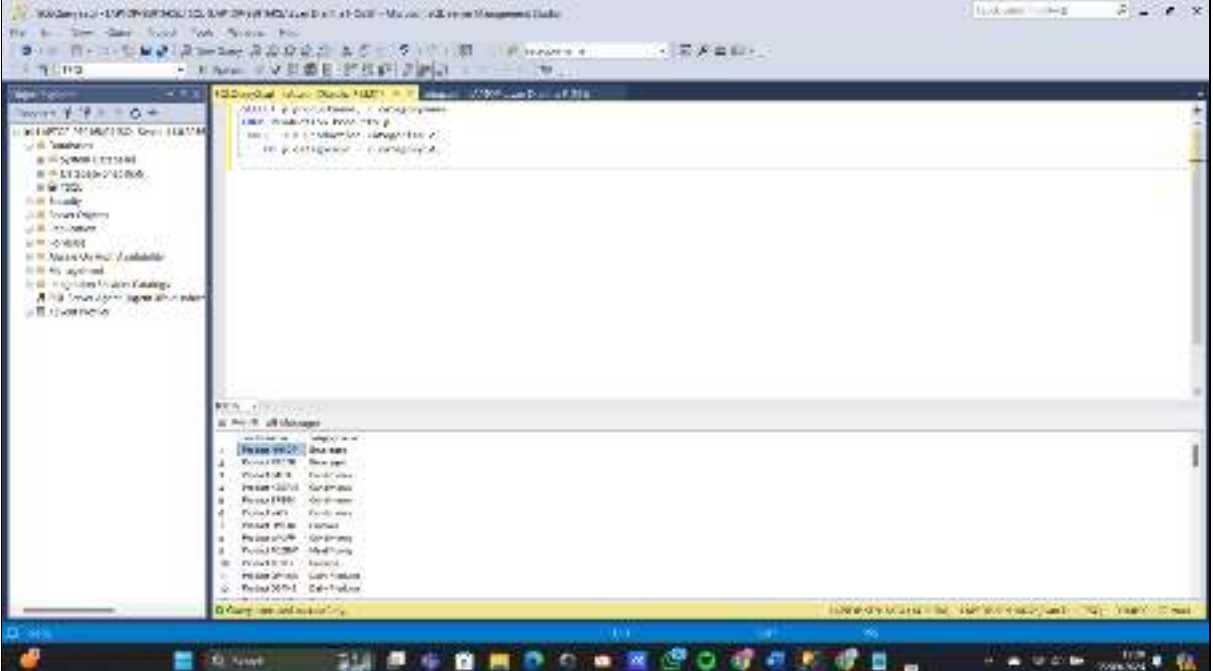
My Answer :



SQLQuery2.sql - LA...van Diantha F (52))* -P X setup.sql - LAPTOP-...van Diantha F (53))

```
SELECT
  firstname AS FIRST_NAME,
  lastname AS LAST_NAME,
  city AS CITY,
  country AS COUNTRY
FROM
  HR.Employees
WHERE
  city = 'Seattle' AND country = 'USA';
```

Practical – Part 6 : Creating an Inner Join Query

Step	Information
1	<p>To experiment on this jobsheet, first log in to SQL Server Management Studio (SSMS). Then open the project \10774A Labs\10774A_05_PRJ\10774A_05_PRJ.ssmssln and the T-SQL script 51 - Lab Exercise 1.sql. Make sure the database is connected to “TSQL”.</p> 
2	<p>[Question- 9] Write a T-SQL SELECT that will display the productname column from the Production.Products table (use the alias table "p") and the categoryname column from the Production.Categories table (use the alias table "c") using inner join.</p> <p>My Answer :</p> 

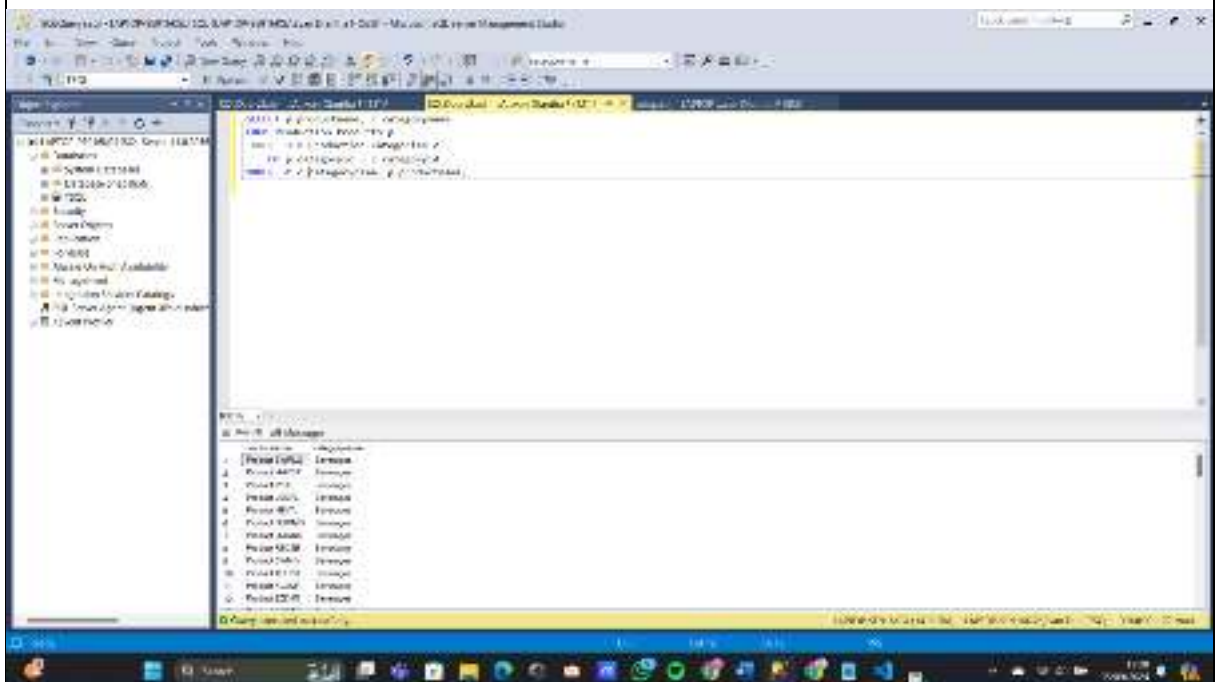


3

Compare the results in step 2 with the file 52 - Lab Exercise 1 - Task 1 Result.txt. If they are the same then the T-SQL you wrote is correct.

productname	categoryname
Product HHYDP	Beverages
Product RECZE	Beverages
Product INEHJ	Condiments
...	...
Product BWRLQ	Beverages
Product JYQFE	Beverages
Product LUNZZ	Condiments

(77 row(s) affected)



4

[Question- 10] Which column is specified as a predicate in the ON join clause? Why?

My Answer :

- The columns specified as predicates in the ON clause of the join are the categoryid of the Products table (p.categoryid) and the categoryid of the Categories table (c.categoryid). Because of the Relationship Between Tables: The categoryid column is used to join the two tables because it is a FOREIGN KEY in the Products table that refers to the PRIMARY KEY in the Categories table. This means that each product in the Products table has a category listed in the Categories table.

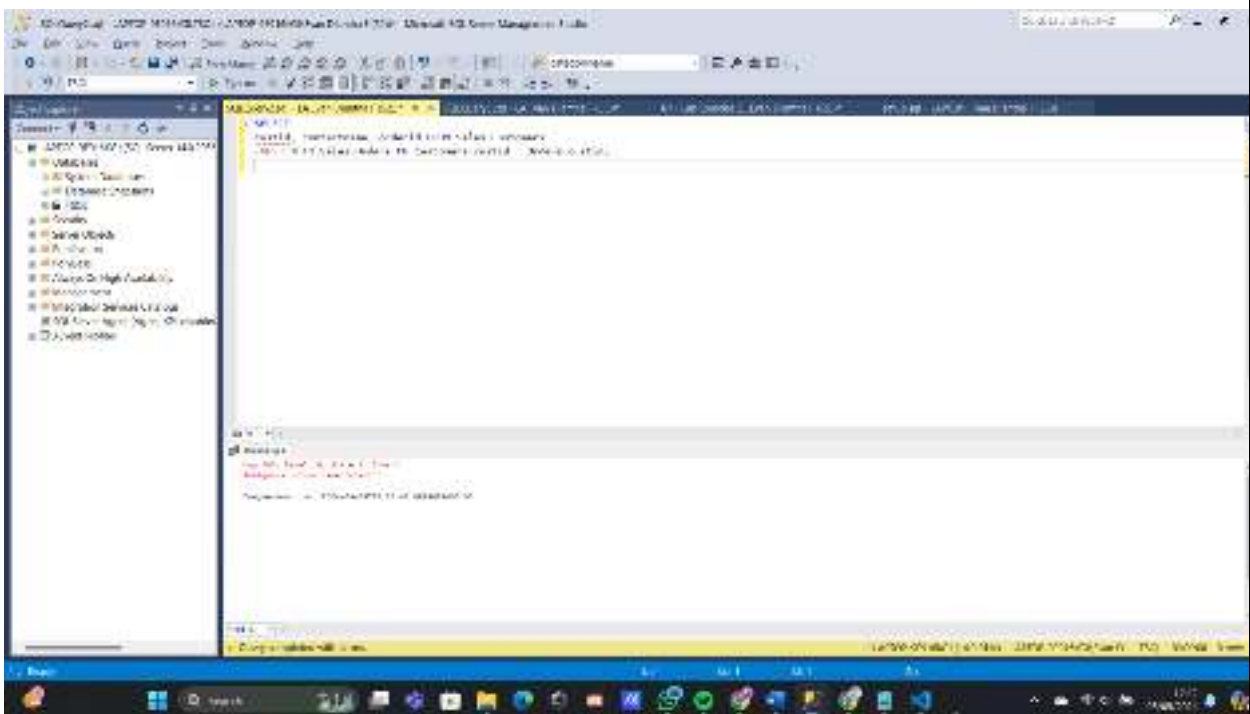
5

Conclusion : After carrying out this part of the practicum, students know and understand how to perform an INNER JOIN on two tables.

Practical – Part 7 : Creating an Inner Join Query on Multiple Tables

Step	Information
1	<p>A <i>developer</i> will often be asked to run T-SQL files obtained from various departments . For example, the sales department wants a sales report of all customers for at least one order , with detailed information about each order. Then <i>the developer</i> will prepare the initialization of the SELECT statement to retrieve the custid and contactname columns in the Sales.Orders table. In accordance with the case study, this part 2 practicum will be carried out.</p> <p>Open the project \10774A Labs\10774A_05_PRJ\10774A_05_PRJ.ssmssln and the T-SQL script 61 - Lab Exercise 2.sql. Make sure the database is connected with “TSQL”.</p> 
2	<p><i>The developer</i> will write T-SQL:</p> <pre>SELECT custid , contactname , orderid FROM Sales . Customers INNER JOIN Sales . Orders ON Customers . custid = Orders . custid ;</pre> <p>Execute the T-SQL , and observe the results!</p>



