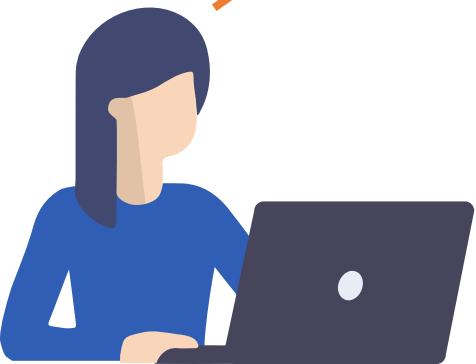


# Checkpoint number 26 : Introduction to Databases

SQL  
VS  
No SQL

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# Introduction

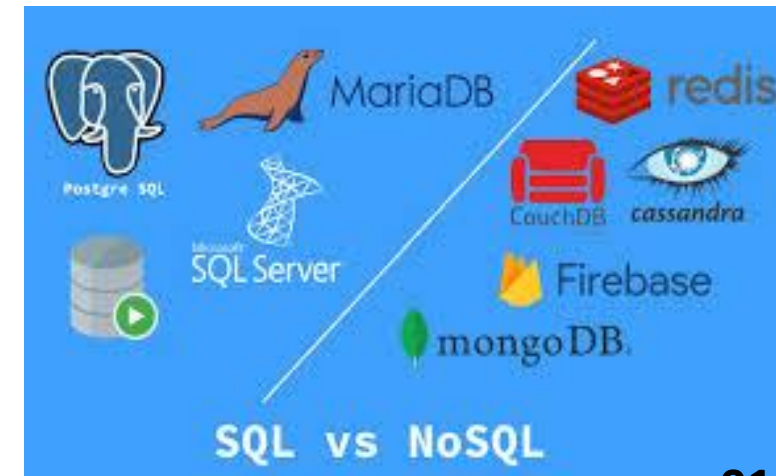


Structured Query Language SQL is a standard language used for storing , manipulating and retrieving data from relational databases management system (RDBMS).



No Structured Query Language Not Only SQL is a database provides a mechanism for storage and rertrieval of data that is modeled in means other than the tabular relations used in relational databases.

→ SQL and NoSQL are two different approaches to data management and represent two distinct categories of databases.



# SQL VS NoSQL

SQL databases are also known as Relational Databases and are based on a relational model. In a relational database, data is stored in tables, with each table having a unique identifier (Primary Key) and relationships defined between tables using Foreign Keys.

SQL databases are well suited for structured data and are ideal for use cases where transactional consistency is a priority, such as financial applications.




On the other hand, NoSQL databases do not follow the relational model and offer more flexibility in terms of data storage.

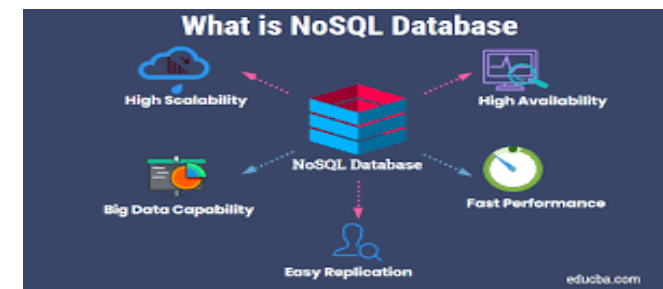
NoSQL databases are designed to handle large amounts of unstructured or semi-structured data, and are better suited for use cases where scalability and performance are the main priorities.

NoSQL databases can handle diverse data types, including documents, key-value pairs, and graph data, and can be easily scaled horizontally.

# MySQL

# NoSQL

Nature	Relational database	Non-Relational database
Design	Based on the concept of tables	Based on the concept of documents
Scalable	Tough to scale due to its relational nature	Easily scalable big data compared to relational
Model	Detailed database model is needed before creation	No need of a detailed database model
Community	Vast community available	
Standardization	SQL is a standard language	
Schema	The schema is rigid	
Flexibility	Not very flexible in terms of design	Very flexible in terms of design
Insertions	Inserting new columns or fields affect the design	No effect on the design with insertion of new columns or fields



## Use Case

Legacy applications or applications that require multi-row transactions

## Data structure

Structured data with clear schema

## Risk

Risk of SQL injection attacks

## Analysis

MySQL is perfect when your data is structured and you are in need of a traditional relationship database



## Use Case

Real-time analytics , content management, IOT, mobile applications

## Data structure

No schema definition required

## Risk

Less risk of attack due to design

## Analysis

MongoDB works great for unstructured data and lends you opportunity for growth

# Conclusion



SQL and NoSQL databases have different design goals and trade-offs, and the choice between the two will depend on the specific requirements of the use case. While SQL databases are best suited for structured data and transactional consistency, NoSQL databases are better suited for handling large amounts of unstructured or semi-structured data, and can be easily scaled.

