



Institute Provides

- ✓ In-Depth **Theory & Practical** Material
- ✓ Daily **Live Class Videos** Shared
- ✓ Weekend Practical Sessions

Complete **Practical Oriented** Training
 Good Interaction with the Trainers
Mock Interviews

Database & SQL Introductions	2Hrs	SQL SERVER PRACTICALS
Sql Server Introduction	2Hrs	Practical Document 1: Basic Table Operations
Sql Sub Languages [DDL, DML, DRL, TCL, DCL]	4Hrs	Practical Document 2: DDL, DML, DRL Operations
Clauses & Operators, Set Operators	2Hrs	Practical Document 3: Query writings
Constraints & Normalization	4Hrs	Practical Document 4: OLTP & OLAP Relations
Data Modeling [OLTP & OLAP]	2Hrs	Practical Document 5: Tricky Queries on Joins
Sub Quires, Joins, Functions, Views	5Hrs	Practical Document 6: Functions & Views
Stored Procedures & Exception Handling	4Hrs	Practical Document 7: Programs for Procedures
Temp Storages [Variables, Tables, CTE]	2Hrs	Practical Document 8: Solutions for Realtime Quires
Dynamic Sql, Triggers, Cursors	3Hrs	
Performance Tuning	3Hrs	
Near Realtime Project	3Hrs	
Resume Prep & FAQs	2Hrs	SQL SERVER BANK PROJECTS
		With complete end to end database design for OLTP & OLAP

TOPIC 1: DATA, DATA STORAGES, DA TABASES AND SQL NITTY-GRITTIES

✓ **Data Fundamentals**

- What is Data and Data Formats
- • Data Storages
- • Structure Data Presence in Databases
On Premises and Cloud Data Storages
Database Providers and Products

✓ **SQL Fundamentals**

- Sql Use in Different Platforms
 - Frontend Applications
 - Business Intelligence
 - Data Engineering
 - Data Science
- • How To Interact with Different Database by Using Sql
Opportunities with Sql



SQL STARTS

TOPIC 2: SQL SERVER DATABASE NITTY-GRITTIES

- ✓ **Versions and Editions in SQL Server**

- ✓ **Editions of SQL Server**

- Enterprise Edition
- Standard Edition
- Developer Edition
- Work Group Edition
- Express Edition

- ✓ **Features of Sql Server**

- ✓ **IDES in Sql Server**

- ✓ **Sql Server Tools**

- Database
- SSIS
- SSRS
- SSAS
-

TOPIC 3: SQL SERVER DATABASE INSTALLATION

- ✓ **SQL Server Database Installation**

- ✓ **Server Name, Instance and Authentication**

- ✓ **Installation Summary**

- ✓ **Sql Server Management Studio Installation**

- Object Explorer
- Query Editor

- ✓ **Sql Server Connections with SSMS**

- Single Instance
- Multi Instance

TOPIC 4: BASIC OPERATIONS WITH TOOL [SSMS]

- ✓ **System Defined Databases and Usage**
 - Masterdb
 - Msdb
 - Modeldb
 - Tempdb
- ✓ **User Defined Database Creation and Usage**
- ✓ **Mdf, Ldf and Ndf Files**
- ✓ **Basic Operations on User Defined Tables**
 - • Create User Tables
 - • Insert Data
 - Update Data
 - Delete Data

TOPIC 5: COMMAND, QUERY AND SQL SERVER ARCHITECTURE

- ✓ ~~Difference Between Query and Command~~
- ✓ **Query and Command Execution in Sql Server**
- ✓ **Parser, Compiler, Optimizer, Syntaxer and CLR**
- ✓ **Storage Engine [Sql Engine]**
- ✓ **Lock, File, Transaction Manager and Buffer Manager**
- ✓ **Buffer and Threads**

TOPIC 6: SQL SERVER DATA DEFINITION LANGUAGE [DDL]

