

SQL Server

1 Background to T-SQL Querying and Programming

- Theoretical Background
- SQL
- Set Theory
- Predicate Logic
- The Relational Model
- The Data Life Cycle
- SQL Server Architecture
- The ABC Flavors of SQL Server
- SQL Server Instances
- Databases
- Schemas and Objects
- Creating Tables and Defining Data Integrity
- Creating Tables
- Defining Data Integrity

2 Single-Table Queries

- Elements of the SELECT Statement
 - The FROM Clause
 - The WHERE Clause
 - The GROUP BY Clause
 - The HAVING Clause
 - The SELECT Clause
 - The ORDER BY Clause
 - The TOP and OFFSET-FETCH Filters
 - A Quick Look at Window Functions
- Predicates and Operators
- CASE Expressions
- NULL Marks
- All-at-Once Operations
- Working with Character Data
 - Data Types
 - Operators and Functions
 - The LIKE Predicate

- Working with Date and Time Data
 - Date and Time Data Types
 - Literals
 - Working with Date and Time Separately
 - Filtering Date Ranges
 - Date and Time Functions
- Querying Metadata
 - Catalog Views
 - Information Schema Views
 - System Stored Procedures and Functions
- CREATE DATABASE
- CREATE TABLE

3 Set Operators

- The UNION Operator
 - The UNION ALL Multiset Operator
 - The UNION Distinct Set Operator
- The INTERSECT Operator
 - The INTERSECT Distinct Set Operator
 - The INTERSECT ALL Multiset Operator
- The EXCEPT Operator
 - The EXCEPT Distinct Set Operator
 - The EXCEPT ALL Multiset Operator
- Precedence
- Circumventing Unsupported Logical Phases

4 Joins

- Cross Joins
 - ANSI SQL-92 Syntax
 - ANSI SQL-89 Syntax
 - Self Cross Joins
 - Producing Tables of Numbers
- Inner Joins
 - ANSI SQL-92 Syntax
 - ANSI SQL-89 Syntax

- Inner Join Safety
- More Join Examples
 - Composite Joins
 - Non-Equi Joins
 - Multi-Join Queries
- Outer Joins
 - Fundamentals of Outer Joins
 - Beyond the Fundamentals of Outer Joins

5 Subqueries

- Self-Contained Subqueries
 - Self-Contained Scalar Subquery Examples
 - Self-Contained Multivalued Subquery Examples
- Correlated Subqueries
 - The EXISTS Predicate
- Beyond the Fundamentals of Subqueries
 - Returning Previous or Next Values
 - Using Running Aggregates
 - Dealing with Misbehaving Subqueries

6 Data Modification

- Inserting Data
 - The INSERT VALUES Statement
 - The INSERT SELECT Statement
 - The INSERT EXEC Statement
 - The SELECT INTO Statement
 - The BULK INSERT Statement
 - The Identity Property and the Sequence Object
- Deleting Data
 - The DELETE Statement
 - The TRUNCATE Statement
 - DELETE Based on a Join
- Updating Data
 - The UPDATE Statement
 - UPDATE Based on a Join

Assignment UPDATE

Merging Data

Modifying Data Through Table Expressions

Modifications with TOP and OFFSET-FETCH

The OUTPUT Clause

INSERT with OUTPUT

DELETE with OUTPUT

UPDATE with OUTPUT

MERGE with OUTPUT

Composable DML

7 SQL Constraints

NOT NULL

UNIQUE

PRIMARY KEY

FOREIGN KEY

CHECK

DEFAULT

8 Views

What are views?

Create views with SSMS and T-SQL

Alter and drop views

Creating indexed views

Referenced table requirements

Indexed view requirements

Create an indexed view

9 User-defined functions

Understanding user-defined scalar functions

Parameterizing functions

Executing scalar functions

Calling scalar functions inline

Calling scalar functions using the EXECUTE keyword

- Understanding table-valued functions
 - Using table-valued functions
- Limitations of functions

10 Stored procedures

- Working with stored procedures
- Using the EXECUTE keyword
- Parameterizing stored procedures
- Dropping stored procedures

11 Data manipulation triggers

- Types of triggers
- Creating triggers
- Altering triggers
- Dropping triggers
- Enabling and disabling triggers