

T Sql Querying Developer Reference Ben Gan

Beginning T-SQL is a performance-oriented introduction to the T-SQL language underlying the Microsoft SQL Server database engine. T-SQL is essential in writing SQL statements to get data into and out of a database. T-SQL is the foundation for business logic embedded in the database in the form of stored procedures and functions. Beginning T-SQL starts you on the path to mastering T-SQL, with an emphasis on best-practices and sound coding techniques leading to excellent performance. This new edition is updated to cover the essential features of T-SQL found in SQL Server 2014, 2012, and 2008. Beginning T-SQL begins with an introduction to databases, normalization, and to SQL Server Management Studio. Attention is given to Azure SQL Database and how to connect to remote databases in the cloud. Each subsequent chapter teaches an aspect of T-SQL, building on the skills learned in previous chapters. Exercises in most chapters provide an opportunity for the hands-on practice that leads to true learning and distinguishes the competent professional. Important techniques such as windowing functions are covered to help write fast executing queries that solve real business problems. A stand-out feature in this book is that most chapters end with a "Thinking About Performance" section. These sections cover aspects of query performance relative to the content just presented. They'll help you avoid beginner mistakes by knowing about and thinking about performance from Day 1. Imparts best practices for writing T-SQL Helps you avoid common errors Shows how to write scalable code for good performance

Provides information on the architecture of the T-SQL programming language. The SQL Server 2014 In-Memory OLTP engine (a.k.a. Hekaton) is designed from the ground up to exploit terabytes of available memory and high numbers of processing cores. It allows us to work with memory-optimized tables and indexes, and natively compiled stored procedures, in addition to the disk-based tables and indexes, and T-SQL stored procedures, that SQL Server has always provided. Hekaton in-memory data is accessible, transparently, using familiar interfaces such as T-SQL and SSMS, but Hekaton's internal behavior and capabilities are very different than those of the standard relational engine. Everything you knew about how your SQL Server stores and accesses data is different in Hekaton. Everything you understood about how multiple concurrent processes are handled needs to be reconsidered. In this book, Kalen Delaney explains how the new In-Memory OLTP engine works, how it stores and manipulates data, and how, even with all data stored in memory and no locking or latching, it can still guarantee the ACID properties of all transactions. Kalen has been working with SQL Server since 1987, specializing in query performance tuning and SQL Server internals. The Hekaton internals knowledge she provides in this book will help you migrate existing tables or databases to Hekaton, and get faster performance from your SQL Server applications than you ever thought possible.

Get a performance-oriented introduction to the T-SQL language underlying the

Microsoft SQL Server and Azure SQL database engines. This fourth edition is updated to include SQL Notebooks as well as up-to-date syntax and features for T-SQL on-premises and in the Azure cloud. Exercises and examples now include the WideWorldImporters database, the newest sample database from Microsoft for SQL Server. Also new in this edition is coverage of JSON from T-SQL, news about performance enhancements called Intelligent Query Processing, and an appendix on running SQL Server in a container on macOS or Linux. Beginning T-SQL starts you on the path to mastering T-SQL with an emphasis on best practices. Using the sound coding techniques taught in this book will lead to excellent performance in the queries that you write in your daily work. Important techniques such as windowing functions are covered to help you write fast-executing queries that solve real business problems. The book begins with an introduction to databases, normalization, and to setting up your learning environment. You will learn about the tools you need to use such as SQL Server Management Studio, Azure Data Studio, and SQL Notebooks. Each subsequent chapter teaches an aspect of T-SQL, building on the skills learned in previous chapters. Exercises in most chapters provide an opportunity for the hands-on practice that leads to true learning and distinguishes the competent professional. A stand-out feature in this book is that most chapters end with a Thinking About Performance section. These sections cover aspects of query performance relative to the content just presented, including the new Intelligent Query Processing features that make queries faster without changing code. They will help you avoid beginner mistakes by knowing about and thinking about performance from day 1.

What You Will Learn

- Install a sandboxed SQL Server instance for learning
- Understand how relational databases are designed
- Create objects such as tables and stored procedures
- Query a SQL Server table
- Filter and order the results of a query
- Query and work with specialized data types such as XML and JSON
- Apply modern features such as window functions
- Choose correct techniques so that your queries perform well

Who This Book Is For

Anyone who wants to learn T-SQL from the beginning or improve their T-SQL skills; those who need T-SQL as an additional skill; and those who write queries such as application developers, database administrators, business intelligence developers, and data scientists. The book is also helpful for anyone who must retrieve data from a SQL Server database.

Python for Everybody is designed to introduce students to programming and software development through the lens of exploring data. You can think of the Python programming language as your tool to solve data problems that are beyond the capability of a spreadsheet. Python is an easy to use and easy to learn programming language that is freely available on Macintosh, Windows, or Linux computers. So once you learn Python you can use it for the rest of your career without needing to purchase any software. This book uses the Python 3 language. The earlier Python 2 version of this book is titled "Python for Informatics: Exploring Information". There are free downloadable electronic copies

of this book in various formats and supporting materials for the book at www.pythonlearn.com. The course materials are available to you under a Creative Commons License so you can adapt them to teach your own Python course.

