

Writing T-SQL Queries in SQL Server 2008

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Course description: In this course, you will learn how to build basic queries using Transact-SQL, the language of SQL Server. Then, you will learn how to build effective views, stored procedures, triggers, and user-defined functions, using Transact-SQL. You will learn about the new enhancements to the Transact-SQL programming language including improved support for error handling and hierarchical queries.

Course outline:

Tour of SQL 08

- Introduction
- Editions
- Server Components
- Management Tools
- Documentation
- Feature Pack
- SSMS
- Demo: SSMS
- Summary

Server Activity

- Introduction
- Demo: Activity Monitor
- Tables, Queries, Views
- Demo: Table Designer
- Demo: Template Explorer
- SSIS
- BIDS
- Demo: BIDS
- Reporting Services
- SSAS
- Summary

Relational Design

- Introduction
- Design Principles
- Key Terms
- Relational Theory
- Surrogate Keys
- Demo: DB Design
- Data Normalization
- First Normal Form
- Second Normal Form

- Third Normal Form
- Computed Columns
- Key Dependence
- Postal Lookup Tables
- Beyond Normal Forms
- Referential Integrity
- Relationships
- One-to-One
- Enforcing Integrity
- Cascading
- Cascading Updates
- Cascading Deletes
- Cascading Actions
- Beyond Normalization
- Business Rules
- Summary

Implementation

- Introduction
- Database Storage
- Storage
- Data Integrity
- Recovery Models
- Demo: Implementation
- Rules for Identifiers
- Demo: DB Properties
- Summary

Data Types

- Introduction
- Character-based
- Numeric Data
- Date and Time
- Binary Types

- Identifier Types
- sql_variant
- Variable-only
- XML Type
- System SQLCLR Types
- Demo: Data Types
- Creating Constraints
- Demo: Constraints
- Triggers
- Creating Indexes
- Demo: Index
- Summary

Management Studio

- Introduction
- Demo: Connecting
- Configure Options
- Customize Toolbars
- Menu Items
- Query Designer
- Projects and Solutions
- Object Explorer
- Filter Nodes
- View Dependencies
- Object Details
- Designers
- Summary

Query Editor

- Introduction
- Demo: Overview
- Editing Options
- Script Table as
- Stored Procedure

- Debugging
- Template Explorer
- Execution Plans
- Results to a File
- SQLCMD Mode
- New Project
- Working Offline
- Books Online
- Demo: Help Features
- Summary

Transact SQL

- Introduction
- T-SQL Extensions
- Batches and Scripts
- Demo: Batches
- Data Type Precedence
- Demo: Converting Types
- Built-In Functions
- Working with Nulls
- Demo: Nulls
- Summary

Handling Functions

- Introduction
- Demo: ISNUMERIC
- Using RAND
- ROUND
- REPLACE
- STUFF
- LEN, LEFT, RIGHT
- SUBSTRING
- CHARINDEX
- PATINDEX

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- SPACE
- CHAR and ASCII
- LOWER and UPPER
- LTRIM and RTRIM
- GETDATE
- MONTH, DATE, YEAR
- DATEPART
- DATENAME
- DATE Math
- Global Functions
- Summary

Controlling Flow

- Introduction
- Demo: IF...ELSE
- BEGIN...END
- GOTO
- RETURN
- CASE
- WHILE
- WAITFOR
- Ranking Results
- Demo: Ranking
- Summary

Transactions

- Introduction
- Passing the ACID Test
- Transaction Types
- Transaction Details
- Isolation Levels
- Locking
- Viewing Lock Info
- Avoiding Blocks
- Demo: Locking
- Deadlocks
- Preventing
- Applications
- Designing
- Efficient Transactions
- Compile\Runtime Errors
- Demo: Errors
- Summary

Explicit Transactions

- Introduction
- Syntax
- Demo: Explicit
- Error Handling
- @@ERROR
- Demo: @@ERROR
- Stored Procedures
- Demo: Stored Procedure
- Summary

Raise Error Try/Catch

- Introduction

- Demo: RAISERROR
- User-Defined Errors
- TRY/CATCH Overview
- Demo: TRY/CATCH
- Error Chaining
- Errors Not Handled
- Demo: Error Info
- XACT_STATE
- Demo: XACT_STATE
- Summary

