Querying SQL Server for Beginners

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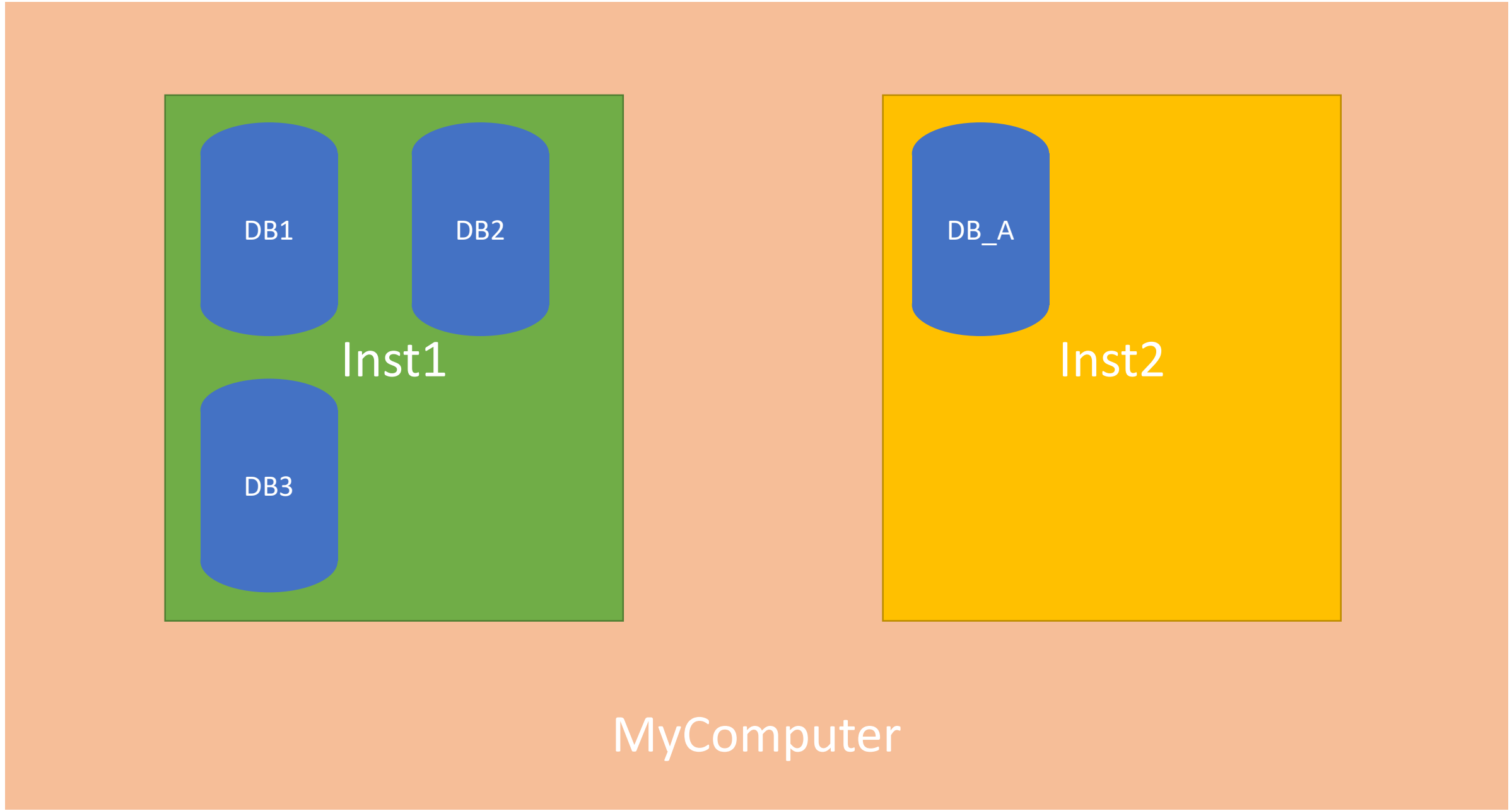
Redgate Software

Definitions

Word	Meaning
RDBMS	Relational database management system
SQL Server	Microsoft’s enterprise level RDBMS
SQL	Structured query language
T-SQL	SQL Server’s flavor of SQL
Instance	One installation of SQL Server, more than one allowed on a computer
Database	A physical container, more than one allowed on an instance


