Introduction to databases Checkpoint

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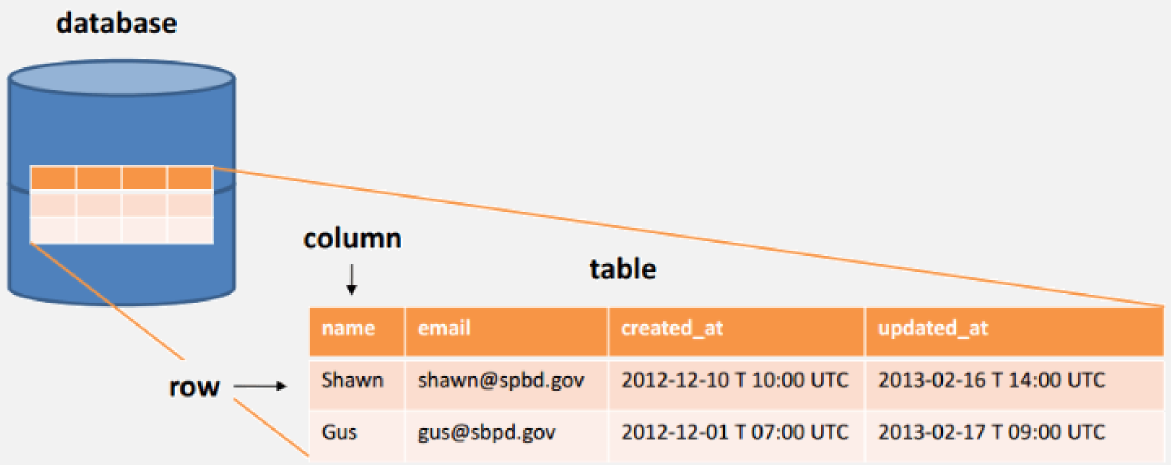
Topics :

- *What is a database*?

-*what are NoSQL and SQL databases ?*

-*Comparison between MongoDB and SQL*

SQL : The relational database



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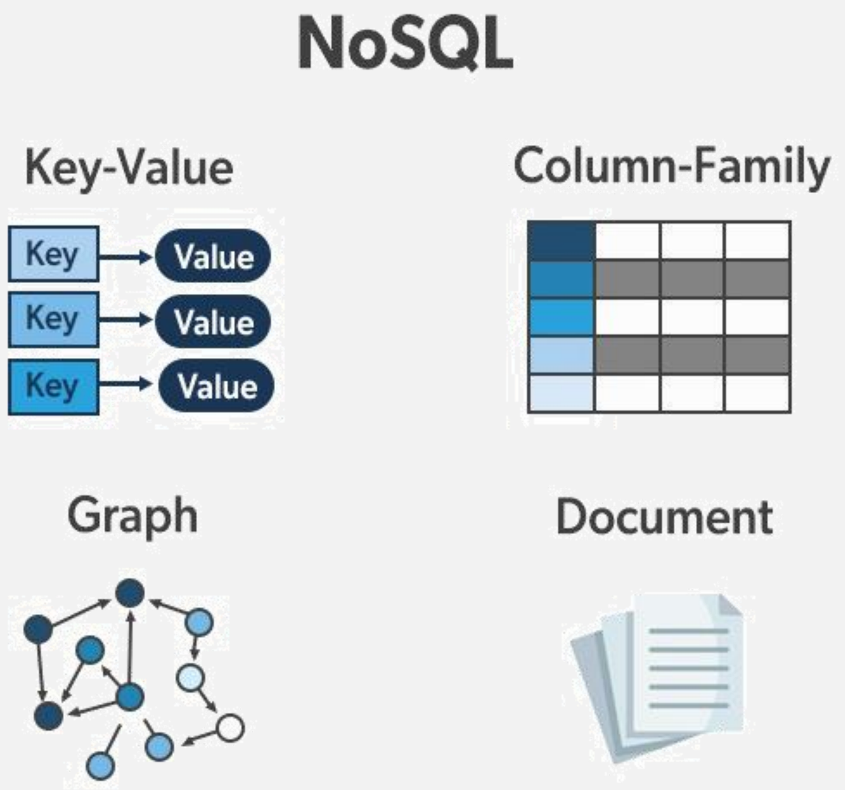
Gus	gus@sbpd.gov	2012-12-01 T 07:00 UTC	2013-02-17 T 09:00 UTC

SQL (Structured Query Language) database or relational database is a collection of highly structured tables, wherein each row reflects a data entity, and every column defines a specific information field. Relational databases are built using the structured query language (SQL) to create, store, update, and retrieve data.

Therefore, SQL is the underlying programming language for all relational database management systems (RDBMS) such as MySQL, Oracle, and Sybase, among others.

No SQL : The non-relational database



Types of NoSQL databases

NoSQL, also referred to as “not only SQL”, “non-SQL”, is an approach to database design that enables the storage and querying of data outside the traditional structures found in relational databases.

Instead of the typical tabular structure of a relational database, NoSQL databases, house data within one data structure, such as JSON document. Since this non-relational database design does not require a schema, it offers rapid scalability to manage large and typically unstructured data sets.

NoSQL is also type of distributed database, which means that information is copied and stored on various servers, which can be remote or local. This ensures availability and reliability of data. If some of the data goes offline, the rest of the database can continue to run.

In this presentation , we are going to take a mongoDB as a main example of NoSQL databases

Differences between SQL and NoSQL

Criteria	SQL Databases	NoSQL Databases
Data Storage Model	Tables with fixed rows and columns	Document: JSON documents, Key-value: key-value pairs, Wide-column: tables with rows and dynamic columns, Graph: nodes and edges
Schemas	Rigid	Flexible
Scaling	Vertical (scale-up with a larger server)	Horizontal (scale-out across commodity servers)
Development History	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.
Examples	Oracle, MySQL, Microsoft SQL Server, and PostgreSQL	Document: MongoDB and CouchDB, Key-value: Redis and DynamoDB, Wide-column: Cassandra and HBase, Graph: Neo4j and Amazon Neptune

Conclusion

- Choosing one between Relational and NoSQL Databases is often a tough challenge and you will have arguments in favor of both in most cases. Even in the modern Petabyte-scale data architecture, Relational Databases find their place in specific scenarios. This is why most data architectures have both Relational and NoSQL Databases splitting the storage duty and this is where Relational Database vs NoSQL becomes Relational Database and NoSQL.
- Whether you choose to pick one or choose to split responsibilities between the two paradigms, the success of your architecture often depends on having access to data transfer tools that can work between these systems and external data sources. Hevo provides a cloud-based ETL tool that helps you transfer data from most of the popular Relational as well as NoSQL systems.