Data Selection Queries

- Introduction
- Transact-SQL
- Schemas and Naming
- Demo: T-SQL Code
- Three-Valued Logic
- Demo: Nulls
- Summary

Sorting

- Introduction
- Demo: Order By
- Group By Clause
- Aggregate Functions
- Demo: Count Rows
- Demo: Top
- Joining Tables
- Demo: Join Tables
- Demo: Outer Join
- Demo: Inner & Outer
- Summary

HierarchyID

- Introduction
- Overview
- Indexing a Hierarchy
- Depth-first
- Breadth-first
- Manipulating
- Demo: HierarchyID
- Sparse Columns
- Restrictions
- Column Sets
- Restrictions
- Recommendations
- Demo: Sparse Columns
- Column Sets
- Filtered Indexes
- Using Filtered Indexes
- Demo: Filtered Indexes
- Summary

FileStream Spatial Data

- Introduction
- FILESTREAM Storage
- Data Access Methods

- Gotchas & Limitations
- Demo: FILESTREAM
- Spatial Data
- Geometry vs. Geography
- Geometric Plane
- Mother Ship
- Projection Distortion
- Data Standards
- Types of Spatial Data
- Spatial Objects
- Geospatial Data
- Demo: Spatial Data
- Summary

Complex Queries

- Introduction
- NULL Values
- SQLTypes and CLR Types
- Demo: Uninitialized Variables
- ANSI_NULLS Option
- Demo: ANSI_NULLS
- NULLS and SQLBoolean
- Demo: SQLBoolean
- Assigning NULL Values
- CLR Integration
- Direct Assignment
- NULLIF
- COALESCE
- Demo: Assigning NULLS
- Summary

Ranking

- Introduction
- Ranking Grouped Data
- ROW_NUMBER
- RANK
- DENSE_RANK
- NTILE
- Demo: ROW_NUMBER
- RANK
- DENSE_RANK
- NTILE
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Correlated Subqueries

- Introduction
- Writing Subqueries
- Subquery Basics
- Correlated Subquery
- Demo: Subquery
- Correlated
- WHERE Clause
- ANY, SOME, ALL
- HAVING Clause
- Updates

- Demo: UPDATE
- Joins and Temp Tables
- Demo: Using a Join
- Summary

Common Table Expressions

- Introduction
- When to Use CTEs
- CTE Syntax
- Overview
- Demo: Defining a CTE
- Recursive CTEs
- Demo: Recursive CTE
- Summary

Modifying Data

- Introduction
- Inserting Data
- Demo: INSERT
- Temporary Tables
- Demo: Temp Tables
- Uses for Temp Tables
- Demo: Global Temps
- Summary

Updating Data

- Introduction
- Demo: Update Statement
- Demo: With Transaction
- Demo: Deleting Data
- Transaction Isolation
- Isolation Levels
- Blocking and Deadlocks
- Deadlocks
- Demo: Isolation Levels
- Snapshot Isolation
- Caveats
- Demo: Snapshot Isolation
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XML Data Type

- Introduction
- Overview
- Declaring XML Objects
- Loading Data
- SELECT...FOR XML
- OPENROWSET
- Demo: Direct Assign
- Indexing Columns
- Primary Indexes
- Secondary Indexes
- Demo: Indexes
- Summary

XML Schema Collections

- Introduction
- Overview
- Typed and Untyped XML
- Schema Basics

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- Demo: XSD
- Lax Validation
- Full DateTime Support
- Registering Schemas
- Viewing Stored Schemas
- Collections
- Namespaces
- Components
- Namespace
- Demo: Schema Info
- Summary

Querying XML

- Introduction
- Overview
- Using XQuery
- query()
- value()
- exist()
- modify()
- nodes()
- Using XQuery
- Demo: XQuery Methods
- FLWOR
- FOR XML
- Demo: FOR XML
- OPENXML
- Demo: OPENXML
- Summary

Best Practices

- Introduction
- Overview
- Relational vs. XML
- Storing XML
- Reasons to Index
- Querying
- Summary

Views

- Introduction
- Advantages of Views
- Views and Security
- Creating Views
- View Rules
- Views and ORDER BY
- Syntax and Options
- CHECK OPTION
- Other Options
- Tools for Creating Views
- Demo: Creating Views
- From Templates
- Edit Views
- View Examples
- Nesting Views

