

SQL VS NoSQL.

EPISODE 2



ACE YOUR SYSTEM DESIGN INTERVIEW

SQL vs NoSQL



- 1 What are SQL and NoSQL?**
- 2 Difference between SQL and NoSQL**
- 3 Scalability + Performance + Security**
- 4 Pros and Cons of SQL and NoSQL?**
- 5 When to Use Which? (with Examples!)**

SQL

- Relational Database Management System (RDBMS)
- Fixed or static or predefined schema
- Not suitable for hierarchical data storage
- Vertically Scalable
- Follows ACID property
- MySQL, PostgreSQL, Oracle

NoSQL

- Non-relational or distributed database system
- Dynamic schema
- Best suited for hierarchical data storage
- Horizontally Scalable
- Follows CAP
- MongoDB, GraphQL, HBase

DATA MODELS

Collection of conceptual tools for describing data, data relationships, data semantics & consistency constraints.

1. Relational Data Model: This type of model designs the data in the form of rows and columns within a table.

2. Entity-Relationship Data Model: An ER model is the logical representation of data as objects and relationships among them.

3. Object oriented Data Model: An extension of the ER model with notions of functions, encapsulation, and object identity, as well

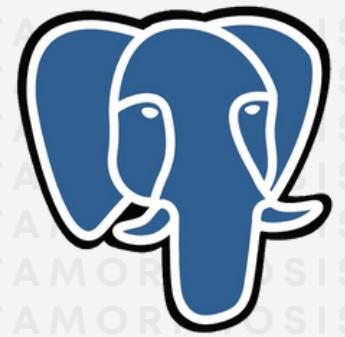
4. Document oriented: These databases store data as semi-structured documents, such as JSON or XML

5. Key-value : These databases store data as key-value pairs, and are optimized for simple and fast read/write operations

6.Column-family : These databases store data as column families, which are sets of columns that are treated as a single entity

7.Graph based: These databases store data as nodes and edges, and are designed to handle complex relationships between data

