

# Data Mining & Data Warehouse

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**2016 – 2017**



# Points to Cover

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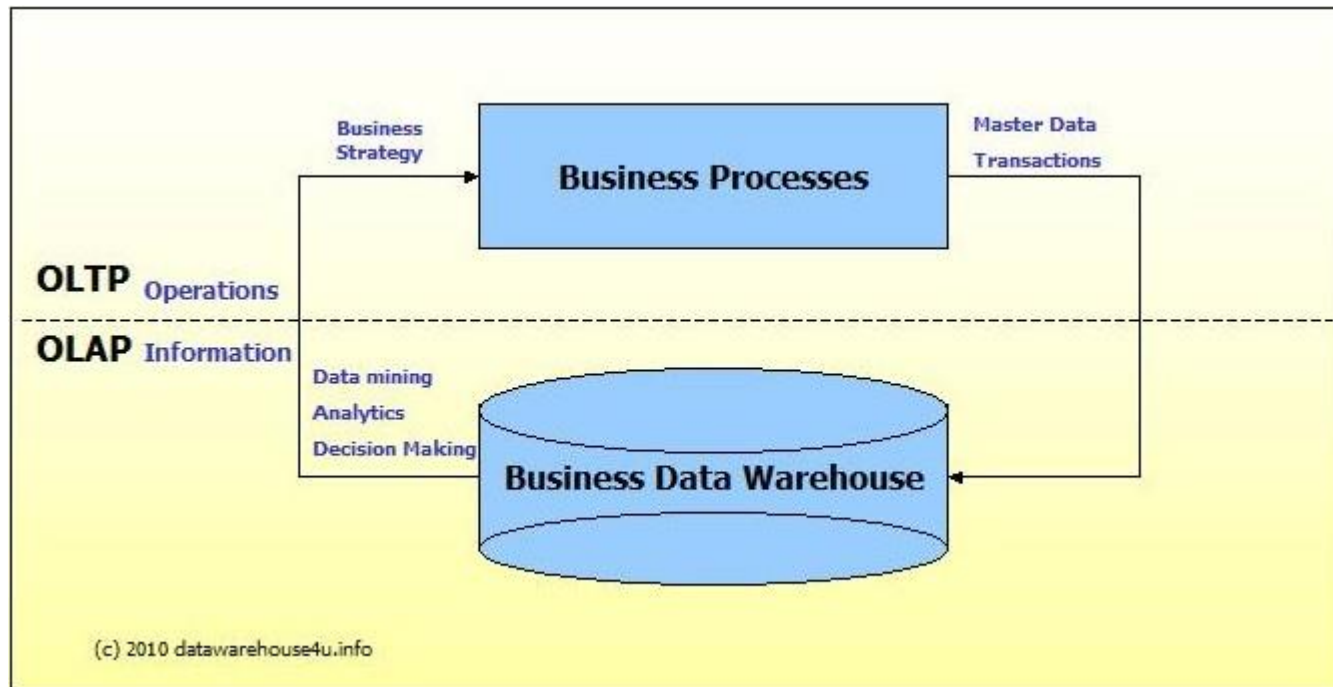
# OLTP (On-line Transaction Processing)

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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?

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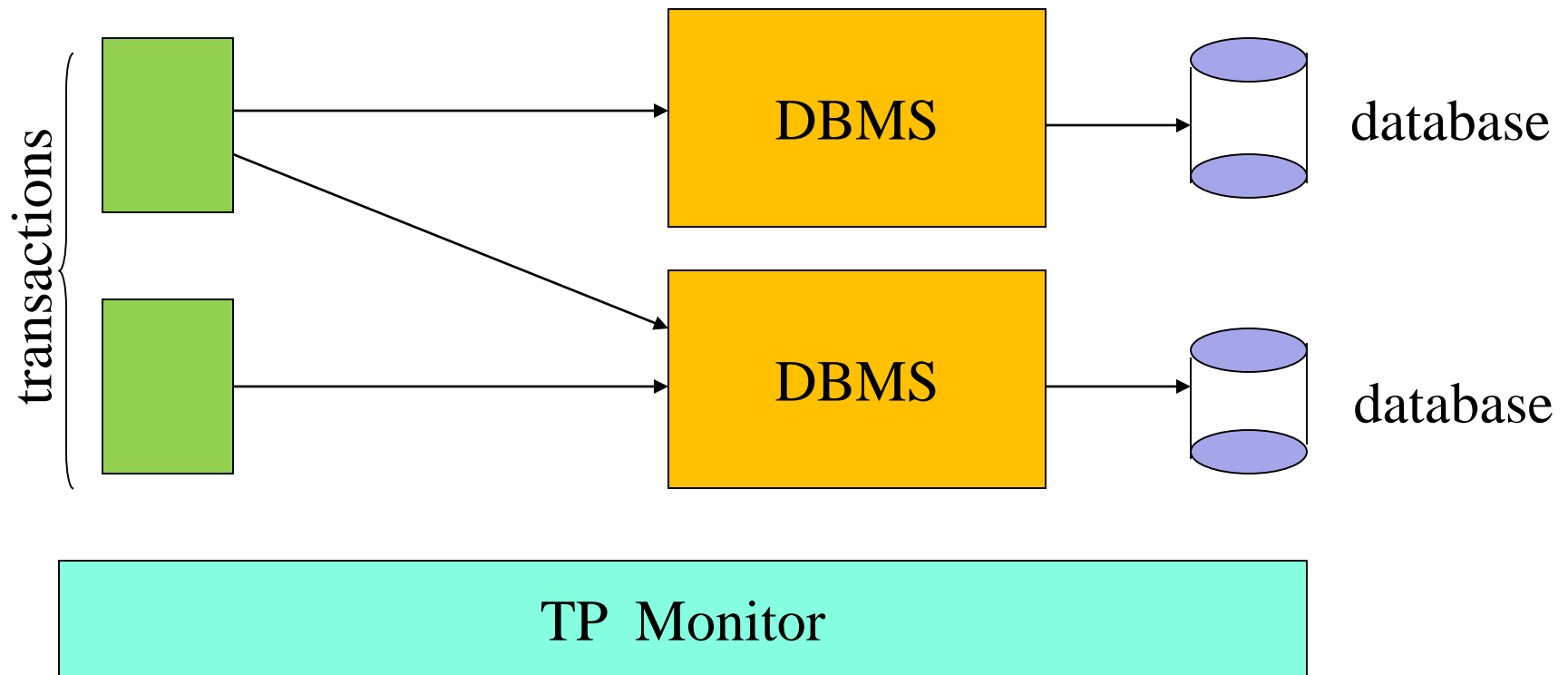
- When an event in the real world changes the state of the enterprise, a transaction is executed to cause the corresponding change in the database state,
- A transaction is an application program with special properties - to guarantee maintains database correctness

