MongoDB

Introduction to MongoDB:

The Introduction to MongoDB course guides you through the foundational skills and knowledge you need to get started with MongoDB. This includes connecting to a MongoDB database, how to conduct simple CRUD operations, and key topics such as aggregation, indexing, data modeling, and transactions.

Wed page goes to request server and server request goes to database management as coming back to the server and server to back the wed page.

Front end languages are HTML, CSS & JavaScript.

Back end languages are server are Java, Python and etc.

Database languages are SQL and NoSQL

A DataBase Management System provides the mechanism to store and retrieve the data.

There are different kinds of database management systems:

1.RDBMS [Relational DataBase Management System]

2.OLAP [Online Analytical Processing]

3.NoSQL [Not Only SQL]

Introduction to NoSQL:

What is NoSQL DataBase?

Not Only SQL (NoSQL) or non-relational databases provides a mechanism for storage and retrieval of data other than tabulas relations model used in relational databases. NoSQL database doesn't use tables for storing data. It is generally used to store big data and real-time wed-applications.

Why NoSQL DataBase?

NoSQL database were created in response to the limitations of traditional relational database technology.

When compared against relational databases, NoSQL databases are more scalable and provide superior performance, and their data model addresses several short coming of the relational model.

When to use NoSQL DataBase?

- When you want to store and retrieve hug amount of data.
- The relationship between the data you store is not that important.
- The data is not structured and changing over time.
- The data is growing continuously and you need to scale the database regular to handle the data.
- Constraints and Joins support is not required at database level.
- Data isn't relational (e.g., Documents)
- Too much data to fit in a relational at database.

Advantages of NoSQL:

- Large volumes of structured, semi-Structured, and Unstructured data.
- Agile sprints, quick iteration, and frequent code pushes.
- Object-Oriented programming (Oops) that is easy to use and flexible.
- Efficient, scale-Out architecture instant of expensive, monolithic architecture.

SQL (Structured Query Language):

Every relational database software interacts with a language known as SQL. Guidelines are provided by a standard organization ANSI (American National Standard Institute).

Adopted the all-database vendors like Oracle, MySQL, Microsoft etc.

An SQL is very complex language. It sud-catogarized into 5-sub languages:

1.DDL (Data Definition Languages): SQL provides a set of commands to define and modify the structure of a database, including creating tables, modifying table structure, and dropping tables.

 Command: CREATE, DROP, TRUNCATE, ALTER, RENAME

2.DML (Data Manipulation Languages): The SQL commands that deal with the manipulation of data present in the database belong to DML or Data Manipulation Language and this includes most of the SQL statements.
It is the component of the SQL statement that controls access to data and to the database. Basically, DCL statements are grouped with DML statements.
Command: INSERT, UPDATE, DELETE

3.DQL (Data Query Languages): SQL provides a rich set of commands for querying a database to retrieve data, including the ability to filter, sort, group, and join data from multiple tables.

Command: SELECT

4.DCL (Data Control languages): DCL includes commands such as GRANT and REVOKE which mainly deal with the rights, permissions, and other controls of the database system.

Command: GANT, REVOKE

5.TCL (Transaction Control Languages): Transactions group a set of tasks into a single execution unit. Each transaction begins with a specific task and ends when all the tasks in the group are successfully completed. If any of the tasks fail, the transaction fails. Therefore, a transaction has only two results: success or failure
Command: COMMIT, ROLLBACK, SAVEPOINT

SQL and NoSQL:

SQL	NoSQL
SQL databases are primarily called RDMS or relational Databases.	NoSQL databases are primarily called as non-relational or distributed database.
SQL databases are table-based databases.	NoSQL databases can be document based, key-value pairs, graph data bases.
MySQL uses SQL to query databases.	MongoDB uses BSON to query databases.
Developed in the 1970s with a focus on reducing data duplication.	Developed in the late 2000s with a focus on scaling and allowing for rapid application change driven by agile and Devops practices.
Oracle, MySQL, Microsoft SQL server and PostgreSQL.	Document: MongoDB and CouchDB. key-values: Redis and DynamoDB. wide-column: Cassandra, Hbase. Graph: Neo4j and Amazon Neptune.

Language Support by MongoDB:

MongoDB currently provides official driver support for all popular programming languages like C, C++, Rust, C#, Java, Node.js, Perl, PHP, Python, Ruby, Scala, Go, and Erlang.

Download steps:

Just go to http://www.mongodb.org/downloads and select your operating system out of Windows, Linux, Mac OS X and Solaris. A detailed explanation about the installation of MongoDB is given on their site. For Windows, a few options for the 64-bit operating systems

drops down. When you're running on Windows 7, 8 or newer versions, select **Windows 64-bit 2008 R2+**. When you're using Windows XP or Vista then select **Windows 64-bit 2008 R2+ legacy**.