SQL (Structured Query Language) Syllabus

1. Introduction to SQL

(What is SQL?, Purpose of SQL, Who should learn SQL?, What are the subsets of SQL?, Data Definition Language, Data Manipulation Language, Data Control Language, and SQL vs. NoSQL)

2. Introduction to Databases and RDMBS

(What is a Database?, Database Objects, Database Tables, Table Records, Types of Database Management Systems, Relational Database Management Systems, and SQL/Relational Databases vs. No SQL Databases)

3. Install a Database Engine

(Download MS SQL Server or Oracle or MySQL Database Engine, and Install. Launch SQL Server Management Studio, Select New Query, and launch SQL Query. Type SQL Commands and Execute.)

4. SQL Syntax

(Focus on SQL Syntax, SQL keywords, SQL is not case sensitive, SQL Comments, SQL Commands, and writing SQL Statements.)

5. SQL Data Types

(SQL Numeric data types, Date and Time data types, Character and String data types, Unicode character string data types, Binary data types, and Miscellaneous data types.)

6. SQL Operators

(SQL Arithmetic Operators, Comparison Operators, Logical Operators, and Bitwise Operators)

7. SQL Expressions

(SQL Boolean Expression, SQL Numeric Expression, and SQL Date Expression)

8. SQL Comments

(SQL Comments, Comments are used to explain sections of SQL statements, or to prevent the execution of SQL statements. Single-Line Comments, and Multi-line Comments)

9. SQL – Data Definition Language Commands and Operations.

(SQL Data Definition Language Commands, Create, Alter, Drop, Truncate, and Rename.

Data Definition Language Operations, Create a Database, Use Database, Rename a Database, Drop Database, Create a Table, Rename Table, Add a Column to exiting Table, Add multiple columns to existing Table, Modify an existing column, Rename a Column, Drop a Column, Truncate a Table, and Drop a Table.)

10. SQL – Data Manipulation Language Commands and Operations

(Data Manipulation Language Commands, SELECT, INSERT, UPDATE, and DELETE.

Data Manipulation Language Operations, Retrieving data from a table, Inserting data into a table, Updating existing data into a table, and Deleting all records from a table.)

13. SQL – Data Control Language Commands

DCL includes commands such as GRANT and REVOKE which mainly deal with the rights, permissions, and other controls of the database system.

14. DCL Operations

(Providing the users the access or privileges to the database objects, and Taking back or canceling the privileges or permissions previously allowed or denied to the users.)

15. SQL Functions

SQL has many built-in functions for performing calculations on data. SQL Aggregate Functions, SQL String Functions, SQL Date Functions, and SQL Scalar functions.

16. SQL Queries and Sub Queries

A Query is used to traverse over some data that may be of small or large quantity to find the needed information.

A Subquery is a type of query which is written inside another query. A subquery becomes a part of a larger query. A subquery is also called INNER QUERY OR NESTED QUERY.

17. SQL Clauses

Clauses in SQL are similar to conditionals in high-level languages. We have a large variety in the SQL clauses like the Where clause, Union Clase, Order By clause, etc.

18. SQL Joins

The SQL Joins clause is used to combine records from two or more tables in a database. A JOIN is a means for combining fields from two tables by using values common to each.

19. SQL Views

Views in SQL are kind of virtual tables. A view also has rows and columns as they are in a real table in the database. We can create a view by selecting fields from one or more tables present in the database.

20. SQL Indexes

An index is a schema object. It is used by the server to speed up the retrieval of rows by using a pointer. It can reduce disk I/O(input/output) by using a rapid path access method to locate data quickly.

21. SQL Transactions

Transactions are units or sequences of work accomplished in a logical order, whether in a manual fashion by a user or automatically by some sort of database program.

22. SQL Injection

SQL injection, also known as SQLI, is a common attack vector that uses malicious SQL code for backend database manipulation to access information that was not intended to be displayed. This information may include any number of items, including sensitive company data, user lists, or private customer details.

SQL vs. NoSQL

There are a lot of databases used today in the industry. Some are SQL databases, some are NoSQL databases. The conventional database is an SQL database system that uses a tabular relational model to represent data and their relationship. The NoSQL database is the newer database that provides a mechanism for storage and retrieval of data other than the model of the tabular relations used in relational databases.