Dgraph

An Open Source, Distributed,
Transactional Graph Database

Agenda

- Data in the internet Era
- Battling the Data Complexity
- Dgraph & Its Architecture
- Demo
- Questions

Hello!

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Dgraph Labs

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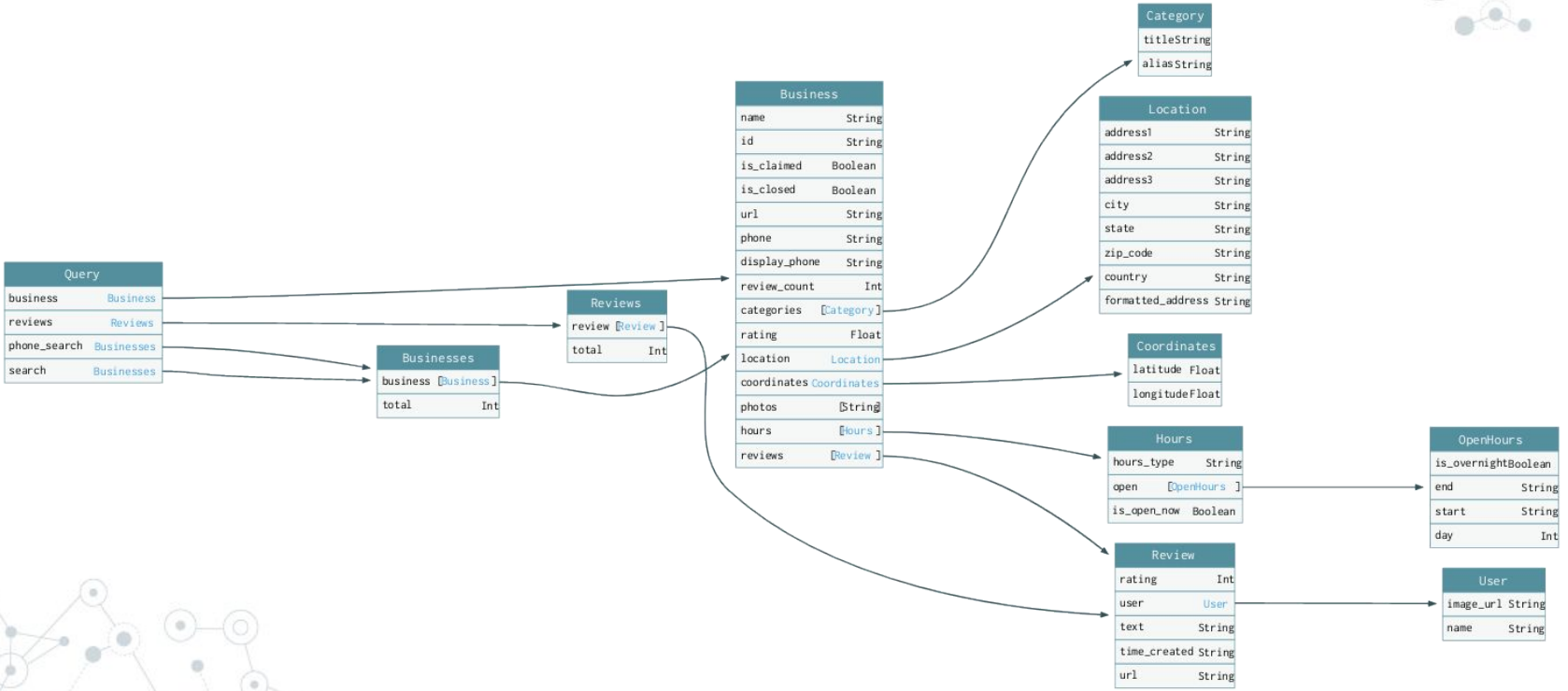
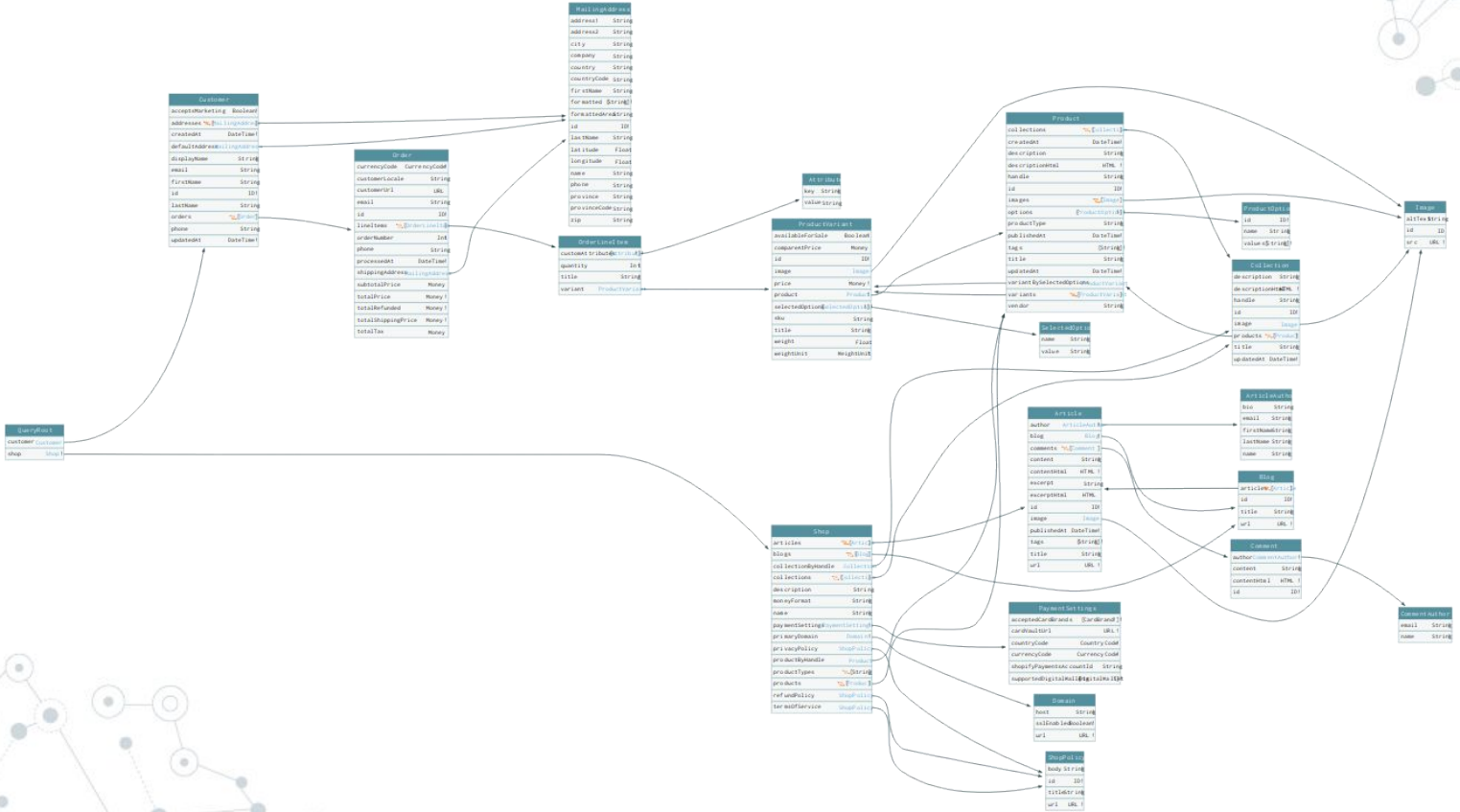
1.
Data in the Internet Era