EXAMPLES



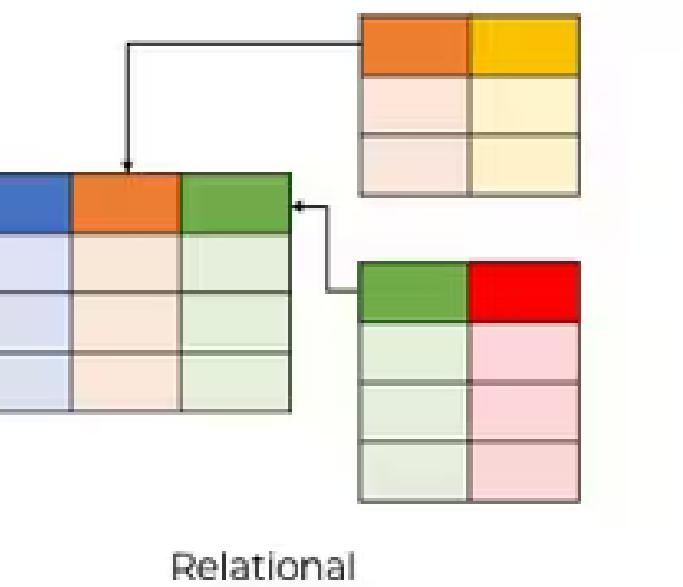
PostgreSQL



MySQL®

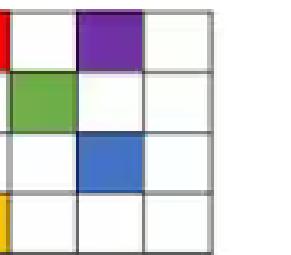


SQL DATABASES

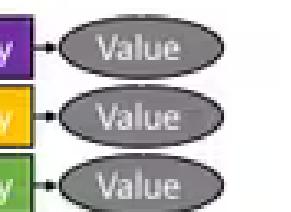


