

## Optimizing Transact Sql Advanced Programming Techniques

Learn about business intelligence (BI) features in T-SQL and how they can help you with data science and analytics efforts without the need to bring in other languages such as R and Python. This book shows you how to compute statistical measures using your existing skills in T-SQL. You will learn how to calculate descriptive statistics, including centers, spreads, skewness, and kurtosis of distributions. You will also learn to find associations between pairs of variables, including calculating linear regression formulas and confidence levels with definite integration. No analysis is good without data quality. Advanced Analytics with Transact-SQL introduces data quality issues and shows you how to check for completeness and accuracy, and measure improvements in data quality over time. The book also explains how to optimize queries involving temporal data, such as when you search for overlapping intervals. More advanced time-oriented information in the book includes hazard and survival analysis. Forecasting with exponential moving averages and autoregression is covered as well. Every web/retail shop wants to know the products customers tend to buy together. Trying to predict the target discrete or continuous variable with few input variables is important for practically every type of business. This book helps you understand data science and the advanced algorithms use to analyze data, and terms such as data mining, machine learning, and text mining. Key to many of the solutions in this book are T-SQL window functions. Author Dejan Sarka demonstrates efficient statistical queries that are based on window functions and optimized through algorithms built using mathematical knowledge and creativity. The formulas and usage of those statistical procedures are explained so you can understand and modify the techniques presented. T-SQL is supported in SQL Server, Azure SQL Database, and in Azure Synapse Analytics. There are so many BI features in T-SQL that it might become your primary analytic database language. If you want to learn how to get information from your data with the T-SQL language that you already are familiar with, then this is the book for you. What You Will Learn Describe distribution of variables with statistical measures Find associations between pairs of variables Evaluate the quality of the data you are analyzing Perform time-series analysis on your data Forecast values of a continuous variable Perform market-basket analysis to predict customer purchasing patterns Predict target variable outcomes from one or more input variables Categorize passages of text by extracting and analyzing keywords Who This Book Is For Database developers and database administrators who want to translate their T-SQL skills into the world of business intelligence (BI) and data science. For readers who want to analyze large amounts of data efficiently by using their existing knowledge of T-SQL and Microsoft's various database platforms such as SQL Server and Azure SQL Database. Also for readers who want to improve their querying by learning new and original optimization techniques.

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](https://MicrosoftPressStore.com/TSQLWindowFunctions/downloads)

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

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.

SQL for Smarties was hailed as the first book devoted explicitly to the advanced techniques needed to transform an experienced SQL programmer into an expert. Now, 10 years later and in the third edition, this classic still reigns supreme as the book written by an SQL master that teaches future SQL masters. These are not just tips and techniques; Joe also offers the best solutions to old and new challenges and conveys the way you need to think in order to get the most out of SQL programming efforts for both correctness and performance. In the third edition, Joe features new examples and updates to SQL-99, expanded sections of Query techniques, and a new section on schema design, with the

same war-story teaching style that made the first and second editions of this book classics. Expert advice from a noted SQL authority and award-winning columnist, who has given ten years of service to the ANSI SQL standards committee and many more years of dependable help to readers of online forums. Teaches scores of advanced techniques that can be used with any product, in any SQL environment, whether it is an SQL-92 or SQL-99 environment. Offers tips for working around system deficiencies. Continues to use war stories--updated!--that give insights into real-world SQL programming challenges.

Demonstrates the SQL Server 2000 programming fundamentals, including database structures and TransactSQL.

Included on two CD-ROMs are a 120 day evaluation copy of Microsoft SQL Server 2000 Enterprise Edition, a searchable electronic copy of the book, sample scripts, white papers and articles and tools and utilities.