Data is not just growing in size, but also in its complexity and connectedness.

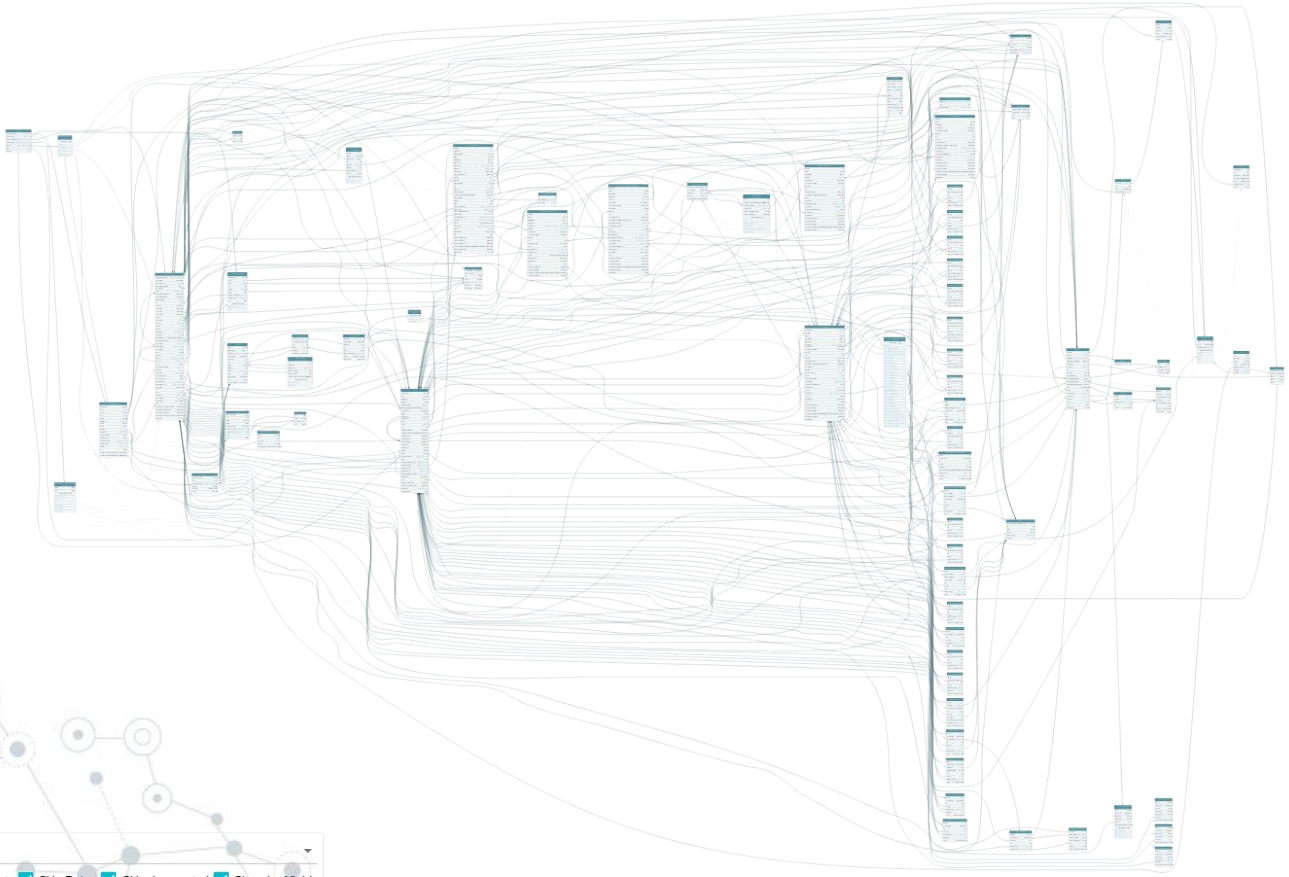
Complex Dataset: Yelp (1)



Complex Dataset: Ecommerce (2)