Relational

NoSQL DATABASES



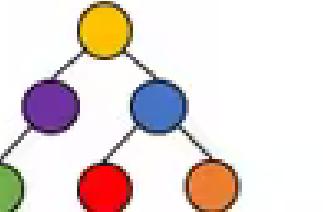
Column



Key-Value



Graph



Document



mongoDB



redis

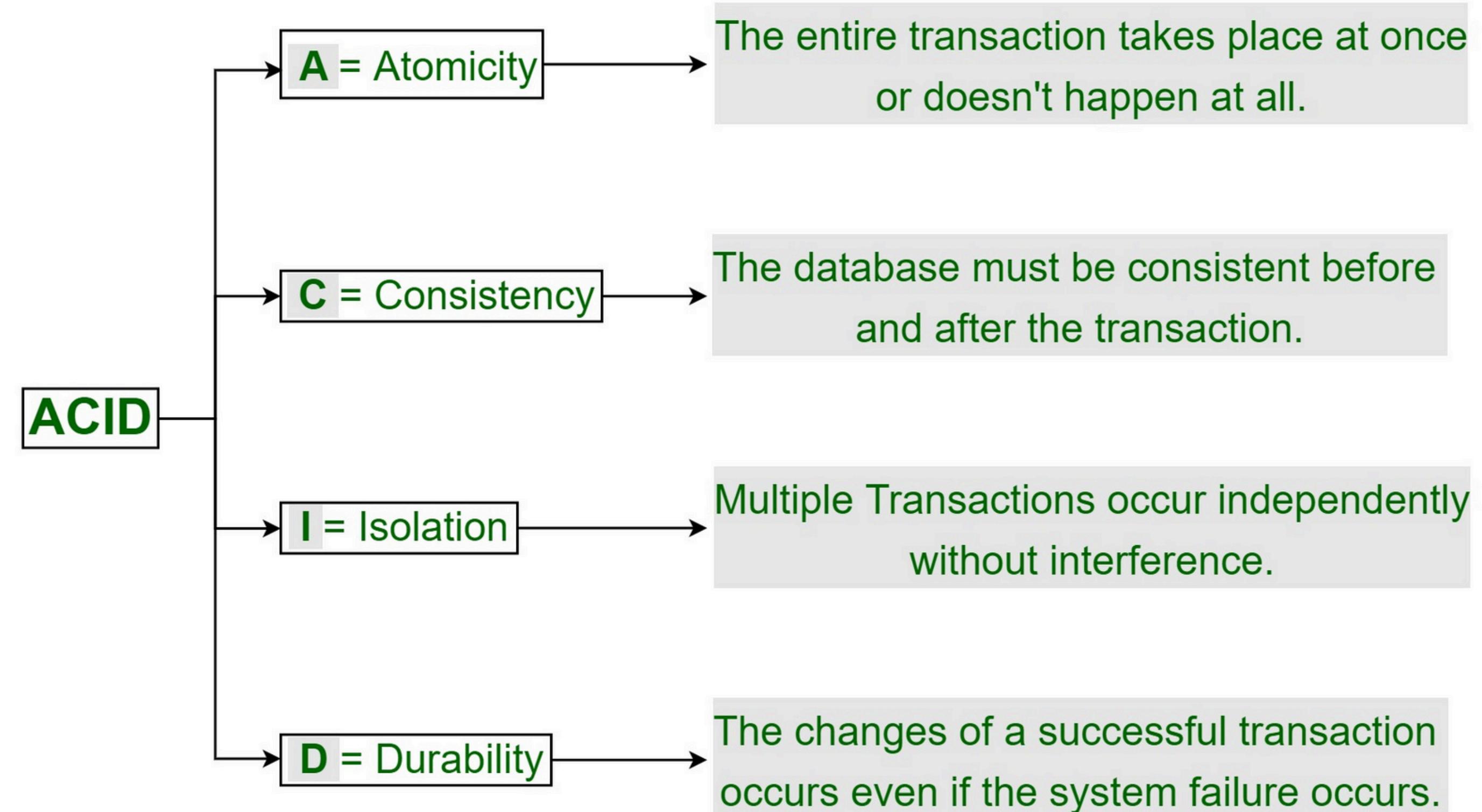