\* An essential book for new and migration projects for SQL Server 2005: will ensure that that such projects have a well-designed database and secure, optimized data access strategies right from the start. \* Describes all new SQL Server 2005 features related to physical database design and provides completely new chapters on designing for fast data access, and exploiting .NET code in the database for optimum distribution of application logic. \* An excellent foundation for MCAD/MCSE/MCDBA Database Design and Implementation exam. \* Deep experience and advice, along with many tips or tricks, from an MVP lead author with over ten years of experience with SQL Server.

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.

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.

If you want to learn how to write stored procedures and triggers for Microsoft SQL Server, Code Centric: T-SQL Programming with Stored Procedures and Triggers is the book for you. You'll learn real-world coding and how to build non-trivial applications. All of the examples covered in the book are available for download, making it easier to work through over 5,000 lines of sample code. While there is extensive coverage of the new functionality in SQL Server 2000—such as UDFs (user-defined functions)—you can use this book effectively for virtually any version of SQL Server 6.x, 7.0, or 2000.

A poorly performing database application not only costs users time, but also has an impact on other applications running on the same computer or the same network. SQL Tuning provides an essential next step for SQL developers and database administrators who want to extend their SQL tuning expertise and get the most from their database applications. There are two basic issues to focus on when tuning SQL: how to find and interpret the execution plan of an SQL statement and how to change SQL to get a specific alternate execution plan. SQL Tuning provides answers to these questions and addresses a third issue that's even more important: how to find the optimal execution plan for the query to use. Author Dan Tow outlines a timesaving method he's developed for finding the optimum execution plan--rapidly and systematically--regardless of the complexity of the SQL or the database platform being used. You'll learn how to understand and control SQL execution plans and how to diagram SQL queries to deduce the best execution plan for a query. Key chapters in the book include exercises to reinforce the concepts you've learned. SQL Tuning concludes by addressing special concerns and unique solutions to "unsolvable problems." Whether you are a programmer who develops SQL-based applications or a database administrator or other who troubleshoots poorly tuned applications, SQL Tuning will arm you with a reliable and deterministic method for tuning your SQL queries to gain optimal performance.

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

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

Buy the print version of Microsoft SQL Server 2012 Unleashed and get the eBook version for free! eBook version includes chapters 44-60 not included in the print. See inside the book for access code and details. With up-to-the-minute content, this is the industry's most complete, useful guide to SQL Server 2012. You'll find start-to-finish coverage of SQL Server's core database server and management capabilities: all the real-world information, tips, guidelines, and samples you'll need to create and manage complex database solutions. The additional online chapters add extensive coverage of SQL Server Integration Services, Reporting Services, Analysis Services, T-SQL programming, .NET Framework integration, and much more. Authored by four expert SQL Server administrators, designers, developers, architects, and consultants, this book reflects immense experience with SQL Server in production environments. Intended for intermediate-to-advanced-level SQL Server professionals, it focuses on the product's most complex and powerful capabilities, and its newest tools and features. Understand SQL Server 2012's newest features, licensing changes, and capabilities of each edition Manage SQL Server 2012 more effectively with SQL Server Management Studio, the SQLCMD command-line query tool, and Powershell Use Policy-Based Management to centrally configure and operate SQL Server Utilize the new Extended Events trace capabilities within SSMS Maximize performance by optimizing design, queries, analysis, and workload management Implement new best practices for SQL Server high availability Deploy AlwaysOn Availability Groups and Failover Cluster Instances to achieve enterprise-class availability and disaster recovery Leverage new business intelligence improvements, including Master Data Services, Data Quality Services and Parallel Data Warehouse Deliver better full-text search with SQL Server 2012's new Semantic Search Improve reporting with new SQL Server 2012 Reporting Services features Download the following from [informit.com/title/9780672336928](http://informit.com/title/9780672336928): Sample databases and code examples

Offers tips for improving the performance of any SQL database, no matter what the platform. Written for experienced database administrators familiar with SQL, the book identifies the similarities and differences of eight DBMSs, including Oracle 9i, IBM DB2 7.2, and Microsoft SQL server 2000. It provides strategies for refining sorts, subqueries, columns, tables, indexes, constraints, and locks. Annotation copyrighted by Book News, Inc., Portland, OR

