SQL & PL/SQL Syllabus

Course Objectives: Learn about SQL – Structured Query Language

- ❖ Build database using Data Definition Language Statements Perform basic CRUD operations using Data Manipulation Language statements like Insert, Update and Delete Write and call Stored Procedures and Functions stored in database.
- ❖ Write and manage database triggers, cursors and Index.

Pre-requisite / Target Audience:

This sql server course can be taken by any beginner who wants to build career in Information Technology. The subscriber needs to have working knowledge of Windows Operating System.

Module 1:- Introduction to Basic Database Concepts

In this module we learn about Basic concepts and advantages of DBMS and limitations of file management system ,and also about 3 data base models

- ❖ What is Data, Field, Record and database?
- ❖ Limitations of File Management System.
- ❖ Basic Concepts of Advantages of DBMS.
- ❖ Levels of Abstraction. ▯ Database Models.
- ❖ Exploring Relational DBMS
- ❖ Understanding Client and Server

Module 2: E-R Modeling and Diagram

In this module we learn about entity, attributes and relationship , identify the entities and attributes How to draw a E-R diagram and translating the E-R diagram in relation schema.

- ❖ Analyzing the Requirement
- ❖ Identify Entities and their Relationships
- ❖ Drawing E-R Diagram
- ❖ Conversion of E.R. Diagrams into Tables

Module 3:Normalization

In this module we learn about what is normalization,types of normalization, data before and after normalization, benefits of normalization.

- ❖ First Normal Form
- ❖ Second Normal Form
- ❖ Third Normal Form Practically Normalizing Tables

Module 4: Introduction to SQL Server

In this module we learn about SQL Server,history of sql server ,types of system databases,communication between frontend and backend and sql server editions.

- ❖ What is SQL Server Version history and different editions
- ❖ Basic Features Components and Tools
- ❖ Starting and Stopping SQL Server Instances / Services
- ❖ Introduction to Management Studio
- ❖ Types of System Databases in SQL

Module 5: Introduction to SQL

In this module we learn about types of sql statements,databases in sql server, how to create a database, datatypes in sql server,and about DDL Statements.

- ❖ Basics of SQL Types of SQL Statements
- ❖ DDL, DML, DQL, DCL and TCL
- ❖ Create Database using Management Studio
- ❖ Datatypes in SQL Server
- ❖ Exploring DDL Statements on Table using Management Studio

Module 6: DDL and DML Statements

In this module we learn about how to create a table,alter and drop a table ,and about DML statements ,like insert update and delete statements.

- ❖ Why write statements in Frontends?
- ❖ Create, Alter and Drop Table Insert,
- ❖ Update and Delete Statement Truncate Statement

Module 7: Working with Queries (DQL)

In this module we learn about select statement, top, distinct string and arithmetic expressions, Sorting the data and about sub queries and where clause(codition).

- ❖ Understanding Select Statement
- ❖ Usage of Top, Distinct, Null etc...keywords
- ❖ Using String and Arithmetic Expressions

- ❖ Exploring Where Clause with Operators
- ❖ Using Advanced Operators
- ❖ Sorting data using Order By clause
- ❖ Working with basic of Sub Queries

Module 8: Aggregate Functions

In this module we learn about how to use aggregate functions like sum,mean,max,avg what is difference between having and where clause, group by clause rollup and cube operator.

- ❖ Using functions in Queries
- ❖ Using predefined functions 🗗
- ❖ Count, Sum, Min, Max, Avg Group By and Having Clause
- ❖ Using Group By with Rollup and Cube

Module 9: Joins and Set Operations

In this module we will know about joins and types of joins how to join the tables and about
Sub queries ,types of operators like union ,intersect and except and how to add the tables and relationship between them.

- ❖ Introduction to Joins Cross Joins
- ❖ Inner Join
- ❖ Outer Join
- ❖ Self Join
- ❖ Co-related Sub Queries
- ❖ Set Operations using Unions, Intersect and Except

Module 10: Implementation of Data integrity

In this module , we will learn correctness of data and types of integrity and types of constraints.

- ❖ Entity integrity
- ❖ Domain integrity
- ❖ Referential integrity
- ❖ Types of constraints

Module 11:Working with Constraints

In this module, we will learn about how to create a constraint,types of constraints,and difference between unique, not null and primary key constraints.

- ❖ Unique
- ❖ Not NULL
- ❖ Primary Key

❖ Default Check Foreign Key

Module 12:Implementing Views

In this module, how to create a view,advantages of views, altering and dropping a
view And advanced options while creating aview.

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

Module 13:Data Control language (DCL)

In this module,we will learn how to grant permission and revoking of roles.
- ❖ Creating Users & Roles
- ❖ Granting & Revoking of Roles & privileges
- ❖ Managing using Management Studio

Module 14:Working with Indexes

In this module, how to create a index, advantages and disadvantages of index, and types of index and
dropping index, and also about index structure.
- ❖ Introduction Clustered and Non Clustered Index
- ❖ Creating and Dropping Indexes

Module 15:Writing Transact-SQL (T-SQL)

In this module, what is script and what is batche,variables and if else statements and working with
temporary tables, and checking with the existence of database objects.
- ❖ What is T-SQL?
- ❖ Scripts and Batches Declaring Variables
- ❖ Using Statements
- ❖ Working with Temp tables
- ❖ Error Handling
- ❖ Using System Functions / Global Variables Using Dynamic SQL

Module 16:Working with Stored Procedures and Functions

In this module, we will learn how to create a stored procedure and difference between stored procedure
and table ,advantages of procedures and about types of parameters.
- ❖ Introduction to stored procedures
- ❖ Benefits of Stored Procedures
- ❖ Creating, Executing Modifying, Dropping
- ❖ Input–Output and Optional Parameters

- ❖ System defined SP's and Functions.
- ❖ User defined Functions

Module 17:Implementing Triggers

In this module, we will learn about what is trigger and how to create a trigger, types of triggers How to use a rollback tran.

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

Module 18:Working with Cursors

In this module, how to create a cursor, what is cursor,types of cursor and benefits of cursor.
- ❖ Creating Cursors
- ❖ Cursors vs. Select
- ❖ Types of cursors
- ❖ Locks on cursors
- ❖ Advantages of cursors

Module 19:Transaction Control Language (TCL)

In this module, we will learn what is transaction ,transaction management and what are acid properties, what are isolation levels and about implicit and explicit transactions.
- ❖ Introduction Transactions process
- ❖ Types of transactions (Implicit, explicit)
- ❖ Working with Locks, Types of locks

Module 20:Backup and Restore

In this module, how to backup database and how to restore a database and how to generate a sql script,and executing a sql script and how to attach and deattach a database.
- ❖ Generating SQL Script
- ❖ Executing SQL Script
- ❖ Generating Change Script
- ❖ Taking database Backup
- ❖ Restoring database using backup
- ❖ Attaching and Detaching of database

Module 21:Advance Features

In this module we will learn about ranking functions and about how to use xml datatype.

- ❖ Pivot Table
- ❖ Common Table Expression
- ❖ Ranking Functions Using BLOB data type
- ❖ Using XML data type