

Data Mining

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Points to Cover

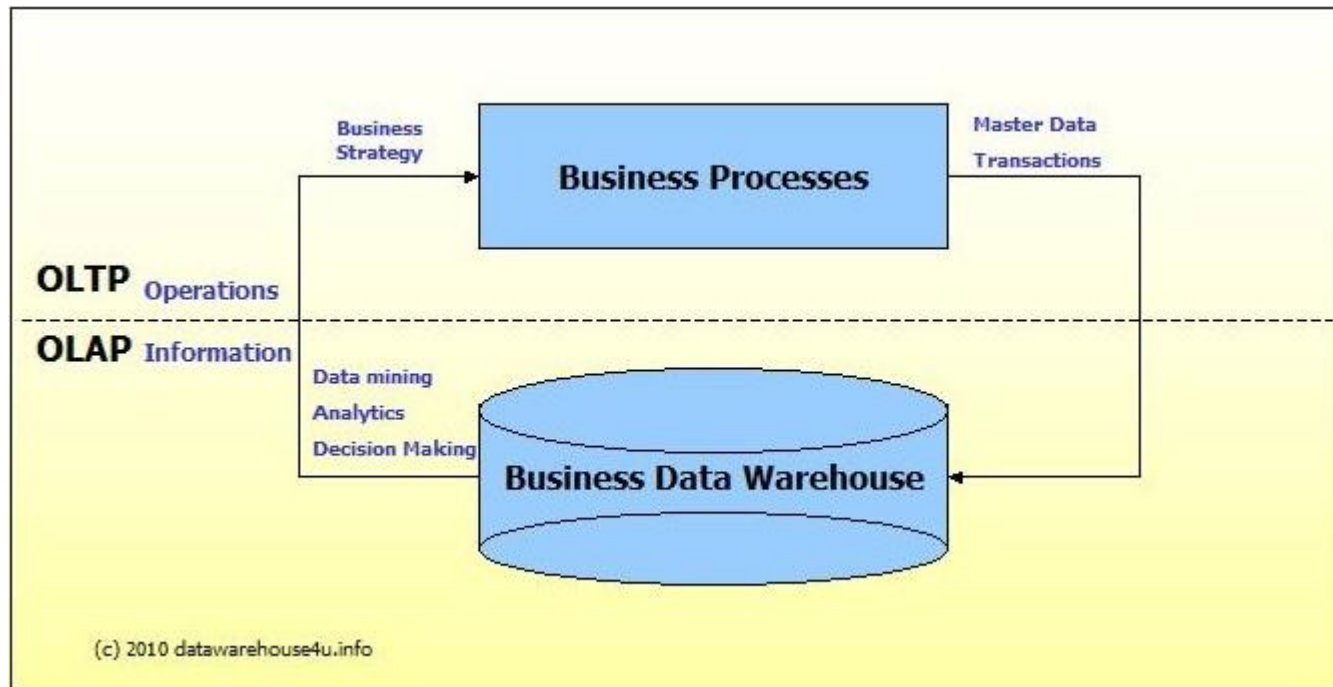
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OLTP (On-line Transaction Processing)

Is characterized by a large number of short on-line transactions (**INSERT, UPDATE, DELETE**). The main emphasis for **OLTP** systems is put on very fast **query processing, maintaining database** in multi-access environments and an **effectiveness measured** by number of transactions per second.

IT with OLTP and OLAP

We can divide IT systems into transactional (OLTP) and analytical (OLAP). In general we can assume that OLTP systems provide **source data** to data warehouses, whereas OLAP systems help to **analyze** it.