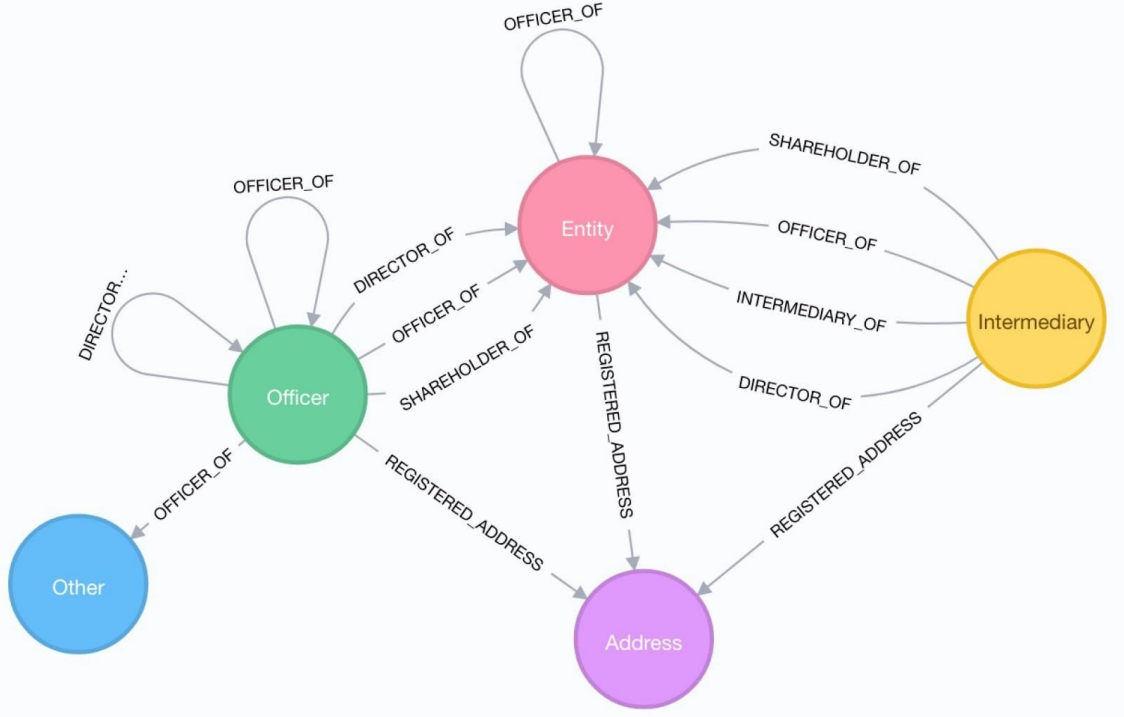


Complex Dataset: GitHub (3)



Unearthing the complex relationships in data could reveal a lot of interesting facts.

Fraud Detection



2.

How does applications deal with such datasets?

SQL Database

Order ID	Customer ID	Order Date
101	**201**	**2019-10-15**
102	**202**	**2019-10-16**
103	**201**	**2019-10-17**

Customer ID	Name	Location
201	**Aman**	**Bengaluru**
202	**Karthik**	**Mumbai**

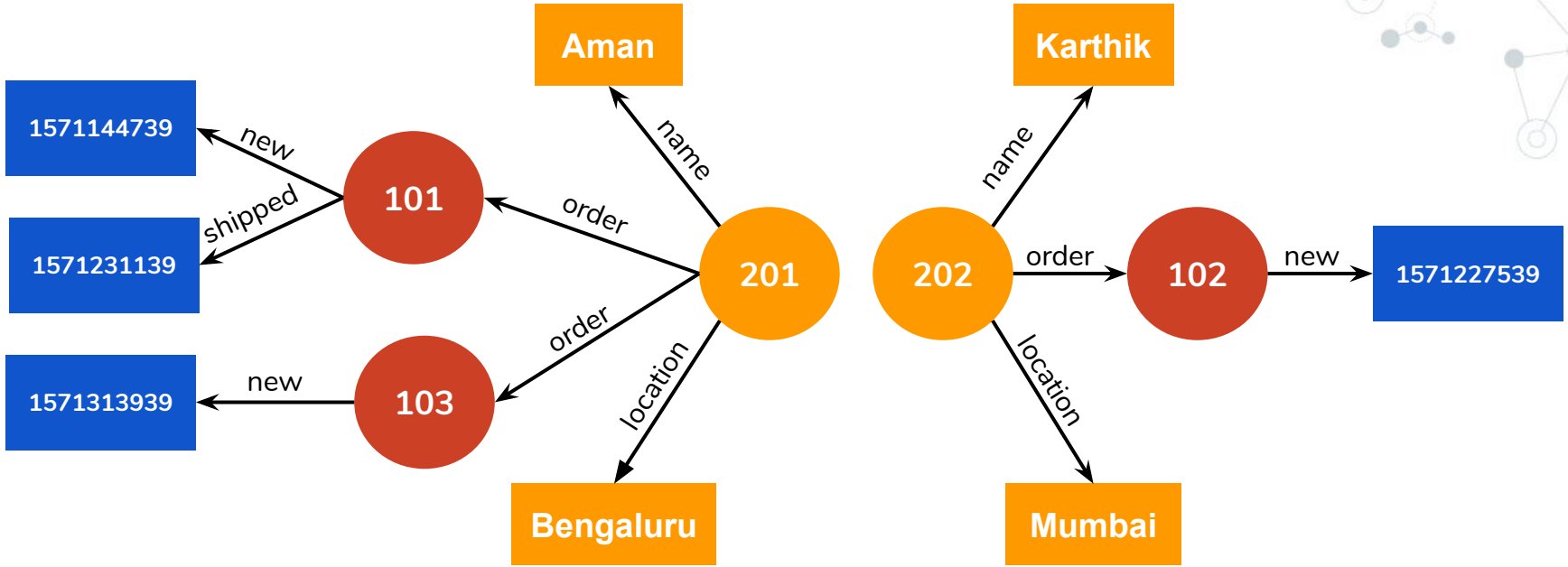
Order ID	Status	Timestamp
101	**New**	**1571144739**
101	**Shipped**	**1571231139**
102	**New**	**1571227539**
103	**New**	**1571313939**