Effectively query and modify data using Transact-SQL Master T-SQL fundamentals and write robust code for Microsoft SQL Server and Azure SQL Database. Itzik Ben-Gan explains key T-SQL concepts and helps you apply your knowledge with hands-on exercises. The book first introduces T-SQL's roots and underlying logic. Next, it walks you through core topics such as single-table queries, joins, subqueries, table expressions, and set operators. Then the book covers more-advanced data-query topics such as window functions, pivoting, and grouping sets. The book also explains how to modify data, work with temporal tables, and handle transactions, and provides an overview of programmable objects. Microsoft Data Platform MVP Itzik Ben-Gan shows you how to: Review core SQL concepts and its mathematical roots Create tables and enforce data integrity Perform effective single-table queries by using the SELECT statement Query multiple tables by using joins, subqueries, table expressions, and set operators Use advanced query techniques such as window functions, pivoting, and grouping sets Insert, update, delete, and merge data Use transactions in a concurrent environment Get started with programmable objects—from variables and batches to user-defined functions, stored procedures, triggers, and dynamic SQL

Prepare for Microsoft Exam 70-761—and help demonstrate your real-world mastery of SQL Server 2016 Transact-SQL data management, queries, and database programming. Designed for experienced IT professionals ready to advance their status, Exam Ref focuses on the critical-thinking and decision-making acumen needed for success at the MCSA level. Focus on the expertise measured by these objectives:

- Filter, sort, join, aggregate, and modify data
- Use subqueries, table expressions, grouping sets, and pivoting
- Query temporal and non-relational data, and output XML or JSON
- Create views, user-defined functions, and stored procedures
- Implement error handling, transactions, data types, and nulls

This Microsoft Exam Ref:

- Organizes its coverage by exam objectives
- Features strategic, what-if scenarios to challenge you
- Assumes you have experience working with SQL Server as a database administrator, system engineer, or developer
- Includes downloadable sample database and code for SQL Server 2016 SP1 (or later) and Azure SQL Database Querying Data with Transact-SQL

About the Exam Exam 70-761 focuses on the skills and knowledge necessary to manage and query data and to program databases with Transact-SQL in SQL Server 2016. About Microsoft Certification Passing this exam earns you credit toward a Microsoft Certified Solutions Associate (MCSA) certification that demonstrates your mastery of essential skills for building and implementing on-premises and cloud-based databases across organizations. Exam 70-762 (Developing SQL Databases) is also required for MCSA: SQL 2016

Database Development certification. See full details at: microsoft.com/learning
An industry consultant shares his most useful tips and tricks for advanced SQL programming to help the working programmer gain performance and work around system deficiencies.

Get the most out of the rich development capabilities of SQL Server 2016 to build efficient database applications for your organization
About This Book Utilize the new enhancements in Transact-SQL and security features in SQL Server 2016 to build efficient database applications
Work with temporal tables to get information about data stored in the table at any point in time
A detailed guide to SQL Server 2016, introducing you to multiple new features and enhancements to improve your overall development experience
Who This Book Is For This book is for database developers and solution architects who plan to use the new SQL Server 2016 features for developing efficient database applications. It is also ideal for experienced SQL Server developers who want to switch to SQL Server 2016 for its rich development capabilities. Some understanding of the basic database concepts and Transact-SQL language is assumed.
What You Will Learn Explore the new development features introduced in SQL Server 2016
Identify opportunities for In-Memory OLTP technology, significantly enhanced in SQL Server 2016
Use columnstore indexes to get significant storage and performance improvements
Extend database design solutions using temporal tables
Exchange JSON data between applications and SQL Server in a more efficient way
Migrate historical data transparently and securely to Microsoft Azure by using Stretch Database
Use the new security features to encrypt or to have more granular control over access to rows in a table
Simplify performance troubleshooting with Query Store
Discover the potential of R's integration with SQL Server
In Detail Microsoft SQL Server 2016 is considered the biggest leap in the data platform history of the Microsoft, in the ongoing era of Big Data and data science. Compared to its predecessors, SQL Server 2016 offers developers a unique opportunity to leverage the advanced features and build applications that are robust, scalable, and easy to administer. This book introduces you to new features of SQL Server 2016 which will open a completely new set of possibilities for you as a developer. It prepares you for the more advanced topics by starting with a quick introduction to SQL Server 2016's new features and a recapitulation of the possibilities you may have already explored with previous versions of SQL Server. The next part introduces you to small delights in the Transact-SQL language and then switches to a completely new technology inside SQL Server - JSON support. We also take a look at the Stretch database, security enhancements, and temporal tables. The last chapters concentrate on implementing advanced topics, including Query Store, columnstore indexes, and In-Memory OLTP. You will finally be introduced to R and how to use the R language with Transact-SQL for data exploration and analysis. By the end of this book, you will have the required information to design efficient, high-performance database applications without any hassle.
Style and approach This book is a detailed guide to mastering the development features offered by SQL Server 2016, with a unique learn-as-you-do approach. All the concepts are explained in a very easy-to-understand manner and are supplemented with examples to ensure that you—the developer—are able to take that next step in building more powerful, robust applications for your organization with ease.

