NoSQL Summary

1: Major differences between SQL and NoSQL databases :

- SQL databases are primarily called as Relational Databases (RDBMS); whereas NoSQL databases are primarily called as non-relational or distributed database.

- SQL databases are table based databases that is SQL databases represent data in form of tables which consists of n number of rows of data. On the other hand, NoSQL databases are document based, key-value pairs, graph databases or wide-column stores which do not have standard schema definitions which it needs to adhere to.

- SQL databases have predefined schema whereas NoSQL databases have a dynamic schema for unstructured data.

- SQL databases are vertically scalable which are scaled by increasing the horse-power of the hardware. Whereas the NoSQL databases are horizontally scalable and these databases are scaled by increasing the databases servers in the pool of resources to reduce the load.

- SQL databases use SQL (structured query language) for defining and manipulating the data, which is very powerful. In NoSQL database, queries are focused on the collection of documents. Sometimes it is also called as UnQL (Unstructured Query Language). The syntax of using UnQL varies from database to database.

2: Pros and cons of SQL and NoSQL databases :

Advantages and disadvantages of SQL:

Advantages :

- Speed: The speed offered by SQL is unbelievable and unbeatable, helping the retrieval of data from database records with ease.

- Well-defined standards: Unlike the NoSQL, SQL doesn't have the issue of standardization. This follows the ISI and ANSI standards, which are approved across the globe.

- No coding: It's code-free nature makes the process hassle-free.

Disadvantages :

- Interfaces: Though there are no complex coding involved, the process of interfacing is complex.

Advantages and disadvantages of NoSQL:

Advantages:

- NoSQL is non-relational: Non-relational, in other words, you can call it as table-less, these NoSQL databases vary from SQL databases. In this sense, they provide the ease of management while ensuring a high level of flexibility with data models that are new.

- NoSQL is low cost: While being low cost, NoSQL is also an open-source database, that provides an awesome solution for smaller enterprises to opt this at affordable prices.

- Detailed database model structuring is unnecessary here: You can easily create a database without actually developing any detailed database models when using NoSQL database. This will help to save a lot of your time and effort.

Disadvantages :

- Less support from the community: Though the NoSQL has been expanding at an unbelievable pace, the community support is relatively less as its new.

- Interfaces and interoperability is another concern that is faced by NoSQL, which needs fixing immediately.

- Standardization: It lacks a standardized platform like SQL, which is preventing it from further expanding. This has been creating concerns during migration. Standardization is what helps the database industry to unify.

3: List three popular NoSQL databases :

- **MONGODB** : MongoDB is the most well known among NoSQL Databases. It is an Open-Source database which is Document-oriented. MongoDB is a scalable and accessible database. It is in C++. MongoDB can likewise be utilized as the file system. In MongoDB, JavaScript can be utilized as the query language. By utilizing sharding MongoDB scales horizontally. It is very useful with Popular JavaScript Frameworks.

- **CASSANDRA** : Cassandra is a distributed data storage system for handling very large amounts of structured data. Generally, these data are spread out across many commodity servers. Cassandra gives you the maximal flexibility to distribute the data. You can also add storage capacity of your data keeping your service online and you can do this task easily. As all the nodes in a cluster are same, there is no complex configuration to deal with. Cassandra is written in Java. It

supports MapReduce with Apache Hadoop. Cassandra Query Language (CQL) is a SQL-like language for querying Cassandra Database.

- **REDIS** : Redis is a key-value store. Furthermore, it is the most famous key-value store. Redis has support for some C++, PHP, Ruby, Python, Perl, Scala and so forth. Redis is composed in C language.

4: Give some advice on how to choose a NoSQL database :

How you choose a NoSQL database should be the same as how you would choose any database. The first step is to first fully understand the requirements so that you can decide which database best suits your project. There are many types of NoSQL databases, each with their own unique advantages, the major classifications are as given below:

- **Document Based Databases** : The smallest unit of storage for these databases is a document. MongoDB is a major commercial implementation of this type of databases.

- **Key Value Pair** : These databases store data in form of Key value pairs. A major example of these is Cassandra.

- **Graphical Databases** : These databases stores data in the form of nodes, edges, and properties to store data. An example of this type is neo4j.