Unit 10 Assignment

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IT234 Database Concepts

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For the Northwind organization a non-relational database system would be the way to go. What is non-relational database for, well it is for soring data, and the data in the non-relational database can be changed very often, this is so that it can manage different kinds of data. Non-relational databases can also support applications that are rapidly changing or improving. It is great when wanting to quickly change a big amount of complex data. They also perform faster than relational databases because it does not view most of the tables. An example a non-relational database can be used is like a document that has information of a user like their name, phone number, address, and Salary. Which is great for the data for the company ‘Northwind Organization.’ It is good for the organization because in the database for the company it contains information about customers.

There are two different types of non-relational databases we can choice from NoSQL databases or Reporting and analytical databases. NoSQL databases are Document Store, Key-Value Data Store, Big Table/Wide-Column Store, Object Store, Graph Store, and Multi-Model. Reporting and analytical databases are Big Data, Datamart, and Online Analytical Processing (OLAP). I will describe each of them individually.

Starting with NoSQL databases there are different types based on the data model. “The ones mostly used are key-value, graph store, and wide-column. NoSQL databases are flexible and easy for excessive amounts of data and users.” ("What Is NoSQL? NoSQL Databases Explained", 2022) Document Database are databases that stores information in documents. Document Databases are fast and easy to work with. It allows the data to be changed if needed, and it scales out the information horizontally. It is also a popular alternative instead of using relational databases. It is also sometimes easier to use than tables, because instead of looking through multiple tables and data it is alp there in a collection of the information.

Key-Value databases are used as a simple key-value method to store data and using the key-values the key can be an identifier. The key and the values can also be anything like complex or simple compound objects. Key-Value can be values and fields in a document and provides flexibility in how to set the data.

Big Table/Wide Column Store is data stored in columns that can be used to spread data across multiple databases and servers. Names and format of the database can vary with the rows and the same table within the columns. This is handy because with the data being in columns the data can be looked through quickly and load quickly. The model of the data is very flexible. “Big Table/Wide Column can be used for Log data, Real-time analytics, and Attribute-based data. An example of the database is Microsoft Azure Cosmos DB, and Google BigTable.” ("What Is NoSQL? NoSQL Databases Explained", 2022)

Object Store databases are databases that can hold large amounts of unstructured data. It is not easy to organize this data that contains rows and columns but can also improve your performance when managing exceptionally large amounts of data. For example, Object Storage can include videos, emails, pictures, and websites.

Graph Database are primarily used to store and navigate relationships within the database and use nodes to store data and edges to store the relationships between entities. It Is useful for interconnected data. It takes the relationship between them. They are used in social media, recommendation engines, and to detect fraud. Graph Databases will let the organization connect to outside sources also.

Multi-Model Database is a database that can put together diverse types of databases into one integrated database. It can provide a single back end that exposes models and data from the application it supports. It is also very consistent and supports many different applications and products.

Now on to the Reporting and Analytical Databases.” It is data management that stores and organizes data. The use of the databases is for intelligence and analytic purposes.” ("Analytical Database Guide: A Criteria for Choosing the Right One | Segment Blog", 2022) Analytic databases are databases that you can only read. “For example, you will use software like Excel, MySQL, and BigQuery to make this type of database.” ("What Is NoSQL? NoSQL Databases Explained", 2022)

Big Data Database is used to SQL to access and retrieve data from tables. For example, it is used in text, images, and logos. It is also helpful for developing data from intelligent applications. Data Mart is a collection of data but summarizes a specific section or unit. An example where Data Mart would be used is a sales department, and a large retail business. It mostly focuses on sales, finances, and marketing. Online Analytical Processing is mostly for large businesses, which helps them with complex analysis. It can perform without affecting the transactional systems. It also helps analyze multiple databases at the same time, and rapidly execute queries.

For the Northwind OLTP database design diagram I would use the Key-Value database, because using this method is dependable and easy to move around with, which is good to be flexible. It is also clear and very manageable, and it clearly represents the relationships between each table, for example ProductID being in the orderdetails table and in the products table, it will be easy to see the relationship. Key-Value is also providing a way to store and retrieve the data and update it with commands like, get, put, and delete, which is quite simple, so Key-Value is a great choice for the Organization chart.

References:

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