- ✓ **Create Table Structure**
- ✓ **Modify Table Structure**
 - **Alter** **Add**
 - **Alter** **Alter**
 - **Alter** **Modify**
- ✓ **Remove Data and Structure from Tables**
- ✓ **Select Into Command**
- ✓ **Truncate and Drop Difference**
- ✓ **Sql Server Datatypes**

TOPIC 7: SQL SERVER DATA MANIPULATION LANGUAGE [DML]

- ✓ **Data Loading into Tables**
- ✓ **Single Row, Multi Row and Required Column Insert into Tables**
- ✓ **Modify Table Data**
- ✓ **Remove Data from Tables**
- ✓ **Difference Between Truncate, Delete and Drop**
- ✓ **Bulk Insert**
- ✓ **Merge Command Operations**
- ✓ **Insert Table Data from Another Table**

TOPIC 8:SQL SERVER DATA RETRIVAL LANGUAGE [DRL]

- ✓ **Data Loading into Tables**
- ✓ **Single Row, Multi Row and Required Column Insert into Tables**
- ✓ **Modify Table Date**
- ✓ **Remove Data from Tables**
- ✓ **Difference Between Truncate, Delete and Drop**
- ✓ **Bulk Insert**
- ✓ **Merge Command Operations**
- ✓ **Insert Table Data from Another Table**

TOPIC 9:SQL SERVER DATA CONTROL LANGUAGE [DCL]

- ✓ **Providing privileges [GRANT]**
- ✓ **Removing privileges [REVOKE AND DENY]**
- ✓ **Implicit and Explicit Grants**

TOPIC 10:SQL SERVER TRANCATION CONTROL LANGUGE [TCL]

- ✓ **Providing privileges [GRANT]**
- ✓ **Removing privileges [REVOKE AND DENY]**
- ✓ **Implicit and Explicit Grants**

TOPIC 11: CLAUSES AND DATA FILTERS

- ✓ Working with Select Statement
- ✓ Clauses
 - From
 - Where
 - Group By
 - Having
 - Order By
- ✓ Single Value Match Operators
 - Arithmetic Operators
+, -, *, %, /
 - Comparison Operators
<, >, <=, >=, =, <>, !=
 - Logical Operators
AND, OR, NOT
- ✓ Multi Value Match Operators

• In	Not In
• Between	Not Between
• Like	Not Like
• Exists	Not Exists
• Is Null	Is Not Null
- ✓ Working With TOP

TOPIC 12: MULTI TABLE OPERATIONS [ROW-WISE SET THEORY]

- ✓ Set Theory Generic Protocols
- ✓ Intersect
- ✓ Union
- ✓ Union All
- ✓ Except
- ✓ Working On Incremental Loading

TOPIC 13: MULTI TABLE OPERATIONS [COLUMN-WISE]

- ✓ Simple Sub Query
- ✓ Correlated Sub Query
- ✓ Nested Sub Query
- ✓ Difference Between Simple and Correlated Sub Query

TOPIC 14: MULTI TABLE OPERATIONS [COLUMN-WISE JOINS]

- ✓ ~~Joins In Realtime Usage~~
- ✓ Cross Join and Cross Apply
- ✓ Inner Join [Equi, Non Equi]
- ✓ Natural Join Self-Join Left
- ✓ Outer Join Right Outer Join
- ✓ Full Outer Join Anti Left
- ✓ Outer Join
- ✓
- ✓
- ✓ Anti Right Outer Join Working on ON
- ✓ and WHERE Clauses Merge Join Loop
- ✓ Join Hash Join
- ✓
- ✓

TOPIC 15: DATA INTEGRITY AND CONSTRAINTS

- ✓ **Domain Integrity**
 - Not Null
 - Default
 - Check
- ✓ **Entity Integrity**
 - Primary Key and Limitations
 - Unique and Limitations
- ✓ **Referential Integrity**
 - Foreign Key
- ✓ **Keys**
 - Composite Key
 - Candidate Key
 - Alternate Key
 - Super Key
 - Artificial Key
- ✓ **Normal Column and Identity Column**
- ✓ **Cascading**
 - On Delete Cascade
 - On Update Cascade
 - On Delete Set NULL
 - On Update Set NULL
 - On Delete Set No Action