Harness the powerful new SQL Server 2012 Microsoft SQL Server 2012 is the most significant update to this product since 2005, and it may change how database administrators and developers perform many aspects of their jobs. If you're a database administrator or developer, Microsoft SQL Server 2012 Bible teaches you everything you need to take full advantage of this major release. This detailed guide not only covers all the new features of SQL Server 2012, it also shows you step by step how to develop top-notch SQL Server databases and new data connections and keep your databases performing at peak. The book is crammed with specific examples, sample code, and a host of tips, workarounds, and best practices. In addition, downloadable code is available from the book's companion web site, which you can use to jumpstart your own projects. Serves as an authoritative guide to Microsoft's SQL Server 2012 for database administrators and developers Covers all the software's new features and capabilities, including SQL Azure for cloud computing, enhancements to client connectivity, and new functionality that ensures high-availability of mission-critical applications Explains major new changes to the SQL Server Business Intelligence tools, such as Integration, Reporting, and Analysis Services Demonstrates tasks both graphically and in SQL code to enhance your learning Provides source code from the companion web site, which you can use as a basis for your own projects Explores tips, smart workarounds, and best practices to help you on the job Get thoroughly up to speed on SQL Server 2012 with Microsoft SQL Server 2012 Bible.

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.

Written for Web site administrators, this book is a complete guide to incorporating a database into an existing Web site or building a site from the ground up around a database. Specific, in-depth coverage is given for integrating Sybase System 11 into a Web site. The CD-ROM software toolkit contains complete management and performance tools.

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

Take Your PL/SQL Programming Skills to the Next Level Build robust database-centric PL/SQL applications quickly and effectively. Oracle Database 12c PL/SQL Advanced Programming Techniques shows you how to write and deploy Java libraries inside Oracle Database 12c, use the utl\_file and DBMS\_SCHEDULER packages, and create external tables and external procedures. Application security, performance tuning, and Oracle Database In-Memory are also covered in this Oracle Press guide. Configure, deploy, and troubleshoot Java libraries for Oracle object types Use the utl\_file package to manage unstructured and structured data Develop and deploy Java I/O libraries and wrap them with PL/SQL Create and use external tables Implement high-speed data transfer Harden database systems and develop secure applications Manage complex schedules and jobs with the DBMS\_SCHEDULER package Optimize PL/SQL for use in performance tuning Create and deploy external procedures Implement the Oracle Database In-Memory column store feature

The industry's most complete, useful, and up-to-date guide to SQL Server 2014. You'll find start-to-finish coverage of SQL Server's core database server and management capabilities: all the real-world information, tips, guidelines, and examples you'll need to install, monitor, maintain, and optimize the most complex database environments. The provided examples and sample code provide plenty of hands-on opportunities to learn more about SQL Server and create your own viable solutions. Four leading SQL Server experts present deep practical insights for administering SQL Server, analyzing and optimizing queries, implementing data warehouses, ensuring high availability, tuning performance, and much more. You will benefit from their behind-the-scenes look into SQL Server, showing what goes on behind the various wizards and GUI-based tools. You'll learn how to use the underlying SQL commands to fully unlock the power and capabilities of SQL Server. Writing for all intermediate-to-advanced-level SQL Server professionals, the authors draw on immense production experience with SQL Server. Throughout, they focus on successfully applying SQL Server 2014's most powerful capabilities and its newest tools and features. Detailed information on how to... Understand SQL Server 2014's new features and each edition's capabilities and licensing Install, upgrade to, and configure SQL Server 2014 for better performance and easier management Streamline and automate key administration tasks with Smart Admin Leverage powerful new backup/restore options: flexible backup to URL, Managed Backup to Windows Azure, and encrypted backups Strengthen security with new features for enforcing "least privilege" Improve performance with updateable columnstore indexes, Delayed Durability, and other enhancements Execute queries and business logic more efficiently with memoryoptimized tables, buffer pool extension, and natively-compiled stored procedures Control workloads and Disk I/O with the Resource Governor Deploy AlwaysOn Availability Groups and Failover Cluster Instances to achieve enterprise-class availability and disaster recovery Apply new Business Intelligence improvements in Master Data Services, data quality, and Parallel Data Warehouse