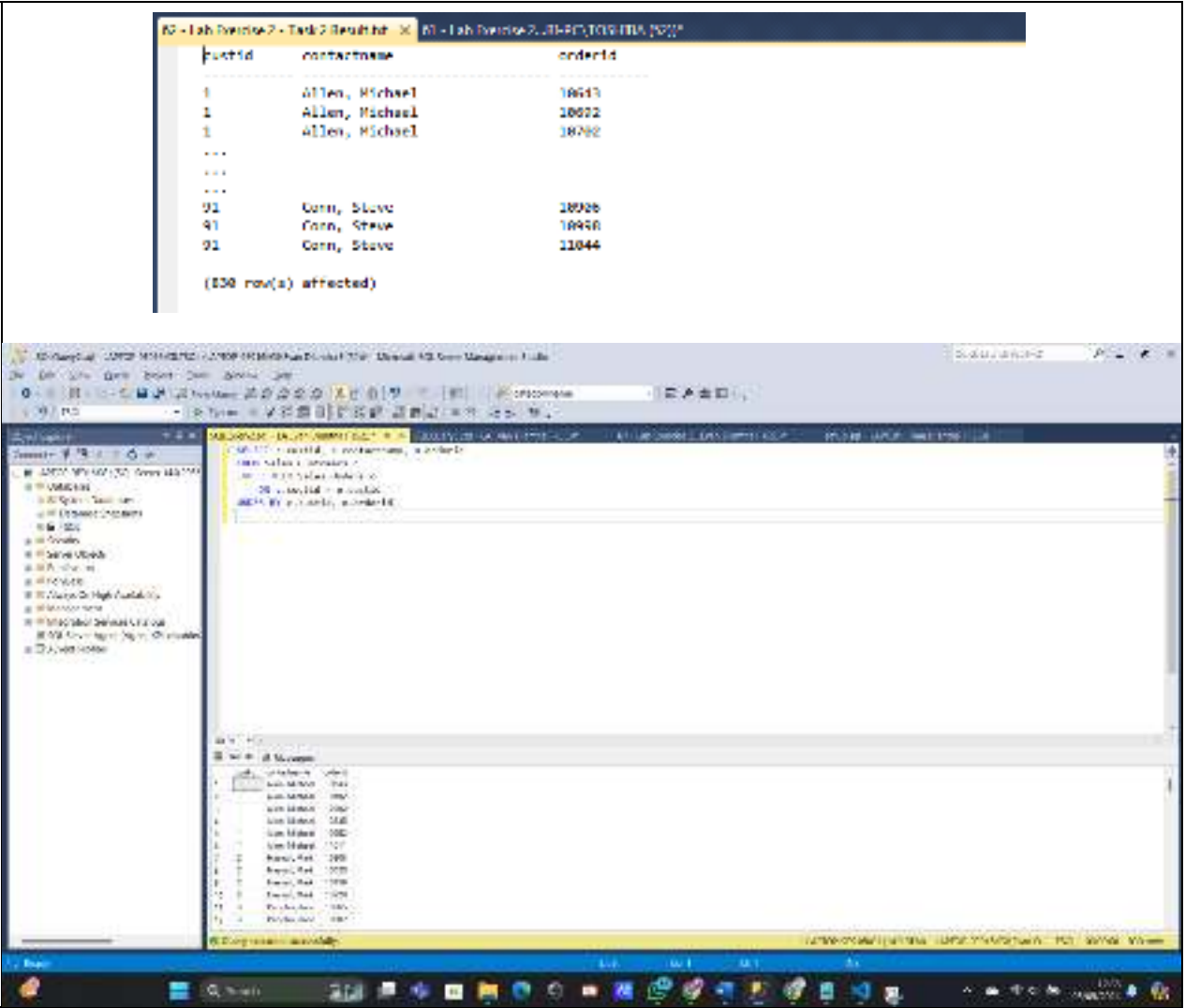
	
3	<p>[Question- 11] After the 2nd stage of the experiment is carried out, an error will appear. What is the content of the error message? Why can this error occur? Explain!</p> <p>My Answer :</p> <ul style="list-style-type: none">- The query is incorrect because of the mismatch in writing table aliases. In the query, the Sales.Customers and Sales.Orders tables are not given aliases, but their columns can be accessed directly by table name. Due to the inconsistent writing of tables and columns in the ON clause, SQL Server does not know which table is meant.
4	<p>[Question- 12] In this 4th trial, fix the error that occurred in the 3rd stage trial which explains that all table names have their own table identities.</p> <p>My Answer :</p>

- The Sales.Customers table is given the alias c and Sales.Orders is given the alias o. For clarity and consistency, the columns accessed in the SELECT and ON clauses are used with the aliases c.custid and o.custid.

5

Observe and compare the results of the 4th stage trial with the file 62 - Lab Exercise 2 - Task 2 Result.txt. If the results are the same, then your answer is correct.



	
6	<p>[Question- 13] Copy the T-SQL in the 4th stage of the test and modify it by using the alias table " c " to Sales.Customers table and " o " for Sales.Orders table.</p> <p>My Answer :</p> <pre>SQLQuery2.sql - LA...van Dianta F (52))*) SQLQuery3.sql - LA...var SELECT c.custid, c.contactname, o.orderid FROM Sales.Customers c INNER JOIN Sales.Orders o ON c.custid = o.custid;</pre> <ul style="list-style-type: none"> - The Sales.Customers table uses the alias c, while the Sales.Orders table uses the alias o. To maintain clarity and code consistency, the ON clause has been changed to support the use of aliases.
7	<p>Execute T-SQL on stage-6 test and compare the result with the result of stage 4 execution! If the result is the same then your T-SQL is correct.</p>
	<p>Change the column prefix in the SELECT clause to the full name, then execute the T-SQL!</p>



8

```
02 - Lab Exercise 2 - Task 2 Result.txt 01 - Lab Exercise 2..RE-PC\TOSHIBA (52) (*) x
-- Notice that there are full source table names written as table aliases.
-- Apply the needed changes to the SELECT statement so that it will run without an error. Test the c
-- Observe and compare the results that you got with the recommended result shown in the file 02 - L

SELECT
Customers.custid, Customers.contactname, Orders.orderid
FROM Sales.Customers AS c
INNER JOIN Sales.Orders AS o ON c.custid = o.custid;

-- Task 3
-- Copy the T-SQL statement from task 2 and modify it to use the table aliases "C" for the Sales.Cus
```

Messages

Msg 209, Level 16, State 1, Line 23
Ambiguous column name 'custid'.
Msg 4104, Level 16, State 1, Line 41
The multi-part identifier "Customers.custid" could not be bound.
Msg 4104, Level 16, State 1, Line 41
The multi-part identifier "Customers.contactname" could not be bound.
Msg 4104, Level 16, State 1, Line 41
The multi-part identifier "Orders.orderid" could not be bound.

9

[Question- 14] Why does the execution result of T-SQL stage 8 produce an error?

My Answer :

- causes errors because unclear column references (such as custid, contactname, and orderid) are used in the SELECT clause without mentioning the original table. Since the query uses INNER JOIN, SQL Server needs to know which table each column comes from. SQL Server cannot find the desired column if it does not have the table alias or full table name.

10

[Question- 15] Change the column name prefix in the T-SQL test step 8 with its alias name, then display the execution results!

My Answer :

SQLQuery2.sql - LA...van Dianta F (52) (*) x SQLQuery3.s

```
SELECT
c.custid, c.contactname, o.orderid
FROM Sales.Customers c
INNER JOIN Sales.Orders o
ON c.custid = o.custid;
```

Results Messages



	custid	contactname	orderid
1	1	Allen, Michael	10843
2	1	Allen, Michael	10892
3	1	Allen, Michael	10702
4	1	Allen, Michael	10835
5	1	Allen, Michael	10952
6	1	Allen, Michael	11011
7	2	Hessal, Mark	10308
8	2	Hessal, Mark	10825
9	2	Hessal, Mark	10759
10	2	Hessal, Mark	10928
11	3	Peoples, John	10385
12	3	Peoples, John	10507

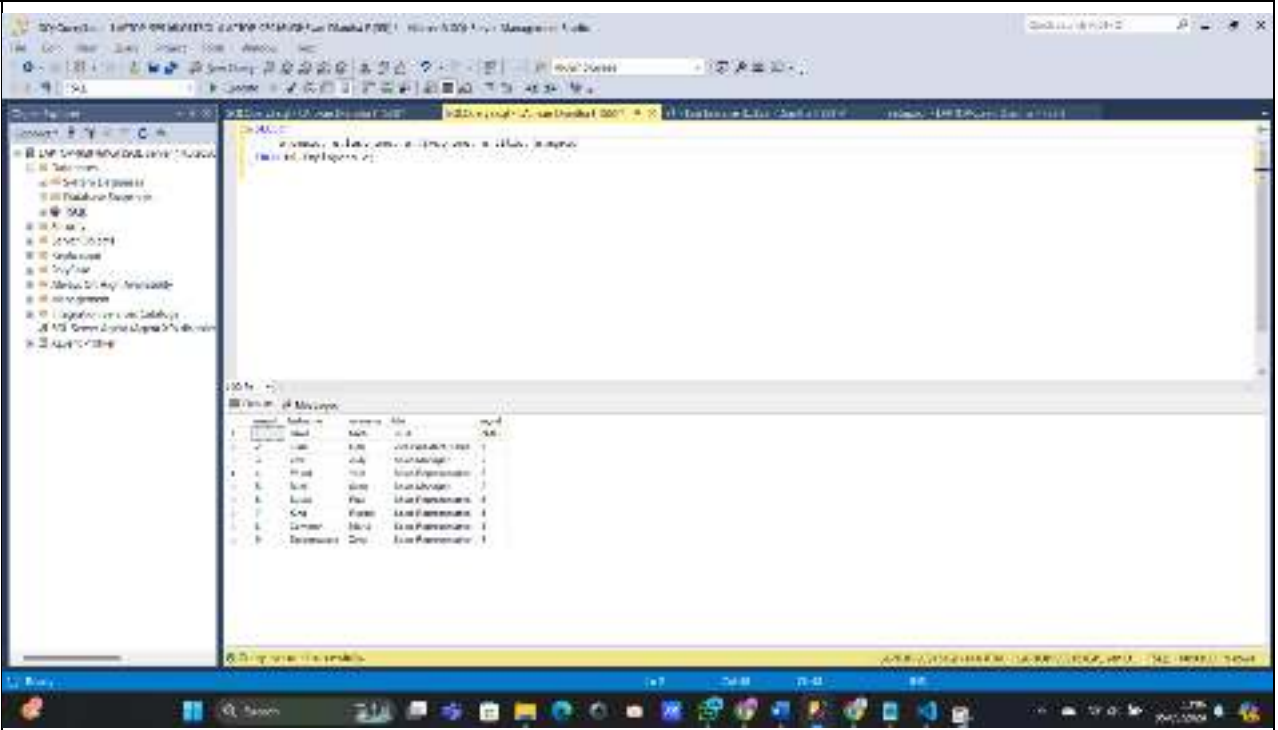
Query executed successfully.

11

Conclusion : After carrying out this part of the practicum, you should now know and understand the importance of using table alias names and how to JOIN multiple tables (more than two tables).

Practical – Part 8 : Creating a Self-Join Query

Step	Information																																																												
1	<p>This practicum uses a case study in an HR department that wants to display reports on employees and managers. Some of the things that want to be displayed are the lastname, firstname, and title columns of the HR.Employees table for employees and managers.</p> <p>Open the project \10774A Labs\10774A_05_PRJ\10774A_05_PRJ.ssmssln and the T-SQL script 71 - Lab Exercise 3.sql. Make sure the database is connected with “TSQL”.</p> 																																																												
2	<p>[Question- 16] Write T-SQL using SELECT clause to display empid, lastname, firstname, title, and mgrid columns. on the table HR.Employees by giving the alias name “e” for the HR.Employees table.</p> <p>My Answer :</p>  <pre>SELECT e.empid, e.lastname, e.firstname, e.title, p.mgrid FROM HR.Employees e;</pre> <table><thead><tr><th></th><th>empid</th><th>lastname</th><th>firstname</th><th>title</th><th>mgrid</th></tr></thead><tbody><tr><td>1</td><td>1</td><td>Davis</td><td>Sara</td><td>CEO</td><td>NULL</td></tr><tr><td>2</td><td>2</td><td>Funk</td><td>Don</td><td>Vice President, Sales</td><td>1</td></tr><tr><td>3</td><td>3</td><td>Lew</td><td>Judy</td><td>Sales Manager</td><td>2</td></tr><tr><td>4</td><td>4</td><td>Peled</td><td>Yael</td><td>Sales Representative</td><td>3</td></tr><tr><td>5</td><td>5</td><td>Buck</td><td>Sven</td><td>Sales Manager</td><td>2</td></tr><tr><td>6</td><td>6</td><td>Suurs</td><td>Paul</td><td>Sales Representative</td><td>5</td></tr><tr><td>7</td><td>7</td><td>King</td><td>Russell</td><td>Sales Representative</td><td>5</td></tr><tr><td>8</td><td>8</td><td>Cameron</td><td>Maria</td><td>Sales Representative</td><td>3</td></tr><tr><td>9</td><td>9</td><td>Dolgoplyanova</td><td>Zoya</td><td>Sales Representative</td><td>5</td></tr></tbody></table>		empid	lastname	firstname	title	mgrid	1	1	Davis	Sara	CEO	NULL	2	2	Funk	Don	Vice President, Sales	1	3	3	Lew	Judy	Sales Manager	2	4	4	Peled	Yael	Sales Representative	3	5	5	Buck	Sven	Sales Manager	2	6	6	Suurs	Paul	Sales Representative	5	7	7	King	Russell	Sales Representative	5	8	8	Cameron	Maria	Sales Representative	3	9	9	Dolgoplyanova	Zoya	Sales Representative	5
	empid	lastname	firstname	title	mgrid																																																								
1	1	Davis	Sara	CEO	NULL																																																								
2	2	Funk	Don	Vice President, Sales	1																																																								
3	3	Lew	Judy	Sales Manager	2																																																								
4	4	Peled	Yael	Sales Representative	3																																																								
5	5	Buck	Sven	Sales Manager	2																																																								
6	6	Suurs	Paul	Sales Representative	5																																																								
7	7	King	Russell	Sales Representative	5																																																								
8	8	Cameron	Maria	Sales Representative	3																																																								
9	9	Dolgoplyanova	Zoya	Sales Representative	5																																																								
3	<p>[Question- 17] Execute the 2nd stage of the test and compare it with 72 - Lab Exercise 3 - Task 1 Result.txt . If the results are the same, then your test is correct.</p> <p>My Answer :</p>																																																												



empid	lastname	firstname	title	mgrid
1	Davis	Sara	CEO	NULL
2	Funk	Don	Vice President Sales	1
3	Lew	Judy	Sales Manager	2
4	Peled	Yael	Sales Representative	3
5	Buck	Sven	Sales Manager	2
6	Suurs	Paul	Sales Representative	5
7	King	Russell	Sales Representative	5
8	Cameron	Maria	Sales Representative	3
9	Dolgopysatova	Zoya	Sales Representative	5

