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# INFO90002

## Database Systems & Information Modelling

Week 06

SQL 3

- Views
- DCL
  - GRANT and REVOKE
- Review of SQL

- a View is a select statement that persists, and can be treated as though it were a table by other SQL statements
- Used to:
  - hide the complexity of queries from users
  - hide structure of data from users
  - hide data from users
    - different users use different views
      - e.g. allow someone to access employee table, but not salaries column
    - one way of improving database security
- To create a view...
  - **CREATE VIEW** nameofview **AS** validSelectStatement
  - its definition (but not its output) is stored in the database
  - can be used as though it is a table

```
CREATE VIEW DepartmentSales AS
SELECT departmentId, name, COUNT(*) as numSales
FROM Department NATURAL JOIN Sale
GROUP BY departmentId;
```

6 • `SELECT * FROM DepartmentSales;`

Result Grid			
Filter Rows:			
Export: Wrap Cell Content:			
	departmentId	name	numSales
▶	2	Books	6
	3	Clothes	8
	4	Equipment	6
	5	Furniture	4
	6	Navigation	13
	7	Recreation	6

6 • `SELECT * FROM DepartmentSales`  
7 `WHERE numSales > 5;`

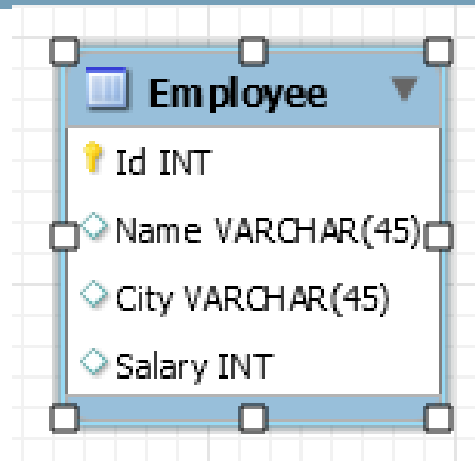
Result Grid			
Filter Rows:			
Export: Wrap Cell Content:			
	departmentId	name	numSales
▶	2	Books	6
	3	Clothes	8
	4	Equipment	6
	6	Navigation	13
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- Conditions that must be satisfied:
  - the select clause only contains attribute names
    - not expressions, aggregates or distinct
  - any attributes not listed in the select clause can be set to null
  - the query does not have a group by or having clause
- MySQL conditions for updatable views are quite stringent
  - see <http://dev.mysql.com/doc/refman/5.0/en/view-updatability.html>

# Updating a View: example

Underlying  
base table

->



Id	Name	City	Salary
1	John Lennon	Sydney	100000
2	Paul McCartney	Melbourne	80000
3	George Harrison	Melbourne	90000
4	Ringo Starr	Brisbane	110000

CREATE VIEW MelbRestricted AS  
(SELECT id, name, city from Employee  
WHERE city = 'Melbourne');

Id	Name	City
2	Paul McCartney	Melbourne
3	George Harrison	Melbourne

SELECT \* FROM MelbRestricted;

INSERT INTO MelbRestricted VALUES  
(null, 'Yoko Ono', 'Melbourne');

Id	Name	City	Salary
1	John Lennon	Sydney	100000
2	Paul McCartney	Melbourne	80000
3	George Harrison	Melbourne	90000
4	Ringo Starr	Brisbane	110000
6	Yoko Ono	Melbourne	NULL

- (beyond CREATE)
- ALTER
  - Allows us to add or remove columns from a table
    - **ALTER TABLE** TableName **ADD** AttributeName AttributeType
    - **ALTER TABLE** TableName **DROP** AttributeName
      - not supported by all vendors (MySQL supports it)
- RENAME
  - Allows the renaming of tables
    - **RENAME TABLE** CurrentTableName **TO** NewTableName

- TRUNCATE
  - like “DELETE FROM table” but it does more
  - differences are vendor-specific, see <http://stackoverflow.com/questions/139630/whats-the-difference-between-truncate-and-delete-in-sql> and <https://dev.mysql.com/doc/refman/5.0/en/truncate-table.html>
  - in MySQL, resets auto\_increment PKs
  - cannot ROLL BACK a TRUNCATE command
    - have to get data back from backup...
- DROP
  - potentially DANGEROUS
    - Removes the table definition and the data in the table
      - There is NO UNDO COMMAND! (have to restore from backup)
    - DROP TABLE TableName



- DCL
  - Users and permissions
    - **CREATE USER, DROP USER**
    - **GRANT, REVOKE**
    - **SET PASSWORD**
- Other commands offered
  - Database administration
    - **BACKUP TABLE, RESTORE TABLE**
    - **ANALYZE TABLE**
  - Miscellaneous
    - **DESCRIBE tablename**
    - **USE db\_name**
  - MySql calls these  
'Database Administration Statements'

- Data Definition Language (DDL)
  - To define and set up the database
  - CREATE, ALTER, DROP
    - Also TRUNCATE, RENAME
- Data Manipulation Language (DML)
  - To maintain and use the database
  - SELECT, INSERT, DELETE, UPDATE
    - MySQL also provides others.... eg REPLACE
- Data Control Language (DCL)
  - To control access to the database
    - GRANT, REVOKE
- Other Commands
  - Administer the database
  - Transaction Control