Best preparation for Microsoft Certification Exam 70-461, job interview & successful database developer career. Exam 70-461: Querying Microsoft SQL Server 2012. The book covers all the official published Microsoft exam topics. Very good chance of passing the certification exam after studying the book thoroughly. Study & practice at your own pace through a series of illustrated lessons with practical database diagrams & T-SQL scripts. Contents at a Glance CHAPTER 1: SQL Server Sample & System Databases CHAPTER 2: Installing SQL Server 2012 CHAPTER 3: Structure of the SELECT Statement CHAPTER 4: SQL Server Management Studio CHAPTER 5: Basic Concepts of Client-Server Computing CHAPTER 6: Fundamentals of Relational Database Design CHAPTER 7: Normal Forms & Database Normalization CHAPTER 8: Functional Database Design CHAPTER 9: Advanced Database Design Concepts CHAPTER 10: The Art of Database Design CHAPTER 11: New Programming Features in SS 2012 CHAPTER 12: JOINing Tables with INNER & OUTER JOINS CHAPTER 13: Basic SELECT Statement Syntax & Examples CHAPTER 14: Subqueries in SELECT Statements CHAPTER 15: SELECT INTO Table Creation & Population CHAPTER 16: Modify Data - INSERT, UPDATE, DELETE & MERGE CHAPTER 17: The Magic of Transact-SQL Programming CHAPTER 18: Exporting & Importing Data CHAPTER 19: Maintaining Data Integrity in the Enterprise CHAPTER 20: Query & Stored Procedure Optimization CHAPTER 21: Advanced T-SQL Programming Topics SPECIAL: How to Prepare for the Exam & Job Interview. Relational database design and SQL (Structured Query Language) programming teach-by-practical-diagrams-&-examples book for developers, programmers, systems analysts and project managers who are new to relational database and client/server technologies. Also for database developers, database designers and database administrators (DBA), who know some SQL programming and database design, and who wish to refresh & expand their RDBMS design & development technology horizons. The book has special orientation for passing Exam 70-461 (Querying Microsoft SQL Server 2012), job interview and performing well on the job. Familiarity with at least one computer programming language, Windows file system & Excel is assumed. Since the book is career advancement oriented, it has a great number of 3NF database design examples with metadata explanations along with practical SQL queries (over 1,600 SELECT queries) and T-SQL scripts, plenty to learn indeed. Great

emphasis is placed on explaining the FOREIGN KEY - PRIMARY KEY constraints among tables, the connections which make the collection of individual tables a database. The database diagrams and queries are based on historic and current SQL Server sample databases: pubs (PRIMARY KEYs 9, FOREIGN KEYs 10), Northwind (PRIMARY KEYs 13, FOREIGN KEYs 13) and the latest AdventureWorks series. Among them: AdventureWorks, AdventureWorks2008, AdventureWorks2012 (PRIMARY KEYs 71, FOREIGN KEYs 90), & AdventureWorksDW2012 (PRIMARY KEYs 27, FOREIGN KEYs 44). The last one is a data warehouse database which is the basis for multi-dimensional OLAP cubes. Sample databases installation instructions are included. The book teaches through vivid database diagrams and T-SQL queries how to think in terms of sets at a very high level, focusing on set-based operations instead of loops like in procedural programming languages. There is a chapter dedicated to the new programming features of SQL Server 2012 and XML. The best way to master T-SQL programming is to type the query in your own SQL Server Management Studio Query Editor, test it, examine it, change it and study it. Wouldn't it be easier just to copy & paste it? It would, but the learning value would diminish rapidly. You need to feel relational database design and the SQL language in your DNA. SQL queries must "pour" out from your fingers into the keyboard.