Results **Messages**

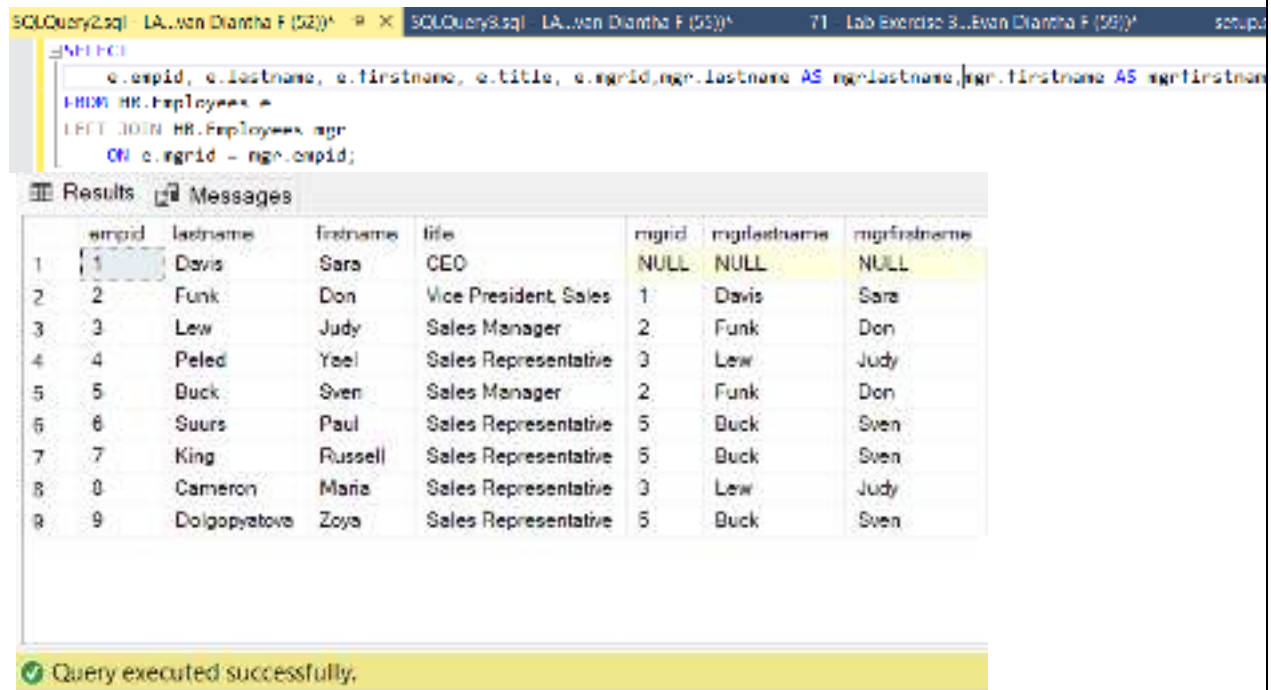
(9 rows affected)

Completion time: 2024-09-08T15:02:05.0269094+07:00

4

[Question- 18] Copy the T-SQL in step 2 then modify it by adding columns about manager information, namely lastname, firstname using SELF-JOIN. Use the aliases mgrlastname and mgrfirstname to distinguish the names of managers and employees.

My Answer :



```

SELECT
    e.empid, e.lastname, e.firstname, e.title, e.mgrid, mgr.lastname AS mgrlastname, mgr.firstname AS mgrfirstname
FROM HR.Employees e
LEFT JOIN HR.Employees mgr
ON e.mgrid = mgr.empid;
  
```

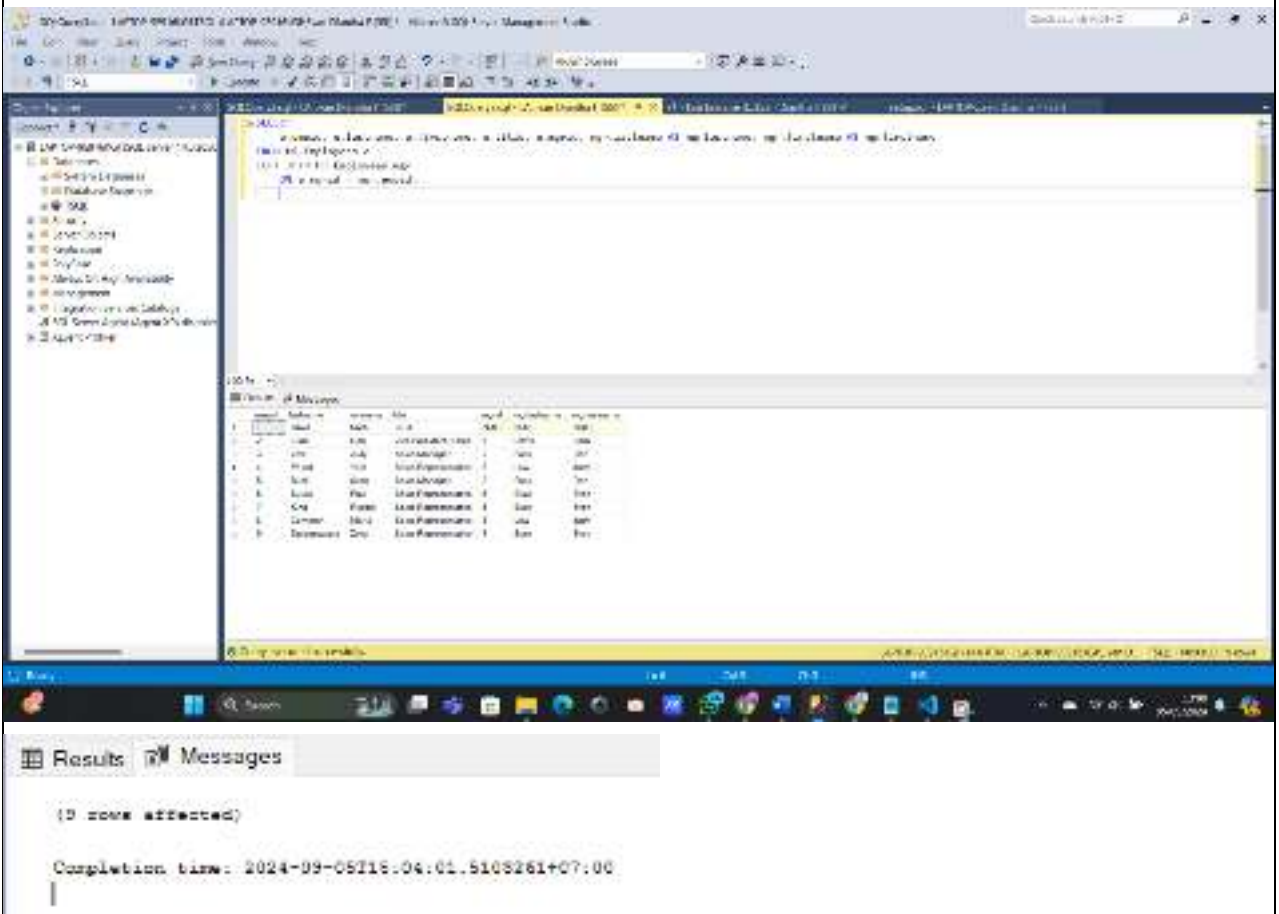
	empid	lastname	firstname	title	mgrid	mgrlastname	mgrfirstname
1	1	Davis	Sara	CEO	NULL	NULL	NULL
2	2	Funk	Don	Vice President Sales	1	Davis	Sara
3	3	Lew	Judy	Sales Manager	2	Funk	Don
4	4	Peled	Yael	Sales Representative	3	Lew	Judy
5	5	Buck	Sven	Sales Manager	2	Funk	Don
6	6	Suurs	Paul	Sales Representative	5	Buck	Sven
7	7	King	Russell	Sales Representative	5	Buck	Sven
8	8	Cameron	Maria	Sales Representative	3	Lew	Judy
9	9	Dolgopysatova	Zoya	Sales Representative	5	Buck	Sven

Query executed successfully.

5

[Question- 19] Execute the 2nd stage of the test and compare it with 7 3 - Lab Exercise 3 - Task 2 Result.txt . If the results are the same, then your test is correct.

My Answer :



Results Messages

(0 rows affected)

Completion time: 2024-09-09T16:04:01.5108261+07:00

6

[Question- 20] Is it mandatory to write the table alias name when executing the SELF-JOIN command? Can the original table name be used as an alias name? Explain!

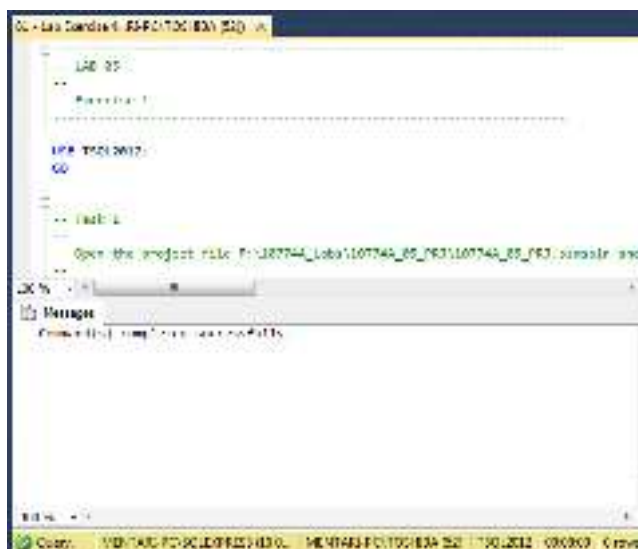
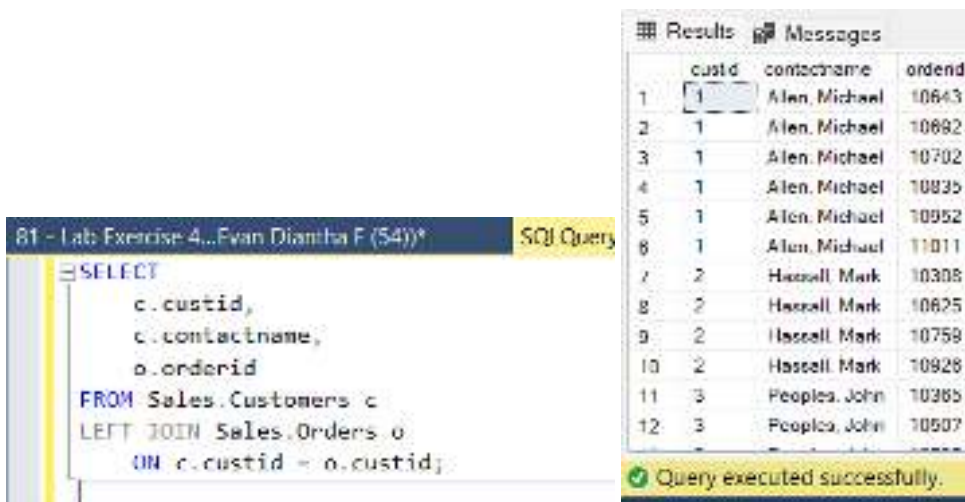
My Answer :

- When performing a self-join, table aliases are highly recommended as they help clarify the code, avoid ambiguity, and make the code more concise and readable. While the original table name can be used as an alias, a better practice to keep the code clear and maintainable is to use a shorter, more descriptive alias.

7

Conclusion : After doing this part of the practicum, you should understand how to write a T-SQL SELF-JOIN statement.