DB1
DB2
Inst1
DB3
DB_A
Inst2
MyComputer

More Definitions

Word	Meaning
Table	The object made of columns and rows in a database that holds the data. Conceptually, looks like a spreadsheet
Column	A column has a data type and properties that enforce rules
Row	Each record in a table
Constraint	The rules
Primary Key	A column or columns that uniquely define a row
Foreign Key	A column or columns that point to a row in another table
Schema	A container to organize objects

Can contain many tables and other objects like schemas, views, indexes, functions, stored procedures

DB_A

```
CREATE TABLE HumanResources.Department(
[DepartmentID] [smallint] IDENTITY(1,1) NOT NULL,
[Name] NVARCHAR(25) NOT NULL,
[GroupName] NVARCHAR(25) NOT NULL,
[ModifiedDate] [date] NOT NULL,
 CONSTRAINT [PK_Department_DepartmentID] PRIMARY KEY
CLUSTERED
([DepartmentID] ASC)
)
```

	DepartmentID	Name	GroupName	ModifiedDate
1	1	Engineering	Research and Development	2008-04-30 00:00:00.000
2	2	Tool Design	Research and Development	2008-04-30 00:00:00.000
3	3	Sales	Sales and Marketing	2008-04-30 00:00:00.000
4	4	Marketing	Sales and Marketing	2008-04-30 00:00:00.000
5	5	Purchasing	Inventory Management	2008-04-30 00:00:00.000
6	6	Research and Development	Research and Development	2008-04-30 00:00:00.000
7	7	Production	Manufacturing	2008-04-30 00:00:00.000
8	8	Production Control	Manufacturing	2008-04-30 00:00:00.000
9	9	Human Resources	Executive General and Administration	2008-04-30 00:00:00.000
10	10	Finance	Executive General and Administration	2008-04-30 00:00:00.000
11	11	Information Services	Executive General and Administration	2008-04-30 00:00:00.000
12	12	Document Control	Quality Assurance	2008-04-30 00:00:00.000
13	13	Quality Assurance	Quality Assurance	2008-04-30 00:00:00.000
14	14	Facilities and Maintenance	Executive General and Administration	2008-04-30 00:00:00.000
15	15	Shipping and Receiving	Inventory Management	2008-04-30 00:00:00.000
16	16	Executive	Executive General and Administration	2008-04-30 00:00:00.000

Schema

```
CREATE TABLE HumanResources.Department(
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```

Table

```
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[GroupName] NVARCHAR(25) NOT NULL,
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)
```

Auto-increment

```
CREATE TABLE HumanResources.Department(
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[GroupName] NVARCHAR(25) NOT NULL,
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 CONSTRAINT [PK_Department_DepartmentID] PRIMARY KEY
CLUSTERED ([DepartmentID] ASC)
)
```

Constraint:
Value must be filled in

```
CREATE TABLE HumanResources.Department(
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)
```

Data types

