



mongoDB®

An introduction to
MongoDB



Presentation by
Najib BOHLI & Rabeb ELKOTEL

SQL vs NoSQL

Introduction of MongoDB

MongoDB Features

Replication/ High Availability

Sharding/ Scaling

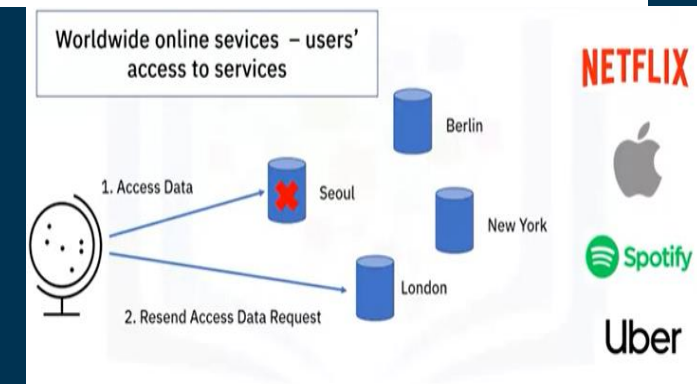
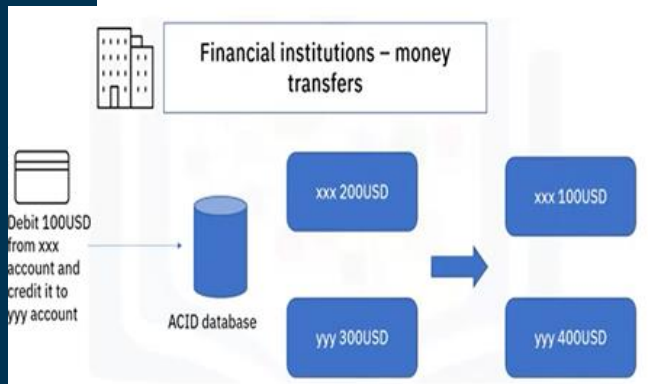
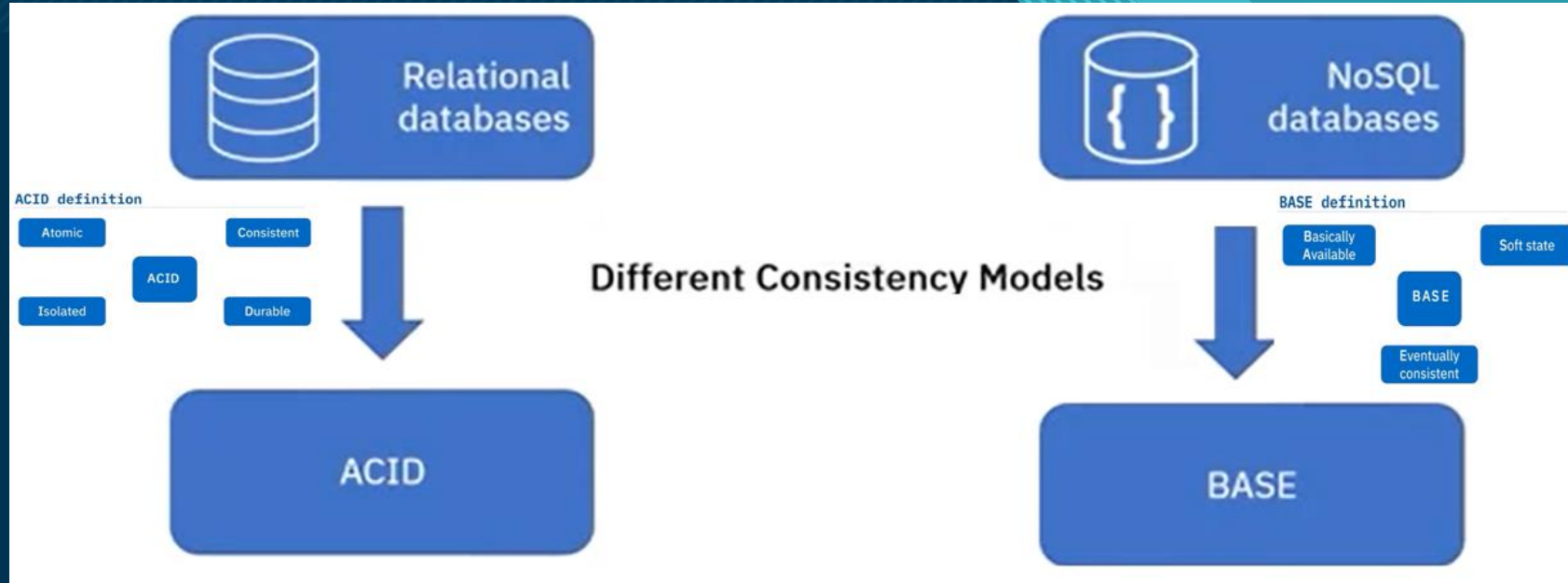