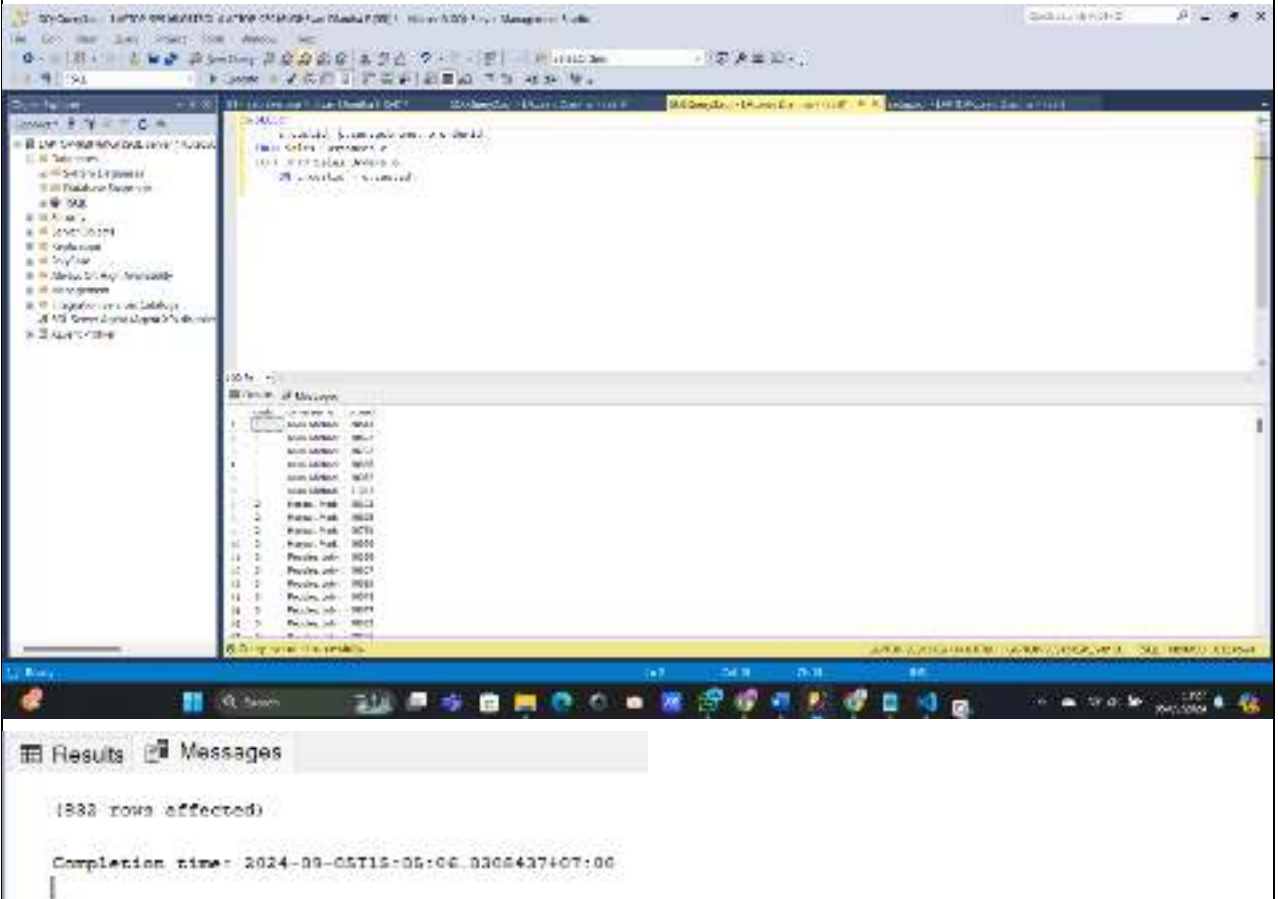
Practical – Part 9 : Creating Outer-Join Query

Step	Information																																																				
1	<p>The case study used in this practicum part 4 continues the practicum in part 3. The sales department is quite satisfied with the report that has been made. Then the sales department wants to change the report to show all customers, even though the customer does not have an order history or customers who have an order history. Therefore, a SELECT clause is needed to retrieve all rows from the Sales.Customers table (custid and contactname columns) and the orderid column from the Sales.Orders table.</p> <p>Open the project \10774A Labs\10774A_05_PRJ\10774A_05_PRJ.ssmssln and the T-SQL script 81 - Lab Exercise 4.sql. Make sure the database is connected with "TSQL".</p> 																																																				
2	<p>[Question- 21] Write a T-SQL command with a SELECT clause to retrieve the custid and contactname columns from the table Sales.Customers and the orderid column from the Sales.Orders table . The command created must retrieve all rows from the Sales.Customers table .</p> <p>My Answer :</p>  <pre>SELECT c.custid, c.contactname, o.orderid FROM Sales.Customers c LEFT JOIN Sales.Orders o ON c.custid = o.custid;</pre> <table><thead><tr><th></th><th>custid</th><th>contactname</th><th>orderid</th></tr></thead><tbody><tr><td>1</td><td>1</td><td>Allen, Michael</td><td>10643</td></tr><tr><td>2</td><td>1</td><td>Allen, Michael</td><td>10682</td></tr><tr><td>3</td><td>1</td><td>Allen, Michael</td><td>10702</td></tr><tr><td>4</td><td>1</td><td>Allen, Michael</td><td>10835</td></tr><tr><td>5</td><td>1</td><td>Allen, Michael</td><td>10952</td></tr><tr><td>6</td><td>1</td><td>Allen, Michael</td><td>11011</td></tr><tr><td>7</td><td>2</td><td>Hazzell, Mark</td><td>10305</td></tr><tr><td>8</td><td>2</td><td>Hazzell, Mark</td><td>10625</td></tr><tr><td>9</td><td>2</td><td>Hazzell, Mark</td><td>10759</td></tr><tr><td>10</td><td>2</td><td>Hazzell, Mark</td><td>10928</td></tr><tr><td>11</td><td>3</td><td>Peoples, John</td><td>10365</td></tr><tr><td>12</td><td>3</td><td>Peoples, John</td><td>10507</td></tr></tbody></table> <p>Query executed successfully.</p>		custid	contactname	orderid	1	1	Allen, Michael	10643	2	1	Allen, Michael	10682	3	1	Allen, Michael	10702	4	1	Allen, Michael	10835	5	1	Allen, Michael	10952	6	1	Allen, Michael	11011	7	2	Hazzell, Mark	10305	8	2	Hazzell, Mark	10625	9	2	Hazzell, Mark	10759	10	2	Hazzell, Mark	10928	11	3	Peoples, John	10365	12	3	Peoples, John	10507
	custid	contactname	orderid																																																		
1	1	Allen, Michael	10643																																																		
2	1	Allen, Michael	10682																																																		
3	1	Allen, Michael	10702																																																		
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9	2	Hazzell, Mark	10759																																																		
10	2	Hazzell, Mark	10928																																																		
11	3	Peoples, John	10365																																																		
12	3	Peoples, John	10507																																																		

3

[Question- 22] Execute the 2nd stage of the test and compare it with 82 - Lab Exercise 4 - Task 1 Result.txt . If the results are the same, then your test is correct.

My Answer :



The screenshot shows the SQL Developer interface. The top pane displays a query window with a SQL statement. The bottom pane shows the query results, indicating that 1832 rows were affected. The completion time is 2024-09-05T15:05:06.0305437+07:00.

4

[Question- 23] Pay attention to the values in the orderid column . Are there any missing values (NULL)? Why?


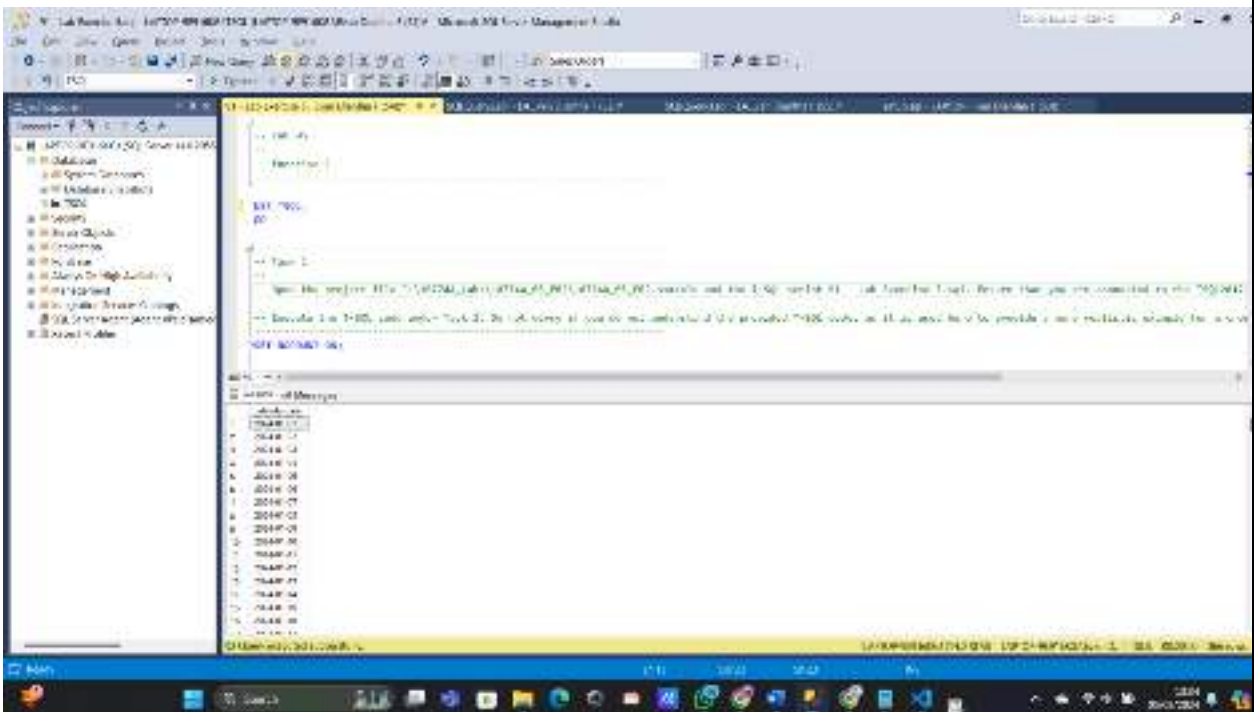
My Answer :

- If the orderid column in the query result shows a NULL value, this means that some customers do not have an associated order in the Sales.Orders table. The NULL value appears because using LEFT JOIN ensures that all rows from the Sales.Customers table are displayed, including customers who do not have orders. If a customer has no orders, the orderid column will contain NULL. To verify the number of customers without orders, you can use a query that counts the number of rows with NULL values in the orderid column.

5

Conclusion : After doing this part of the practicum, you should understand how to write the T-SQL OUTER-JOIN statement .

Practical – Part 10 : Creating a Cross-Join Query

Step	Information
1	<p>This case study begins with the HR department wanting to set up a personal calendar for each employee. The IT department will provide a T-SQL code that generates all days in the past year. Therefore, <i>the developer</i> will use the SELECT clause to return all rows from the calendar table for each row in the HR.Employees table.</p> <p>Open the project \10774A Labs\10774A_05_PRJ\10774A_05_PRJ.ssmssln and the T-SQL script 91 - Lab Exercise 5.sql. Make sure the database is connected with "TSQL".</p> 
2	<p>[Question- 24] Run the T-SQL code under task 1. Display the output! (Don't worry if you don't understand the T-SQL code. The next step will provide a more concrete example of how CROSS-JOIN is implemented.)</p> <p>My Answer :</p> 



3

[Question- 25] Write a SELECT command to retrieve values from the empid, firstname, and lastname columns from the HR.Employees table and the calendardate column from the HR.Calendar table.

My Answer :

The screenshot shows the SQL Developer interface. The query editor contains the following SQL statement:

```
SELECT empid, firstname, lastname, calendardate
FROM HR.Employees, HR.Calendar;
```

The Results window displays the output of the query, showing columns empid, firstname, lastname, and calendardate. The data is as follows:

empid	firstname	lastname	calendardate
1	Scott	Tyler	2008-01-01
2	Scott	Tyler	2008-01-02
3	Scott	Tyler	2008-01-03
4	Scott	Tyler	2008-01-04
5	Scott	Tyler	2008-01-05
6	Scott	Tyler	2008-01-06
7	Scott	Tyler	2008-01-07
8	Scott	Tyler	2008-01-08
9	Scott	Tyler	2008-01-09
10	Scott	Tyler	2008-01-10
11	Scott	Tyler	2008-01-11
12	Scott	Tyler	2008-01-12
13	Scott	Tyler	2008-01-13
14	Scott	Tyler	2008-01-14
15	Scott	Tyler	2008-01-15

4

[Question-2 6] Execute the 3rd stage test and compare it with the file 92 - Lab Exercise 5 - Task 2 Result.txt . If the results are the same, then your test is correct.

