

Q.1 What is data warehouse? Explain characteristics of data warehouse.

A Data Warehouse (DW) is a relational database that is designed for query and analysis rather than transaction processing. It includes historical data derived from transaction data from single and multiple sources.

A Data warehouse provider integrates enterprise-wide, historical data and from single and multiple sources.

A Data Warehouse provides integrated enterprise-wide, historical data and focuses on providing support for decision-makers for data modeling and analysis.

A Data warehouse is a group of data specific to the entire organization, not only to a particular group of users.

It is not used for daily operations and transaction processing but used for making decisions.

Characteristics of data warehouse

Subject-oriented

A data warehouse target on the modeling and analysis of data for decision-makers. Therefore, data warehouse typically provide a concise and straightforward view around a particular subject, such as customer, product, or sale, instead of the global organization's ongoing operations.

Integrated

A data warehouse integrates various heterogeneous data sources like RDBMS, flat files, and online transaction records. It requires performing data cleaning and integration during data warehousing to ensure consistency in naming conventions, attribute types etc.

Time-variant

Historical information is kept in a

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data warehouse, for example, one can retrieve files from 3 months, 6 months, 12 months, or even previous data from a data warehouse. These variations with a transactions system, where often only the most current file is kept.

non-volatile

The data warehouse is a physically separate data storage, which is transformed from the source operational RDBMS. The operational updates of data do not occur in the data warehouse, i.e. update, insert and delete operations are not performed.

Q.2 Write the difference between OLTP systems and Data warehouse.

Data
warehouse

OLTP
Database

Database

It is produced for analysis of business measures by categories and attributes.

It can be optimized for a common set numbers of loads of transactions, and large, complex generally inserting unpredictable queries that access several rows per table.

It can be loaded with consistent, true data needed no real-time validation.

It can be developed for the validation of incoming data during transaction and uses validation data tables.

It provides some concurrent users relative to OLTP.

It provides thousands of concurrent users.

Q.3 Explain Applications of data warehouse

Every organization, no matter in what industry it works in or how big or small it is, requires a data warehouse to connect its disparate sources for anticipating, analysis, reporting business intelligence, and facilitating robust decision making.

Here, we are listing down the best applications of data warehousing across different industries

Banking

With the perfect data warehousing solution, bankers can manage all their available resources more effectively. They can better analyze their consumer data, government regulations, and market trends to facilitate better decision-making.

Finance :

The application of data warehousing in the financial

industry banking helps the analyze enable strategies both end

Education

The education data warehousing comprehends an educational real-time valued a

Healthcare

Another area is All the data are and are insight best used

industry is the same as in the banking sector. The right solution helps the financing industry analyze customer expenses that enable them to outline better strategies to maximize profits at both ends.

Education :

The educational sector requires data warehousing to have a comprehensive view of their student's and faculty data. It provides educational institutions access to real-time data feeds to make valued and informed decisions.

Healthcare

Another critical use of data warehouse is in the Healthcare sector. All the clinical, financial, and employee data are stored in the warehouse, and analysis is run to derive valuable insights to strategize resources in the best way possible.

Q.4 Explain data warehouse types.

Three types of data warehouses (DW) are

1) Enterprise Data Warehouse

Enterprise Data Warehouse (EDW) is a centralized warehouse. It provides decision support service across the enterprise. It offers a unified approach for organizing and representing data. It also provides the ability to classify data according to the subject and give access according to those divisions.

2) Operational Data Store

Operational Data Store, which is also called ODS, are nothing but data store required when neither Data Warehouse nor OLTP systems support organizations reporting needs. In ODS, data warehouse is refreshed in real time. Hence, it is widely prepared for routine activities like storing records of the employees.

Data Mart :

A data mart is a subset of the data warehouse. It specifically designed for a particular line of business, such as sales, finance, sales or finance. In an independent data mart, data can collect directly from sources.

Q.5 Explain Bottom-up Top-Down methodology in data warehouse.

Top-down

In the top-down design approach a data warehouse is described as a subject-oriented, time-variant non-volatile and integrated data repository for the entire enterprise data from different sources are validated, re-formatted and saved in a normalized database as the data warehouse.

- Advantages

Data marts are loaded from the data warehouses.

Developing new data mart from the data warehouse is very easy.

- Disadvantages

This technique is inflexible to changing department needs.

Q.6 Explain Bottom-up Top-Down methodology in data warehouse.

Bottom-up

In the bottom-up approach, first the analytical business processes are identified to be a base in contrast to the top-down approach.

- Advantages

Documented.

The data is organized to accommodate business units.

It is just a simple process and the data is organized in marts.

Q.6 Explain Bottom-up methodology in data warehouses

Bottom-up

In the bottom-up approach, a data warehouse is described as 'a copy of transaction data, specifically architecture for query and analysis, term the star schema. In this approach, a data mart is created first to necessary reporting and analytical capabilities for particular business process. Thus it is needed to be a business-driven approach in contrast to Inmon's data-driven approach.

- Advantages

Documents can be generated quickly

The data warehouse can be extended to accommodate new business units.

It is just developing new data marts and then integrating with data marts.

Disadvantages

The locations of the data warehouse and the data marts are reversed in the bottom-up approach design.

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Q.7 Data warehouse development life cycle with Kimball lifecycle diagram

Data warehouse life-cycle

The term data warehouse life cycles used to indicate the phases a data warehouse system goes through between when it is conceived and when it is no longer available for use.

Apart from the type of software life cycles typically include the following phases: requirement analysis, design, construction, testing, deployment, operation, maintenance, and retirement.

On the other hand, different life cycles differ in the relevance and priority with which the phases are carried out, which can vary according to the implementation constraints.

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Kimball Lifecycle Approach