"Most T-SQL developers recognize the value of window functions for data analysis calculations. But they can do far more, and recent optimizations make them even more powerful. In T-SQL Window Functions, renowned T-SQL expert Itzik Ben-Gan introduces breakthrough techniques for using them to handle many common T-SQL querying tasks with unprecedented elegance and power. Using extensive code examples, he guides you through window aggregate, ranking, distribution, offset, and ordered set functions. You'll find a detailed section on optimization, plus an extensive collection of business solutions -- including novel

techniques available in no other book."--provided by publisher.

Tackle the toughest set-based querying and query tuning problems—guided by an author team with in-depth, inside knowledge of T-SQL. Deepen your understanding of architecture and internals—and gain practical approaches and advanced techniques to optimize your code’s performance. Discover how to: Move from procedural programming to the language of sets and logic Optimize query tuning with a top-down methodology Assess algorithmic complexity to predict performance Compare data-aggregation techniques, including new grouping sets Manage data modification—insert, delete, update, merge—for performance Write more efficient queries against partitioned tables Work with graphs, trees, hierarchies, and recursive queries Plus—Use pure-logic puzzles to sharpen your problem-solving skills

In *Advanced Transact-SQL for SQL Server 2000*, authors Itzik Ben-Gan and Thomas Moreau explore the powerful capabilities of Transact-SQL (T-SQL). Ben-Gan and Moreau offer solutions to common problems encountered using all versions of SQL Server, with a focus on the latest version, SQL Server 2000. Expert tips and real code examples teach advanced database programmers to write more efficient and better-performing code that takes full advantage of T-SQL. The authors offer practical solutions to the everyday problems programmers face and include in-depth information on advanced T-SQL topics such as joins, subqueries, stored procedures, triggers, user-defined functions (UDFs), indexed views, cascading actions, federated views, hierarchical structures, cursors, and more.

Become a Node.js craftsman. About This Book This book will help readers to dive deeper into software development with Node.js and JavaScript Takes a craftsman approach to Node.js and object-orientation and test-driven development Crafts many of the small details of Node.js and through to fully-fledged web applications with REST Who This Book Is For This book is written to help you if you're working with Node.js already, but you want to move your craft to the next level with Node.js, so some working knowledge of Node.js is of course already assumed, so that we can look at the work of crafting applications with Node. What You Will Learn How to connect to databases like MongoDB and MySQL from your Node.js application How to unit tests and end-to-end tests for your code When and how to leverage migrations for setting up a continuous deployment workflow Detailed insight into how the Node Package Manager, NPM works How object-orientation actually works in JavaScript Ways to keep your code fast and efficient using asynchronous and non-blocking operations How to use and create event emitters How to use REST frameworks to write full-fledged web applications How to integrate Node.js with Angular In Detail The Node Craftsman Book helps JavaScript programmers with basic Node.js knowledge to now thoroughly master Node.js and JavaScript. This book dives you deeper into the craft of software development with Node.js and JavaScript, including object-orientation, test-driven development, database handling, web frameworks, and much more. The Node Craftsman Book shows you how to work with Node.js and how to think deeply about how you build your Node projects. You'll master how to build a complete Node.js application across six crafting milestones, and you'll learn many specific skills to achieve that mastery. These skills include how to work with the Node Package Manager in depth, how to connect your Node applications to databases, and how to write unit tests and end-to-end tests for your code. You'll experience the full Node.js development picture, and learn how to craft and control your Node.js applications - right through to fully-fledged web applications using REST, and integration with Angular applications. Style and approach This book builds on your early knowledge and experience of Node.js and takes a craftsman approach to understanding the whole picture more deeply and shaping your Node applications to perform the way a craftsman would want. So, we take a thoughtful and broad thinking and coding approach to work with Node.js in this book.

"Congratulations! You are going to WIN your next SQL Server interview. "SQL The One" book can guide you to achieve the success in your next interview. This book covers Microsoft SQL

Server interview experiences, questions and answers for a range of SQL DBA's and SQL Server Professionals. All of these questions have been collected from the people who attended interviews at various multinational companies across the world. It also covers "How to prepare for a SQL DBA interview?" and "How to become an expert in your career?" Salient Features of Book All interview questions are asked in various MNC Covers 1090 real time questions and answers 254 questions on SQL Server Performance Tuning Covers all SQL Server HA & DR features 316 questions on SQL Server HA & DR features Lots of scenario based questions Covers SQL Server 2005, 2008, 2008 R2, 2012, 2014 and 2016 Questions are categorized In-depth explanations An Interview Experience with Microsoft Useful as a reference guide for SQL DBA Interview preparation

The World's #1 Hands-On Oracle SQL Workbook—Fully Updated for Oracle 11g Crafted for hands-on learning and tested in classrooms worldwide, this book illuminates in-depth every Oracle SQL technique you'll need. From the simplest query fundamentals to regular expressions and with newly added coverage of Oracle's powerful new SQL Developer tool, you will focus on the tasks that matter most. Hundreds of step-by-step, guided lab exercises will systematically strengthen your expertise in writing effective, high-performance SQL. Along the way, you'll acquire a powerful arsenal of useful skills—and an extraordinary library of solutions for your real-world challenges with Oracle SQL. Coverage includes 100% focused on Oracle SQL for Oracle 11g, today's #1 database platform—not "generic" SQL! Master all core SQL techniques including every type of join such as equijoins, self joins, and outer joins Understand Oracle functions in depth, especially character, number, date, timestamp, interval, conversion, aggregate, regular expressions, analytical, and more Practice all types of subqueries, such as correlated and scalar subqueries, and learn about set operators and hierarchical queries Build effective queries and learn fundamental Oracle SQL Developer and SQL*Plus skills Make the most of the Data Dictionary and create tables, views, indexes, and sequences Secure databases using Oracle privileges, roles, and synonyms Explore Oracle 11g's advanced data warehousing features Learn many practical tips about performance optimization, security, and architectural solutions Avoid common pitfalls and understand and solve common mistakes For every database developer, administrator, designer, or architect, regardless of experience!