```
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CLUSTERED ([DepartmentID] ASC)
)
```

Primary Key

Creating an environment for learning

- SQL Server Developer instance
- Tool for queries
  - SQL Server Management Studio (SSMS)
  - Azure Data Studio (New, cross platform)
- Sample databases
- Find instructions here https://bit.ly/2IqluUK
  - This article also has SSRS instructions, you can ignore those

Creating an environment for learning

Start here

Installing and Configuring SQL Server and Reporting Services

Since this series is focused on report development, it will cover just enough about installation and configuration to help you get things set up on your development computer. **This section is not intended to provide information for installing SQL Server or SSRS in a production environment.**

Skip this

SSRS Service Installation and Configuration

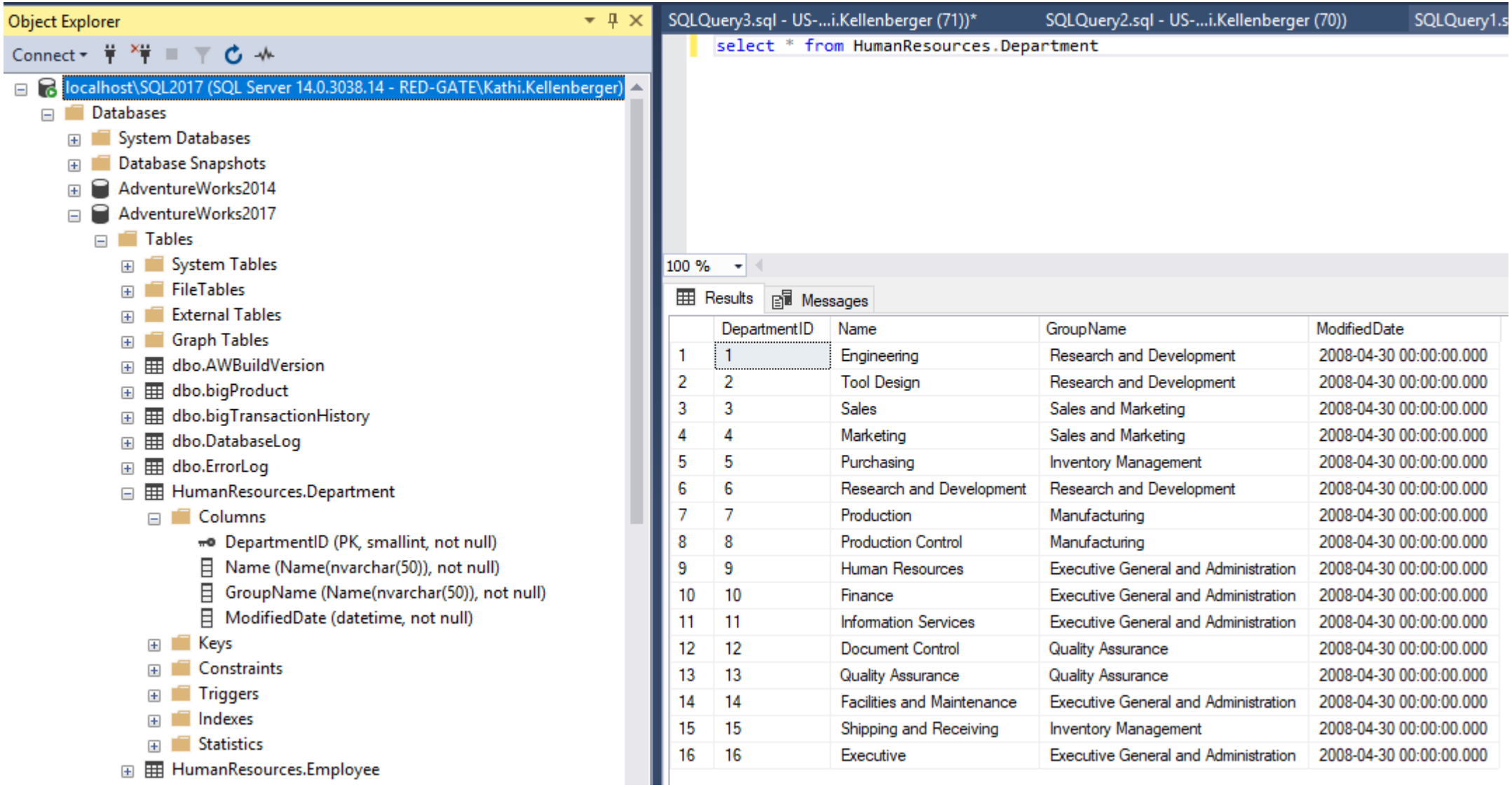
Previous versions of SQL Server allowed you to include SSRS during the installation of the database engine, but that is no longer the case beginning with 2017. Installing them together was quite convenient since the installation took care of the SSRS configuration for you automatically. Now, you must download the media separately and configure SSRS yourself. It's not difficult, but I'll walk you through the steps.

Do this

Restoring a Sample Database

To follow along with the examples in this series of articles, you'll need to restore one or more sample databases. The main database that will be used for the examples is called *AdventureWorks2017*. At the time of this writing, Microsoft is hosting the sample databases on GitHub, a well-known software repository site. Search for the *AdventureWork2017.bak* file. A *bak* file is a backup file, and that's what you need. Figure 30 shows the download page.

Getting around SSMS



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DEMO: Using SSMS

SSMS Tips and Tricks

- Right-click a table to create a query of top 1000 rows
- Pull table and column names from Object Explorer to query window
- Pull the word “columns” to get a list of the columns
- Select code to run instead of running everything
- Query designer (use to learn, not as a crutch)
- Right-click to script out definitions
- Take advantage of IntelliSense, better yet, use a tool like SQL Prompt to help you write the query
- Add comments to code

The SELECT statement

