Database Lab
Transactions

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Topics

- conceptual design
- logical design
- consistency constraints
- data manipulation
- queries
- **transactions**
- views
- stored procedures and user-defined functions
- triggers
- security

Transactions

- logical units of work
- bracketed by begin and commit/rollback

```
begin;
            create table …
            drop table …
            select …
            insert …
            update …
            delete …
end; / commit; / rollback;
```

- the dangers of autocommit …

Isolation Levels

-- T1

begin transaction isolation level …;

        select * from vehicle …

        update vehicle …

        select * from vehicle …

commit;

        select * from vehicle;

-- T2

begin;

set transaction isolation level …;

          update limousine set …

commit;

Concurrency Control

- isolation levels
  - read committed
  - repeatable read
  - serializable

Isolation Level	Dirty Read	Nonrepeatable Read	Phantom Read
Read uncommitted	Possible	Possible	Possible
Read committed	Not possible	Possible	Possible
Repeatable read	Not possible	Not possible	Possible
Serializable	Not possible	Not possible	Not possible

Concurrency Control

- multi-version concurrency control
  - updates create new version, readers can continue to "see" old version
  - no read locks
  - only update locks
- explicit locks
  - e.g., lock table