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Evolution in the field of SQL

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ABSTRACT :

Structured Query Language is referred to as SQL. A computer language called SQL is used to administer database systems. Relational database management systems are the only databases that support SQL (RDMS).For SQL to be advanced in managing new kinds of data systems, it must. Big Data is a highly elastic system that can handle large, fast, and diverse datasets.

Only a small percentage of databases are managed via relational databases. As is well known, SQL is a broad language which can be utilized with a variety of database systems, even if we limit our use to big data. We shall discuss databases in the context of modern database management systems like MapReduce, NoSQL, and NewSQL in this research paper.

INTRODUCTION :

SQL (Structured Query Language) is a language that is evolving. Because SQL was designed for conventional relational databases, it needs to be updated to handle the demands of the Big Data age.
The evolution of SQL from query syntax for structured data to Big Data Analysis for unstructured data is described in this research article. Tables used to be the format used to store databases. SQL provided a strong, standardized data management solution. Conventional databases become unusable when data volume, velocity, and variety rise.
Big Data opens up new possibilities and resolves many of the issues with traditional databases. Both structured and unstructured databases can be managed for large databases using big data.

METHODOLOGY :

1. Literature Review: IBM invented SQL in the 1970s. Traditional relational databases like SQL are used for database manipulation and querying.
2. Data Gathering: Big Data has been expanding over the past few years. One of SQL's limitations is that unstructured databases cannot use it. These difficulties are crucial to SQL's evolution.
3. Technical Analysis: JSON and other semi-structured data are utilized to enhance distributed computing and parallel processing. SQL has extensive integrations with Hadoop, Spark, and other technologies.

CASE STUDY :

The greatest illustration of how SQL evolved from standard databases to massive amounts of data in the entertainment industry is Netflix. SQL transit is demonstrated in this case study.
When Netflix first launched, it relied solely on traditional databases for its customer and viewer references. When Netflix's user base grows, traditional databases become less effective.
The following are the difficulties traditional databases face:

1. Scalability: Large volume of user information and data.
2. Performance: Quicker Processing of Data
3. Variety of Data: Netflix has access to a wide range of data, including produced material, TV series, and films.

SQL AND NETFLIX EVOLUTION :

1. NoSQL Integration: Elasticsearch and Cassandra are two examples of NoSQL databases used by Netflix. Standardized SQL interface querying is used by NoSQL databases.
2. Integration of Machine Learning Models: Real-time content can be used to integrate machine learning models into SQL queries.
3. Streaming Analytics: To keep an eye on and improve the distribution of content Video is streamed efficiently using a SQL-based streaming method.

Outcomes:

1. Make a lot of users' recommendations.
2. Improved video quality and content delivery.

DATABASE :

The ACID (Atomicity, Consistency, Isolation, Durability) attribute is adhered to by databases. Atomicity is the quality of a database being accessible to all users and changing both all or none of the data. Transactions are calls to commit or abort. Changes ought to be consistent and should not alter as a result of another transaction. To be isolated, a transaction must be separate from all others.

KEY VALUE :

This storage system is quite basic. Processing is faster than using RDBMS. Every value has an associated key.

- **Presented in Columns**
  Key value employs store data as a model for data.
  Personalities: Partition tolerance, availability, and consistency
- **The application of big data**
  well-liked for cloud services. Big Data apps are designed to use NoSQL databases. Due to the vast volume of data, organizations are now shifting to big data. useful for quick data processing and data analysis.
- **Document Archive**
  Data in this store does not require a consistent structure to be stored.

SURVEY :

The evolution survey is:

1. Conventional Relational Databases: IBM created SQL in 1970 to facilitate database management and querying. SQL makes advantage of well-defined table structures. Data integrity is established using the ACID (Atomicity, Consistency, Isolation, Durability) attribute.
2. Make the switch to NoSQL: NoSQL is becoming a more flexible and scalable data management system as data volume grows. beneficial for handling semi-structured and unstructured data.
3. SQL via Big Data: Hive is used by Hadoop to store data in HDFS. Spark SQL handles massive amounts of data in memory.
4. SQL for streaming: SQL is also utilized for streaming.
5. SQL via (ML): Data scientists can use SQL to execute machine learning models thanks to big data.

Conclusions :

The evolution of traditional databases is crucial since data is growing every day at a rapid rate. Therefore, data management is required. The application of novel techniques also eliminates data duplication. Maintaining high security and data organization is also an important consideration at all times. The time whenever digital data can be kept is not too far off. The study paper's introduction, methodology, NoSQL the database, big data, graphs database, Keys Valued Store, semi-structured data, and non-uniform data were all covered in this paper. Document Store, Big Data Implementation, Column-Oriented.

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