

NoSQL

Non-relational databases

NoSQL is a term used to describe high-performance, non-relational databases.

NoSQL databases are widely recognized for ease of development, scalable performance, high availability, and resilience.

NoSQL Database Models :

- *Document Databases*
- Graph Databases
- Key-value Databases
- Columnar Databases

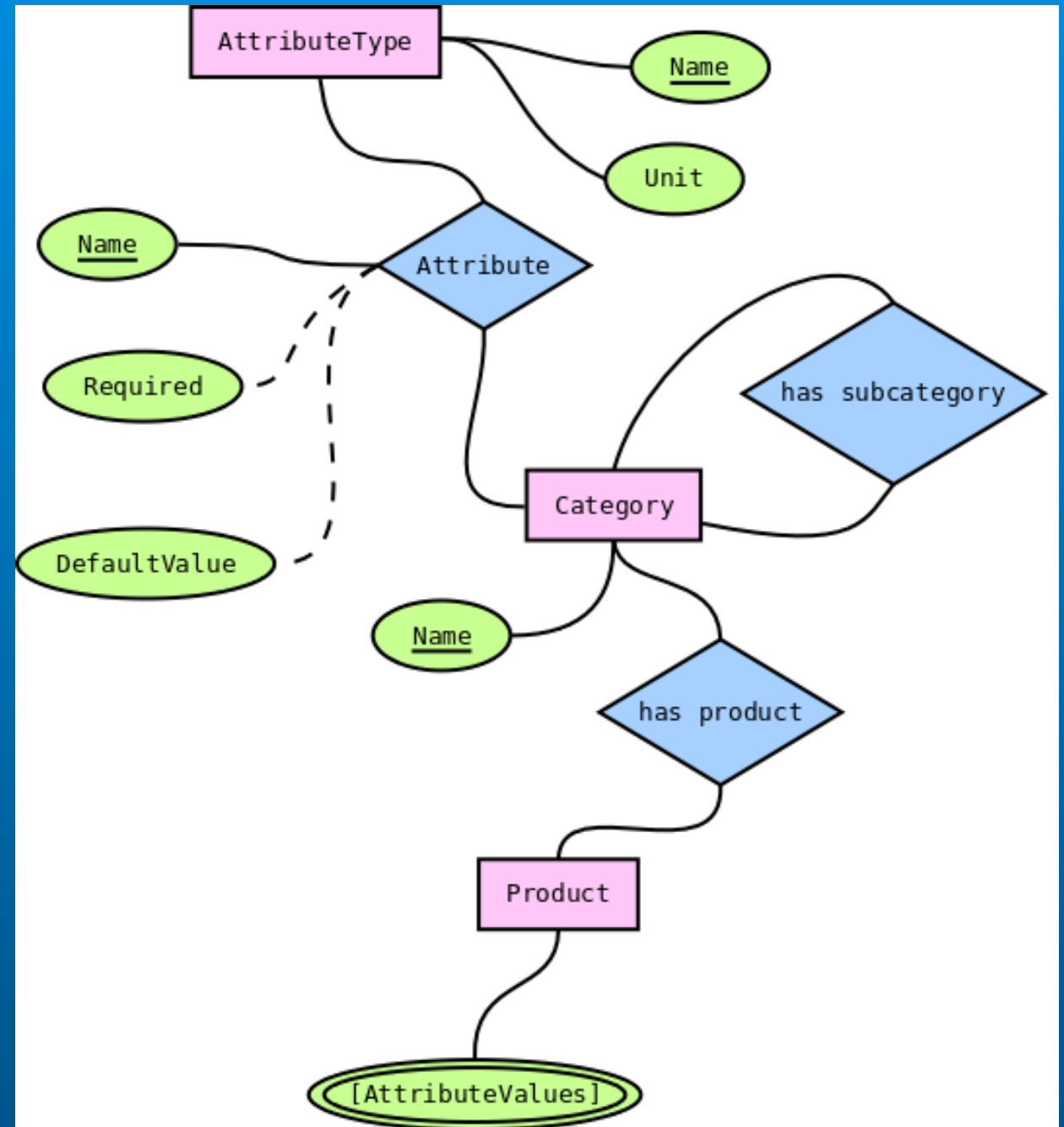
Document Databases

- Store data elements in document-like structures that encode information in formats such as JSON.
- Common use - Web and Mobile applications.
- Examples - MangoDB, CouchDB, Couchbase Server

Document 1	Document 2	Document 3
<pre>{ "id": "1", "name": "John Smith", "isActive": true, "dob": "1964-30-08" }</pre>	<pre>{ "id": "2", "fullName": "Sarah Jones", "isActive": false, "dob": "2002-02-18" }</pre>	<pre>{ "id": "3", "fullName": { "first": "Adam", "last": "Stark" }, "isActive": true, "dob": "2015-04-19" }</pre>

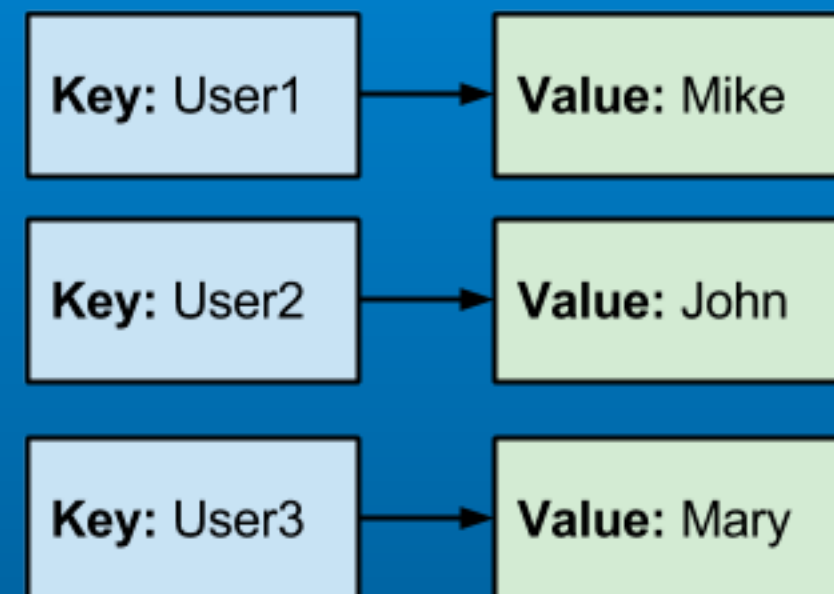
Graph Databases

- Emphasize connections between data elements, storing related “Nodes” in graphs to accelerate querying.
- Common use - Geospatial applications, recommendation engines.
- Allegrograph, IBM Graph, Neo4j



Key-Value Databases

- Simple data model that pairs a unique key and its associated value.
- Common uses - storing clickstream data and application logs
- Examples - DynamoDB, Aerospike, Redis, Riak



Columnar Databases

- Stores data across tables that can have very large numbers of columns.
- Columnar databases are optimized for reading and writing columns of data as opposed to rows of data.
- Common uses - Internet Search and other large-scale web applications.
- Examples: Casandra, HBase, SimpleDB.

Pros

- ★ **Less Tables, easier to manage, high level of flexibility .**
- ★ **Mostly open source and low cost.**
- ★ **Easier scalability, designed to function with high-performance even with low cost hardware.**
- ★ **No need to create detailed database model and relations.**

Cons

- **Community is relatively new and lacks the maturity of MySQL user base.**
- **Lack of reporting tools for analysis and performance.**
- **Lack of standards. Doesn't have universal language like SQL. Can cause problems during migration**