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

Joe Celko's SQL Puzzles and Answers, Second Edition, challenges you with his trickiest puzzles and then helps solve them with a variety of solutions and explanations. Author Joe Celko demonstrates the thought processes that are involved in attacking a problem from an SQL perspective to help advanced database programmers solve the puzzles you frequently face. These techniques not only help with the puzzle at hand, but also help develop the mindset needed to solve the many difficult SQL puzzles you face every day. This updated edition features many new puzzles; dozens of new solutions to puzzles; and new chapters on temporal query puzzles and common misconceptions about SQL and RDBMS that leads to problems. This book is recommended for database programmers with a good knowledge of SQL. A great collection of tricky SQL puzzles with a variety of solutions and explanations Uses the proven format of puzzles and solutions to provide a user-friendly, practical look into SQL programming problems - many of which will help users solve their own problems New edition features: Many new puzzles added!, Dozens of new solutions to puzzles, and using features in SQL-99, Code is edited to conform to SQL STYLE rules, New chapter on temporal query puzzles, New chapter on common misconceptions about SQL and RDBMS that leads to problems

Encoded characteristic functions (ECF) is a new, innovative SQL programming methodology which allows programmers to encode conditional logic as scalar expressions within certain clauses. These extremely powerful techniques are presented by the authors of ECF in "Optimizing Transact-SQL".

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

This is the industry's most comprehensive and useful guide to SQL Server 2008 and 2008 R2. It presents start-to-finish coverage of SQL Server's core database server and management capabilities, plus complete introductions to Integration, Reporting, and Analysis Services, application development, and much more. Four expert SQL Server administrators, developers, and consultants have packed this book with real-world information, tips, guidelines, and samples drawn from their own extensive experience creating and managing complex database solutions. Writing for intermediate-to-advanced-level SQL Server professionals, they focus on the product's most complex and powerful capabilities, and its newest tools and features. For example, you'll find invaluable information on administering SQL Server more efficiently, analyzing and optimizing queries, implementing data warehouses, ensuring high availability, and tuning performance. The accompanying CD-ROM contains an extraordinary library of practical tools and information including sample databases and all code examples. Whether you're responsible for SQL Server 2008 analysis, design, implementation, support, administration, or troubleshooting, no other book offers you this much value. Understand the Microsoft SQL Server 2008 environment, R2's newest features, and each edition's capabilities Manage SQL Server 2008 more effectively with SQL Server Management Studio, the SQLCMD command-line query tool, and Powershell Efficiently manage security, users, backup/restore, replication, Database Mail, and database objects—from tables and indexes to stored procedures and triggers Increase availability with clustering, database mirroring, and other features Use new Policy-Based Management to centrally configure and operate SQL Server throughout the organization Use SQL Server Profiler to capture queries and identify bottlenecks Improve performance by optimizing queries, design more effective databases, and manage workloads with the new Resource Governor Develop applications using SQL Server 2008's enhancements to T-SQL and SQLCLR, .NET integration, LINQ to SQL, XML, and XQuery Make the most of Analysis Services, Integration Services, and Reporting Services—especially Microsoft's new R2 reporting improvements Improve data security using Column-level and Transparent Data Encryption CD-ROM includes: 15 additional chapters Code samples, scripts, and databases utilized within the book Free version of SQL Shot (performance & tuning software)

Transact-SQL, or T-SQL, is Microsoft Corporation's powerful implementation of the ANSI standard SQL database query language, which was designed to retrieve, manipulate, and add data to relational database management systems (RDBMS). You may already have a basic idea of what SQL is used for, but you may not have a good understanding of the concepts behind relational databases and the purpose of SQL. This book will help you build a solid foundation of understanding, beginning with core relational database concepts and continuing to reinforce those concepts with real-world T-SQL query applications. If you are familiar with relational database concepts but are new to Microsoft SQL Server or the T-SQL language, this book will teach you the basics from the ground up. If you're familiar with earlier versions of SQL Server, it will get you up-to-speed on the newest features. And if you know SQL Server 2005, you'll learn about some exciting new capabilities in SQL Server 2008. Information