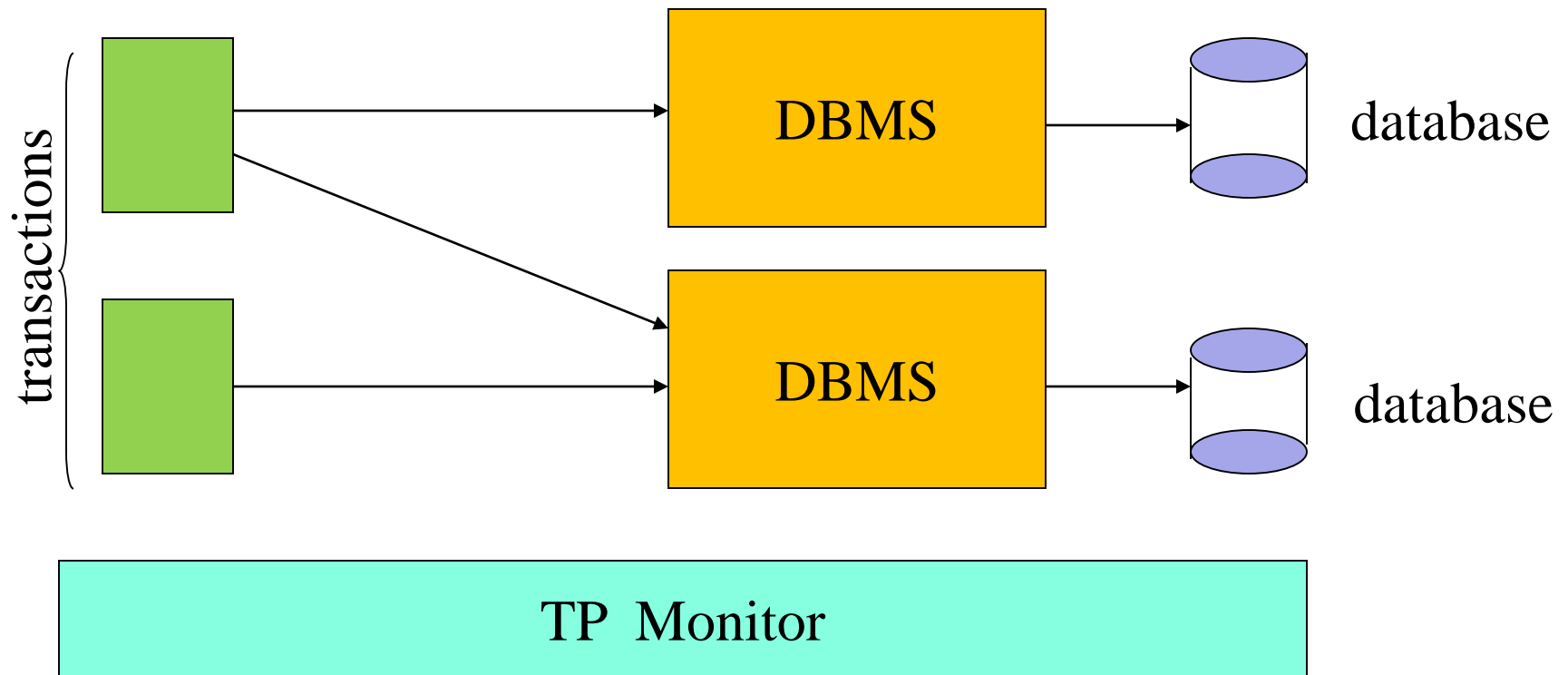
What is a Transaction?

- When an **event in the real world** changes the state of the enterprise, a transaction is executed to cause the corresponding **change in the database state**,
- A transaction is an application program with special properties - to guarantee maintains database correctness

What is a **T**ransaction **P**rocessing System?

- ❖ Transaction execution is controlled by a **TP** monitor
- ❖ TP monitor and DBMS together guarantee the maintains of database,
- ❖ A Transaction Processing System consists of **TP monitor, databases, and transactions**

