SQL VS NOSQL

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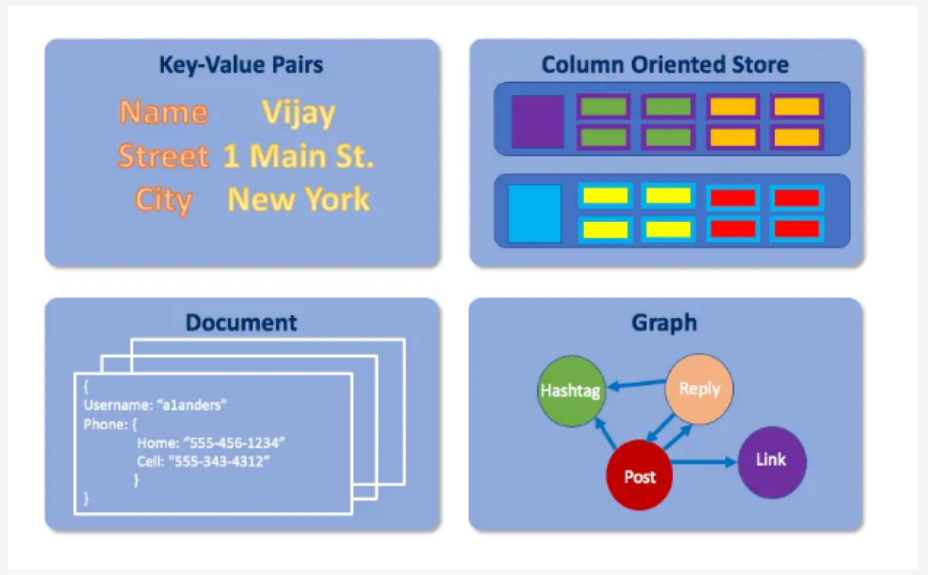
Spark Page - https://spark.adobe.com/page/tyMOvzuj48fGm/

Relational Vs. Non-Relational (or SQL Vs. NoSQL)

There are two main types of database systems, SQL (relational databases) and and NoSQL (non relational or distributed databases). SQL databases are table based while NoSQL ones can be a collection of key value pairs, graph databases, documents or wide-column stores. A wide-column store is similar looking to a table but the names and formats of it's columns and rows can be different on each line. SQL databases are rigidly structured and must follow strict rules and guidelines for data manipulation whereas a NoSQL solution can follow whatever rules were set forth for a particular database section. Basically a NoSQL database is a database that uses some other method of data storage and manipulation besides a relational structured query language setup.



difference between nosql and sql database - ("difference-between-nosql-and-sql-database", 2019)

Three NoSQL Twitter Features

Three features of twitter that could be NoSQL are hashtags, a reply and a share.

Twitter Features How To

The hashtag system could be done by having a graph based database. The tweets could be saved to a

database as a nodes with all other things that can be hash tagged pointing to the hashtag node.

A reply could just be added to wherever the post is stored as another column for people who liked a post's user id and can be queried when that post is being viewed and add the likes in order beneath it. This type of data might be repeated in multiple entries depending on where it is needed, perhaps inside a user entry or a tweet entry.

Lastly a share could work exactly the same as a hashtag and could be served to users who are subscribed to the specific person instead of hashtag.

Twitter Features Pros/Cons

Some pros to using a NoSQL database for things like hashtags, replies and a shares are the ability to be able to adjust quickly for many different types of data like text, video, image or anything else without having to restructure anything. Also being able to not worry about if the entries are related and adhere to a schema. Some cons maybe the repetition of data. For a site like Twitter there could be many entries containing a user name field or a social rating system and could become confusing quickly if managed and organized badly.

("How Twitter Uses NoSQL - ReadWrite", 2019)

One Relational Facebook Feature

One relational feature of Facebook could be friends.