My Answer :


The screenshot shows the SQL Developer interface. The query editor contains the following SQL statement:

```
SELECT empid, firstname, lastname, calendardate
FROM HR.Employees, HR.Calendar;
```

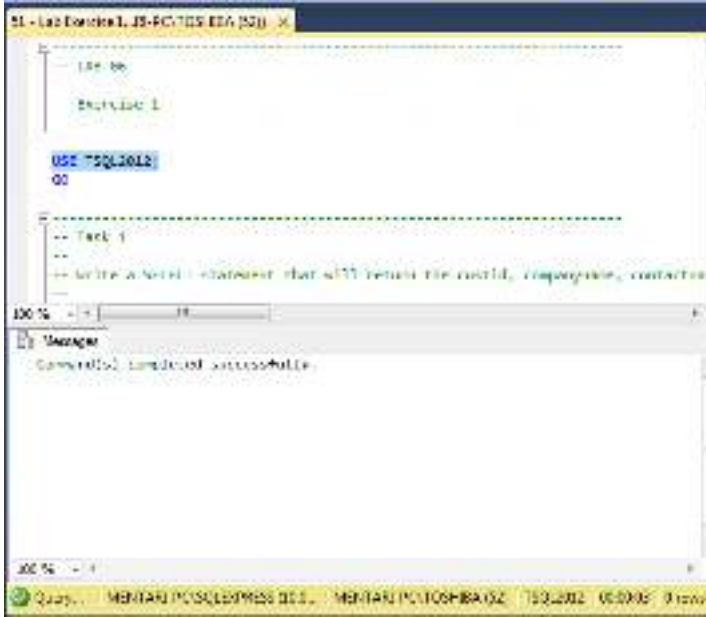
The Results window displays the output of the query, showing columns empid, firstname, lastname, and calendardate. The data is as follows:

empid	firstname	lastname	calendardate
1	Scott	Tyler	2008-01-01
2	Scott	Tyler	2008-01-02
3	Scott	Tyler	2008-01-03
4	Scott	Tyler	2008-01-04
5	Scott	Tyler	2008-01-05
6	Scott	Tyler	2008-01-06
7	Scott	Tyler	2008-01-07
8	Scott	Tyler	2008-01-08
9	Scott	Tyler	2008-01-09
10	Scott	Tyler	2008-01-10
11	Scott	Tyler	2008-01-11
12	Scott	Tyler	2008-01-12
13	Scott	Tyler	2008-01-13
14	Scott	Tyler	2008-01-14
15	Scott	Tyler	2008-01-15



	<div><div>Results Messages</div><div>(1204 rows affected)</div><div>Completion time: 2024-09-03T15:00:40.7896355+07:00</div></div>
5	<div>Drop the HR.Calendar table by executing the T-SQL code below task 3.</div> <div></div>
6	Conclusion : After completing this practical section, you will understand how to write T-SQL CROSS-JOIN code .

Practical – Part 11 : Writing Queries Who Will Filter Data with WHERE clause

Step	Information
1	<p>The scenario in this practicum uses the problems in the marketing department. The marketing department is working on several campaigns for old customers. The marketing staff needs a different customer list according to several business rules. Therefore, <i>the developer</i> will write a SELECT command to retrieve the desired rows from the Sales.Customers table.</p> <p>Open the project \10774A Labs\10774A_06_PRJ\10774A_06_PRJ.ssmssln and the T-SQL script 51 - Lab Exercise 1.sql. Make sure the database is connected with “TSQL”.</p> 
2	<p>Write a SELECT statement that will return the column values from a table, Then filter the results to only customers who are from “Brazil”!</p> <pre> SELECT custid , companyname , contactname , address , city , country , telephone FROM Sales . Customers WHERE country = Brazil' ; </pre> <p>Use of the N prefix for literal characters (N'Brazil'). This prefix is used because the country column is a Unicode data type. When expressing Unicode characters literally, the N character (for National) is specified as the prefix.</p>
3	<p>[Question- 27] Execute the 2nd stage of the test and compare it with the file 52 - Lab Exercise 1 - Task 1 Result.txt . If the results are the same, then your test is correct.</p> <p>My Answer :</p>

The screenshot shows a Windows 10 desktop with a Visual Studio Code window open. The code editor displays a C++ program that calculates the sum of squares of integers from 1 to 10. The program is named `sum.cpp` and is located in the `C:\Users\user\Documents` directory. The code is as follows:

```

#include <iostream>
using namespace std;

int main() {
    int sum = 0;
    for (int i = 1; i <= 10; i++) {
        sum += i * i;
    }
    cout << "Sum of squares: " << sum << endl;
    return 0;
}

```

The terminal window at the bottom shows the output of the program:

```

$ g++ sum.cpp -o sum.exe
$ ./sum.exe
Sum of squares: 385

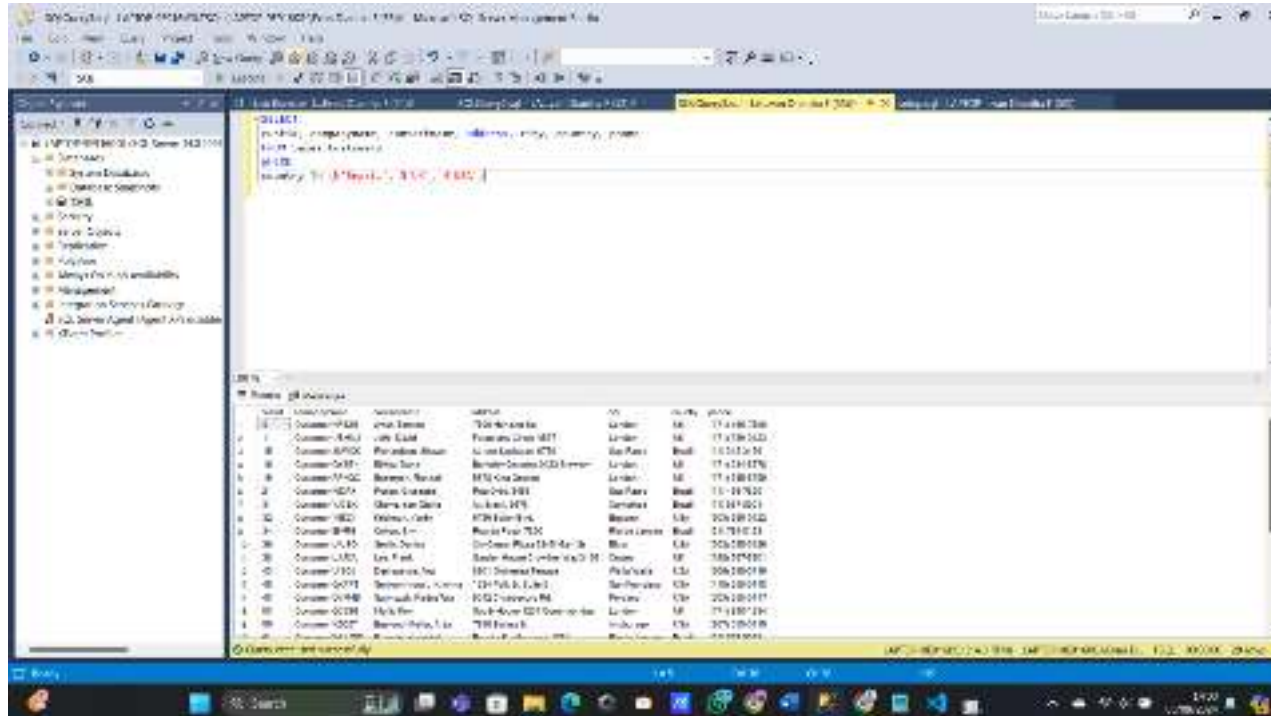
```

The completion time is 2024-09-08T16:06:38.6948604+07:00.

4

[Question- 28] Write a SELECT command that will return values in the custid, companyname, contactname, address, city, columns. country, and phone in the Sales.Customers table , then filter the results only for “Brazil, UK and USA” (Use the IN predicate in the WHERE clause).

My Answer :



The screenshot shows the SQL Server Enterprise Manager interface. The left pane displays the 'Adventureworks2008' database structure. The right pane shows a SQL query window with the following query:

```
SELECT custid, companyname, contactname, address, city, country, phone
FROM Sales.Customers
WHERE country IN ('Brazil', 'UK', 'USA');
```

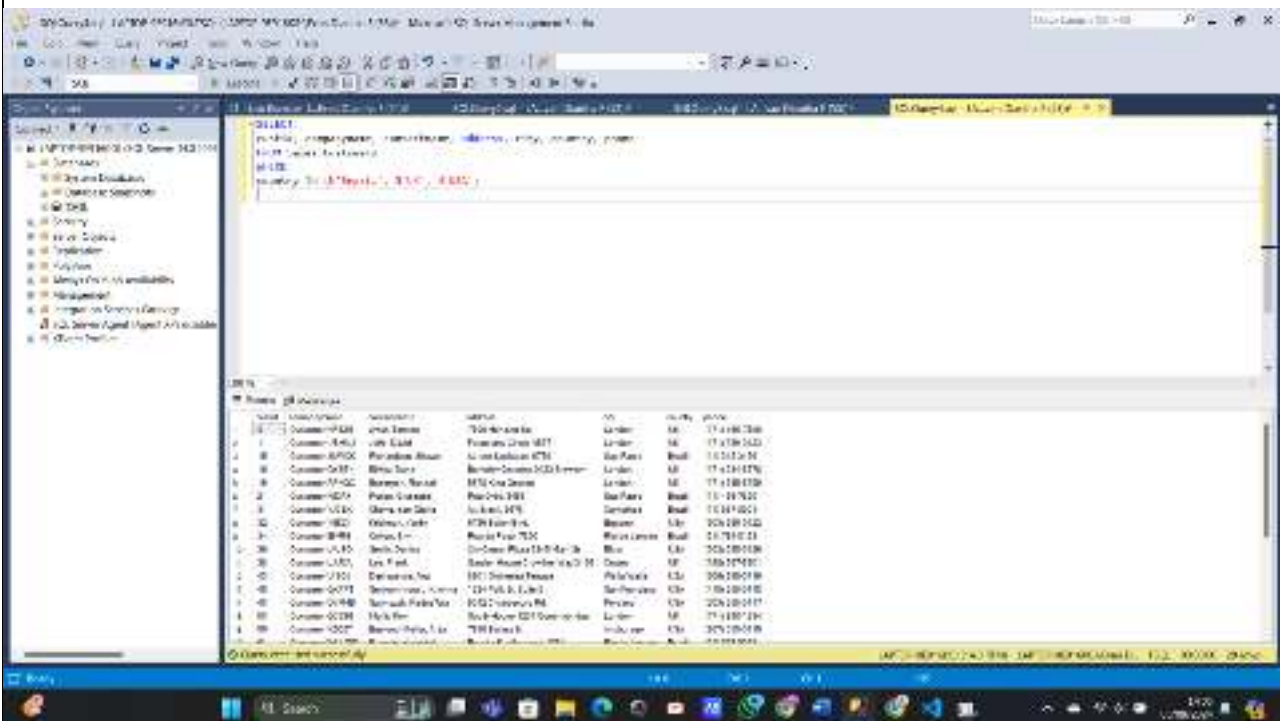
Below the query window, the 'Results' pane displays the output of the query as a table with 7 columns: custid, companyname, contactname, address, city, country, and phone. The results are filtered to show only customers from Brazil, UK, and USA.

custid	companyname	contactname	address	city	country	phone
1	Customer-BA01	John Doe	7000 Avenida	London	UK	01-180-7340
2	Customer-BA02	John Doe	7000 Avenida	London	UK	01-180-7340
3	Customer-BA03	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340
4	Customer-BA04	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340
5	Customer-BA05	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340
6	Customer-BA06	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340
7	Customer-BA07	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340
8	Customer-BA08	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340
9	Customer-BA09	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340
10	Customer-BA10	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340

5

[Question-2 9] Execute the 3rd stage test and compare it with file 53 - Lab Exercise 1 - Task 2 Result.txt . If the results are the same, then your test is correct.

My Answer :

