



# Transaction Management

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## Motivation

- ❖ Concurrent execution
  - Why is this desirable?
- ❖ Crash recovery
  - Not desirable but unavoidable!
- ❖ Transaction
  - Abstracts away concurrency and crash recovery issues
  - Application developers need not worry about this

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## Transactions: The ACID properties

- ❖ **A**tomicity: All actions in a Xact happen, or none happen
- ❖ **C**onsistency: Each Xact transforms the database from one consistent state to another
- ❖ **I**solation: Execution of concurrent transactions is as though they are evaluated in some serial order
- ❖ **D**urability: If a Xact commits, its effects persist

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## Transactions: The ACID properties



- ❖ **C**onsistency
  - Responsibility of application
- ❖ **I**solation
  - Responsibility of Concurrency Control manager
- ❖ **A**tomicity, **D**urability
  - Responsibility of Recovery manager

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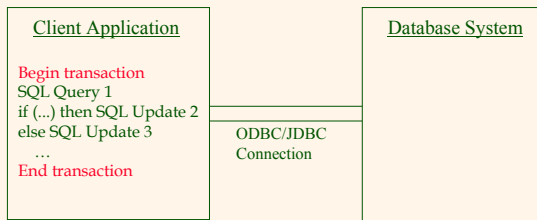
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## Transactions API



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