# Systems Design and Databases (CIS1018-N) TSQL Tutorial 7: Sorting and Filtering Data

## Before You Start

Finish the previous tutorials before attempting this one. Try to complete this set of tasks before your next tutorial.

**Hint:** It is important before start the lab, you should walk-through lecture(s) and demonstration exercises

## Introduction

You are an analyst who will be writing reports using corporate databases stored in SQL Server. You have been provided with a set of data business requirements and will write T-SQL queries to retrieve the specified data from the databases. You will need to retrieve only some of the available data, and return it to your reports in a specified order.

## Sorting and Filtering Data

* Exercise 1: Write Queries that Filter Data Using a WHERE Clause
* Exercise 2: Write Queries that Sort Data Using an ORDER BY Clause
* Exercise 3: Write Queries that Filter Data Using the TOP Option
* Exercise 4: Write Queries that Filter Data Using the OFFSET-FETCH Clause

## Exercise 1: Write Queries that Filter Data Using a WHERE Clause

**Task 1**:

* Write a SELECT statement that will return the custid, companyname, contactname, address, city, country, and phone columns from the Sales.Customers table.
* Filter the results to include only the customers from the country Brazil.
* Execute the written statement and compare the results that you got with the possible result(s) of the query.

|  |
| --- |
| -- Insert Query here |
| USE TSQL; |

|  |
| --- |
| **Possible Result of Query** |
|  |

**Task 2:**

* Write a SELECT statement that will return the custid, companyname, contactname, address, city, country, and phone columns from the Sales.Customers table.
* Filter the results to include only customers from the countries Brazil, UK, and USA.
* Execute the written statement and compare the results that you got with the possible result(s) of the query.

|  |
| --- |
| -- Insert Query here |
| USE TSQL; |

|  |
| --- |
| **Possible Result of Query** |
| … |

**Task 3**

* Write a SELECT statement that will return the custid, companyname, contactname, address, city, country, and phone columns from the Sales.Customers table.
* Filter the results to include only the customers with a contact name starting with the letter A.

|  |
| --- |
| -- Insert Query here |
| USE TSQL; |

* Execute the written statement and compare the results that you got with the possible result(s) of the query.

|  |
| --- |
| **Possible Result of Query** |
|  |

**Task 4:**

* The IT department has written a T-SQL statement that retrieves the custid and companyname columns from the Sales.Customers table and the orderid column from the Sales.Orders table.
* Execute the query. Notice two things:
  + First, the query retrieves all the rows from the Sales.Customers table.
  + Second, there is a comparison operator in the ON clause specifying that the city column should be equal to the value “Paris”.

|  |
| --- |
| -- Insert Query here |
| USE TSQL; |

|  |
| --- |
| **Possible Result of Query** |
| Sales.Customers    …  Sales.Orders |

**Task 5:**

* Write a T-SQL statement to retrieve customers from the Sales.Customers table that do not have matching orders in the Sales.Orders table.
* Matching customers with orders is based on a comparison between the customer’s custid value and the order’s custid value.
* Retrieve the custid and companyname columns from the Sales.Customers table.
* (Hint: Use a T-SQL statement that is similar to the one in the previous task.)
* Execute the written statement and compare the results that you got with the possible result(s) of the query.

|  |
| --- |
| -- Insert Query here |
| USE TSQL; |

|  |
| --- |
| **Possible Result of Query** |
|  |

## Exercise 2: Write Queries that Sort Data Using an ORDER BY Clause

**Scenario:** After receiving the initial list of customers, the marketing department would like to have column city in ascending order and country in descending order from Customers table in TSQL database.

**Task 1:**

* Write a SELECT statement that Using ORDER BY city column ascending order from the Sales.Customers table
* Write a SELECT statement that Using ORDER BY country column in descending order from the Sales.Customers table.

|  |
| --- |
| -- Insert Query here |
| USE TSQL; |

|  |
| --- |
| **Possible Result of Query** |
| …    … |

**Task 2:**

* Write a SELECT statement against the Sales.Orders table and retrieve the orderid and orderdate columns.
* Retrieve the 20 most recent orders, ordered by orderdate.
* Execute the written statement and compare the results that you got with the possible result(s) of the query.

|  |
| --- |
| -- Insert Query here |
| USE TSQL; |

|  |
| --- |
| **Possible Result of Query** |
|  |

**Task 3:**

* Write a SELECT statement to retrieve the same result as in task 2, but use the OFFSET-FETCH clause.
* Execute the written statement and compare the results that you got with the possible result(s) of the query.

|  |
| --- |
| -- Insert Query here |
| USE TSQL; |

|  |
| --- |
| **Possible Result of Query** |
|  |

**Task 4:**

* Write a SELECT statement to retrieve the productname and unitprice columns from the Production.Products table.
* Execute the T-SQL statement and notice the number of the rows returned.
* Modify the SELECT statement to include only the top 10 percent of products based on highest unitprice ordering.
* Execute the written statement and compare the results that you got with the possible result(s) of the query.

**Notice the number of rows returned:**

* Is it possible to implement this task with the OFFSET-FETCH clause?

|  |
| --- |
| -- Insert Query here |
| USE TSQL; |

|  |
| --- |
| **Possible Result of Query** |
|  |

## Exercise 3: Write Queries that Filter Data Using the TOP Option

**Task 1:**

* Write a SELECT statement against the Sales.Orders table and retrieve the custid, orderid and orderdate columns.
* Retrieve the 20 most recent orders, ordered by orderdate.
* Execute the written statement and compare the results that you got with the below given possible result of query.

|  |
| --- |
| -- Insert Query here |
| USE TSQL; |

|  |
| --- |
| **Possible Result of Query** |
|  |

**Task 2:**

* Write a SELECT statement to retrieve the same result as in task 1, but use the OFFSET-FETCH NEXT clause.
* Execute the written statement and compare the results that you got with the results from task 1.

|  |
| --- |
| -- Insert Query here |
| USE TSQL; |

|  |
| --- |
| **Possible Result of Query** |
|  |

## Exercise 4: Write Queries that Filter Data Using the OFFSET-FETCH Clause

**Task 1:**

* Write a SELECT statement to retrieve the custid, orderid, and orderdate columns from the Sales.Orders table. Order the rows by orderdate and orderid. Retrieve the first 20 rows.
* Execute the written statement and compare the results that you got with the below given possible result of query.

|  |
| --- |
| -- Insert Query here |
| USE TSQL; |

|  |
| --- |
| **Possible Result of Query** |
|  |

**Task 2:**

* Copy the SELECT statement in task 1 and modify the OFFSET-FETCH clause to skip the first 20 rows and fetch the next 20 rows.
* Execute the written statement and compare the results that you got with the below given possible result of query.

|  |
| --- |
| -- Insert Query here |
| USE TSQL; |

|  |
| --- |
| **Possible Result of Query** |
|  |

## Document History

Prepared by Dr Yar Muhammad,   
Revision 0. (31-Aug-22): This is the initial version of the 2022/23 exercise.