

Database Vs. Data Warehouse

Similarities and differences



Databases and data warehouses are used to generate different types of information. Information generated by both are used for different purposes. These may range from simple informational queries to analytical reports used for improving performance of businesses. Both database and data warehouse have differences and similarities between them which are discussed.

What is Database?



As per definition, database is an organized of data or information which are manipulated and retrieved.

Transactional Database

A database system which supports or has ability to rollback the incomplete transaction or operation is called transactional database.

Presently, a large number of database systems have capability of transactional database operations.

Operational Database

Operational database allow us to manipulate data in real time. All the data is stored, edited or deleted in real time. Operations database works as source for data warehouse.

These are key to data warehouses and difference operations for business analysis. The operational database can be SQL or NoSQL.

What is Data Warehouse?



It is a collection of structured data which is collected from one or more sources in data warehouses for the purpose analysis and reporting. A data warehouse plays an important role in taking business decisions as these are taken on the basis data consolidation, analysis and different kinds of reporting.

In data warehouse, a large amount of heterogeneous data is collected and transformed according to decision making system for generating analytical reports. For example a company can contain different types of data regarding employees personal information, their salaries, tasks assigned to them, data about products, sales and purchases. The top management may require data regarding increase in decrease of sales and performance of employees. To get this information, all the data in data warehouse will be evaluated through decision making system. This is the main purpose of a data warehouse. The data ware house is not only used in present decision making but also contributes towards future decision making.

Comparison of Database and Data Warehouse

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	DATABASE	DATA WAREHOUSE
Definition	Database is an organized collection of data stored, manipulated and retrieved as per requirement.	You need data warehouse for analysis and generating reports due to vast range and different types of data.



Comparison of Database and Data Warehouse

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	DATABASE	DATA WAREHOUSE
Design	Design of operational database is different from data warehouse design. It mainly observes data accuracy when updating real-time data.	The design of data-warehouse ensures vast range of data which is used over-time for analysis purpose.



Comparison of Database and Data Warehouse

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	DATABASE	DATA WAREHOUSE
Focus	The focus of database is mainly on transactions with the help of queries.	It has ability of data analysis which is collected from different sources and generate reports.

Comparison of Database and Data Warehouse

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	DATABASE	DATA WAREHOUSE
Type of Information	The databases provide information such as online availability of seats.	The information (analysis reports) obtained from data-warehouse are used for betterment and to check the performance of business.



Comparison of Database and Data Warehouse

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Types

	DATABASE	DATA WAREHOUSE
Types	There are many types of databases. The examples are OLTP, CSV, text files, excel spreadsheets and XML files etc.	It is an OLAP type of database which exist on the top layer of other database and perform analysis.



Comparison of Database and Data Warehouse

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	DATABASE	DATA WAREHOUSE
Optimization	It is optimized for read-write operations through single-point-transaction. Mostly the OLTP database queries respond in less than a second.	The data-warehouses are optimized for retrieval of large data-sets to aggregate the data as it is designed for handling broad analytical queries.



Comparison of Database and Data Warehouse



	DATABASE	DATA WAREHOUSE
Reporting	<p>It has more static type of reporting. These are usually one-time lists. For example, you may need data of a specific patient to check the history of disease or a student checks its admission status. These results can be in PDF formats. The data may be combined from several tables and actual queries may be complex which requires expertise in this field.</p>	<p>When you measure the performance of a business, the static report is not sufficient for that purpose. To perform analysis, the data is aggregated and summarized into different types of reports.</p>

Comparison of Database and Data Warehouse

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	DATABASE	DATA WAREHOUSE
Data Duplication	In an OLTP database, the data is normalized and there is no duplication of data in order to increase the optimized processing and better efficiency.	In OLAP database, the data is organized in such a way to facilitate the analysis and reporting. Usually the data is denormalized and stored in fewer tables in simple structure.

Comparison of Database and Data Warehouse

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What is the difference between OLAP and OLTP. When is each used?

	DATABASE	DATA WAREHOUSE
	<p>OLTP is the abbreviation of on-line transaction processing. It is defined by several online transaction to obtain the information. The query processing of this system is very fast. Its effectiveness depends upon the transactions carried out per second. It has original data source. It is highly normalized system which makes it efficient.</p> <p>It is used to run and control the basic tasks of a business.</p>	<p>OLAP is the abbreviation of on-line analytical processing. In this system very few transactions are performed. It is uses large amount of current as well as historical data. The data comes from several sources. It is denormalized and reports are generated from vast range of data.</p> <p>It is used for improving the performance of business and in making decisions and planning.</p>

Similarities

The similarity between data warehouse and database is that both the systems maintain data in form of table, indexes, columns, views and keys. Also data is retrieved in both by using SQL queries.