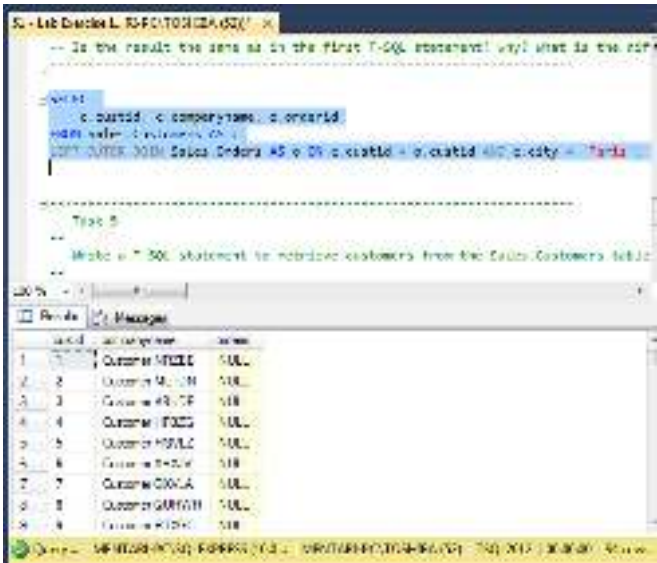


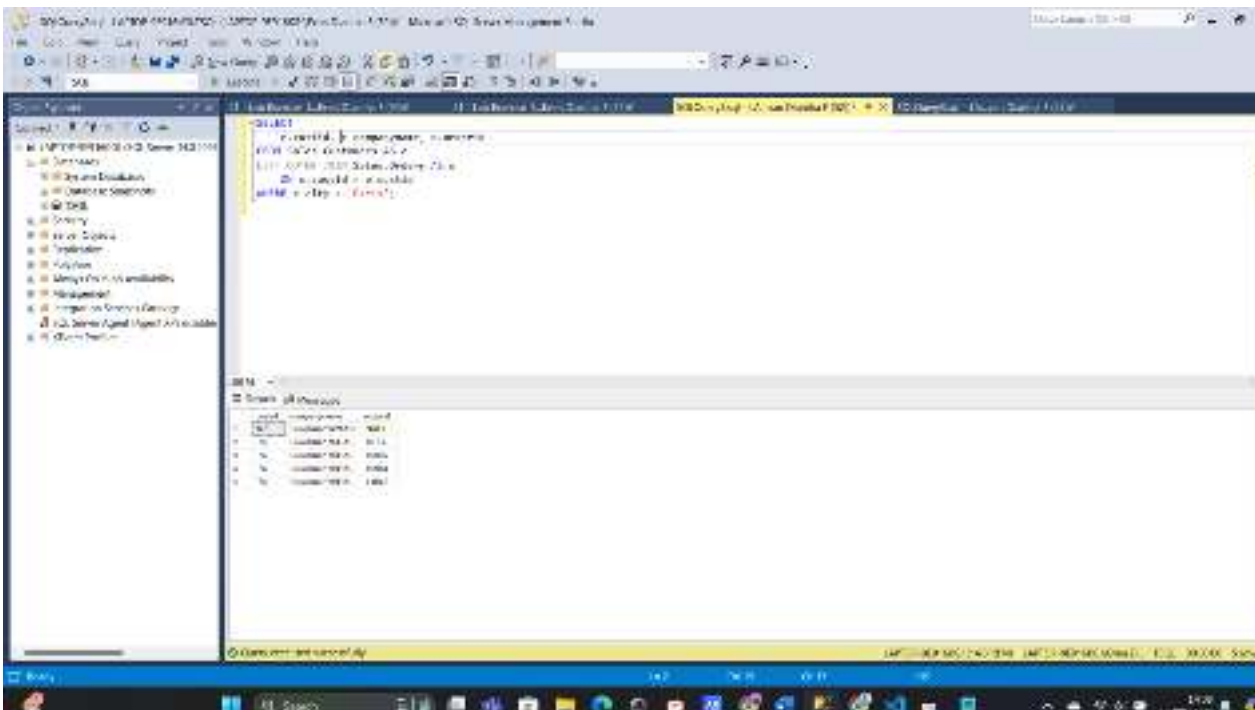
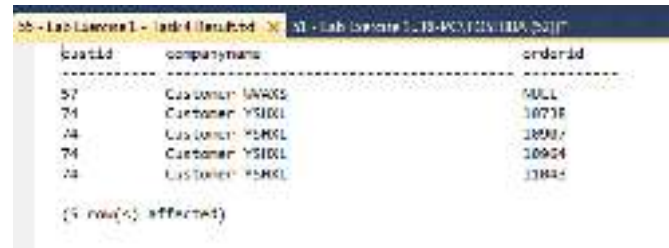
The screenshot shows the SQL Server Enterprise Manager interface. The left pane displays the 'Adventureworks2008' database structure. The right pane shows a SQL query window with the following query:

```
SELECT custid, companyname, contactname, address, city, country, phone
FROM Sales.Customers
WHERE country IN ('Brazil', 'UK', 'USA');
```

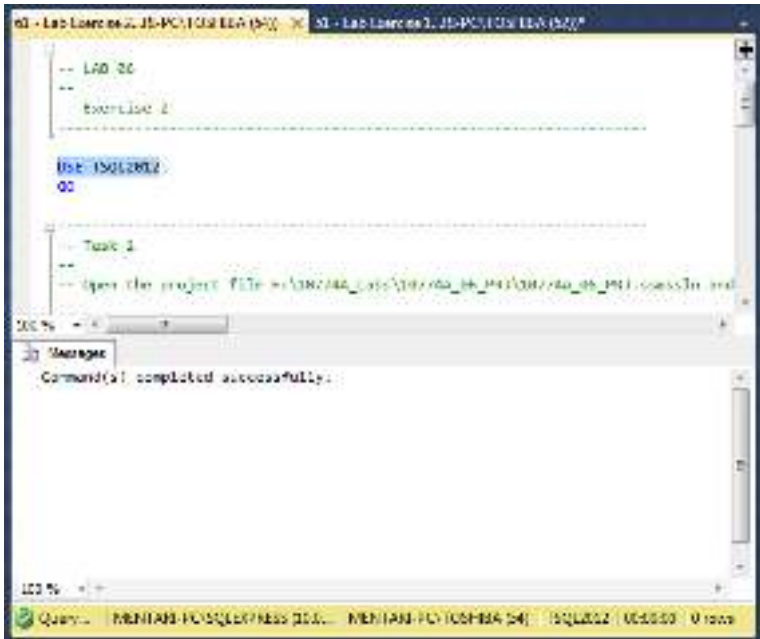
Below the query window, the 'Results' pane displays the output of the query as a table with 7 columns: custid, companyname, contactname, address, city, country, and phone. The results are filtered to show only customers from Brazil, UK, and USA.

custid	companyname	contactname	address	city	country	phone
1	Customer-BA01	John Doe	7000 Avenida	London	UK	01-180-7340
2	Customer-BA02	John Doe	7000 Avenida	London	UK	01-180-7340
3	Customer-BA03	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340
4	Customer-BA04	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340
5	Customer-BA05	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340
6	Customer-BA06	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340
7	Customer-BA07	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340
8	Customer-BA08	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340
9	Customer-BA09	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340
10	Customer-BA10	Paradise House	4000 Avenida	San Francisco	USA	01-180-7340

	<div> <div>Results Messages</div> <div> 12 rows affected Completion time: 2024-02-05T15:08:09.6958662+07:00 </div> </div>
6	<p>The IT department has written T-SQL code to return values in the custid, companyname columns in the Sales.Customers table and the orderid column. in the Sales.Orders table as below:</p> <pre> SELECT c . custid , c . companyname , o . orderid FROM Sales . Customers AS c LEFT OUTER JOIN Sales . Orders AS o ON c . custid = o . custid AND c . city = 'Paris' ; </pre>
7	<p>Query execution in the 7th stage of the trial. Note two things, first the query will retrieve all rows in the Sales.Customers table . Second, the use of the comparison operator with the ON clause makes the city column more specific, namely the same as the value "Paris".</p> 
8	<p>[Question-30] Copy the T-SQL Code in step 7 then modify it with the comparison operator for the city column in the WHERE clause. After that execute the code, show the result!</p> <p>My Answer :</p>

	 <p>The screenshot shows the SQL Developer interface. The left pane displays the 'Schema - All Objects' tree. The main pane shows the query results for the following SQL statement:</p> <pre>SELECT * FROM CUSTOMER WHERE companyname = 'Customer YSIKSL' ORDER BY orderid</pre> <p>The results table contains 5 rows:</p> <table><tr><th>orderid</th><th>companyname</th><th>orderid</th></tr><tr><td>57</td><td>Customer YSIKSL</td><td>NULL</td></tr><tr><td>74</td><td>Customer YSIKSL</td><td>10738</td></tr><tr><td>74</td><td>Customer YSIKSL</td><td>10907</td></tr><tr><td>74</td><td>Customer YSIKSL</td><td>10904</td></tr><tr><td>74</td><td>Customer YSIKSL</td><td>11844</td></tr></table>	orderid	companyname	orderid	57	Customer YSIKSL	NULL	74	Customer YSIKSL	10738	74	Customer YSIKSL	10907	74	Customer YSIKSL	10904	74	Customer YSIKSL	11844
orderid	companyname	orderid																	
57	Customer YSIKSL	NULL																	
74	Customer YSIKSL	10738																	
74	Customer YSIKSL	10907																	
74	Customer YSIKSL	10904																	
74	Customer YSIKSL	11844																	
9	<p>Compare the results of step 9 with file 55 - Lab Exercise 1 - Task 4 Result.txt . If the results are the same, then your test is correct.</p>  <p>The screenshot shows a text file with the following content:</p> <pre>55-Lab Exercise 1 - Task 4 Result.txt orderid companyname orderid ----- 57 Customer YSIKSL 74 Customer YSIKSL 74 Customer YSIKSL 74 Customer YSIKSL 74 Customer YSIKSL (5 row(s) affected)</pre>																		
10	<p>Conclusion : After completing the practicum and answering the questions in this section, you should understand how to filter data rows from one or more tables using the WHERE clause with logical operator predicates.</p>																		

Practical – Part 11 : Writing Queries Which Will Sort Data with clause ORDER BY

Step	Information
1	<p>The case study in this lab is based on a problem in the sales department. The sales department wants to create a report that shows all orders with some customer information. In addition, there is an additional request to sort the data based on order dates and the customer IDs. The order rows in the previous lab were displayed without using the ORDER BY clause, therefore specifically for this lab section the WHERE command will be followed by the ORDER BY clause.</p> <p>Open the project \10774A Labs\10774A_06_PRJ\10774A_06_PRJ.ssmssln and the T-SQL script 61 - Lab Exercise 2.sql . Make sure the database is connected with "TSQL".</p> 
2	<p>[Question- 31] Write a SELECT command to retrieve the custid, custname columns from the Sales.Customers table and theorderid, orderdate columns from the Sales.Orders table ! Filter the results only for orders on or after April 1, 2008. Then sort the results based on orderdate in descending order and custid in ascending order!</p> <p>My Answer :</p>

[Question- 32] Execute the 2nd stage of the test and compare it with the file 62 - Lab Exercise 2 - Task 1 Result.txt . If the results are the same, then your test is correct.

My Answer :

The screenshot displays a Windows desktop environment. The primary application is Microsoft SQL Server Enterprise Manager. On the left, the 'Server Explorer' pane shows a tree view of a SQL Server instance. The right pane is a query window containing a SQL query. Below the query window, a 'Results' tab is active, displaying a table with the following data:

id	name	age	gender
1	John	25	Male
2	Jane	30	Female
3	Mike	22	Male
4	Sarah	28	Female
5	David	35	Male
6	Emily	20	Female
7	Chris	32	Male
8	Alex	27	Male
9	Olivia	24	Female
10	Noah	31	Male
11	Isabella	29	Female
12	Liam	26	Male
13	Mia	23	Female
14	Ethan	33	Male
15	Ava	21	Female
16	Lucas	30	Male
17	Sophia	28	Female
18	Benjamin	25	Male

The status bar at the bottom of the application window indicates '18 rows affected' and 'Completion time: 2024-09-06T14:18:58.2896494+07:00'.

The T-SQL command from the previous practicum followed by the WHERE command is as



3

follows:

```
SELECT
e . empid , e . lastname , e . firstname , e . title , e . mgrid ,
m . lastname AS mgrlastname , m . firstname AS mgrfirstname
FROM HR . Employees AS e
INNER JOIN HR . Employees AS m ON e . mgrid = m . empid
WHERE
mgrlastname = N'Buck' ;
```

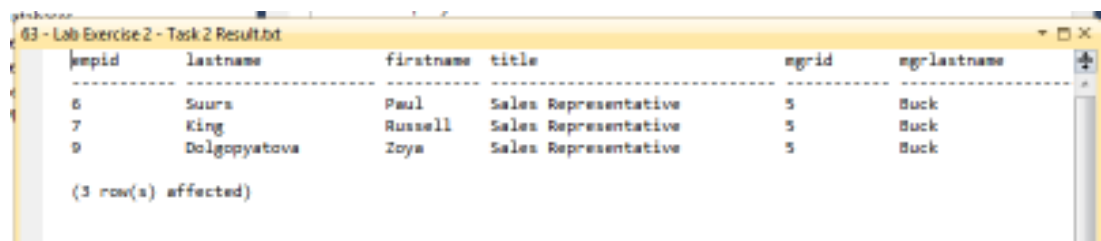
4

[Question- 33] Execute the T-SQL command at stage 3. Did an error occur? What is the error message? What do you think is the cause?

My Answer :

- The use of a column alias (mgrlastname) in the WHERE clause causes errors in T-SQL queries. This is due to the fact that this clause is processed before the application of the alias. To ensure the query can be executed correctly, you should add the original column name, for example, m.lastname, to the WHERE clause.