If you've not programmed with Transact-SQL, this book is for you. It begins with an overview of SQL Server query operations and tools used with T-SQL, and covers both the 2005 and 2008 releases of SQL Server query tools and the query editor. The book then moves to show you how to design and build applications of increasing complexity. Other important tasks covered include full text indexing, optimizing query performance, and application design and security considerations. The companion website also provides all of the code examples from the book. Design and write simple and efficient T-SQL code in SQL Server 2019 and beyond. Writing T-SQL that pulls back correct results can be challenging. This book provides the help you need in writing T-SQL that performs fast and is easy to maintain. You also will learn how to implement version control, testing, and deployment strategies. Hands-on examples show modern T-SQL practices and provide straightforward explanations. Attention is given to selecting the right data types and objects when designing T-SQL solutions. Author Elizabeth Noble teaches you how to improve your T-SQL performance through good design practices that benefit programmers and ultimately the users of the applications. You will know the common pitfalls of writing T-SQL and how to avoid those pitfalls going forward. What You Will Learn Choose correct data types and database objects when designing T-SQL Write T-SQL that searches data efficiently and uses hardware effectively Implement source control and testing methods to streamline the deployment process Design T-SQL that can be enhanced or modified with less

effort Plan for long-term data management and storage Who This Book Is For Database developers who want to improve the efficiency of their applications, and developers who want to solve complex query and data problems more easily by writing T-SQL that performs well, brings back correct results, and is easy for other developers to understand and maintain

Sams Teach Yourself SQL in 10 Minutes, Fourth Edition New full-color code examples help you see how SQL statements are structured Whether you're an application developer, database administrator, web application designer, mobile app developer, or Microsoft Office users, a good working knowledge of SQL is an important part of interacting with databases. And Sams Teach Yourself SQL in 10 Minutes offers the straightforward, practical answers you need to help you do your job. Expert trainer and popular author Ben Forta teaches you just the parts of SQL you need to know—starting with simple data retrieval and quickly going on to more complex topics including the use of joins, subqueries, stored procedures, cursors, triggers, and table constraints. You'll learn methodically, systematically, and simply—in 22 short, quick lessons that will each take only 10 minutes or less to complete. With the Fourth Edition of this worldwide bestseller, the book has been thoroughly updated, expanded, and improved. Lessons now cover the latest versions of IBM DB2, Microsoft Access, Microsoft SQL Server, MySQL, Oracle, PostgreSQL, SQLite, MariaDB, and Apache Open Office Base. And new full-color SQL code listings help the beginner clearly see the elements and structure of the language. 10 minutes is all you need to learn how to... Use the major SQL statements Construct complex SQL statements using multiple clauses and operators Retrieve, sort, and format database contents Pinpoint the data you need using a variety of filtering techniques Use aggregate functions to summarize data Join two or more related tables Insert, update, and delete data Create and alter database tables Work with views, stored procedures, and more Table of Contents 1 Understanding SQL 2 Retrieving Data 3 Sorting Retrieved Data 4 Filtering Data 5 Advanced Data Filtering 6 Using Wildcard Filtering 7 Creating Calculated Fields 8 Using Data Manipulation Functions 9 Summarizing Data 10 Grouping Data 11 Working with Subqueries 12 Joining Tables 13 Creating Advanced Joins 14 Combining Queries 15 Inserting Data 16 Updating and Deleting Data 17 Creating and Manipulating Tables 18 Using Views 19 Working with Stored Procedures 20 Managing Transaction Processing 21 Using Cursors 22 Understanding Advanced SQL Features Appendix A: Sample Table Scripts Appendix B: Working in Popular Applications Appendix C : SQL Statement Syntax Appendix D: Using SQL Datatypes Appendix E: SQL Reserved Words

Gain a solid understanding of T-SQL—and write better queries Master the fundamentals of Transact-SQL—and develop your own code for querying and modifying data in Microsoft SQL Server 2012. Led by a SQL Server expert, you'll learn the concepts behind T-SQL querying and programming, and then apply your knowledge with exercises in each chapter. Once you understand the logic behind T-SQL, you'll quickly learn how to write effective code—whether you're a programmer or database administrator. Discover how to: Work with programming practices unique to T-SQL Create database tables and define data integrity Query multiple tables using joins and subqueries Simplify code and improve maintainability with table expressions Implement insert, update, delete, and merge data modification strategies Tackle advanced

techniques such as window functions, pivoting and grouping sets Control data consistency using isolation levels, and mitigate deadlocks and blocking Take T-SQL to the next level with programmable objects

T-SQL Querying Pearson Education

Provides information on the architecture of the T-SQL programming language to create scalable code.

