

Basic Database Concepts

- What is Data, Field, Record and database?
- Limitations of File Management System.
- Basic Concepts of Advantages of DBMS
- Levels of Abstraction
- Exploring Relational DBMS
- Understanding E-R Modeling With Example
- Understanding Normalization with Example

SQL Server Installation

- Installing SQL Server various Versions
- Installing SQL Server Management Studio
- Understanding SQL Server Instances
- Connecting to SQL Server Instance using SSMS

Introduction to SQL SERVER and SQL

- History and Editions of SQL Server
- Server Components and Tools
- Instance and Browser Service
- Starting and Stopping SQL Server Service
- Types of Authentication
- Management Studio
- Types of System Databases
- Introduction to SQL

Create Database

- Create Database Using User Interface
- Understanding Files and FileGroup
- Create Database Using T-SQL
- Alter Database

Working With Table

- Working With SCHEMA
- CREATE/ALTER/DROP SCHEMA

Working With TABLE

- CREATE/ALTER/DROP TABLE
- Understanding Datatypes

- Understanding Column Attributes and Constraints

T-SQL Select Queries

- Writing Simple SELECT statement
- Sorting Data
- Filtering Data Using Predicate
- Filtering Data with TOP and OFFSET-FETCH
- Working with unknown value
- Using Case Expression
- Working with SET Operator

Query Multiple Tables Using Joins

- Understanding Joins
- Inner Join
- Outer Join
- Self-Join
- Writing Multi –Join Queries
- Write queries with NULLs in Join column

Implement functions and aggregate data

- Understanding Aggregate Function
- Understanding GROUP BY Clause
- Understanding HAVING Clause
- Practice Queries Base on Joins, Aggregate, Subquery
- Understanding Built-in Functions
- Using Conversion Functions
- Using Logical Functions
- Using functions to work with NULL
- Using Date Related Functions
- Using String Related Functions
- Using System Functions

Modify Data

- Adding data to table (INSERT)
- Modify and Remove data (UPDATE/DELETE)
- Generate automatic column values (Identity/NEWID/Sequence)
- MERGE
- OUTPUT

Query Data Using Subquery and APPLY

- Introduction to Subqueries
- Self-Contained Subqueries
- Co-related Sub Queries
- Using EXISTS predicate with subqueries
- Using APPLY

Query Data Using Table Expression

- Derived Table
- CTE (Common table expression)
- View
- TVF (Table valued function)

Group and Pivot Data

- Grouping sets
- Cube
- Rollup
- Handling and distinguishing NULLs in Result SET
- Introduction to Window Functions
- Window Aggregate Function
- Window Ranking Function
- Windows Offset Function
- Window Pivot/UnPivot Function

Constraints

- Types of constraints
- Unique
- Not NULL

- Primary Key
- Default
- Check
- Foreign Key
- Enable and disable Constraints

View

- Introduction & Advantages of Views
- Creating, Altering, Dropping Views
- Advance Options while Creating a View
- SQL Server Catalogue Views
- Using View Designer

Index

- Introduction
- Index Structure(B-Tree, Heap)
- Types of Index(Clustered/Non-clustered)
- Guidelines
- Example

Programming Using T-SQL

- Introduction to T-SQL
- Scripts and Batches
- Local Variables and Statements
- Global Variables
- Keywords
- Controlling Program Flow
- Working with Temporary tables
- Checking Existence of Database Objects

Implement Stored Procedure

- Introduction to stored procedures
- Benefits of Stored Procedures
- Understanding Execution Plan
- Creating, Executing, Modifying , Dropping Stored Procedure
- Input – Output and Optional Parameters
- Using RaisError and Throw
- System defined Stored procedures

Implement User Defined Functions

- Introduction to UDF
- Scalar Function
- Inline Table-Valued Function
- Multi-statement Table-Valued Function

Implement error handling and transactions

- Introduction to Error handling
- Using RAISERROR
- Using THROW
- Using @@Error
- Using TRY –CATCH
- Catchable and Non -catchable Errors
- Difference between RAISERROR AND THROW
- Transaction management in SQL Server
- USING XACT_STATE()
- USING XACT_ABORT

Working With Triggers

- Introduction to triggers
- Creating, Altering, Dropping triggers
- for/after/instead of triggers
- Using Rollback Tran
- DDL Triggers

Working With Cursor

- Introduction to Cursor
- Types of Cursor
- Creating Cursors
- Locks on Cursor
- Advantages of Cursors

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