cassandra

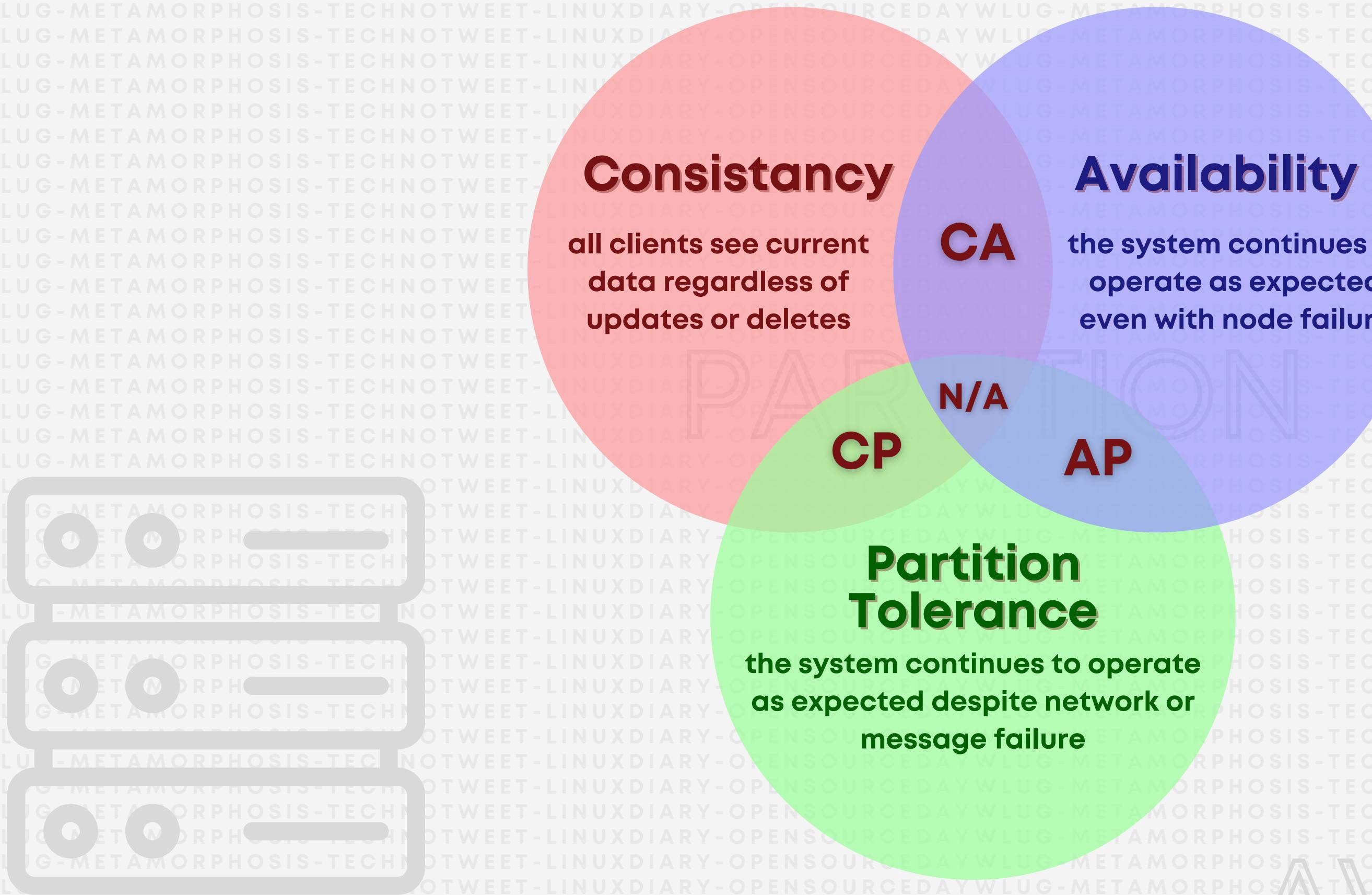


neo4j

ACID Properties



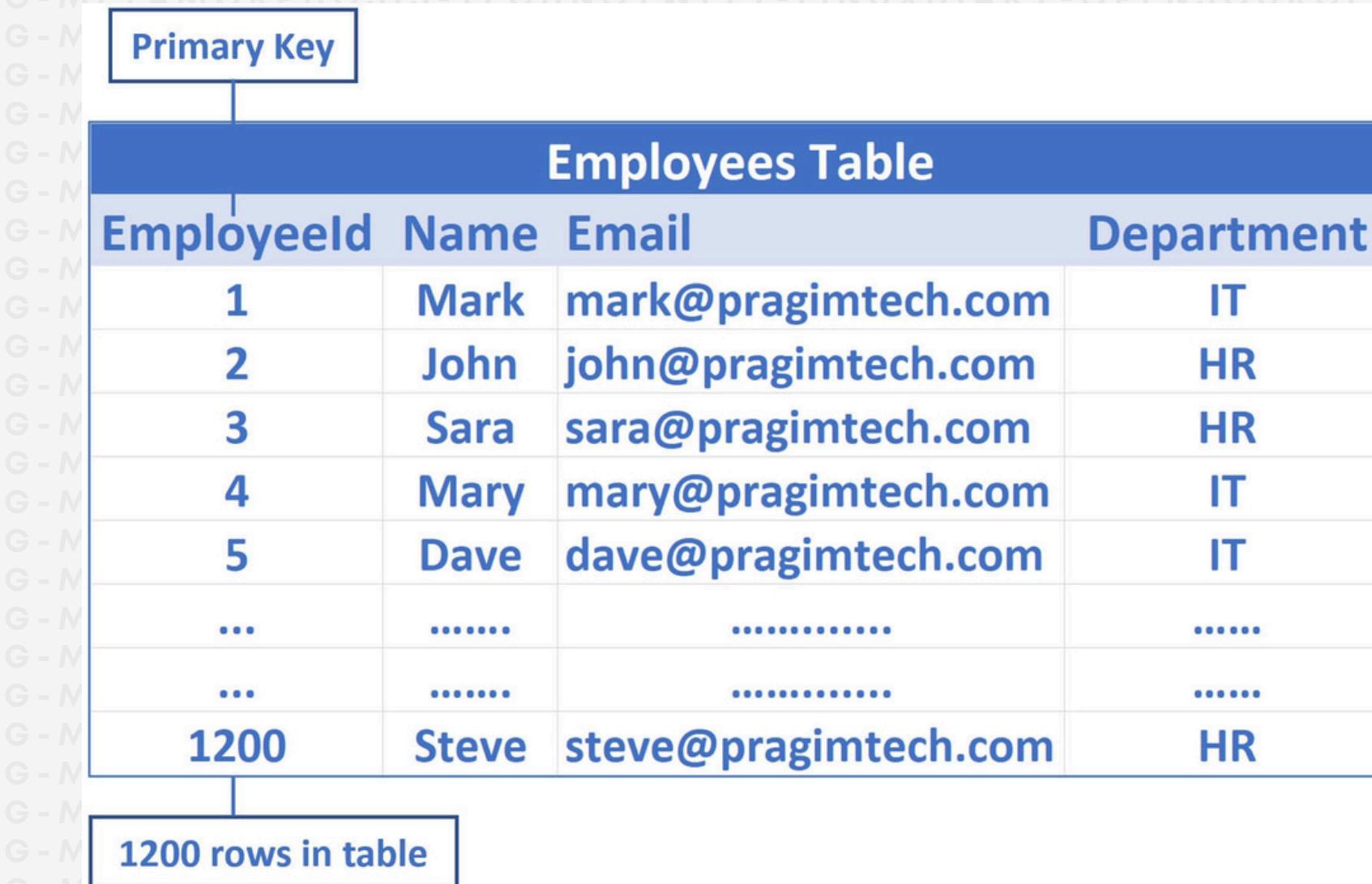
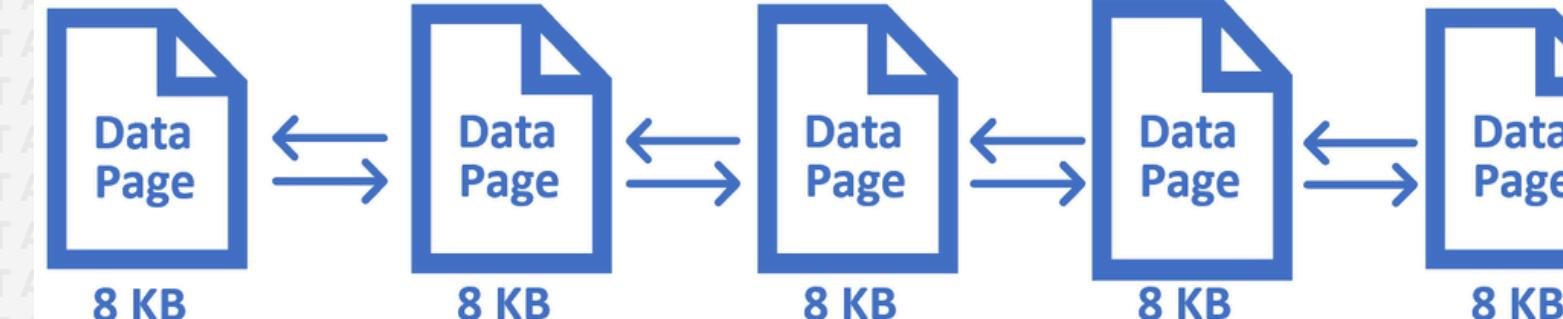
CAP Properties