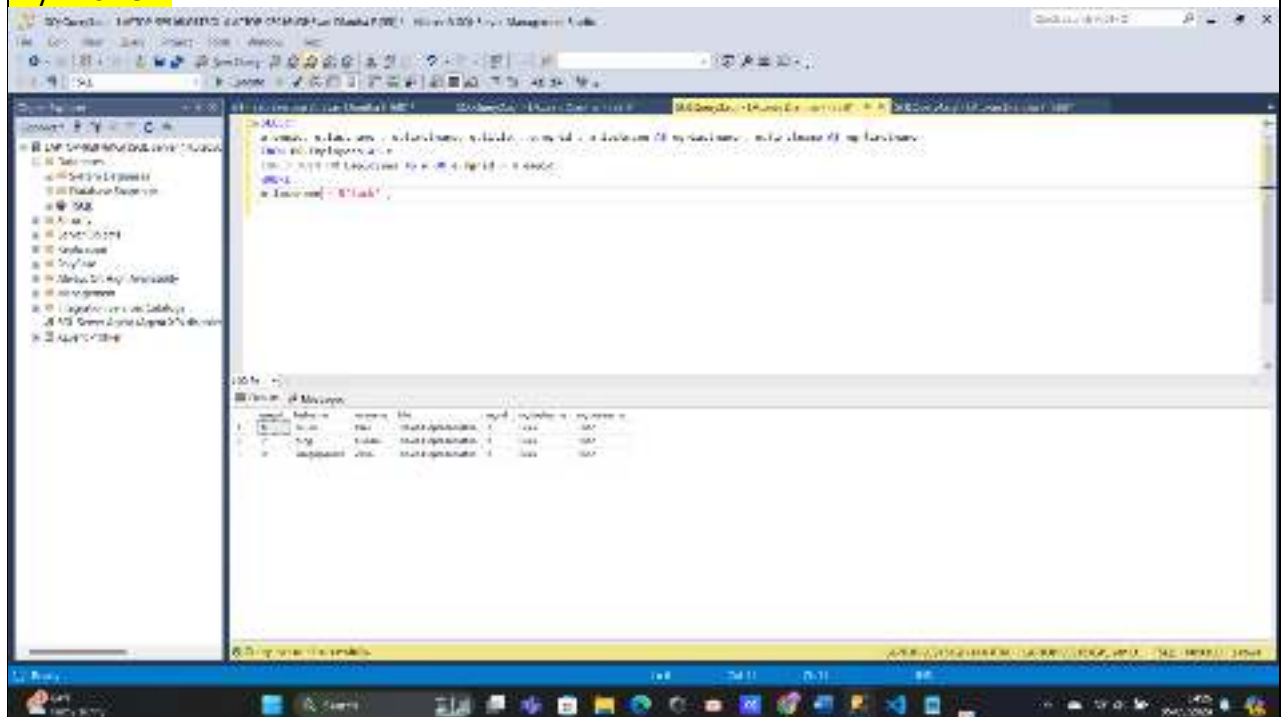
[Question-3 4] Make changes to the T-SQL command to fix the error in the 3rd trial, then execute it! Compare the execution results with the file 63 - Lab Exercise 2 - Task 2 Result.txt. If the same, then the test result is correct.



empid	lastname	firstname	title	mgrid	mgrlastname
6	Suura	Paul	Sales Representative	5	Buck
7	King	Russell	Sales Representative	5	Buck
9	Dolgopysatova	Zoya	Sales Representative	5	Buck

(3 row(s) affected)

My Answer :



The screenshot shows the SQL Server Enterprise Manager interface. The 'Queries' pane on the left lists several queries, including 'Task 2'. The 'Task 2' query is selected, and its SQL text is displayed in the main window. The SQL text is as follows:

```
SELECT e.empid, e.lastname, e.firstname, e.title, m.empid, m.lastname
FROM employees e
INNER JOIN employees m ON e.empid = m.mgrid
WHERE m.lastname = 'Buck';
```

The 'Results' pane at the bottom shows the execution results of the query, which match the data shown in the table above:

empid	lastname	firstname	title	mgrid	mgrlastname
6	Suura	Paul	Sales Representative	5	Buck
7	King	Russell	Sales Representative	5	Buck
9	Dolgopysatova	Zoya	Sales Representative	5	Buck



5

[Question- 35] Copy the T-SQL command in experiment 4, and modify it to produce all employees ORDER BY manager's first name. Initially test using the table's original name, then test using the table's alias name! Execute the T-SQL and compare the results to the 64 - Lab Exercise 2 - Task 3 Result.txt file . If the results are the same, then the experiment was correct.

64 - Lab Exercise 2 - Task 3 Result.txt

empid	lastname	firstname	title	mgrid	mgridlastname
3	Lew	Judy	Sales Manager	2	Funk
5	Buck	Sven	Sales Manager	2	Funk
4	Peled	Yael	Sales Representative	3	Lew
8	Cameron	Maria	Sales Representative	3	Lew
2	Funk	Don	Vice President, Sales	1	Davis
6	Sturs	Paul	Sales Representative	5	Buck
7	King	Russell	Sales Representative	5	Buck
9	Dolgopiatova	Zoya	Sales Representative	5	Buck

(8 row(s) affected)

My Answer :

The screenshot shows the SQL Server Enterprise Manager interface. The query window displays the following T-SQL command:

```
SELECT * FROM Employees ORDER BY mgrid;
```

The results pane shows the following data:

empid	lastname	firstname	title	mgrid	managerid	mgrlastname
3	Lew	Judy	Sales Manager	2	2	Funk
5	Buck	Sven	Sales Manager	2	2	Funk
4	Peled	Yael	Sales Representative	3	3	Lew
8	Cameron	Maria	Sales Representative	3	3	Lew
2	Funk	Don	Vice President, Sales	1	1	Davis
6	Sturs	Paul	Sales Representative	5	5	Buck
7	King	Russell	Sales Representative	5	5	Buck
9	Dolgopiatova	Zoya	Sales Representative	5	5	Buck

6

[Question-3 6] Why can we use column names according to the original table name or use table alias names?

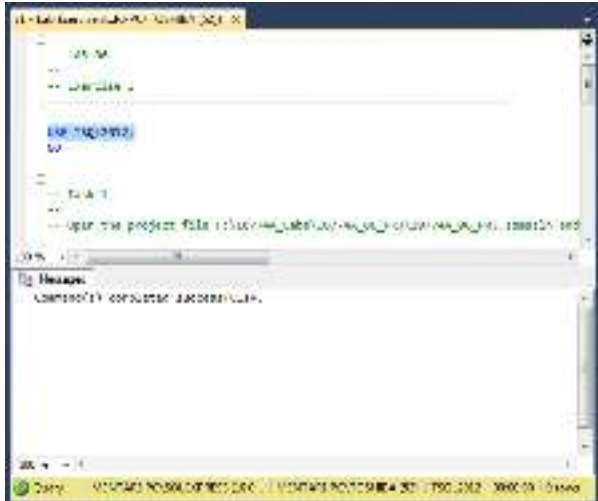
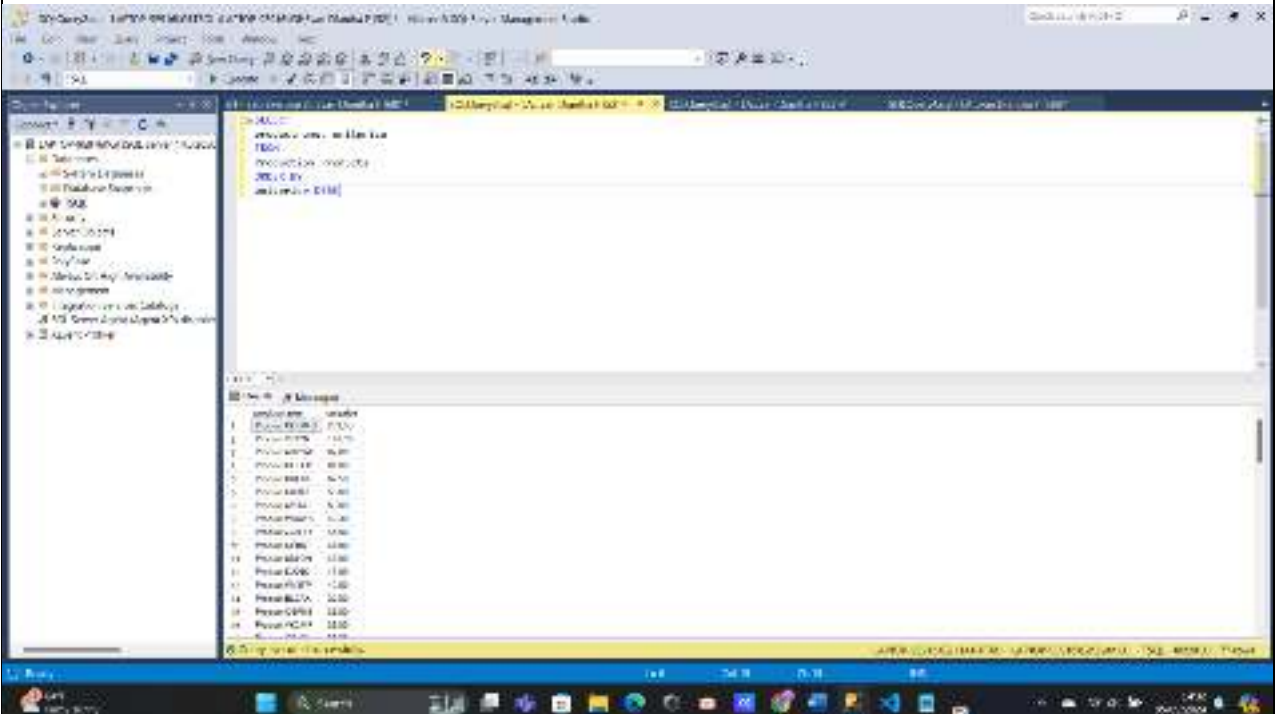
My Answer :

- Since SQL is processed before the application of column aliases, the original column names of the table are used in clauses such as WHERE. The original column names are necessary for conditions and calculations that occur before the aliases are applied, but table aliases make it easier to reference tables, especially when performing joins or when the same table is used more than once in a query. Table aliases also help simplify and clarify complex queries.

7

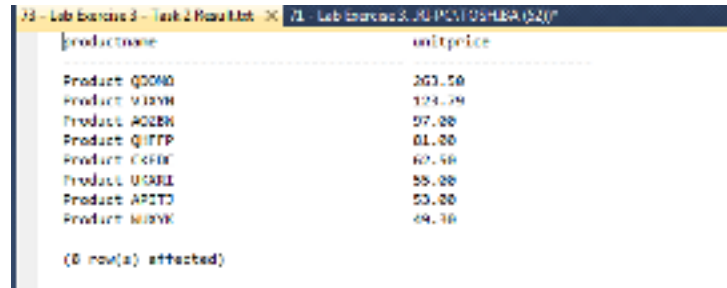
Conclusion : After working on the practical work and questions in this section, you should now understand how to use the ORDER BY clause .

Practical – Part 12 : Writing Queries Who Will Do Data Filtering with clauses TOP

Step	Information
1	<p>Part 8 of the lab uses a case study on the sales department. The sales department wants to create an additional report that shows the order invoices and the 10 percent of the most expensive products that have been sold.</p> <p>Open the project \10774A Labs\10774A_06_PRJ\10774A_06_PRJ.ssmssln and the T-SQL script 71 - Lab Exercise 3.sql . Make sure the database is connected with "TSQL".</p> 
2	<p>[Question- 37] Write a SELECT command to display the productname and unitprice columns in the Production.Products table sorted descending by unitprice! Show the execution results!</p> <p>My Answer :</p> 

3

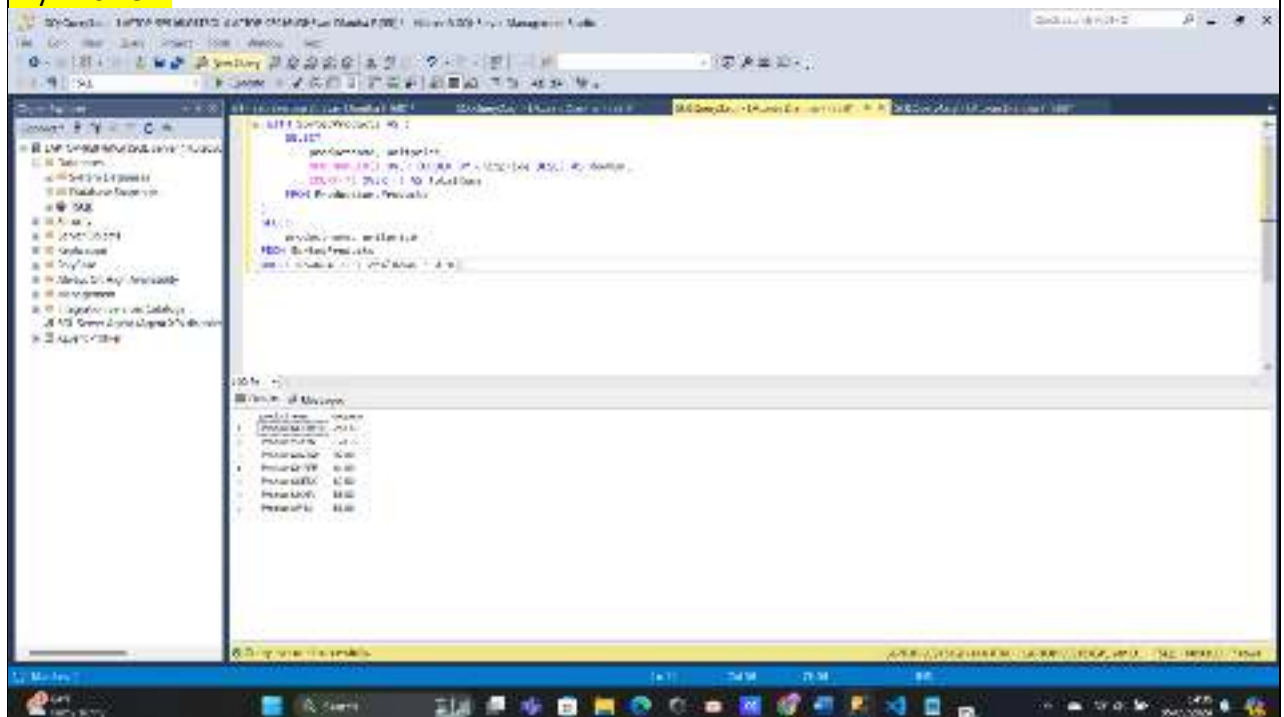
[Question- 38] Copy and modify the T-SQL command in trial 2 with the limitation that only 10 percent of the child products are displayed based on unitprice ordering! Execute the command, and compare whether it is in accordance with the file 73 - Lab Exercise 3 - Task 2 Result.txt.



productname	unitprice
Product QOONO	263.50
Product V12VH	174.79
Product AQ2BH	97.00
Product Q17FP	61.00
Product C47H1	60.50
Product UG2BL	55.00
Product AP1T3	53.00
Product M12VH	49.70

(8 row(s) affected)

My Answer :



```

-- Query 1: Top 10 Percent by Unit Price
SELECT productname, unitprice
FROM Production.Product
ORDER BY unitprice DESC
TOP 10 PERCENT

```

Results (8 rows):

productname	unitprice
Product QOONO	263.50
Product V12VH	174.79
Product AQ2BH	97.00
Product Q17FP	61.00
Product C47H1	60.50
Product UG2BL	55.00
Product AP1T3	53.00
Product M12VH	49.70

4

[Question- 39] Is it possible to implement the 5 trial T-SQL command using the OFFSET-FETCH clause?