Use window functions to write simpler, better, more efficient T-SQL queries Most T-SQL developers recognize the value of window functions for data analysis calculations. But they can do far more, and recent optimizations make them even more powerful. In T-SQL Window Functions, renowned T-SQL expert Itzik Ben-Gan introduces

breakthrough techniques for using them to handle many common T-SQL querying tasks with unprecedented elegance and power. Using extensive code examples, he guides you through window aggregate, ranking, distribution, offset, and ordered set functions.

You'll find a detailed section on optimization, plus an extensive collection of business solutions — including novel techniques available in no other book. Microsoft MVP Itzik Ben-Gan shows how to:

- Use window functions to improve queries you previously built with predicates
- Master essential SQL windowing concepts, and efficiently design window functions
- Effectively utilize partitioning, ordering, and framing
- Gain practical in-depth insight into window aggregate, ranking, offset, and statistical functions

- Understand how the SQL standard supports ordered set functions, and find working solutions for functions not yet available in the language
- Preview advanced Row

- Pattern Recognition (RPR) data analysis techniques
- Optimize window functions in SQL Server and Azure SQL Database, making the most of indexing, parallelism, and more

- Discover a full library of window function solutions for common business problems

- About This Book
- For developers, DBAs, data analysts, data scientists, BI professionals, and power users familiar with T-SQL queries
- Addresses any edition of the SQL Server 2019 database engine or later, as well as Azure SQL Database

- Get all code samples at: MicrosoftPressStore.com/TSQLWindowFunctions/downloads

Troubleshoot query performance issues, identify anti-patterns in code, and write

efficient T-SQL queries

Key Features Discover T-SQL functionalities and services that help you interact with relational databases

Understand the roles, tasks and responsibilities of a T-SQL developer

Explore solutions for carrying out database querying tasks, database administration, and troubleshooting

Book Description Transact-SQL (T-SQL) is Microsoft's proprietary extension to the SQL language that is used with Microsoft SQL Server and Azure SQL Database. This book will be a useful

guide to learning the art of writing efficient T-SQL code in modern SQL Server versions, as well as the Azure SQL Database. The book will get you started with query

processing fundamentals to help you write powerful, performant T-SQL queries. You

will then focus on query execution plans and learn how to leverage them for

troubleshooting. In the later chapters, you will learn how to identify various T-SQL

patterns and anti-patterns. This will help you analyze execution plans to gain insights

into current performance, and determine whether or not a query is scalable. You will

also learn to build diagnostic queries using dynamic management views (DMVs) and

dynamic management functions (DMFs) to address various challenges in T-SQL

execution. Next, you will study how to leverage the built-in tools of SQL Server to

shorten the time taken to address query performance and scalability issues. In the

concluding chapters, the book will guide you through implementing various features, such as Extended Events, Query Store, and Query Tuning Assistant using hands-on examples. By the end of this book, you will have the skills to determine query performance bottlenecks, avoid pitfalls, and discover the anti-patterns in use. Foreword by Conor Cunningham, Partner Architect – SQL Server and Azure SQL – Microsoft

What you will learn

- Use Query Store to understand and easily change query performance
- Recognize and eliminate bottlenecks that lead to slow performance
- Deploy quick fixes and long-term solutions to improve query performance
- Implement best practices to minimize performance risk using T-SQL
- Achieve optimal performance by ensuring careful query and index design
- Use the latest performance optimization features in SQL Server 2017 and SQL Server 2019
- Protect query performance during upgrades to newer versions of SQL Server

Who this book is for

This book is for database administrators, database developers, data analysts, data scientists, and T-SQL practitioners who want to get started with writing T-SQL code and troubleshooting query performance issues, through the help of practical examples. Previous knowledge of T-SQL querying is not required to get started on this book.

Queries not running fast enough? Wondering about the in-memory database features in 2014? Tired of phone calls from frustrated users? Grant Fritchey's book *SQL Server Query Performance Tuning* is the answer to your SQL Server query performance problems. The book is revised to cover the very latest in performance optimization features and techniques, especially including the newly-added, in-memory database features formerly known under the code name Project Hekaton. This book provides the tools you need to approach your queries with performance in mind. *SQL Server Query Performance Tuning* leads you through understanding the causes of poor performance, how to identify them, and how to fix them. You'll learn to be proactive in establishing performance baselines using tools like Performance Monitor and Extended Events. You'll learn to recognize bottlenecks and defuse them before the phone rings. You'll learn some quick solutions too, but emphasis is on designing for performance and getting it right, and upon heading off trouble before it occurs. Delight your users. Silence that ringing phone. Put the principles and lessons from *SQL Server Query Performance Tuning* into practice today. Covers the in-memory features from Project Hekaton

Helps establish performance baselines and monitor against them

Guides in troubleshooting and eliminating of bottlenecks that frustrate users

The Definitive Guide to SQL Get comprehensive coverage of every aspect of SQL from three leading industry experts. Revised with coverage of the latest RDBMS software versions, this one-stop guide explains how to build, populate, and administer high-performance databases and develop robust SQL-based applications. *SQL: The Complete Reference, Third Edition* shows you how to work with SQL commands and statements, set up relational databases, load and modify database objects, perform powerful queries, tune performance, and implement reliable security policies. Learn how to employ DDL statements and APIs, integrate XML and Java scripts, use SQL objects, build web servers, handle remote access, and perform distributed transactions. Techniques for managing in-memory, stream, and embedded databases that run on today's mobile, handheld, and wireless devices are included in this in-depth volume. Build SQL-based relational databases and applications

