**SQL**

**TOC for MS SQL Server**

Day 1

* Introduction of SQL
  + DBMS & RDBMS
  + MS SQL Server DB Architecture
  + Database files
* Overview of SQL Database Objects
* System Databases
* SQL Commands- DDL, DML, DCL, TCL, DQL
* Database Constraints
* Creating Database, Schemas & Tables
* Backup and Restore Database

Day 2

* Inserting, Updating and Deleting Data
* Identity Column
* Filtering Data – Where Clause
  + Conditional Operators
  + Relational Operators
  + IN / NOT IN Operator
  + Between AND Operator
  + Like Operator
  + IS NULL / IS NOT NULL Operator
* Handling Null Values
* Column Alias
* Order By Clause
* Built-In Functions
  + Number / Math Functions
  + String Functions
  + Date / Time Functions

Day 3

* Built-In Functions
  + Analytical Functions
  + Aggregate Functions
* Group By Clause
* OVER Clause and PARTITION BY clause
* Top N Analysis using Ranking functions
* Derived Tables
* Common Table Expressions (CTE)
* Temporary Tables
* Sequences

Day 4

* SET Operations
  + UNION, UNION ALL, INTERSECT, EXCEPT
* Joins & it’s Types
  + CROSS JOIN
  + INNER JOIN
  + OUTER JOIN
  + SELF JOIN
* Subqueries & it’s types
  + Single Row Subquery
  + Multi Row Subquery
  + ANY, ALL Operators
  + Multi Column Subquery
  + Corelated Subquery

Day 5

* Synonyms
* Views
* Procedural Blocks
  + Variables
  + Print Command
  + Decision Construct – IF ELSE
  + Iterations & Loops
* Stored Procedures
  + Advantages
  + Input & Output Parameters

Day 6

* User Defined Functions
  + Scalar Valued Functions
  + Table Valued Functions
* Procedures vs Functions
* Triggers
  + DDL Triggers – DB Level, System Level
  + DML Triggers – After, Instead of

Day 7

* Cursors
* Exception Handling
  + System Exceptions
  + User Defined Exceptions
* Transaction Management
  + ACID properties
  + Isolation Locks
  + Challenges while working with multiple transactions and Shared resource

Day 8

* Pivot / Unpivot
* Indexes
  + Clustered
  + Non-Clustered
* Best practices on Performance tuning
* Tools for Query Optimization
* SQL Coding Guidelines

Day 9

* Normalization
  + 1 NF
  + 2 NF
  + 3 NF
* Revision & Summary