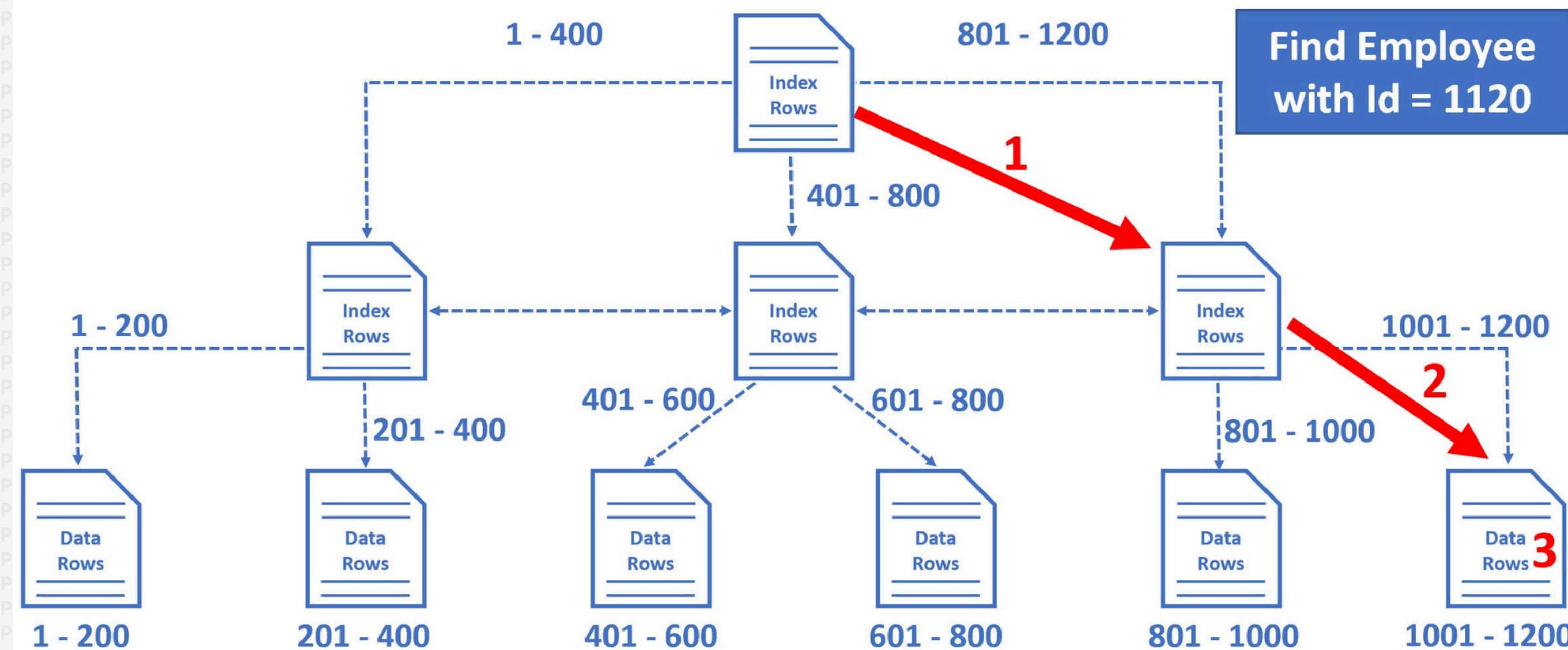
Data Storage in SQL

Well, data in relational databases is stored in row and column format at the logical level, but physically it stores data in something called data pages.