TOPIC 16: NORMALIZATION AND DATA MODELING

- ✓ **What is Normalization**
- ✓ **Types Of Normalization**
- ✓ **1: 1, 1: Many, Many to Many Relations**
- ✓ **Business, Conceptual, Logical, Physical Data Model**
- ✓ **Dimension, Fact Tables**
- ✓ **Dimension Model Schemas [Star, Snowflake, Galaxy]**
- ✓ **Entity Relational Model [OLTP]**
- ✓ **Dimension Model [OLAP]**

TOPIC 17:PHYSICAL DATA DISTRIBUTION [INDEXES]

- ✓ **Clustered Index Design and Structure**
- ✓ **Non-Clustered Index Design and Structure**
- ✓ **Unique Index Design**
- ✓ **Index with Included Columns**
- ✓ **Column Storage Index**
- ✓ **Full-Text Index Population**
- ✓ **Filtered Index Design**
- ✓ **Covering Index Design**
- ✓ **B-Tree and Online Indexes**
- ✓ **Index View Vs Materialized Views**
- ✓ **Fill Factor, TEMPDB, Pat Index**

TOPIC 18:SCHEMAS, SYSTEM DEFINED VIEWS AND PROCEDURES

- ✓ **What Is Schema and Realtime advantages with practical**
- ✓ **System Defined Procedures Usage with Example**
 - **Sp_Help, Sp_HelpText, Sp_Rename, Sp_Rename, Sp_Tables, Sp_Who2, Sp_Who**
 - **Sp_Spaceused, Sp_Statistics, Sp_Foreignkeys**
- ✓ **System Defined Views Usage with Example**
 - **Sys.Servers, Sys.Databases, Sys.Objects, Sys.Schemas, Sys.Views, Sys.Indexes**
 - **Information_Schema.Tables, Information_Schema.Columns**

TOPIC 19: DISTINCT, GROUP BY, ROLL UP AND CUBE

- ✓ **Difference Between Group by and Distinct, Performance Impact**
- ✓ **GroupBy and Having Usages to Identify and Eliminate Duplicates**
- ✓ **RollupAnd Cube**
- ✓ **Creating Full Totals and Sub totals**
- ✓ **Comparing Rollup, Cube and Group Functions**

TOPIC 20: VIEWS

- ✓ **Advantages and Limitations of Views**
- ✓ **TablesVs Views**
- ✓ **SimpleViews [Modifiable View]**
- ✓ **Complex Views [Read Only View]**
- ✓ **Materialized Views**
- ✓ **Encrypted Views, Schema Binding Views**

TOPIC 21:FUNCTIONS [USER DEFINED AND SYSTEM DEFINED]

✓ Advantages and Limitations of Functions

✓ System Defined Functions

• String Functions

ASCII	LEN	RTRIM
CHAR	LOWER	SPACE
CHARINDEX	LTRIM	STR
CONCAT	NCHAR	STUFF
CONCAT WITH +	PATINDEX	SUBSTRING
DATALLENGTH	REPLACE	UPPER
LEFT	RIGHT	

• Aggregate Functions

AVG	BINARY_CHECKSUM	CHECKSUM
CHECKSUM_AGG	COUNT	COUNT_BIG
GROUPING	GROUPING_ID	MAX
MIN	STDEV	STDEVP
SUM	VAR	VARP

• Configuration Functions

DATEFIRST	DBTS	LANGID
LANGUAGE	LOCK_TIMEOUT	MAX_CONNECTIONS
MAX_PRECISION	NESTLEVEL	OPTIONS
REMSERVER	SERVERNAME	SERVICE_NAME
SPID	TEXTSIZE	VERSION

• Cursor Functions

CURSOR_STATUS	CURSOR_ROW	FETCH_STATUS
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• Date and Time Functions

