

## MEANING OF OLTP :

⇒ OLTP. online Transaction Processing, Refers to the system being accessible and usable over a network in Real-Time. A Transaction is a single, atomic unit of work, such as a database operation (insert, update, delete) or a business process (e.g: Placing an order).

⇒ This refers to the system's ability to handle and execute Transactions efficiently and accurately.

⇒ This emphasizes the system's focus on processing Transactions, rather than just storing data.

## ADVANTAGES OF OLTP :

### Fast and Efficient :

OLTP Systems process Transactions quickly, ensuring timely responses.

### Real-Time Processing :

Transactions are processed immediately, reflecting up-to-date information.

### Improved Data Integrity :

OLTP Systems enforce data consistency and accuracy.



Enhanced Security :

User access controls and Transactions logging ensure secure data management.

High Availability :

OLTP Systems are designed for continuous operation, minimizing downtime.

Scalability :

OLTP Systems can handle increasing Transaction Volumes and user loads.

Reduced Errors :

Automated processing minimizes manual errors and inconsistencies.

Cost-Effective :

OLTP Systems streamline processes, reducing operational costs.

Data Freshness :

Data is always up-to-date, reflecting the latest Transactions.

Support Business operations :

OLTP Systems facilitate day to day business activities.



## DISADVANTAGES OF OLTP :

### Complexity :

OLTP Systems can be complex to design, implement and manage.

### High Costs :

Developing and maintaining OLTP systems can be expensive.

### Data Normalization :

OLTP Systems require normalized data, which can lead to slower query performance.

### Limited Data Analysis :

OLTP Systems focus on Transactions, not complex data analysis.

### Data Warehousing challenges :

Integrating OLTP data into datawarehouse for analytics can be difficult.

### Scalability limitations :

OLTP Systems can become bottlenecked with extremely high Transaction volumes.

### Backup and Recovery :

Ensuring data consistency during back-ups and recoveries can be challenging.



System overload :

High Transaction volumes can overload the system, causing performance issues.

Dependence on Hardware :

OLTP Performance is closely tied to hardware capabilities, requiring regular upgrades.

MEANING OF OLAP :

Online logical Analytical Processing (OLAP), Refers to the system being accessible and usable over a network, in real-time, Emphasizes the system's ability to process and analyse data logically, using complex queries and calculations.

ADVANTAGES OF OLAP :

Fast Query Performance :

OLAP System optimize data storage and querying for rapid response times.

Improved Decision-Making :

OLAP enables timely and informed decisions by providing fast access to relevant data.

Enhanced Business Intelligence :

OLAP Supports complex data analysis, forecasting and trend analysis.



### Multidimensional Analysis :

OLAP allows analysis of data across multiple dimensions such as time, geography and product.

### Data Aggregation :

OLAP Enables Summarization and aggregation of data, facilitating analysis and reporting.

### Simplified Reporting :

OLAP Streamlines reporting processes, reducing manual effort and errors.

### Increased Productivity :

OLAP Automates many analytical tasks, freeing up resources for strategic activities.

### Better Data management :

OLAP integrates data from various sources, providing a unified view.

### Scalability :

OLAP Systems Can handle large volumes of data and user queries.



## Disadvantages of OLAP:

### Complexity:

OLAP Systems can be challenging to design, implement and maintain.

### High-Costs:

Developing and maintaining OLAP Systems can be expensive.

### Data Quality issues:

OLAP relies on high-quality data, which can be difficult to ensure.

### Data Integration challenges:

Integrating data from various sources can be time consuming and complex.

### Limited Real-Time Capabilities:

OLAP Systems may not support real-time data analysis.