NoSQL Database

Key	Value
201	**{“name”: “Aman”, “location”: “Bengaluru”**
202	**{“name”: “Karthik”, “location”: “Mumbai”}**

Key	Value
101	**{“customer”: 201, “date”: 2019-10-15, “new”: 1571144739, “shipped”: 1571231139}**
102	**{“customer”: 202, “date”: 2019-10-16, “new”: 1571227539}**
103	**{“customer”: 201, “date”: 2019-10-17, “new”: 1571313939}**

Graph Database



But we need a Graph Database that is scalable, performant and resilient.

3.

Welcome to Dgraph

A State of the Art Graph Database

Dgraph (github.com/dgraph-io/dgraph)

An open source graph database built for web scale production environments written in Go.

- Fast & horizontally scalable
- Highly available by design
- Fault tolerant
- Sharded and distributed (joins, filters and sorts)
- Client side transactions
- Consistent replication with Raft

Fast, Distributed Graph DB https://dgraph.io

graph-database database distributed throughput latency production golang graphdb go scale

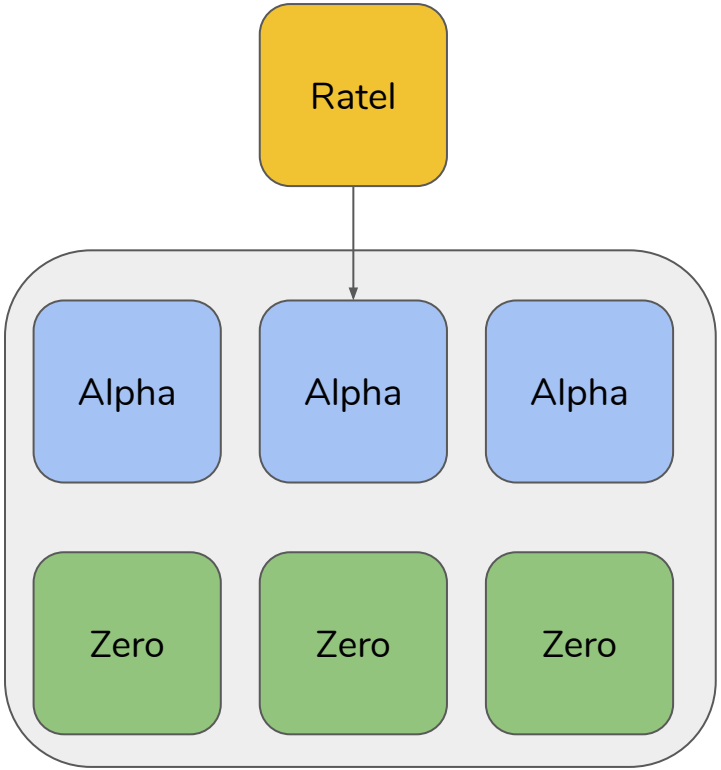
3,660 commits | **176** branches | **91** releases | **111** contributors | View license