Create, load, and modify database objects using SQL

Construct and execute simple, multitable, and summary

queries Implement security measures with authentication, privileges, roles, and views
Handle database optimization, backup, recovery, and replication Work with stored
procedures, functions, extensions, triggers, and objects Extend functionality using APIs,
dynamic SQL, and embedded SQL Explore advanced topics such as DBMS
transactions, locking mechanisms, materialized views, and two-phase commit protocol
Understand the latest market trends and the future of SQL

Beginning Queries with SQL is a friendly and easily read guide to writing queries with
the all-important — in the database world — SQL language. Anyone who does any work
at all with databases needs to know something of SQL, and that is evidenced by the
strong sales of such books as Learning SQL (O'Reilly) and SQL Queries for Mere
Mortals (Pearson). Beginning Queries with SQL is written by the author of Beginning
Database Design, an author who is garnering great reviews on Amazon due to the
clarity and succinctness of her writing.

Are you an SQL programmer that, like many, came to SQL after learning and writing
procedural or object-oriented code? Or have switched jobs to where a different brand of
SQL is being used, or maybe even been told to learn SQL yourself? If even one answer
is yes, then you need this book. A "Manual of Style" for the SQL programmer, this book
is a collection of heuristics and rules, tips, and tricks that will help you improve SQL
programming style and proficiency, and for formatting and writing portable, readable,
maintainable SQL code. Based on many years of experience consulting in SQL shops,
and gathering questions and resolving his students' SQL style issues, Joe Celko can
help you become an even better SQL programmer. Help you write Standard SQL
without an accent or a dialect that is used in another programming language or a
specific flavor of SQL, code that can be maintained and used by other people. Enable
you to give your group a coding standard for internal use, to enable programmers to
use a consistent style. Give you the mental tools to approach a new problem with SQL
as your tool, rather than another programming language — one that someone else might
not know!

"Master every business SQL skill you need! Grouping, totaling, summaries, modifying
databases, integrating data from multiple tables, and much more! Includes video
introduction, 2+ hours of expert audio commentary, 200+ animated figures, 100+ self
review questions, 100+ exercises, searching, hyperlinking, and more."--Container.
Delve inside the core SQL Server engine—and put that knowledge to work—with
guidance from a team of well-known internals experts. Whether database developer,
architect, or administrator, you'll gain the deep knowledge you need to exploit key
architectural changes—and capture the product's full potential. Discover how SQL
Server works behind the scenes, including: What happens internally when SQL Server
builds, expands, shrinks, and moves databases How to use event tracking—from
triggers to the Extended Events Engine Why the right indexes can drastically reduce
your query execution time How to transcend normal row-size limits with new storage
capabilities How the Query Optimizer operates Multiple techniques for troubleshooting
problematic query plans When to force SQL Server to reuse a cached query plan—or
create a new one What SQL Server checks internally when running DBCC How to
choose among five isolation levels and two concurrency models when working with
multiple concurrent users

Build smarter and efficient database application systems for your organization with SQL

Server 2017 Key Features Build database applications by using the development features of SQL Server 2017 Work with temporal tables to get information stored in a table at any time Use adaptive querying to enhance the performance of your queries Book Description Microsoft SQL Server 2017 is the next big step in the data platform history of Microsoft as it brings in the power of R and Python for machine learning and containerization-based deployment on Windows and Linux. Compared to its predecessor, SQL Server 2017 has evolved into Machine Learning with R services for statistical analysis and Python packages for analytical processing. This book prepares you for more advanced topics by starting with a quick introduction to SQL Server 2017's new features and a recapitulation of the possibilities you may have already explored with previous versions of SQL Server. The next part introduces you to enhancements in the Transact-SQL language and new database engine capabilities and then switches to a completely new technology inside SQL Server: JSON support. We also take a look at the Stretch database, security enhancements, and temporal tables. Furthermore, the book focuses on implementing advanced topics, including Query Store, columnstore indexes, and In-Memory OLTP. Towards the end of the book, you'll be introduced to R and how to use the R language with Transact-SQL for data exploration and analysis. You'll also learn to integrate Python code in SQL Server and graph database implementations along with deployment options on Linux and SQL Server in containers for development and testing. By the end of this book, you will have the required information to design efficient, high-performance database applications without any hassle. What you will learn Explore the new development features introduced in SQL Server 2017 Identify opportunities for In-Memory OLTP technology Use columnstore indexes to get storage and performance improvements Exchange JSON data between applications and SQL Server Use the new security features to encrypt or mask the data Control the access to the data on the row levels Discover the potential of R and Python integration Model complex relationships with the graph databases in SQL Server 2017 Who this book is for Database developers and solution architects looking to design efficient database applications using SQL Server 2017 will find this book very useful. In addition, this book will be valuable to advanced analysis practitioners and business intelligence developers. Database consultants dealing with performance tuning will get a lot of useful information from this book as well. Some basic understanding of database concepts and T-SQL is required to get the best out of this book.

