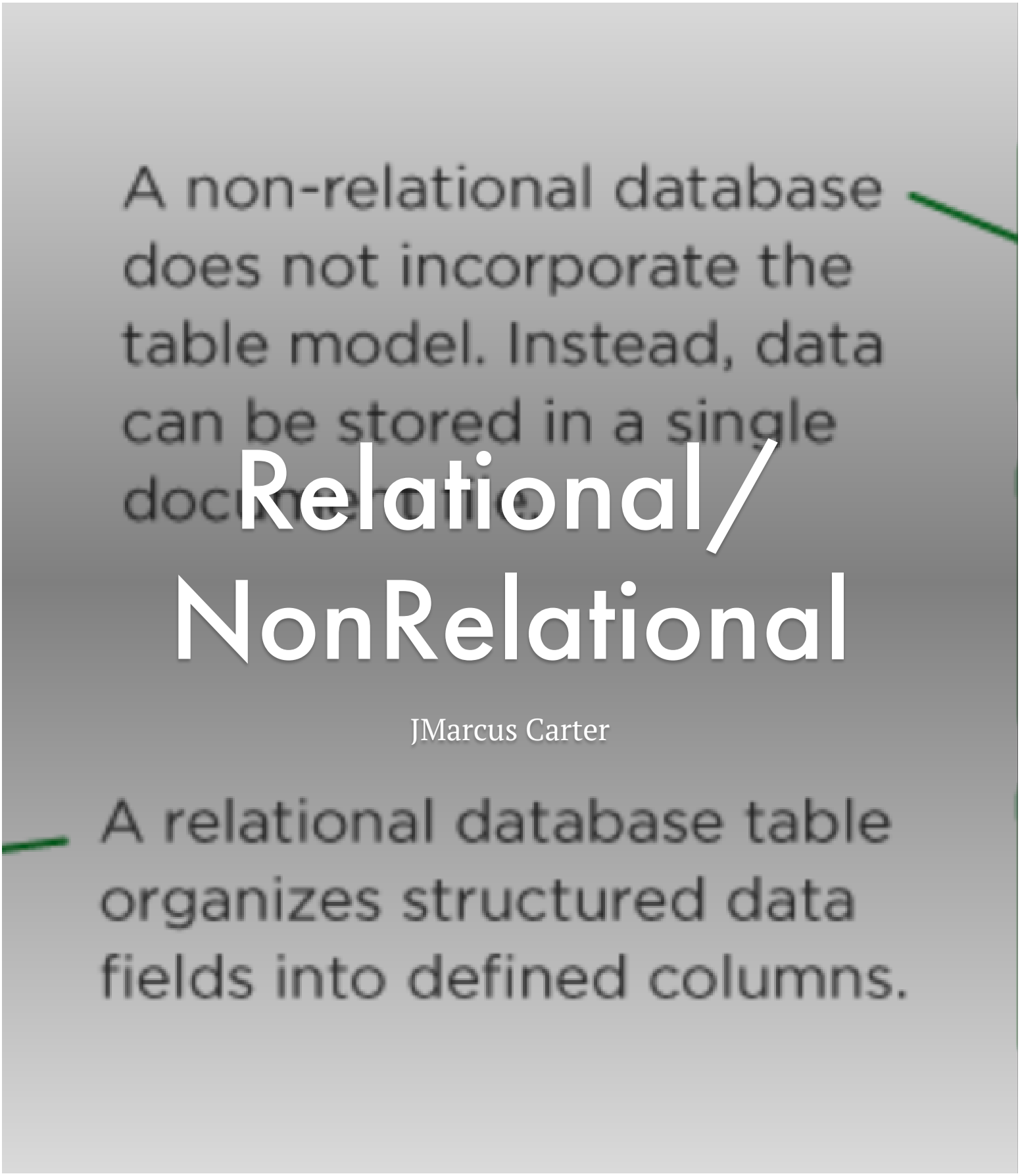

Relational/ NonRelational

JMarcus Carter

Link To Spark Page

“SQL vs. NoSQL: What's the Difference?” Hiring Headquarters, 26 Nov. 2019, www.upwork.com/hiring/data/sql-vs-nosql-databases-whats-the-difference/.

Whats the Difference?

Relational databases are structured, like phone books that store phone numbers and addresses. Non-relational databases are document-oriented and distributed, like file folders that hold everything from a person’s address and phone number to their Facebook likes and online shopping preferences.

Why we call them SQL/ No SQL?

