Transact SQL Tutorial

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Transact SQL, often shortened to T-SQL, is Microsoft’s proprietary implementation of ANSI standard SQL. Transact SQL adds more power and programming functionality to ANSI SQL and is used exclusively with the SQL Server database management system.

Basic T-SQL shares many elements with ANSI SQL and we do not make a distinction in this tutorial.

One thing you need to understand is that SQL, especially Transact SQL, is a legit programming language. It is relatively simplistic compared to the likes of Python, but it is fairly powerful non the less, and you cannot afford to be a lazy programmer. Most of the concepts from computer science 101 will apply to white SQL with the notable exception that SQL is a procedural programming language unlike most popular languages which are object oriented.

This tutorial is organized in three parts.

Language Basics. This section is takes you through foundational T-SQL and it is recommended that you go through the tutorial in the order of the lessons given. The next two sections are in no particular order.

Advanced Topics. This section takes you into the heavier programming aspects of T-SQL. Here you will start to dive into issues of writing high performance code.

Solutions To Real World Problems. This is a highly opinionated section where I share my solutions to recurring problems that I have tackled over the past 20 years. Fortunately, all this stuff was kept in various forums, emails, and Stack Overflow in addition to the stuff I keep at the top of my head.

This section is basically me uploading two decades of coding experience to the internet. I am not saying the way I do things is the correct way. I am saying there is a reason I get paid six figures to do this stuff.

Language Basics

Obligatory Hello World

String functions If you work in analytics, you are going to be spending a lot of time manipulating strings. You are pretty much going to use ALL the string functions at some point.

Case statement

Creating, Altering, Dropping Tables

Advanced Topics

Bulk Insert

SQL Merge

Recursive query

Over

Conditional case

Indexed Views

Error Processing

Common Table Expression (CTE)

Derived Tables

Variables

Combining queries with Union

Subqueries

SQL Update With Join

Solutions To Real World Problems

Loading large Bulk insert remove all keys and indexes, use a view.

Loading a Type II dimension with SQL Merge

[Why you cannot join on null](https://social.msdn.microsoft.com/Forums/en-US/30e13bb2-8a5e-400f-b8c0-188a7325c516/left-outer-join-with-not-in-statement-returns-unexpected-results?forum=transactsql) also check asshole’s book

Why you cannot have more than one clustered index on a table

[Limitations of indexes on computed columns](https://social.msdn.microsoft.com/Forums/en-US/1e06bd40-0706-4de7-b585-0ab83c4110e5/how-to-properly-create-an-index-on-a-computed-column?forum=transactsql)

Listing all columns in a database

Listing all tables in a database

[Querying hierarchical data](https://social.msdn.microsoft.com/Forums/en-US/3a6ca0f7-475b-4e89-8201-a0aec4c233e1/need-some-help-with-a-bottom-up-recursive-query?forum=transactsql)

A Better Alternative To WITH (NOLOCK)

[A Deep Dive On How The Where Clause Functions](https://social.msdn.microsoft.com/Forums/en-US/fbb33d44-cc92-4587-b198-2beebf3abcaa/the-mechanics-of-the-where-clause?forum=transactsql)

Converting dates to YYYYMMDD

Finding Duplicate Records

Why People That Indent Code Drive Me Nuts (AKA A Recommended SQL Style Guide)

I’m that rare breed of human for whom SQL is my primary language. Of course, I had learned other programming languages prior to SQL, but I never used them day in and day out. Most people come to SQL from other programming languages and they have a tendency to bring their nonsense with them.

Loading Small Amounts Of Data By Hand Quickly

How To Rapidly Stand Up A Data Warehouse From Scratch

The Only Bloody Good Reason To Use Cursors (AKA Moving Large Amounts of Data Between Tables)

[Sending Emails With T-SQL Without Using Hardcoded Email Addresses](https://stackoverflow.com/questions/58004072/how-do-you-send-email-with-tsql-using-a-agent-operator-instead-of-an-email-addre)

[A Clearer Explanation Of The Parameters Of The Numeric Data Type](https://stackoverflow.com/questions/48632850/with-tsql-how-do-i-convert-a-highly-precise-value-to-numeric)