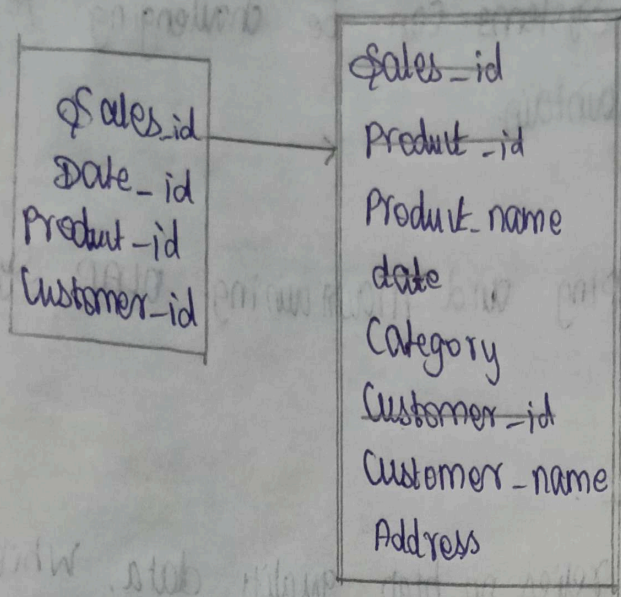
### Data Security concerns:

OLAP Systems require robust security measures to protect sensitive data.

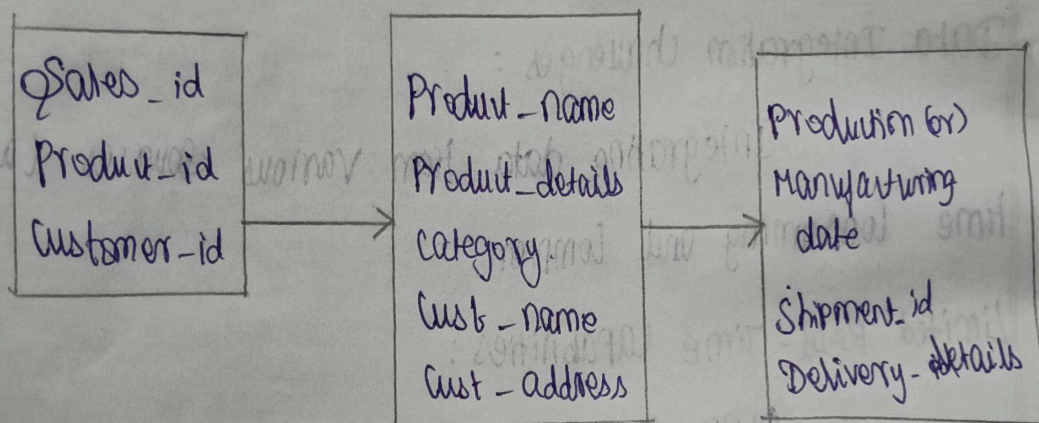


# Schema

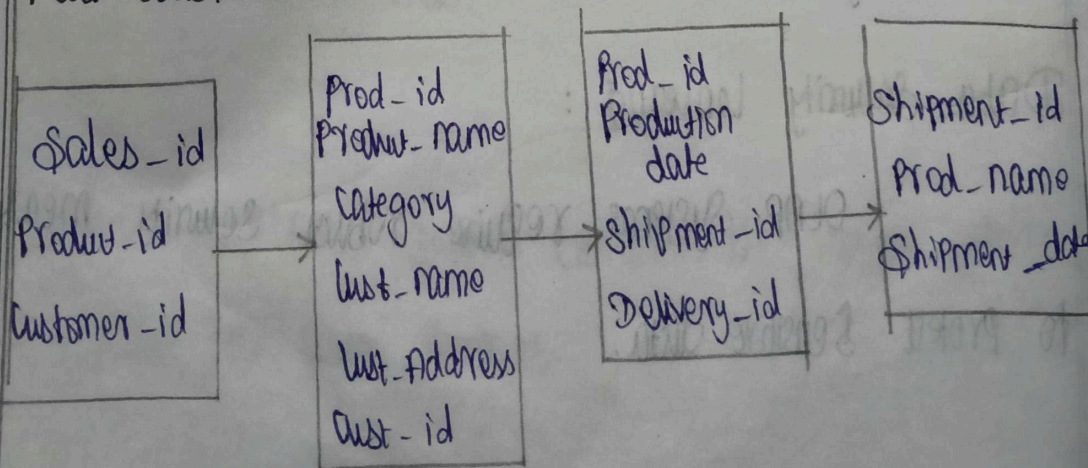
## 1. Star Schema



## 2. Snowflake Schema



## 3. Fact Constellation:



# ER - MODEL