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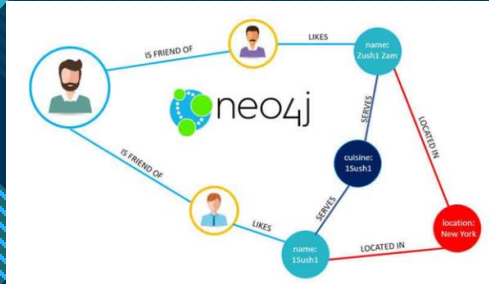
- ✓ NoSQL (often interpreted as Not only SQL) database
- ✓ It provides a mechanism for storage and retrieval of data that is modeled in means other than the tabular relations used in relational databases.

SQL	NoSQL
Relational Database Management System (RDBMS)	Non-relational or distributed database system.
These databases have fixed or static or predefined schema	They have dynamic schema
These databases are best suited for complex queries	These databases are not so good for complex queries
Vertically Scalable	Horizontally scalable
Follows ACID property	Follows BASE property

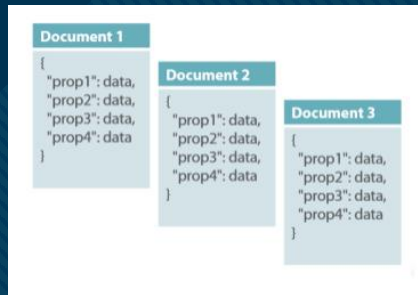
• SQL vs NoSQL



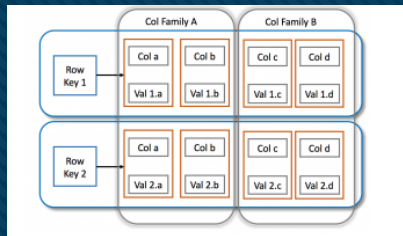
NoSQL Types



Graph database



Document-oriented



Column family



What is MongoDB?



- ✓ MongoDB is an **open source, document-oriented** database designed with both scalability and developer agility in mind.
- ✓ Instead of storing your data in **tables and rows** as you would with a relational database, in MongoDB you store **JSON-like documents** with **dynamic schemas**(schema-free, schema less).

```
{
  "_id" : ObjectId("5114e0bd42..."),
  "FirstName" : "John",
  "LastName" : "Doe",
  "Age" : 39,
  "Interests" : [ "Reading", "Mountain Biking ]
  "Favorites": {
    "color": "Blue",
    "sport": "Soccer"
  }
}
```

MongoDB is Easy to Use mongoDB®

Relational

Person:

Pers_ID	Surname	First_Name	City
0	Miller	Paul	London
1	Ortega	Alvaro	Valencia
2	Huber	Urs	Zurich
3	Blanc	Gaston	Paris
4	Bertolini	Fabrizio	Rom

Car:

Car_ID	Model	Year	Value	Pers_ID
101	Bentley	1973	100000	0
102	Rolls Royce	1965	330000	0
103	Peugeot	1993	500	3
104	Ferrari	2005	150000	4
105	Renault	1998	2000	3
106	Renault	2001	7000	3
107	Smart	1999	2000	2

no relation

MongoDB Document

```
{
  first_name: 'Paul',
  surname: 'Miller'
  city: 'London',
  location: [45.123,47.232],
  cars: [
    { model: 'Bentley',
      year: 1973,
      value: 100000, ... },
    { model: 'Rolls Royce',
      year: 1965,
      value: 330000, ... }
  ]
}
```

• Features Of MongoDB

- Document-Oriented storage
- Full Index Support
- Replication & High Availability
- Auto-Sharding
- Aggregation
- MongoDB Atlas
- Various APIs
 - JavaScript, Python, Ruby, Perl, Java, Java, Scala, C#, C++, Haskell, Erlang
- Community

• Replication

- Replication provides redundancy and increases data availability.
- With multiple copies of data on different database servers, replication provides a level of fault tolerance against the loss of a single database server.

Sharding/Replication mongoDB®

- Replication Split data sets across multiple data nodes for high availability.
- Sharding scale up/down horizontally when it is required for high throughput