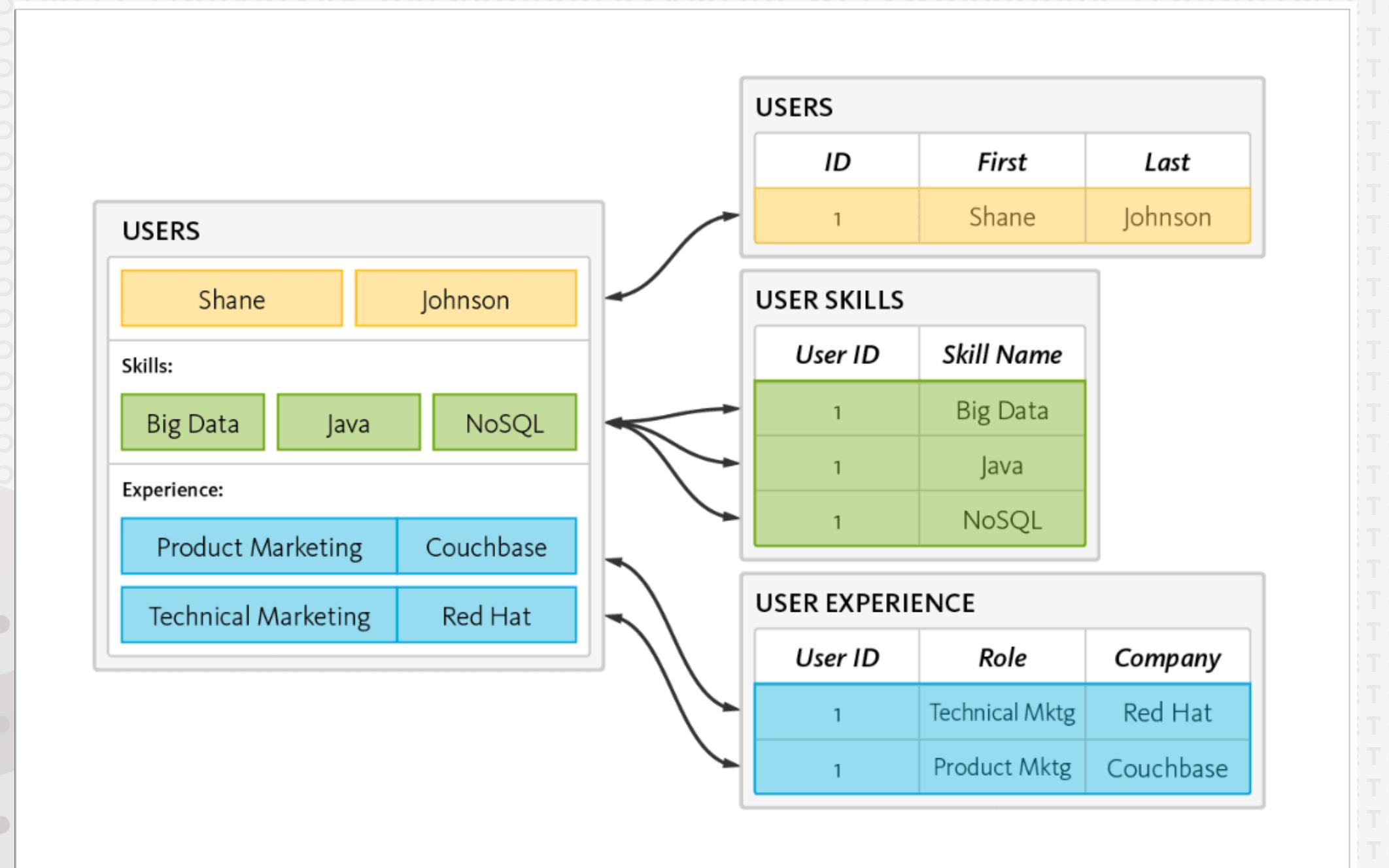
Table data in SQL Server is actually stored in a tree like structure.