Branch: **master** | New pull request | Create new file | Upload files | Find file | Clone or download

prashant-shahi Adding documentation on valid predicate names (#4186) ··· Latest commit `654fd57` 1 hour ago

.github	add pawan as code owner for query package (#3980)	last month
.travis	Remove dashboard specific code from Dgraph. Also build binary for rat…	2 years ago
algo	Simplify make call by omitting redundant arguments (#4074)	20 days ago
chunker	Make test util functions that create clients return an error. (#4176)	yesterday
codec	Remove uses of x.Check in tests in favor of t.Fatalf (#4180)	2 hours ago
compose	Enterprise - Support applying a license using /enterpriseLicense endp…	2 months ago
conn	Adopt Go Modules (#4146)	8 days ago

Distributed & Horizontally Scalable



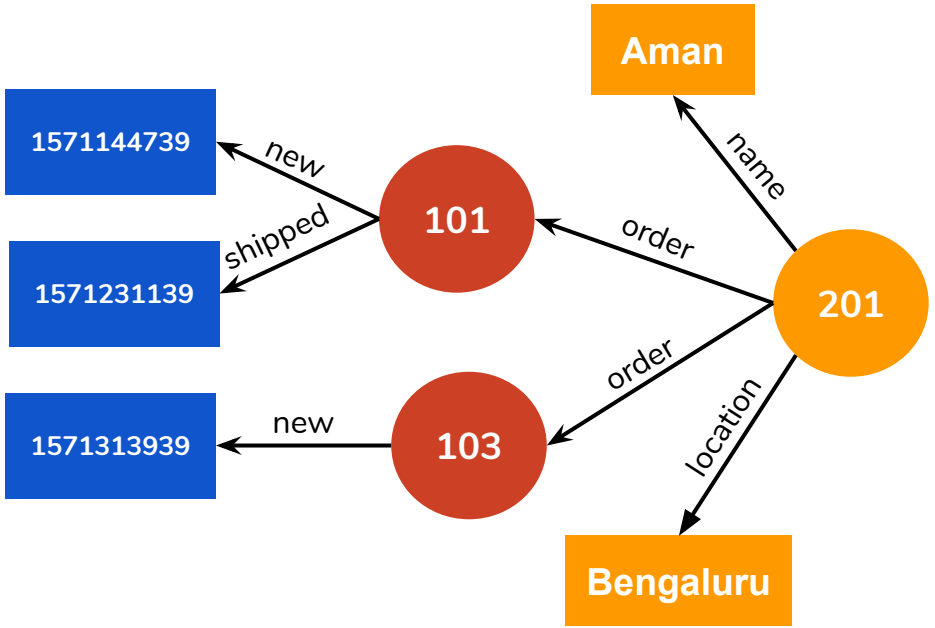
Ratel: Web UI

Alpha: Data Storage

Zero: Cluster Management

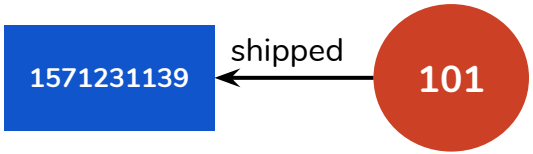
Data Sharding (1)

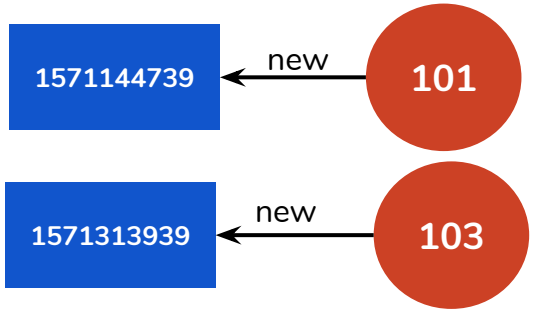
- Vertex cut partitioning
- Data for one type of edge is stored together (i.e. *order* edges)

