Duration of Training : 4 weekends

Syllabus

Database Fundamentals
What is a database? What is MySQL?
Introduction to MySQL & MySQL workbench
Database Design

Introduction To Database Design

Learn Database Normalization with the help of a case study
Learn ER Modeling with a Case Study

SQL Basics

How To Create A Database & MySQL DataTypes
How to use SELECT in MySQL
How to query data using Where clause in MySQL
How to use Insert Into in MySQL
How to Delete & Update data in MySQL

Data Sorting

How sorting is done in MySQL using ORDER BY, DESC and ASC
How to use Group By in MySQL
How to use Wildcards in MySQL
Using Regular Expressions & Wild Cards in MySQL

Functions

Ultimate guide to Functions used in MySQL
How to use Aggregate Function in MySQL

Must Know Stuff!

All about Null value & Keyword in MySQL
How to use Auto Increment in MySQL
How to use Alter, Drop & Rename function in MySQL
How to use Limit keyword in MySQL

Most Dreaded Topics!

Using Sub-Queries in MySQL
How to use Joins in MySQL
How to use Unions in MySQL
How to use Views in MySQL

How to use Index in MySQL

Advance SQL Course Syllabus

Module 1 - SAMPLE DATABASES

1. Installing Oracle Sample Databases
2. Conceptual Diagram of Entity Model
3. Visio Diagram of Database
4. Primary Key and Foreign Key; RDBMS Basics
5. 1NF, 2NF & 3NF Normal Forms.
6. OLTP DB
7. Business Scenarios
8. Reviewing
9. Data Warehouse Database
10. HierarchyID Based Trees
11. Creating, Saving & Emailing Database Diagrams
12. pubs Book Publishing Sample Database Overview
13. Northwind Food & Drink Supplier Sample DB
14. Advanced Review of pubs Database Diagram
15. Advanced Review of Northwind Database Diagram
16. Accounting DB Review: GL, AP, AR & Inventory

Module 2 - DATABASE DESIGN

1. Understanding Logical Data Modelling
2. Working with Table Column Data Types
3. New; DATE, TIME, DATETIMEOFFSET & DATETIME2
4. CREATE TABLE by Script & Using Object Explorer
5. Primary Key and Foreign Key Constraints
6. Database Diagram Design in Object Explorer
7. Logical Database Modelling with Visio
8. Relational Database Design with Visio
9. Reverse Engineering a Database with Visio
10. ALTER TABLE and Changing Tables by MS
11. Designing Compressed Tables & Indexes
12. Partitioned Table, Partition Function and Scheme
13. Create Partition & Manage Partition Wizards
14. The Data Compression Wizard
15. Code, Translate and Lookup Table Design
16. Database Design and Programming Standards

Module 3 - SELECT STATEMENT

1. Inner Join, Self Join, Outer Join and Cross Join
2. Basic SQL SELECT and SELECT INTO Statements
3. Sorting SELECT Query Results with ORDER BY
4. Exploring CTEs, Nested & Correlated Subqueries
5. SELECT with UNION, UNION ALL, ROLLUP and CUBE
6. Date & Time, String and Math System Functions
7. Exploring Configuration & System Statistical Functions

8. Dynamic SQL for Automatic Query Generation
9. The GROUP BY Clause & Aggregate Functions
10. Working with Hierarchy ID and Metadata Functions
11. TOP, ROW_NUMBER, RANK, DENSE_RANK and NTILE
12. Understanding Recursive Queries & Tree Processing
13. Creating Comma-Delimited Lists with XML Path
14. Crosstab (Matrix) Query with CTE and PIVOT
15. Building Multidimensional Crosstab Query
16. Architecting Business Intelligence Dashboards

Module 4 - MODIFY DATA

1. INSERT INTO Statement with VALUES Clause
2. Understanding INSERT and SELECT Subquery
3. INSERT and EXECUTE Statement
4. Data Removal with the DELETE Statement
5. Data Modification with the UPDATE Statement
6. Working with the MERGE Statement
7. Synchronizing Two Tables with MERGE
8. Modifying Data with Cursors, Subqueries & JOINs
9. Logged and Minimally-Logged Operations
10. Creating Audit Trail with the OUTPUT Clause
11. Combining INSERT with CTE and OUTPUT
12. UPDATE with CTE, OVER & PARTITION BY
13. Deleting Duplicate Rows with CTE
14. Updating Binary Mask and CSV List Columns
15. Using UPDATE with the FROM Clause
16. UPDATE with GROUP BY Aggregate Subquery

Module 5 - DATA INTEGRITY

1. Data Integrity Constraints in AdventureWorks2008
2. Surrogate Key Architecture, Natural Key & GUID
3. PK, FK, UNIQUE & CHECK Constraints; Defaults
4. Data Integrity Enforcement with Triggers
5. Working with Data Integrity Templates
6. Stored Procedure vs. Ad-hoc SQL Script
7. Entity, Domain and Referential Database Integrity
8. Entity Integrity Definition Using Management Studio
9. Listing and Scripting Data Integrity Objects
10. Understanding Domain Integrity Enforcement
11. Implementing Referential Integrity Constraints
12. Creating User Defined Integrity Objects
13. Exploring Table-Level CHECK Constraints
14. Enterprise-Level Business Rules Enforcement
15. Transactions for Data Integrity Maintenance
16. Comparing and Synchronizing Databases

Module 6 - PROGRAMMABILITY

1. Stored Procedure Design and Programming
2. Exploring Table-Valued, XML & OUTPUT Parameters
3. Stored Procedures in AdventureWorks2008 Database
4. DML - Data Manipulation Language Triggers
5. Trigger Examples with DELETED & INSERTED Tables
6. Discovering INSTEAD OF Triggers & AFTER Triggers
7. DDL - Data Definition Language Triggers
8. Designing & Creating Views - Modifying Data

9. Table-Valued, Scalar-Valued & Inline Functions
10. Understanding Plan Guides for High Performance
11. Temporary Tables, Table Variables & tempdb
12. EXECUTE AS for Execution Context Definition
13. Multiple, Nested, Cascading & Recursive CTE-s
14. Grouping Sets for Multiple Groupings Definition
15. Spatial Data Types: Geography & Geometry
16. Applying Manual Debugging Techniques

Module 7 - TRANSACT-SQL

1. TRANSACT-SQL, Batch, and Scripts
2. BEGIN, COMMIT, ROLLBACK TRANSACTION
3. Using TRY…CATCH Blocks for Exception Handling
4. Locks, Isolation Levels and Deadlocks
5. Snapshot Isolation for OLTP Concurrency
6. PROGRAMMING STATEMENTS in Transact-SQL
7. User Defined and System Stored Procedures
8. Working with Linked Servers & 4-part Reference
9. Exploring CROSS APPLY & OUTER APPLY Operators
10. DBA Script Generator Using Query Editor
11. Discovering Undocumented T-SQL Features
12. Dynamic PIVOT and Matrix (Crosstab) Scripts
13. INTERSECT and EXCEPT Set Operators
14. FILESTREAM Data and SPARSE Columns
15. Optimizing with Database Engine Tuning Advisor
16. Debugging with the Transact-SQL Debugger