Transaction Processing System



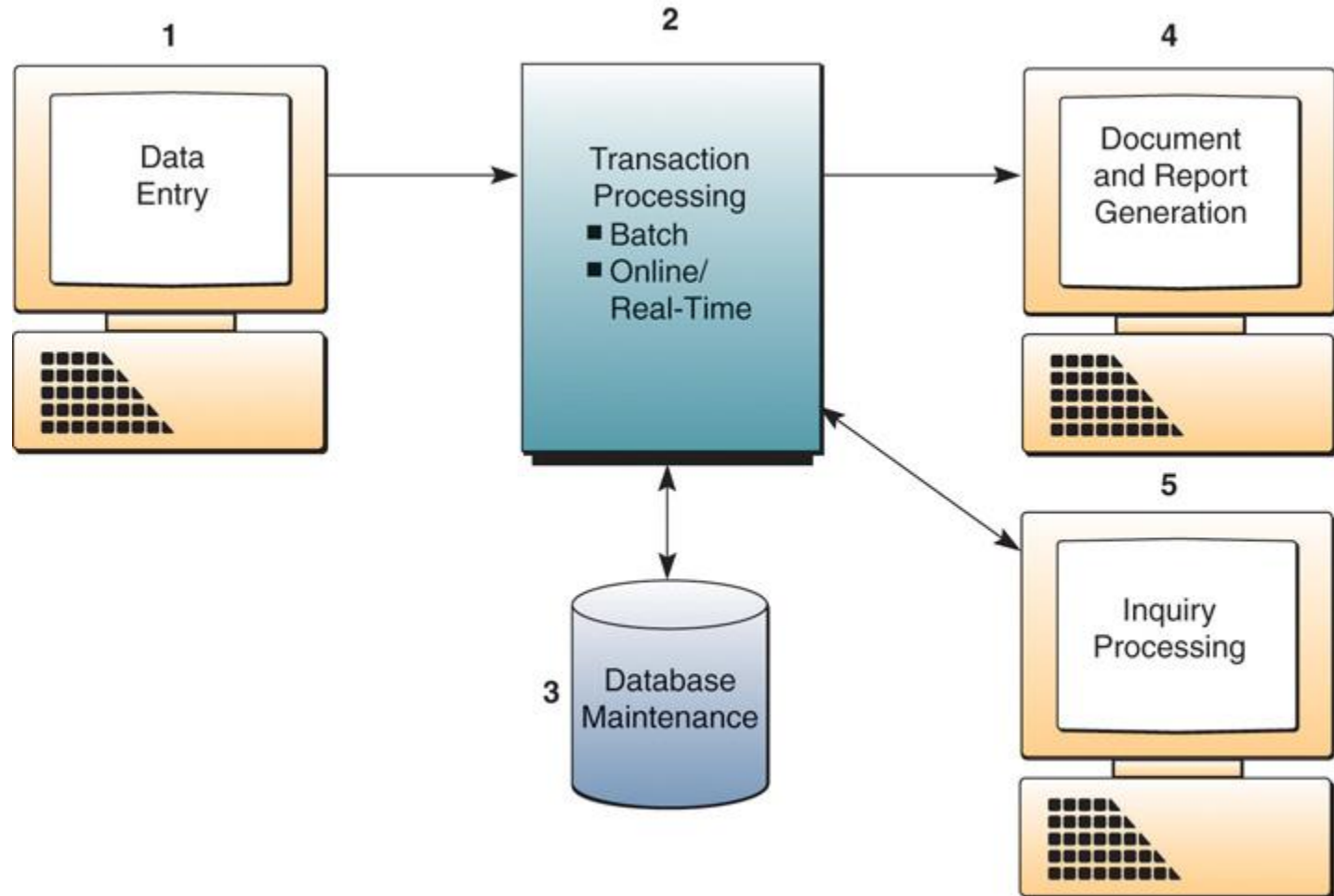
System Requirements

- **Long Lifetime:** complex systems are not easily replaced, *Must be designed so they can be **easily extended** as the needs of the enterprise change.*
- **Security:** sensitive information must be carefully protected since system is accessible to many users, *Authentication, authorization.*
- **High Throughput:** many users => many transactions/sec
- **Low Response Time:** on-line => users are waiting

Online Transaction Processing (OLTP) can include:

1. Banking, Financial, Hospital, Universities, Airline reservations operations, etc.
2. Purchases & Orders (phone, Internet, direct)
3. Real-time systems, immediate feedback
4. Real-time Reports and databases updates

Online Transaction Processing Cycle



Roles in Design, Implementation, and Maintenance of a TPS

- **System Analyst** - specifies system using input from customer; provides complete description of functionality from customer's and user's point of view
- **Database Designer** - specifies structure of data that will be stored in database
- **Application Programmer** - implements application programs (transactions) that access data and support enterprise rules

Examples - Supermarket

- OLTP
 - Event is 3 cans of sugar and 1 box of milk bought; update database to reflect that event
- OLAP
 - Last winter in all stores in north, how many customers bought sugar and milk together?
- Data Mining
 - Are there any interesting combinations of foods that customers frequently bought together?

*Thank
you*

