Desirable Transaction Properties

Elmasri & Navathe 19.3

ACID Properties

- Atomicity
- Consistency preservation
- Isolation
- Durability or permanencey

ACID: Atomicity

- Transaction is an *atomic* unit of processing;
- Performed in its entirety or not at all.
  - $100 removed from Savings
  - $100 added to checking

ACID: Consistency

- Transactions preserve consistency
  - Start in consistent state.
  - End in consistent state.

    It is assumed the code for processing the transaction and the database system enforcing integrity constraints maintain consistency of the database.

ACID: Isolation

- Transcations appear as though they were executed in isolation.
- That is one transaction must not interfere with another.
  - I withdraw $100.
  - My wife withdraws $100.
  - Neither we nor the bank loses or gains $100.

    Responsibility of the *Concurrency Control* system.

ACID: Durability

- Changes to database made by *committed* transaction must persist in spite of any failure.

  Responsibility of the *Recovery System*.