```
SELECT *
FROM schema1.table1;
```

This statement returns all columns and all rows from table1.

CAUTION! Exploratory only. Don’t do this in production code!!

The SELECT statement

```
SELECT col1, col2, col3
FROM schema1.table1;
```

This statement returns all the rows, but just the three columns from table1

DEMO: Writing SQL Statements

Filtering

```
SELECT col1, col2, col3
FROM schema1.table1
WHERE col1 = 5;
```

This statement returns col1, col2 and col3 from table1, but only for the rows where col1 is 5

Operators

- =, <>, !=
- <, >, <=, >=
- IN
- BETWEEN
- LIKE (% most common wildcard, replaces 0 or more characters)
- NOT
- AND, OR
- IS NULL
- Parentheses to enforce logic

Query filters can become very complex!

DEMO: Filtering

NULL

Means a value has not been entered

NOT 0, NOT an empty string

You can’t compare anything to NULL

```
SELECT col1, col2, col3
FROM schema1.table1
WHERE col1 IS NULL;
```

DEMO: Filtering

Ordering

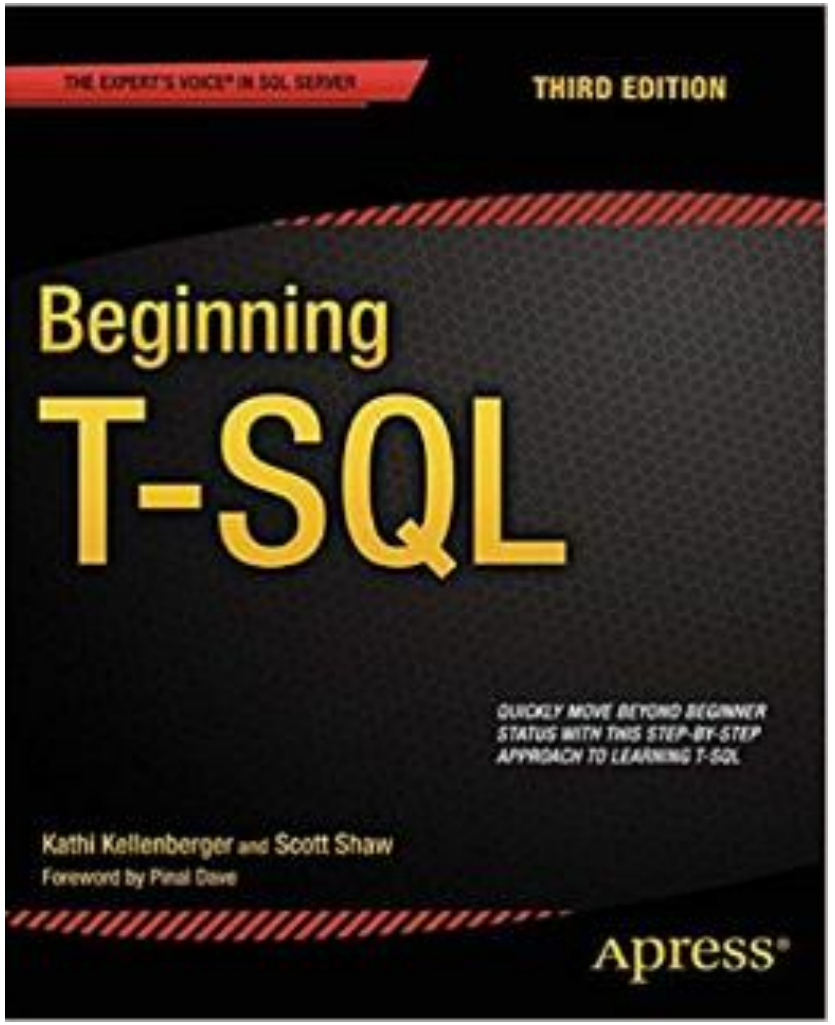
```
SELECT col1, col2, col3
FROM schema1.table1
ORDER BY col3 DESC;
```

Returns col1, col2, and col3 from all the rows from table1, but they are in descending order of col3

DEMO: Ordering

Resources

- Beginning T-SQL, 3rd Edition
- Lots of training classes
  - Codecademy
  - Pluralsight
  - Udemy
- PASS.org
- Auntkathisql.com
- Simple Talk



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LOS ANGELES

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Jefferson Boulevard, Playa Vista

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