Apply powerful window functions in T-SQL—and increase the performance and speed of your queries Optimize your queries—and obtain simple and elegant solutions to a variety of problems—using window functions in Transact-SQL. Led by T-SQL expert Itzik Ben-Gan, you'll learn how to apply calculations against sets of rows in a flexible, clear, and efficient manner. Ideal whether you're a database administrator or developer, this practical guide demonstrates ways to use more than a dozen T-SQL querying solutions to address common business tasks. Discover how to: Go beyond traditional query approaches to express set calculations more efficiently Delve into ordered set functions such as rank, distribution, and offset Implement hypothetical set and inverse distribution functions in standard SQL Use strategies for improving sequencing, paging, filtering, and pivoting Increase query speed using partitioning, ordering, and coverage indexing Apply new optimization iterators such as Window Spool Handle common issues such

as running totals, intervals, medians, and gaps

Conquer SQL Server 2019 administration—from the inside out Dive into SQL Server 2019 administration—and really put your SQL Server DBA expertise to work. This supremely organized reference packs hundreds of timesaving solutions, tips, and workarounds—all you need to plan, implement, manage, and secure SQL Server 2019 in any production environment: on-premises, cloud, or hybrid. Six experts thoroughly tour DBA capabilities available in SQL Server 2019 Database Engine, SQL Server Data Tools, SQL Server Management Studio, PowerShell, and Azure Portal. You'll find extensive new coverage of Azure SQL, big data clusters, PolyBase, data protection, automation, and more. Discover how experts tackle today's essential tasks—and challenge yourself to new levels of mastery. Explore SQL Server 2019's toolset, including the improved SQL Server Management Studio, Azure Data Studio, and Configuration Manager Design, implement, manage, and govern on-premises, hybrid, or Azure database infrastructures Install and configure SQL Server on Windows and Linux Master modern maintenance and monitoring with extended events, Resource Governor, and the SQL Assessment API Automate tasks with maintenance plans, PowerShell, Policy-Based Management, and more Plan and manage data recovery, including hybrid backup/restore, Azure SQL Database recovery, and geo-replication Use availability groups for high availability and disaster recovery Protect data with Transparent Data Encryption, Always Encrypted, new Certificate Management capabilities, and other advances Optimize databases with SQL Server 2019's advanced performance and indexing features Provision and operate Azure SQL Database and its managed instances Move SQL Server workloads to Azure: planning, testing, migration, and post-migration

Get a detailed look at the internal architecture of T-SQL with this comprehensive programming reference. Database developers and administrators get best practices, expert techniques, and code samples to master the intricacies of this programming language—solving complex problems with real-world solutions. Discover how to: Work with T-SQL and CLR user-defined functions, stored procedures, and triggers. Handle transactions, concurrency, and error handling. Efficiently use temporary objects, including temporary tables, table variables, and table expressions. Evaluate when to use set-based programming techniques and when to use cursors. Work with dynamic SQL in an efficient and secure manner. Treat date- and time-related data in a robust manner. Develop CLR user-defined types and learn about temporal support in the relational model. Use XML and XQuery and implement a dynamic schema solution. Work with spatial data using the new geometry and geography types and spatial indexes. Track access and changes to data using extended events, SQL Server Audit, change tracking, and change data capture. Use Service Broker for controlled asynchronous processing in database applications. All the book's code samples will be available for download from the companion Web site.

Dive deep inside the architecture of SQL Server 2012 Explore the core engine of Microsoft SQL Server 2012--and put that practical knowledge to work. Led by a team of SQL Server experts, you'll learn the skills you need to exploit key architectural features. Go behind the scenes to understand internal operations for creating, expanding, shrinking, and moving databases--whether you're a database developer, architect, or administrator. Discover how to: Dig into SQL Server 2012 architecture and configuration Use the right recovery model and control transaction logging Reduce query execution time through proper index design Track events, from triggers to the Extended Event Engine Examine internal structures with database console commands Transcend row-size limitations with special storage capabilities Choose the

right transaction isolation level and concurrency model Take control over query plan caching and reuse

Breathe new life into older applications by refactoring T-SQL queries and code using modern techniques. This book shows you how to significantly improve the performance of older applications by finding common anti-patterns in T-SQL code, then rewriting those anti-patterns using new functionality that is supported in current versions of SQL Server, including SQL Server 2019. The focus moves through the different types of database objects and the code used to create them, discussing the limitations and anti-patterns commonly found for each object type in your database. Legacy code isn't just found in queries and external applications. It's also found in the definitions of underlying database objects such as views and tables. This book helps you quickly find problematic code throughout the database and points out where and how modern solutions can replace older code, thereby making your legacy applications run faster and extending their lifetimes. Author Lisa Bohm explains the logic behind each anti-pattern, helping you understand why each pattern is a problem and showing how it can be avoided. Good coding habits are discussed, including guidance on topics such as readability and maintainability. What You Will Learn Find specific areas in code to target for performance gains Identify pain points quickly and understand why they are problematic Rewrite legacy T-SQL to reduce or eliminate hidden performance issues Write modern code with an awareness of readability and maintainability Recognize and correlate T-SQL anti-patterns with techniques for better solutions Make a positive impact on application user experience in your organization Who This Book Is For Database administrators or developers who maintain older code, those frustrated with complaints about slow code when there is so much of it to fix, and those who want a head start in making a positive impact on application user experience in their organization

