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What are types of databases emerging in for handling big data problems? Perform the comparison of these databases by highlighting their characteristics and applications. Odd Roll NO
10 points

Ans:

Database types, sometimes referred to as database models or database families, are the patterns and structures used to organize data within a database management system. Many different database types have been developed over the years. Some are mainly historic predecessors to current databases, while others have stood the test of time. In the last few decades, new types have been developed to address changing requirements and different use patterns.

Following are the types of databases emerging in for handling big data problems:

Database Model Types

The three general database types based on the model are:

1. Relational database
2. Non-relational database (NoSQL)
3. Object-oriented database

Centralized Database

A centralized database is stored as well as managed in a single location. The information is available through a network. The end-user has access through the network to the centralized computer, where the stored information resides.

Centralized Database Features

The main features of a centralized database are:

Data integrity. Keeping data in one location maximizes data integrity and reduces redundancy. Information accuracy and reliability are enhanced.

Security. A single point of location provides only one access point, leading to increased data safety.

End-user friendly. Data access, as well as updates, are immediate with a centralized database. A single database design provides simplicity.

Cost-effective. The labor, power supply, and maintenance are all reduced to a minimum through a centralized system. The database is easier to maintain from an administration aspect.

Data preservation. A fault-tolerant setup through disaster recovery solutions.

Distributed Database

Distributed databases store information across different physical sites. The database resides on multiple CPUs on a single site or spread out across various locations. Due to the connections between the distributed databases, the information appears as a single database to end-users.

Distributed Database Features

The most exciting features of a distributed database are:

Location independency. The physical location of the database spreads out across multiple sites.

Query processing distribution. A complex query splits into multiple sites, which divides the tasks between different CPUs, reducing bottleneck.

Distributed transactions. Multiple storage locations provide a distributed recovery method. Commit protocols exist in cases of numerous transactions.

Network linking. The distributed databases interlink through a network where communication happens between the storages as well as with end-users.

Seamless integration. Although not physically connected, distributed database parts connect into one logical database.

Database Types Based on Design

The design of the storage depends on the business objective. There are two main approaches to database design based on the function are:

1. Operational (transactional) database
2. Analytical database

Although the databases serve a different purpose, incorporating the two together creates a data warehouse system.

Database Types Based on Hosting

There are multiple hosting options for databases. The two places where an information system resides are:

1. On-premises databases
2. Cloud databases

Database Types Based on Processing Power

The database processing depends on the business model. Choosing the wrong level of a database system affects the workflow of an organization and team. Most database vendors offer multiple solutions to database processing. The two main ones are:

1. Personal database
2. Commercial database

Businesses leverage the power of both depending on the use case.

These are all the types of databases.