CURRENT_TIMESTAMP	DATEADD	DATEDIFF
DATENAME	DATEPART	DAY
GATDATE	GATUTCDATE	ISDATE
MONTH	SYSDATETIME	SYSDATETIMEOFFSET
SYSDATETIME	SWITCHOFFSET	TODATETIMEOFFSET
YEAR		

• Mathematical Functions

ABS
ATAN
COS
EXP
LOG₁₀
RADIANS
SIGN
SQUARE

ACOS
ATN₂
COT
FLOOR
PI
RAND
SIN
TAN

ASIN
CEILING
DEGRESS
LOG
POWER
ROUND
SQRT

• Other Functions

APPNAME
CONVERT
GETANSINULL
IDENT_CURRENT
IDENTITY
NEWID
PERMISSIONS
SCOPE_IDENTITY
TRANCOUNT

CAST
CURENT_USER
HOST_ID
IDENT_INCR
ISNULL
NULLIF
ROWCOUNT
SESSION_USER
USER_NAME

COALESCE
DATALENGTH
HOST_NAME
IDENT_SEED
ISNUMERIC
PARSENAME
ROWCOUNT_BIG
STATENAME_USER

- ✓ **System Defined Window Functions**
 - Intro to window functions
 - Basic windowing syntax
 - The usual suspects: SUM, COUNT, and AVG
 - ROW_NUMBER ()
 - RANK () and DENSE_RANK ()
 - NTILE
 - LAG and LEAD
 - Defining a window alias
- ✓ **User Defined Functions**
 - Scalar-valued Functions
 - Table-valued Functions
- ✓ **Difference Between Functions and Procedures**

T-SQL STARTS

TOPIC 22: PROGRAMMING FUNDAMENTALS

- ✓ Variable Declarations and Assignments
- ✓ Basic syntax
- ✓ Conditional Statements
- ✓ Multi Branching Conditional Statements
- ✓ Iterative Statements
- ✓ Exception/ Error Handling

TOPIC 23: STORED PROCEDURES

- ✓ Use in Real Time and Types
- ✓ System Defined and User Defined Procedures
- ✓ Dynamic Sql **Queries** in Procedures
- ✓ In, Out, InOut Parameters
- ✓ Dynamic Data Insertion with Procedures
- ✓ Using TEMP Tables in Procedures
- ✓ Stored Procedure inside Stored Procedure

TOPIC 24: TEMP STORAGES

- ✓ **LocalVariables Vs Global Variables with Example**
- ✓ **TableValued Variables**
- ✓ **Temporary Table Usage in Real Time**
- ✓ **InlineViews Vs Normal Views**
- ✓ **Common Table Expressions**
- ✓ **CTE usage in Real Time**
- ✓ **Multiple Examples using CTE**
- ✓ **Duplicate Finding and Removing**
- ✓ **Non-Recursive and Recursive CTE**

TOPIC 25: TRIGGERS

- ✓ **Use inRealTime**
- ✓ **TriggersVsProcedures**
- ✓ **TypesOfTriggers**
- ✓ **DMLTriggers**
- ✓ **DDLTriggers**
- ✓ **FORTriggers**
- ✓ **INSTEADOf Triggers**

TOPIC 26: CURSORS

- ✓ **What is Cursor.**
- ✓ **Cursor Life Cycle**
- ✓ **Working Process of Cursor.**

TOPIC 27: DYNAMIC SQL IMPLEMENTATION

- ✓ **Creating DynamicSELECT Statements.**
- ✓ **Passing DynamicTable Names**
- ✓ **Create a Procedurewith Dynamic Table Names and Variables**
- ✓ **Normal SQL Vs.Dynamic SQL**

TOPIC 28: OTHER S

- ✓ **Project Explanation**
- ✓ **Day to DayActivities**
- ✓ **Real TimeDatabase Environment**
- ✓ **Challenges**
- ✓ **PerformanceTuning**

