IT 775
Database Technology

SQL-DML

Views

Tables
SQL Recognizes Several Kinds

- Base tables
- Temporary (working) tables
- Views

Tables
SQL Recognizes Several Kinds

- Base tables
  - persistent (permanent)
- Temporary (working) tables
  - transient -- don't persist beyond the session
  - purpose of temporary tables
  - hold intermediate results for a session
  - no need to drop tables at end to cleanup
  - useful for debugging SQL queries

Tables
SQL Recognizes Several Kinds

- Views
  - Virtual (derived) tables created by executing a named
  - Stored query (called a NAMED SELECT)
  - Use view name like a table name
  - Views are created from data already in the database
  - Views are automatically created or updated for each reference to the view
  - Materialized whenever DBMS wants (at query or update)
  - Often used to support external schemas for various users

Views

- Views differ from temp tables
  - Temp table, once created, has no connection to source tables
  - Temp table disappears when session ends
  - View automatically reflects updates to source tables
    - At least limited updates
  - View is permanent -- there for next session

Views

- Purpose
  - Convenient way to invoke frequently used complex queries
  - Convenient way to implement external schemas for end users
  - Provides a layer of security by granting users access only to views, but not underlying tables
- Not necessarily materialized until referenced in a query
- View defined on another view is updateable if the source view is updateable

Creating Views

Syntax for defining views

```
CREATE VIEW viewname [(attrlist)] AS
SELECT …
```

- If attribute list is not included, the default is the names of the attributes from the select list

```
CREATE VIEW csstudentenroll AS
 SELECT sname, snbr, gpa, dept, cnbr, sect
   FROM student NATURAL JOIN enroll
    WHERE major = 'cs';
```

Using Views

Use a view like a base table

SELECT … FROM viewname

Example:

```
SELECT    sname, snbr, dept, cnbr, sect
  FROM    csstudentenroll
WHERE     dept = 'math' AND cnbr >= 600;
```

Compare with using base tables

```
SELECT    sname, snbr, dept, cnbr, sect
  FROM    student NATURAL JOIN enroll
WHERE     dept = 'math' AND cnbr >= 600
  AND     major = 'cs';
```

Exercise #4

- SQL Coding - Views