Updated for the latest database management systems -- including MySQL 6.0, Oracle 11g, and Microsoft's SQL Server 2008 -- this introductory guide will get you up and running with SQL quickly. Whether you need to write database applications, perform administrative tasks, or generate reports, *Learning SQL, Second Edition*, will help you easily master all the SQL fundamentals. Each chapter presents a self-contained lesson on a key SQL concept or technique, with numerous illustrations and annotated examples. Exercises at the end of each chapter let you practice the skills you learn. With this book, you will: Move quickly through SQL basics and learn several advanced features Use SQL data statements to generate, manipulate, and retrieve data Create database objects, such as tables, indexes, and constraints, using SQL schema statements Learn how data sets interact with queries, and understand the importance of subqueries Convert and manipulate data with SQL's built-in functions, and use conditional logic in data statements Knowledge of SQL is a must for interacting with data. With *Learning SQL*, you'll quickly learn how to put the power and flexibility of this language to work.

Build agile and responsive business intelligence solutions Create a semantic model and analyze data using the tabular model in SQL Server 2016 Analysis Services to create corporate-level business intelligence (BI) solutions. Led by two BI experts, you will learn how to build, deploy, and query a tabular model by following detailed examples and best practices. This hands-on book shows you how to use the tabular model's in-memory database to perform rapid analytics—whether you are new to Analysis Services or already familiar with its multidimensional model. Discover how to:

- Determine when a tabular or multidimensional model is right for your project
- Build a tabular model using SQL Server Data Tools in Microsoft Visual Studio 2015
- Integrate data from multiple sources into a single, coherent view of company information
- Choose a data-modeling technique that meets your organization's performance and usability requirements
- Implement security by establishing administrative and data user roles
- Define and implement partitioning strategies to reduce processing time

Use Tabular Model Scripting Language (TMSL) to execute and automate administrative tasks

- Optimize your data model to reduce the memory footprint for VertiPaq
- Choose between in-memory (VertiPaq) and pass-through (DirectQuery) engines for tabular models
- Select the proper hardware and virtualization configurations
- Deploy and manipulate tabular models from C# and PowerShell using AMO and TOM libraries

Get code samples, including complete apps, at: <https://aka.ms/tabular/downloads>

About This Book

- For BI professionals who are new to SQL Server 2016 Analysis Services or already familiar with previous versions of the product, and who want the best reference for creating and maintaining tabular models.
- Assumes basic familiarity with database design and business analytics concepts.

Discussing new and existing features, SQL Server designer and administrator Michael Coles takes you on an expert guided tour of Transact-SQL functionality in SQL Server 2008 in his book, *Pro T-SQL 2008 Programmer's Guide*. Fully functioning examples and downloadable source code bring Coles' technically accurate and engaging treatment of Transact-SQL into your own hands. Step-by-step explanations ensure clarity, and an advocacy of best-practices will steer you down the road to success. *Pro T-SQL 2008 Programmer's Guide* is every developer's key to making full use of SQL Server 2008's powerful, built-in Transact-SQL language. Transact-SQL is the language developers and DBAs use to interact with SQL Server. It's used for everything from querying data, to writing stored procedures, to managing the database. New features in SQL Server 2008 include a spatial data type, SQLCLR integration, the MERGE statement, a dramatically improved and market-leading XML feature set, and support for encryption—all of which are covered in this book

Ace your preparation for Microsoft® Certification Exam 70-461 with this 2-in-1 Training Kit from Microsoft Press®. Work at your own pace through a series of lessons and practical exercises, and then assess your skills with practice tests on CD—featuring multiple, customizable testing options. Maximize your performance on the exam by learning how to:

- Create database objects
- Work with data
- Modify data
- Troubleshoot and optimize queries

You also get an exam discount voucher—making this book an exceptional value and a great career investment.

T-SQL insiders help you tackle your toughest queries and query-tuning problems Squeeze maximum performance and efficiency from every T-SQL query you write or tune. Four leading experts take an in-depth look at T-SQL's internal architecture and offer advanced practical techniques for optimizing response time and resource usage. Emphasizing a correct understanding of the language and its foundations, the authors present unique solutions they have spent years developing and refining. All code and techniques are fully updated to reflect new T-SQL enhancements in Microsoft SQL Server 2014 and SQL Server 2012. Write faster, more efficient T-SQL code:

- Move from procedural programming to the language of sets and logic
- Master an efficient top-down tuning methodology
- Assess algorithmic complexity to predict performance
- Compare data aggregation techniques, including new grouping sets
- Efficiently perform data-analysis calculations
- Make the most of T-SQL's optimized bulk import tools
- Avoid date/time pitfalls that lead to buggy, poorly performing code
- Create optimized BI statistical queries without additional software
- Use programmable objects to accelerate queries
- Unlock major performance improvements with In-Memory OLTP
- Master useful and elegant approaches to manipulating graphs

About This Book

For experienced T-SQL practitioners

Includes coverage updated from *Inside Microsoft SQL Server 2008 T-SQL Querying* and *Inside Microsoft SQL Server 2008 T-SQL Programming*

Valuable to developers, DBAs, BI professionals, and data scientists

Covers many MCSE 70-464 and MCSA/MCSE 70-461 exam topics

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