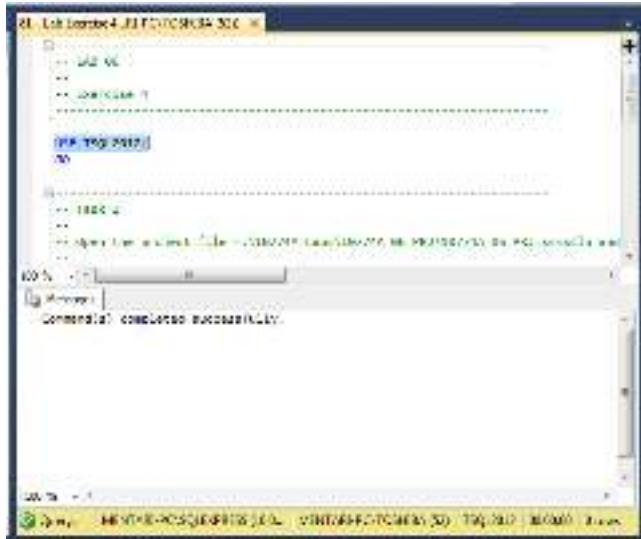
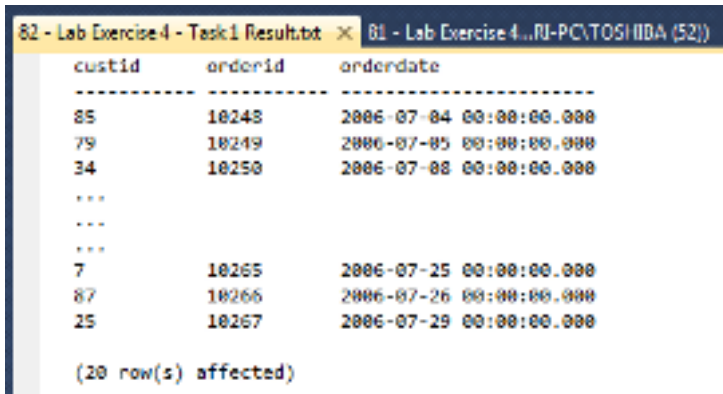
My Answer :

- In T-SQL queries, you can use the OFFSET-FETCH clause instead of ROW_NUMBER(). Using this clause, you can specify a subset of data based on the order and number of rows retrieved; for example, you can count the total rows, specify 10% of that number, and then use OFFSET-FETCH to retrieve the calculated number of rows. More advanced methods of paging and retrieving subsets of data are supported by SQL Server 2012 and later versions.

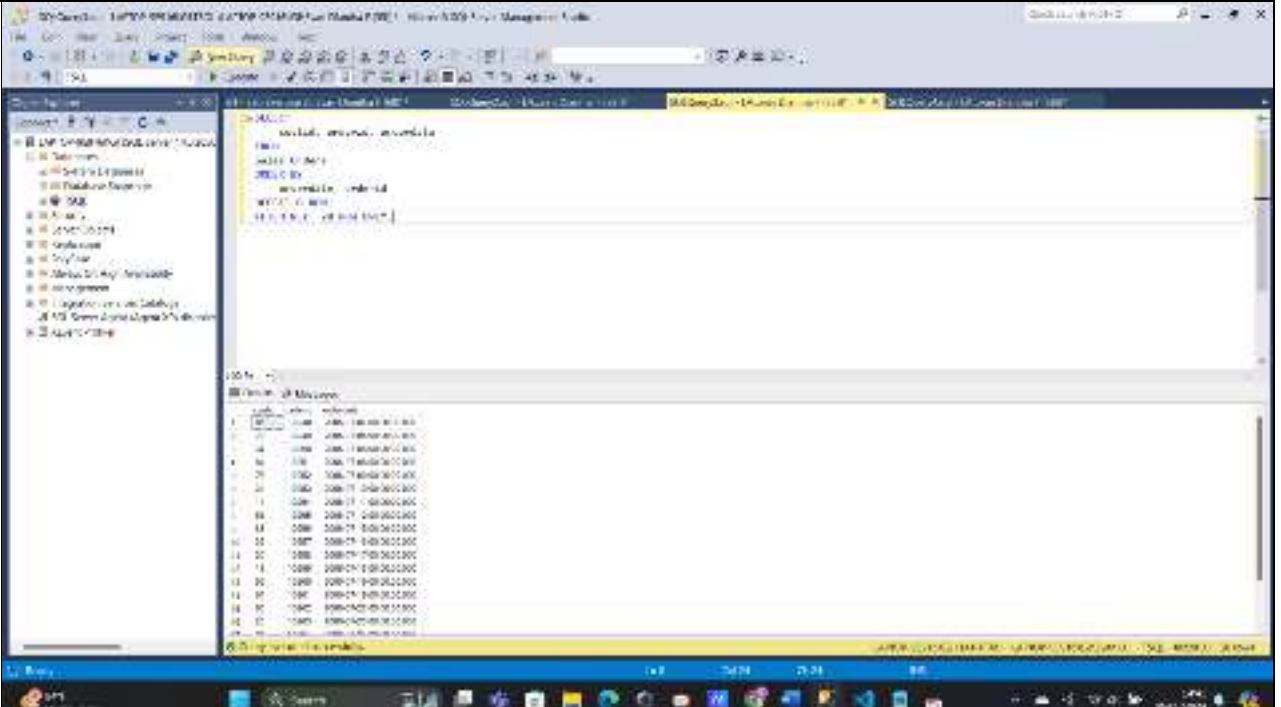
5

Conclusion : After completing the practical work and questions in this section, you should now understand how to apply the TOP option to the SELECT clause of the T-SQL command.

Practical – Part 13 : Writing Queries Who Will Filter Data with OFFSET-FETCH clause

Step	Information
1	<p>Practical part 9 will implement paging solution to display rows from Sales.Orders table , because the number of rows is too many. On each report page, user can only see 20 rows.</p> <p>Open the project \10774A Labs\10774A_06_PRJ\10774A_06_PRJ.ssmssln and the T-SQL script 81 - Lab Exercise 4.sql . Make sure the database is connected with "TSQL".</p>
	
2	<p>[Question- 40] Write a SELECT command to display the custid,orderid, and orderdate columns in the Sales.Orders table . Sort the rows by orderdate and orderid. Take the first 20 rows. Execute the command and compare the results with the file 82 - Lab Exercise 4 - Task 1 Result.txt. If the results are the same, then your test is correct.</p>  <pre> custid orderid orderdate ----- 85 10248 2006-07-04 00:00:00.000 79 10249 2006-07-05 00:00:00.000 34 10250 2006-07-08 00:00:00.000 7 10265 2006-07-25 00:00:00.000 87 10266 2006-07-26 00:00:00.000 25 10267 2006-07-29 00:00:00.000 (20 row(s) affected) </pre> <p>My Answer :</p>



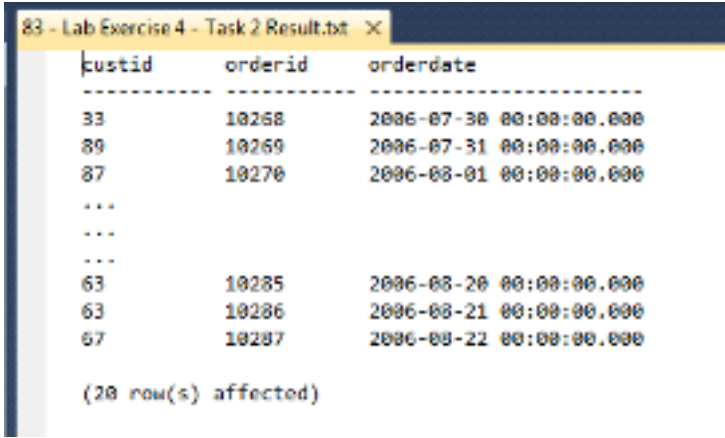
	 <p>Results Messages</p> <p>(20 rows affected)</p> <p>Completion time: 2024-09-05T15:11:12.7601781+07:00</p>
3	<p>[Question- 41] Write a SELECT statement to display the same results as question no. 43, skip the first 20 rows, and continue with the next 20 rows using the OFFSET-FETCH clause! Execute the statement and compare 83 - Lab Exercise 4 - Task 2 Result.txt. If the results are the same, then your test is correct.</p> <p>My Answer :</p>



The screenshot displays the SQL Server Enterprise Manager interface. The left pane shows the 'Server Enterprise' tree with the 'Database' folder expanded. The right pane shows the 'Database' properties, including the 'Tables' list. The 'Tables' list is expanded, showing a table named 'tbl_mhs' with columns 'id', 'nama', 'alamat', 'no_telp', and 'email'. The 'tbl_mhs' table is selected, and its data is displayed in the 'Data' pane below. The data is as follows:

id	nama	alamat	no_telp	email
1	Adi	Jl. Raya	0812-3456789	adi@polinema.ac.id
2	Budi	Jl. Raya	0812-3456789	budi@polinema.ac.id
3	Cici	Jl. Raya	0812-3456789	cici@polinema.ac.id
4	Dani	Jl. Raya	0812-3456789	dani@polinema.ac.id
5	Evi	Jl. Raya	0812-3456789	evi@polinema.ac.id
6	Fani	Jl. Raya	0812-3456789	fani@polinema.ac.id
7	Gani	Jl. Raya	0812-3456789	gani@polinema.ac.id
8	Hani	Jl. Raya	0812-3456789	hani@polinema.ac.id
9	Iani	Jl. Raya	0812-3456789	iani@polinema.ac.id
10	Jani	Jl. Raya	0812-3456789	jani@polinema.ac.id
11	Kani	Jl. Raya	0812-3456789	kani@polinema.ac.id
12	Lani	Jl. Raya	0812-3456789	lani@polinema.ac.id
13	Mani	Jl. Raya	0812-3456789	mani@polinema.ac.id
14	Nani	Jl. Raya	0812-3456789	nani@polinema.ac.id
15	Oani	Jl. Raya	0812-3456789	oani@polinema.ac.id
16	Pani	Jl. Raya	0812-3456789	pani@polinema.ac.id
17	Qani	Jl. Raya	0812-3456789	qani@polinema.ac.id
18	Rani	Jl. Raya	0812-3456789	rani@polinema.ac.id
19	Sani	Jl. Raya	0812-3456789	sani@polinema.ac.id
20	Tani	Jl. Raya	0812-3456789	tani@polinema.ac.id
21	Uani	Jl. Raya	0812-3456789	uani@polinema.ac.id
22	Vani	Jl. Raya	0812-3456789	vani@polinema.ac.id
23	Wani	Jl. Raya	0812-3456789	wani@polinema.ac.id
24	Xani	Jl. Raya	0812-3456789	xani@polinema.ac.id
25	Yani	Jl. Raya	0812-3456789	yani@polinema.ac.id
26	Zani	Jl. Raya	0812-3456789	zani@polinema.ac.id



	 <pre>83 - Lab Exercise 4 - Task 2 Result.txt X custid orderid orderdate ----- 33 10268 2006-07-30 00:00:00.000 89 10269 2006-07-31 00:00:00.000 87 10270 2006-08-01 00:00:00.000 63 10285 2006-08-20 00:00:00.000 63 10286 2006-08-21 00:00:00.000 67 10287 2006-08-22 00:00:00.000 (20 row(s) affected)</pre>
4	Conclusion : After working on the practical work and questions in this section, you should now understand how to use the OFFSET-FETCH clause in T-SQL commands.

-- Have a great time doing it -