My Database Checkpoint

Database: this is a set of information designed and produced to be easily accessed or modified by several users.

There are two approach to create ,manage and maintained a database otherwise called database management systems(DBMS).

The types of database management system can be summarised into two main parts namely:

1. **NoSQL Database**

2. **SQL Database**

We are going to look at the two in-depth in our next slide.

Database Management Systems

1. SQL is a domain-specific language used in programming and designed for managing data held in a relational database management system, or for stream processing in a relational data stream management system.

    Example of SQL database system include:

    - Oracle
    - My SQL
    - Microsoft SQL Server

Database Management System

1. NoSQL database provides a mechanism for storage and retrieval of data that is modeled in means other than the tabular relations used in relational databases. Such databases have existed since the late 1960s, but the name "NoSQL" was only coined in the early 21st century, examples include:
 - MongoDB by far the most popular NoSQL database in use
 - Cassandra
 - Google Cloud BigTable
 - Apache Hbase

   In the next slides we are going to be looking at the critical differences between the SQL and NoSQl

SQL vs NoSQL: Five Critical Differences

1.   **Database Architecture**

At the most basic level, the biggest difference between these two technologies is that SQL databases are relational, while NoSQL databases are non-relational.

SQL vs NoSQL: Five Critical Differences

2. Database Schemas and Query Languages

SQL databases use structured query language and have a pre-defined schema for defining and manipulating data. SQL is one of the most versatile and widely used query languages available, making it a safe choice for many use cases. It's perfect for complex queries. However, SQL can be too restrictive.

 NoSQL databases have dynamic schemas for unstructured data, and the data is stored in many ways. You can use column-oriented, document-oriented, graph-based, or KeyValue store for your data. It is flexible.

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3. Database Scaling

SQL databases are vertically scalable in most situations. You're able to increase the load on a single server by adding more CPU, RAM, or SSD capacity. NoSQL databases are horizontally scalable. You're able to handle higher traffic by sharding, which adds more servers to your NoSQL database. Horizontal scaling has a greater overall capacity than vertical scaling, making NoSQL databases the preferred choice for large and frequently changing data sets.

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4.Data Structure

SQL databases are table-based, while NoSQL databases are document, key-value, graph, or wide-column stores.

Some examples of SQL databases include MySQL, Oracle, PostgreSQL, and Microsoft SQL Server. NoSQL database examples include MongoDB, BigTable, Redis, RavenDB Cassandra, HBase, Neo4j, and CouchDB.

SQL vs NoSQL: Five Critical Differences

5. Ideal Use Cases

SQL databases are better for multi-row transactions, while NoSQL is better for unstructured data like documents or JSON. SQL databases are also commonly used for legacy systems that were built around a relational structure.

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Thanks for Reading