# What is a Transaction Processing System?

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- ❖ 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

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- **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



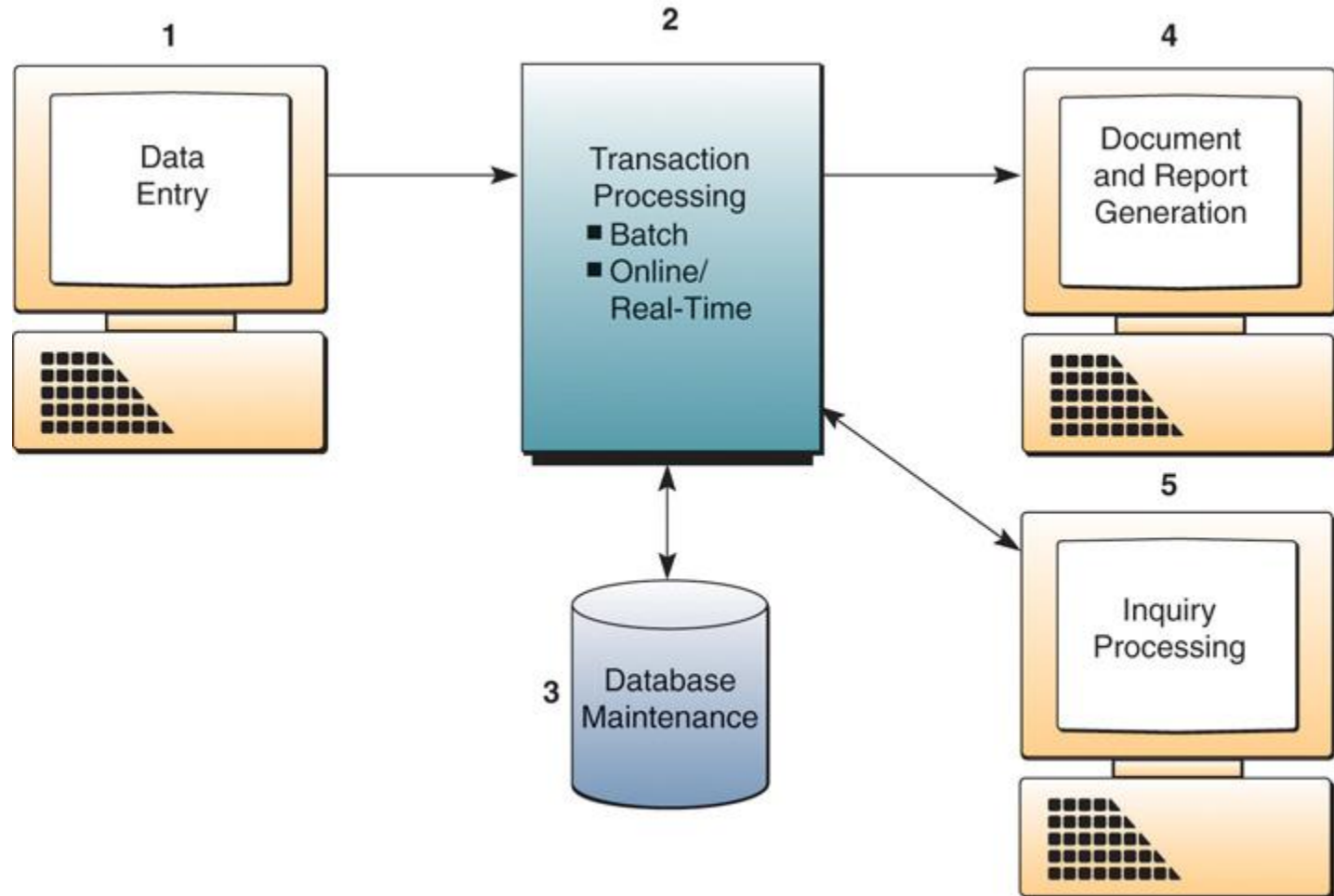
# Online Transaction Processing (OLTP) can include:

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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

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# Roles in Design, Implementation, and Maintenance of a TPS

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- **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

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

*Thank  
you*