We call them SQL and NoSQL, referring to whether or not they’re written solely in structured query language (SQL).

Twitter and NoSQL Features/ How??

Finley, Klint, and Cloud. “How Twitter Uses NoSQL.” ReadWrite, 2 Jan. 2011, readwrite.com/2011/01/02/how-twitter-uses-nosql/.

- Twitter mainly uses MySQL but due to the increasing size of the data users send to twitter they have switched over to Scribe to track most of this data and handle this issue.
- FlockDB is an awesome feature twitter uses that allows people to send private tweets to people or only share with a select few of users. it is used mainly for the filtering feature in twitter
- HBase is used exclusively for the people "search" on twitter. it works in conjunction with Hadoop.

Twitter Pros And Cons??

1. Pro of using Scribe for its twitter DB instead of MySQL is that it can handle way more data than MySQL however a con is that it is less secure and has less professional support if things were to go wrong.
2. Pro of Flock DB is that its a great filtering tool for looking at and maintaining social graphs however it does not generate realtime statistics for Twitter.
3. HBase is great for gathering this realtime data for searching for people on twitter however lacks extremely in the cache department compared to something like MongoDB.

One Relational Facebook Feature?

One relational facebook feature is using MySQL to store updated posts and timeline data.?

Facebook How To?

MySQL stores all the social graph data and uses caches to intercept these updated posts, updated photos, friend requests.

Pros And Cons to Facebook using Relational DB

Phan, Manh. “Pros and Cons of Relational Database.” Manh Phan - Practice Makes Perfect!, ducmanhphan.github.io/2019-01-12-Pros-and-cons-of-relational-database/.

- Theres a time and place for when and when NOT to use a relational database. If Facebooks analytics team wants to do trending analysis over several days, weeks, months or years they can do that because relational offers the better technology.

- Another pro is that relational databases are easy to use because most data is stored in rows and columns like a spread sheet. so different teams can decipher the data the same way.
- One of the major cons to facebook using a relational database is depending on what database they use. their could be a lack of support for complex types of data.
- Lack of RDBMs does not allow transactions to safely be supported. so facebooks gaming partners would be less secure and therefor could lead to less use of the platform for transactions.
- Another Con is that with the amount of data that facebook has to deal with there is always a constant need for database expansion. noSQL database can do this and scale for significantly cheaper.

Four NoSQL Database Types

1. Dictionary
2. Document
3. Graph
4. Column

Document based distributed Database built for the cloud. they store the data in json like documents. There are no rows and columns, and Mongo DB supports arrays and nested objects

Built around JSON, Flexible and natural for developers. They promise a higher developer productivity. The most popular data model to relational databases. The one big difference is Document DB offers Flexible Schema

Cassandra is widely considered a perfect platform for mission critical data. it provides low latency for uses and gives peace of mind knowing that you can survive outages with less worry. Fault tolerant and linear scalability are the strong suits.

First designed as a clustered and replicated database. clustering improves data safety and MDS enables independent scaling. They claim to be better than MongoDB because Mongo leaves data at risk. Though couch-base is very inflexible and cannot adapt to modern workloads

Hbase is an Open Sourced database modeled after google's BigTable and written in Java. HBase provides a fault tolerant way of storing large quantities of spare data. Facebook implemented its new messenger using HBase back in 2010

5 No SQL Pros/Cons

- **Pros**
- Flexible Scalability - Most NoSQL DB models are invented to be used on the cheapest of hardware/ computers.
- Storing Massive Amounts of Data - Huge volumes of data needing to be stored makes using a Relational DB illogical and unreasonable.
- Maintenance - Data distribution capabilities
- Economical - Most NoSQL DB are open sourced meaning open to the public. this allows a ton of savings for years.
- **Cons**
- Less support compared to relational DB.
- NoSQL does not support ACID. - Meaning systems like banks are not considered safe enough to commit transactions to a large degree
- Not Compatible with SQL - You will sometimes need a manual query language which makes things a bit more complicated than they needed to be.
- Age- Compare to Relational databases NoSQL is very new. this leads to less functionalities and less stability.

Two No SQL Solutions (Weather App)

- Due to meteorological data being in such high volumes, storing them efficiently can be very hard for relational data models due to the lack of scalability. No SQL storage can support large data sizes and better performance NoSQL db like HBase can store different readings and analyze "Big Data" with no issue
- Other "Cloud" based computing resources are used more and more to sparse data like the seismology and oceanology being stored using OTS.

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