Technology professionals in many different roles use T-SQL. Our goal is to provide a guide and a reference for IT pros across the spectrum of operational database solution design, database application development, and reporting and business intelligence solutions. Database solution designers will find this book to be a thorough introduction and comprehensive reference for all aspects of database modeling, design, object management, query design, and advanced query concepts. Application developers who write code to manage and consume SQL Server data will benefit from our thorough coverage of basic data management and simple and advanced query design. Several examples of ready-to-use code are provided to get you started and to continue to support applications with embedded T-SQL queries. Report designers will find this book to be a go-to reference for report query design. You will build on a thorough introduction to basic query concepts and learn to write efficient queries to support business reports and advanced analytics. Finally, database administrators who are new to SQL Server will find this book to be an all-inclusive introduction and reference of mainstream topics. This can assist you as you support the efforts of other team members. Beyond the basics of database object management and security concepts, we recommend *Beginning SQL Server 2005 Administration* and *Beginning SQL Server 2008 Administration* from Wrox, co-authored in part by the same authors. This book introduces the T-SQL language and its many uses, and serves as a comprehensive guide at a beginner through intermediate level. Our goal in writing this book was to cover all the basics thoroughly and to cover the most common applications of T-SQL at a deeper level. Depending on your role and skill level, this book will serve as a companion to the other Wrox books in the Microsoft SQL Server Beginning and Professional series.. This book will help you to learn: How T-SQL provides you with the means to create tools for managing databases of different size, scope, and purpose Various programming techniques that use views, user-defined functions, and stored procedures Ways to optimize query performance How to create databases that will be an essential foundation to applications you develop later Each section of this book organizes topics into logical groups so the book can be read cover-to-cover or can be used as a reference guide for specific topics. We start with an introduction to the T-SQL language and data management systems, and then continue with the SQL Server product fundamentals. This first section teaches the essentials of the SQL Server product architecture and relational database design principles. This section (Chapters 1–3) concludes with an introduction to the SQL Server administrator and developer tools. The next section, encompassing Chapters 4 through 9, introduces the T-SQL language and teaches the core components of data retrieval, SQL functions, aggregation and grouping, and multi-table queries. We start with the basics and build on the core structure of the SQL SELECT statement, progressing to advanced forms of SELECT queries. Chapter 10 introduces transactions and data manipulation. You will learn how the INSERT, UPDATE, and DELETE statements interact with the relational database engine and transaction log to lock and modify data rows with guaranteed consistency. You will not only learn to use correct SQL syntax but will understand how this process works in simple terms. More advanced topics in the concluding section will teach you to create and manage T-SQL programming objects, including views, functions, and stored procedures. You learn to optimize query performance and use T-SQL in application design, applying the query design basics to real-world business solutions. Chapter 15 contains a complete tutorial on using SQL Server 2008 Reporting Services to visualize data from the T-SQL queries you create. The book concludes with a comprehensive set of reference appendixes for command syntax, system stored procedures, information schema views, file system commands, and system management commands. The material in this book applies to all editions of Microsoft SQL Server 2005 and 2008. To use all the features discussed, we recommend that you install the Developer Edition, although you can also use the Enterprise, Standard, or Workgroup editions. SQL Server 2005 Developer Edition or SQL Server 2008 Developer Edition can be installed on a desktop computer running Windows 2000, Windows XP, or Windows Vista. You can also use Windows 2000 Server, Windows Server 2003, or Windows Server 2008 with the Enterprise or Standard edition. The SQL Server client tools must be installed on your desktop computer and the SQL Server relational database server must be installed on either your desktop computer or on a remote server with network connectivity and permission to access. Consult [www.microsoft.com/sql](http://www.microsoft.com/sql) for information about the latest service packs, specific compatibilities, and minimum recommend system requirements. The examples throughout this book use the following sample databases, which are available to download from Microsoft: the sample database for SQL Server 2005 is called AdventureWorks, and the sample database for SQL Server 2008 is called AdventureWorks2008. Because the structure of these databases differs significantly, separate code samples are provided throughout the book for these two version-specific databases. An example using the AdventureWorks2008DW database for SQL Server 2008 is also used in Chapter 15.

