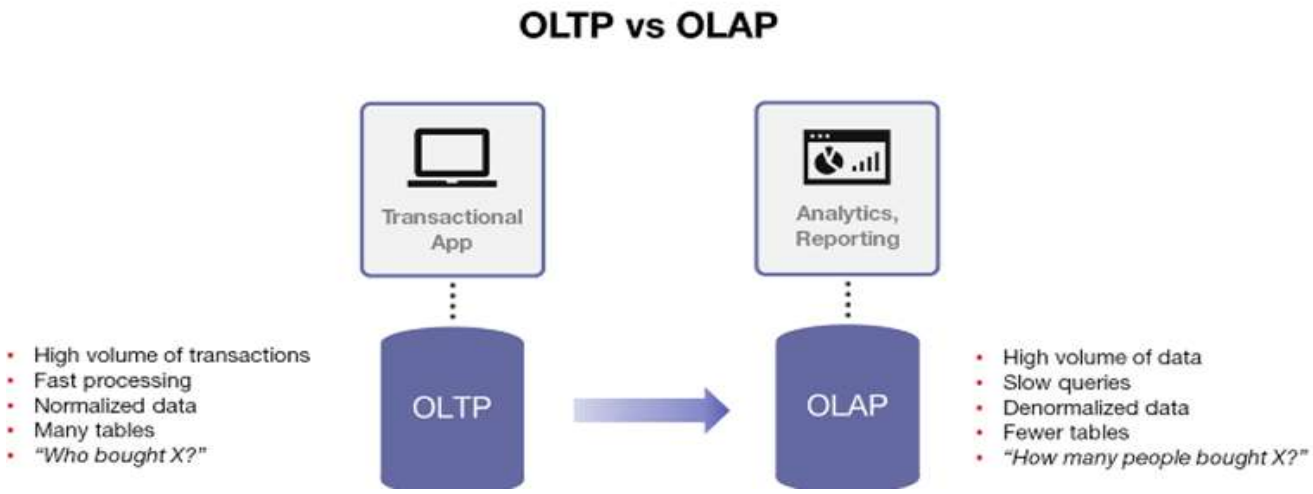
1_OLTP VS OLAP

Tuesday, February 10, 2026 2:20 PM



OLTP systems are designed mainly for **data entry and day-to-day transactions**, not for reporting or analytics.
Typical operations include:

- **INSERT** new records
- **UPDATE** existing records
- **DELETE** old records

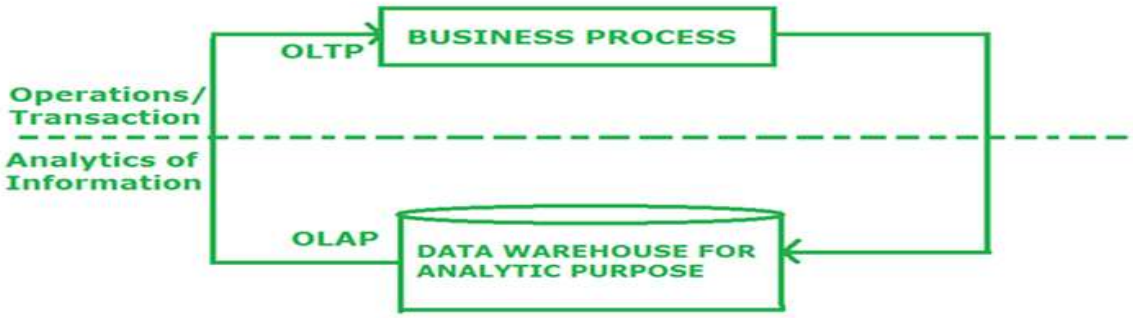
These systems focus on **speed, accuracy, and consistency** during frequent small transactions.
Why OLTP Uses a Normalized Model
Relational databases used in OLTP environments are usually **highly normalized**.
Benefits of normalization in OLTP

- Each table represents **one entity**
- Redundancy is kept **very low**
- Data is stored in **one place**, so updates are easy
- Ensures **data consistency**
- Provides **fast performance** for data modifications

Example:
If a customer's phone number changes, you update it in **one table**, not in multiple places.
Why OLTP Is Not Good for Reporting
Although normalization is great for transactions, it becomes a problem for reporting.
Reasons

- Data is spread across **many small tables**
- Tables have **complex relationships**
- Even simple reports require **multiple joins**
- Queries become **slow and complicated**
  This is why OLTP systems are not ideal for analytics or dashboards.

De normalization is used to combine multiple table data into one so that it can be queried quickly. De Normalized=> Lesser number of tables



OLTP Systems are used to *"run"* a business (requires mostly current data)

Data Warehouse helps to "optimize" the business (requires historical data)