- CTE
- Encrypting
- Summary

Updating View Data

- Introduction
- Updating Rules
- Updating Behavior
- Demo: Limiting Updates
- Using Computed Columns
- Demo: Computed Columns
- Indexed Views
- How Indexed View Work
- Performance Benefits
- Data Modifications
- Requirements
- Demo: Indexed Views
- Partitioned Views
- Summary

SQL Server Partitions

- Introduction
- Overview
- Why Partition?
- Partitioning
- 6.5 and Earlier
- SQL Server 7.0
- SQL Server 2000
- SQL Server 2005/2008
- SQL Server 2008
- Range Partitions
- Partition Key
- Multiple Filegroups
- Index Partitioning
- Summary

Creating Partitioned Tables

- Introduction
- Overview
- LEFT and RIGHT
- Datetime Values
- RANGE RIGHT
- Demo: Partition Function
- Partition Scheme
- Demo: Filegroups
- Partition Scheme
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- Partitioned Index
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Querying Partitions

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- Overview
- \$PARTITION Function
- Demo: \$PARTITION
- Catalog Views

- sys.partition_functions
- sys.partition_range_values
- sys.partition_schemes
- sys.data_spaces
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Managing Partitions

- Introduction
- Overview
- Tables or Indexes
- Partition Function
- Splitting Partitions
- Merging Partitions
- Switching Partitions
- Partition Scheme
- Backing Up Partitions
- Performance
- Join Queries
- Multiple Disk Drives
- Lock Escalation
- Summary

User Defined Functions

- Introduction
- Scalar Functions
- WITH Function Options
- Demo: Scalar Functions
- With Parameters
- Inline Functions
- Inline Syntax
- Demo: Inline Function
- Inline Parameters
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Table Valued Functions

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- Multi-Statement Syntax
- Limitations
- TABLE Data Type
- Demo: Multi-Statement
- Using Functions, Views...
- Demo: Scalar Functions
- Table-Valued Functions
- Choosing Between
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Stored Procedures

- Introduction
- Overview
- Performance Benefits
- Deferred Name Resolution
- Execution Plans
- Plan Recompilation
- Using Schema Qualifiers
- Reasons to Use

- Stored Procedure Syntax
- Creating Procedures
- SET NOCOUNT ON
- Parameters
- Optional Parameters
- Output Parameters
- Return
- Variables
- Debugging
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Testing and Triggers

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- Demo: Debugging
- PRINT Statements
- Output Parameters
- Creating Triggers
- Types of Triggers
- Uses for Triggers
- Trouble with Triggers
- How Triggers Work
- Demo: After Trigger
- INSTEAD OF Trigger
- DDL Trigger
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Full-Text Search

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- Demo: Full-Text Index
- Full-Text Queries
- CONTAINS Predicate
- Demo: Simple Terms
- Generation Terms
- Prefix Terms
- Proximity Terms
- FREETEXT
- CONTAINSTABLE
- Ranking Relevance
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- Using APPLY
- Demo: APPLY With Joins
- APPLY With TVF
- FOR XML PATH
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- Five Clauses in MERGE
- WHEN Clause
- Demo: MERGE
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- Demo: CTE
- Grouping Sets
- Demo: Base Query
- Grouping Sets

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Executing Dynamic SQL

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- Demo: Dynamic SQL
- sp_executesql
- Demo: Parameters
- QUOTENAME
- Output Parameters
- Signing Stored Procedures
- Demo: Certificates
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Complex Data And Structures

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- Overview
- Issues with Data Types
- Demo: Explicit Conversion
- Multinational Data
- Demo: COLLATE
- Hierarchical Data
- Demo: hierarchyid
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- Join vs. Subqueries
- One-Pass Queries
- Demo: UNION ALL
- One-Pass
- Multiple Resultsets
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- Table Variables
- UDFs
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Working With Complex Queries

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- Demo: Implicit Set On
- Keeping it Simple
- Demo: Sub Tasks
- UDF
- Demo: Procedure

- Summary

Maintaining Query Files

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- SourceSafe
- Files Under Control
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- Keyword Expansion
- Enabling
- Demo: srcsafe.ini
- Version Info
- File Versions
- Demo: Versions
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