TECNIQUE INFORM:

"BDCN UNIT 1 ACTIVITY 2."

HIGHER UNIVERSITY TECHNICIAN IN INFORMATION TECHNOLOGY DEVELOPMENT OF MULTI-PLATFORM SOFTWARE AREA.

PRESENT BY:

JOEL ALEJANDRO REYES VICENTE

PRESENT BY:

ING. FRANCISCO EMANUEL PORTILLA

SALAZAR.

CT. REYNOSA, TAMAULIPAS   **AUGUST 2023.**

I

Introduction.

A time series database (TSDB) is a database optimized for time-stamped or time series data. Time series data are simply measurements or events that are tracked, monitored, downsampled, and aggregated over time.

A graph database is defined as a specialized, single-purpose platform for creating and manipulating graphs. Graphs contain nodes, edges, and properties, all of which are used to represent and store data in a way that relational databases are not equipped to do.

A document database is a type of nonrelational database that is designed to store and query data as JSON-like documents. Document databases make it easier for developers to store and query data in a database by using the same document-model format they use in their application code. The flexible, semistructured, and hierarchical nature of documents and document databases allows them to evolve with applications' needs. The document model works well with use cases such as catalogs, user profiles, and content management systems where each document is unique and evolves over time. Document databases enable flexible indexing, powerful ad hoc queries, and analytics over collections of documents.

Time series DB.

Characteristics.

-Data is appended in the sequence of time and is stored as time, value, and events. Data can have many dimensions. The data often does not require relationships between entries of different tables and older data is purged or compressed and archived.

-Data in a time series database has a timestamp and at least one metric related to it. For example, the diesel price was $5.45 (metric) on 24-04-2022. We can add more metrics as well—for example, petrol price, stock prices, or the number of cars visiting the state museum.

Date	Diesel price	Petrol price	Stock price	Number of cars visiting the state museum
24-04-2022	5.45	7.13	100	780

-The time is stored as a timestamp, which includes the time in precision of seconds and milliseconds. Date can be stored in various formats using the DateTime data type. Timestamp supports calendar and time zone adaptation. Time series databases also provide support for getting aggregations and statistics about the data based on time.

GraphDB.

Characteristics.

-Graph algorithms—operations specifically designed to analyze relationships and behaviors among data in graphs—make it possible to understand things that are difficult to see with other methods. When it comes to analyzing graphs, algorithms explore the paths and distance between the vertices, the importance of the vertices, and clustering of the vertices. The algorithms will often look at incoming edges, importance of neighboring vertices, and other indicators to help determine importance.

-RDF graphs (RDF stands for Resource Description Framework) conform to a set of W3C (Worldwide Web Consortium) standards designed to represent statements and are best for representing complex metadata and master data. They are often used for linked data, data integration, and knowledge graphs. They can represent complex concepts in a domain, or provide rich semantics and inferencing on data.

-Property graphs are used to model relationships among data, and they enable query and data analytics based on these relationships. A property graph has vertices that can contain detailed information about a subject, and edges that denote the relationship between the vertices. The vertices and edges can have attributes, called properties, with which they are associated.

In this example, a set of colleagues and their relationships are represented as a property graph.
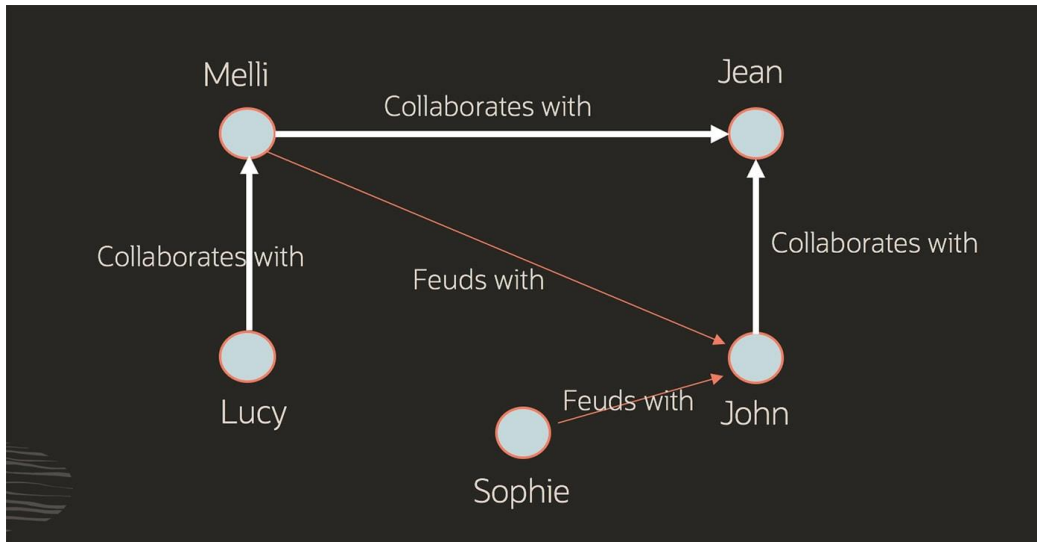
Document-oriented DB.

Characteristics.

Flexible Schemas.

Rather than the tabular model, document stores have a dynamic self-describing schema, adaptable to change. No need to predefine it is the database. Values and fields can alternate through different documents; modify the design at any stage, without fundamentally disrupting its structure — no need for schema migrations. Note: some document stores allow JSON schema, letting you set governing rules for managing document structures.

Better for Agile Developers.

Due to the intuitive data model, document-oriented databases are faster and easier for developers. The objects in your code can be mapped to the documents, making them more intuitive to handle. Decomposition of data across tables is eliminated as

a necessity, along with the need to integrate a separate ORM layer, or using costly JOINs.

Powerful Querying.

Query in a flexible way, with the expressive query language and multifaceted indexing feature. This is an essential difference between relational databases and document stores. The query language has comprehensive abilities, letting you deal with data however you think is best. Full-time aggregations, ad hoc queries, and indexing are deep ways of processing, modifying, and retrieving your data. ACID transactions let you retain guarantees you are accustomed to having in SQL databases, whether this is manipulation of data in single documents or in shard multiples.