

## **1. Fundamental of RDBMS**

Theoretical Background

SQL

The Relational Model

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

Working with Character Data

Data Types

Collation

Operators and Functions

The *LIKE* Predicate

Working with Date and Time Data

Date and Time Data Types

Working with Date and Time Separately

Filtering Date Ranges

Date and Time Functions

System Stored Procedures and Functions

## **3. Joins**

Inner Joins

Self-join

Cross Joins

Multi-Join Queries

Outer Joins

Fundamentals of Outer Joins

Beyond the Fundamentals of Outer Joins

Left join

Right Join

## **4. Subqueries**

Self-Contained Subqueries

Self-Contained Scalar Subquery

Self-Contained Multivalued Subquery

Correlated Subqueries

The *EXISTS* Predicate

Returning Previous or Next Values

Using Running Aggregates

## 5. Table Expressions (CTE)

- Derived Tables
- Assigning Column Aliases
- Common Table Expressions
- Assigning Column Aliases in CTEs
- Using Arguments in CTEs
- Defining Multiple CTEs
- Multiple References in CTEs
- Recursive CTEs
- Views
- Views and the *ORDER BY* Clause
- View Options
- Inline Table-Valued Functions
- The *APPLY* Operator

## 6. 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

## 7. Beyond the Fundamentals of Querying

- Window Functions
- Ranking Window Functions
- Offset Window Functions
- Aggregate Window Functions
- Pivoting Data
- Pivoting with Standard SQL
- Pivoting with the Native T-SQL *PIVOT* Operator
- Unpivoting Data
- Unpivoting with Standard SQL
- Unpivoting with the Native T-SQL *UNPIVOT* Operator
- Grouping Sets
- The *GROUPING SETS* Subclause
- The *CUBE* Subclause
- The *ROLLUP* Subclause
- The *GROUPING* and *GROUPING\_ID* Functions

## 8. 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

The *OUTPUT* Clause  
*INSERT* with *OUTPUT*  
*DELETE* with *OUTPUT*  
*UPDATE* with *OUTPUT*  
*MERGE* with *OUTPUT*

## **9 Programmable Objects**

Variables  
Batches  
The *GO n* Option  
Flow Elements  
The *IF ELSE* Flow Element  
The *WHILE* Flow Element  
An Example of Using *IF* and *WHILE*  
Temporary Tables  
Local Temporary Tables  
Global Temporary Tables  
Table Variables  
Table Types  
Dynamic SQL  
The *EXEC* Command  
The *sp\_executesql* Stored Procedure  
Using *PIVOT* with Dynamic SQL  
User-Defined Functions  
Stored Procedures  
Error Handling  
Job Scheduling