NoSQL database vs Relational database

▶ Two main types of modern databases are known as relational and non-relational databases

▶ They are also referred to as SQL and NoSQL

▶ From historical evidences, we know that RDBMS(Relational Database Management Systems) have worked well when data structures were simpler and static

▶ With the advancing of technology and big data applications, the traditional SQL based relational databases were found less equipped in handling large volumes of data and the growing complexities of data structures

▶ Since NoSQL databases offer better scalable, flexible and cost efficient alternative to the SQL based RDBMS, they have gained widespread popularity and adoption

▶ Here are the key areas of difference:

▶ 1.   Data Models and Schema

▶ NoSQL databases allow us to use "unstructured data" without defining the schema first unlike the RDBMS. No pre-defined schema makes NoSQL databases much easier to update as changing the schema structure in an RDBMS can be very expensive, time consuming and often interruptive.

▶ 2. Data Structure

▶ The foundation of the RDBMS are built on structured data. On the other hand, NoSQL databases are designed to handle unstructured data (texts, photos, videos, social media posts and emails). The former are based on table, whereas the latter (NoSQL) can be document based, key-value pairs, graph databases, or wide-column stores.

▶ Scaling

▶ Relational databases are vertically scalable but typically more expensive as they require a single server to host the entire database. So to scale, one needs to buy a bigger and more expensive server. Scaling in a NoSQL database is much cheaper as one can add capacity by scaling horizontally over cheap, commodity servers.

▶ 4. Development Model

▶ Relational databases, in general, are closed source with licensing fees applicable into their use. NoSQL databases tend to be more a part of the open-source community.