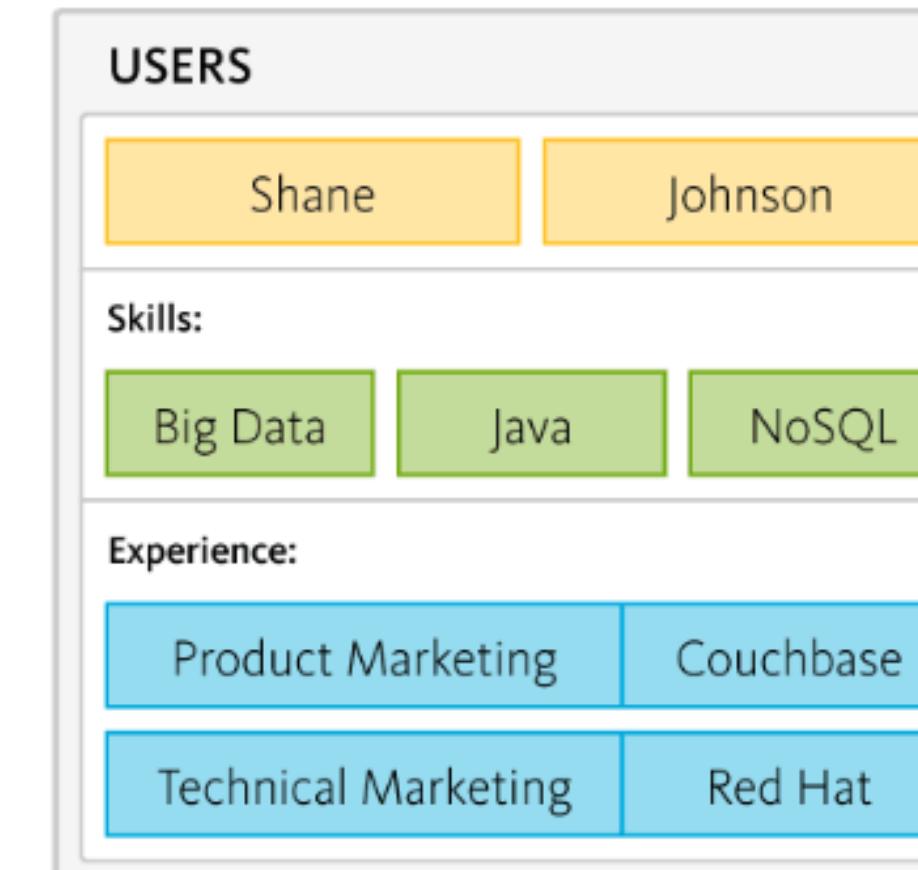
How is Data Actually Stored?



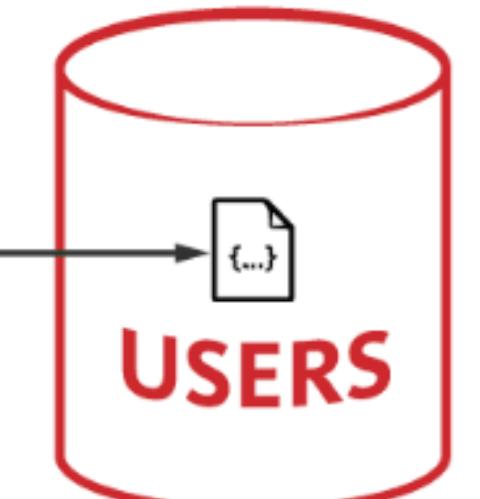
Why do we need to store data in NoSQL?