Facebook Feature How To

The way somebody might implement friends with relations could be having a separate table of userFriends and inside have columns like userId, dateAdded etc. You could then query posts with SQL to get very easily obtain precise data by accessing posts with relation filters and show friend's posts and new shared items.

Facebook Feature Pros/Cons

A pro to using SQL for this could be the overall organization, predictability and ease of access to data. A con to this approach might be that as something like Facebook becomes bigger and the data becomes more complicated, the time and resources it will take

to sift through data will become longer and longer, especially when a facebook user starts to obtain many friends to track. The limited horizontal scale of a SQL database would eventually create a slowdown with so many complex queries and perhaps limit the scope of what post might contain without a lot of index management and optimizations when involving conditional friend features. There is only so much power that can be added to one system.

Four NoSQL Database Types

Key Value Pair - The key value pair used a structure where the user gets a specific value by presenting the key. For instance a user id may be a key for a user information document. The Key-Value Pair type of database is very quick to query, because it's structure is so simple.

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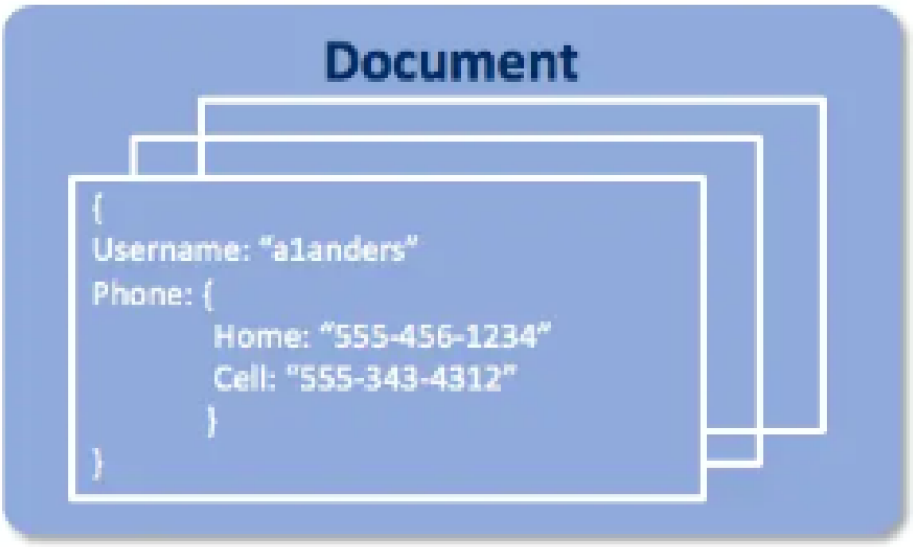
Document Based Store - The document store stores documents made of tagged elements to provide structure to the data being stored using encoding with something like XML or JSON.



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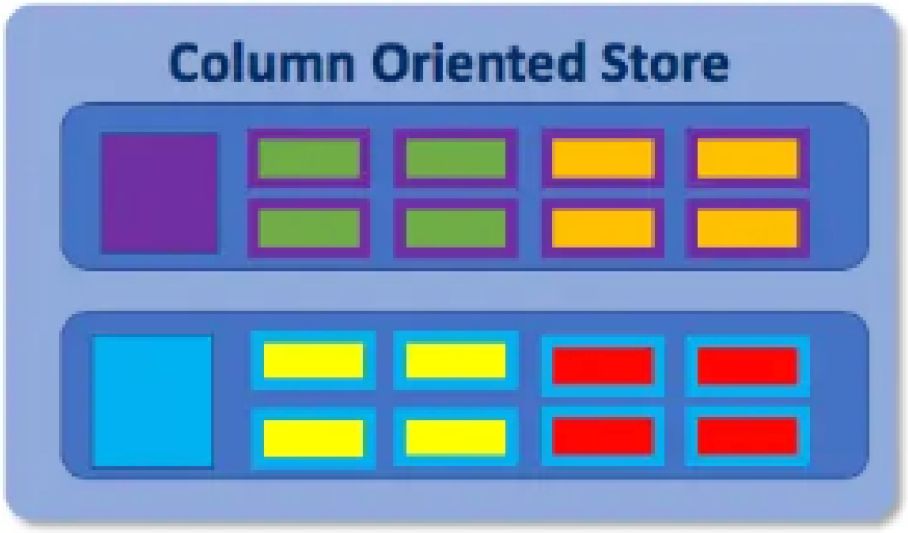
Wide-Column stores are series of storage blocks of data which are stored in families of columns using a key value pair type of method. Column databases are very scalable and are fast to load and query.