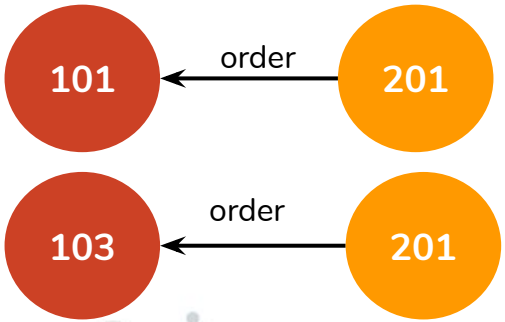


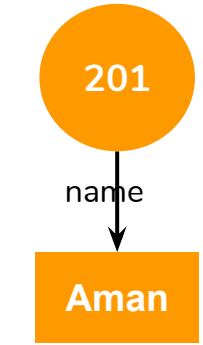
Data Sharding (2)

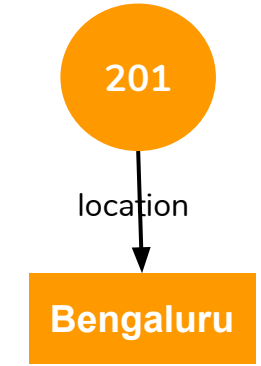
- Allows efficient graph traversal, single network call for one hop traversal











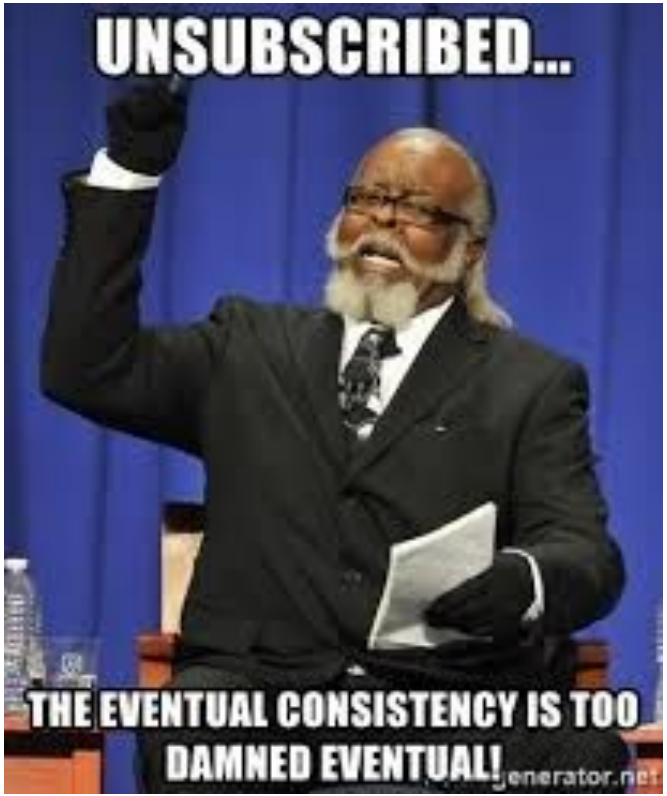
Client Side Transactions

- Dgraph provides a consistent view of data for each client for the duration of transaction (snapshot isolation)
- Ensures consistency using Raft consensus algorithm when concurrent transactions are running

```
txn := client.NewTxn()
...
// perform queries
// or mutations
...
txn.Commit()
// or txn.Abort()
```

Strong Consistency

- Dgraph supports Linearizability
- Changes are immediately reflected to majority of replicas in the system
- Everyone sees consistent view of the data



4.

Demo

Pray to Demo Gods!

Dgraph

Scalable, Distributed, Low Latency Graph Database

San Francisco, California https://dgraph.io contact@dgraph.io Verified

Repositories 59 | Packages | People 22 | Teams 2 | Projects

Pinned repositories

dgraph
Fast, Distributed Graph DB
Go ★ 11.4k 789

badger
Fast key-value DB in Go.
Go ★ 6.7k 496

ristretto
A high performance memory-bound Go cache
Go ★ 1.3k 60

dgo
Official Dgraph Go client
Go ★ 136 28

dgraph4j
Official Dgraph Java client
Java ★ 82 36

dgraph-js
Official Dgraph JavaScript client
JavaScript ★ 177 18

Find a repository… Type: All Language: All New

Thanks!

Any questions?

You can find me at:

 @mangalaman93

 aman@dgraph.io