

# Transaction [Concepts - theory]

→ unit of DB

→ Important in large Database  
to concurrent users  
high availability  
fast response

→ Processing → Interleaved-Parallel  
Begin Statement  
Read-only → disk block → buffer (if occupied → replacement)  
Read-write → disk block → buffer → disk block  
End Statement → Commit  
Roll back

→ Items → collection that has size [granularity]  
↳ Record - Block - Attribute value

## → Concurrency Control Problems

① Lost update

② Temporary update  
④ unrepeated Read

③ Incorrect summary

→ Failures ① Computer failure ② system error / zero  
③ exception condition ④ Concurrency enforcement  
⑤ Disk failure ⑥ catastrophes

→ System log - Transaction Tracker - no failure except ⑤ ⑥  
- log buffer - back up

## → Properties [ACID]

Atomicity → entirety or non

Consistency → from state to another

Durability → Permanency in database

Isolation → not interfered

↳ levels of isolation

(0)

can not overwrite dirty reads

(1)

has no lost update

(2)

has no dirty reads

(3)

has repeatable reads

Snapshot

✓ read  
✓ write  
x Commit