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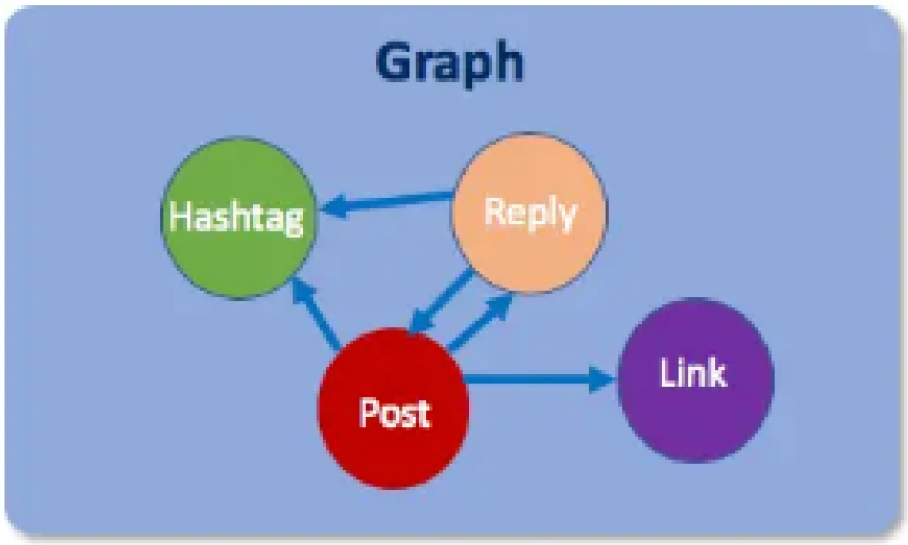
Graph Based uses nodes and node relationships to organize data. Graph style databases work very well when the data is related or often duplicated.



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Five NoSQL Databases

ArangoDB is a popular NoSQL document store database. ArangoDB uses it's own query language AQL.

BaseX is a JSON and XML document database.

Berkeley DB is a key value NoSQL database written in C and has an api for C++, C#, Java, Perl, PHP, Python, Ruby, Smalltalk, Tcl, and more.

Bigtable is a compressed, high performance, proprietary data storage system built using the Google File System and other Google technologies.

Amazon Mobile Hub uses DynamoDB which is a Key-Value Pair and a document store style database. DynamoDB is used for many things including advertising, social media apps, gaming data, and much more and lends itself perfectly to mobile applications.

(Violino, 2019)

Five NoSQL Databases Pros/Cons

ArangoDB pros is that it uses it's own query language AQL making it more specialized. Using it's AQL may make it too specialized for some developers.

Berkeley DB pros include application development APIs across multiple programming languages. Berkeley DB cons include large file sizes due to using

JSON XML documents and a speed disadvantage when in need of frequently updating data.

BaseX pros include application development APIs with familiar JSON XML documents. BaseX seems to be a lesser known and used NoSQL database so support may be hard to find.

Bigtable pros include being able to handle very large quantities of data. Bigtable also uses familiar Google ideas. cons include being cloud hosted.

Amazon Mobile Hub pros include a large backing by a well known mega company as well as utilizing Amazon Web Services.

Weather App (Two NoSQL Solutions)

You could use ArangoDB to store city weather in JSON documents and use something like Berkeley DB with it's large scale speed capabilities to store city / weather key value pairs that return queried data from the more specific ArangoDB.

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