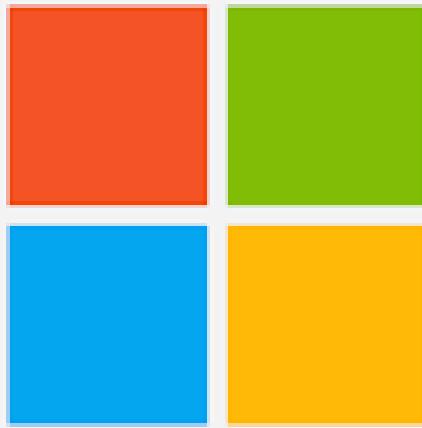
Beauty of NoSQL



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{  
  "firstName": "Shane",  
  "lastName": "Johnson",  
  "skills": ["Big Data", "Java", "NoSQL"],  
  "experience": [  
    {  
      "role": "Technical Marketing",  
      "company": "Red Hat"  
    },  
    {  
      "role": "Product Marketing",  
      "company": "Couchbase"  
    }  
  ]  
}
```



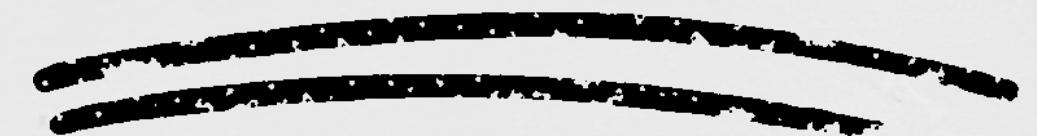
Real Life Use Case



stack overflow

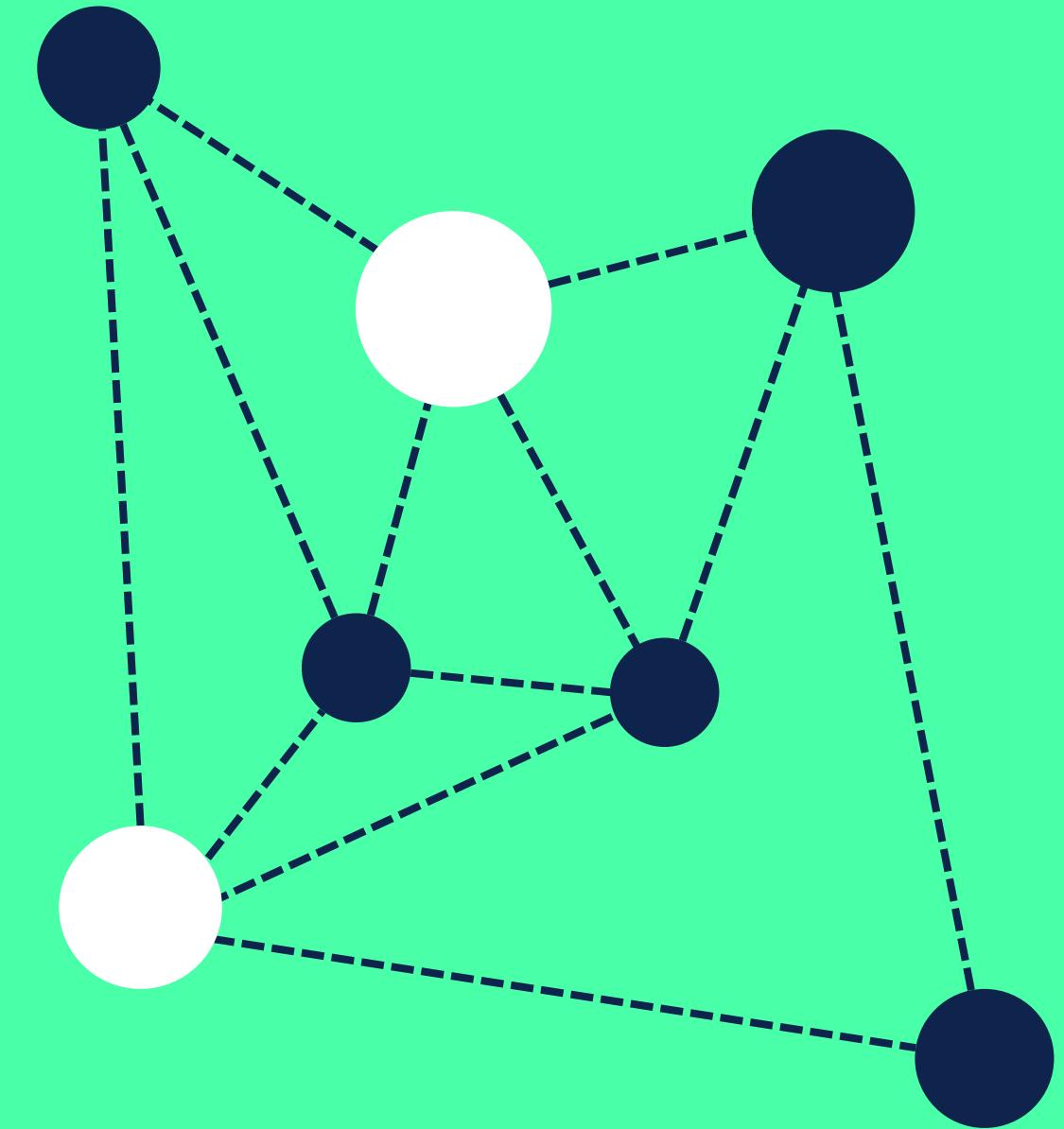


**THANK
YOU**





SQL



NoSQL