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

You've learned the fundamentals of SQL programming. You've done some basic data manipulation that makes it feel SQL is now your thing. Yet, you're not feeling competent enough to play around with the complexity and versatility of the language, or based on your basic SQL programming skills, you think SQL is not as robust of a programming language as people preach. The truth is, SQL can be a tricky programming language if not well mastered. The programming language is a verbose one that requires adequate learning and years of practice to properly learn a good number of the tricks and techniques offered by the language. This is the motivation with which I wrote this book. If you want to go past the basic SELECT, INSERT, UPDATE and DELETE statements in SQL programming at a pace that saves you time without getting you tired of the learning process because of unclear complexities, then this book is for you. This book doesn't try to compress one year of learning into one month but rather explicitly covers advanced techniques used in SQL programming, for you to better understand and be able to use them in practice more quickly. The examples used to explain several concepts in this book mimic real-life scenarios. This way, you can imagine yourself working on an actual company's database so that your first or next experience with professionally using SQL will not be vague and confusing. Standard statements are used to provide solutions to the problems defined in this book, and I use DBMS-specific statements where appropriate. Some of the techniques covered in this book include but are not limited to: creating and using stored routines such as functions and procedures, using correlated and uncorrelated sub queries, using loops and conditional statement to handle complex logic, using triggers to monitor data manipulations that occurs in a database to ensure data integrity and avoid inappropriate events from making changes to the database, how to protect database from SQL injection and database administration. This book also provides insight into some basic SQL techniques that are useful but not commonly emphasized. These include transactions, rollback, save points, etc. I also provide you with a reference page for additional information beyond what the book offers.

*Database Administration, Second Edition*, is the definitive, technology-independent guide to the modern discipline of database administration. Packed with best practices and proven solutions for any database platform or environment, this text fully reflects the field's latest realities and challenges. Drawing on more than thirty years of database experience, Mullins focuses on problems that today's DBAs

actually face, and skills and knowledge they simply must have. Mullins presents realistic, thorough, and up-to-date coverage of every DBA task, including creating database environments, data modeling, normalization, design, performance, data integrity, compliance, governance, security, backup/recovery, disaster planning, data and storage management, data movement/distribution, data warehousing, connectivity, metadata, tools, and more. This edition adds new coverage of “Big Data,” database appliances, cloud computing, and NoSQL. Mullins includes an entirely new chapter on the DBA’s role in regulatory compliance, with substantial new material on data breaches, auditing, encryption, retention, and metadata management. You’ll also find an all-new glossary, plus up-to-the-minute DBA rules of thumb.

A guide to SQL covers such topics as retrieving records, metadata queries, working with strings, data arithmetic, date manipulation, reporting and warehousing, and hierarchical queries.

Provides detailed information about Transact-SQL programming and shows specific differences between the Microsoft and Sybase versions of the language.

Task-based guide delivers the SQL know-how to employ and maintain any SQL-based database.

This guide contains a wealth of solutions to problems that SQL Server programmers face. The recipes in the book range from those that show how to perform simple tasks to ones that are more complicated.

Demonstrates important concepts and offers working Transact-SQL code, covering data filtering, DDL, DML, statistical functions, runs and sequences, transactions, stored procedures and triggers, and performance tuning.

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.

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.

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