
# MySQL RDBMS

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# Sub query

- Sub queries with UPDATE and DELETE are not supported in all RDBMS.
- In MySQL, Sub-queries in UPDATE/DELETE is allowed, but sub-query should not SELECT from the same table, on which UPDATE/DELETE operation is in progress.

# Views

- RDBMS view represents view (projection) of the data.
- View is based on SELECT statement.
- Typically it is restricted view of the data (limited rows or columns) from one or more tables (joins and/or sub-queries) or summary of the data (grouping).
- Data of view is not stored on server hard-disk; but its SELECT statement is stored in compiled form. It speed up execution of view.

where

views are not materialized.

data is not copied / stored.

# Views

- Views are of two types: Simple view and Complex view
- Usually if view contains computed columns, group by, joins or sub-queries, then the views are said to be complex. DML operations are not supported on these views.
- DML operations on Simple view affects underlying table. & vice versa
- View can be created with CHECK OPTION to ensure that DML operations can be performed only the data visible in that view.

# View

- Views can be differentiated with: SHOW FULL TABLES.
- Views can be dropped with DROP VIEW statement.
- View can be based on another view.

* SHOW CREATE VIEW viewname ;
* Cannot create index on views.

- Applications of views
  - Security: Providing limited access to the data.
  - Hide source code of the table. → DESC tablename or SHOW CREATE TABLE ... ;
  - Simplifies complex queries.

# Data Control Language

- Security is built-in feature of any RDBMS. It is implemented in terms of permissions (a.k.a. privileges).
- There are two types of privileges.
- System privileges
  - Privileges for certain commands i.e. CREATE TABLE, CREATE USER, CREATE TRIGGER, ...
  - Typically these privileges are given to the database administrator. (MySQL root login).
- Object privileges
  - RDBMS objects are table, view, stored procedure, function, triggers, …
  - Can perform operations on the objects i.e. INSERT, UPDATE, DELETE, SELECT, CALL, ...
  - Typically these privileges are given to the database users.

Database users, table struct & other system level info is maintained in system tables (in system dbs).

system dbs: mysql, sys, performance_schema, information_schema.

visible by root login: SHOW DATABASES;

# Data Control Language

- Permissions are given to user using GRANT command.
  - GRANT CREATE TABLE TO user@host;
  - GRANT CREATE TABLE, CREATE VIEW TO user1@host, user2@host;
  - GRANT SELECT ON db.table TO user@host;
  - GRANT SELECT, INSERT, UPDATE ON db.table TO user@host;
  - GRANT ALL ON db.* TO user@host;
- By default one user cannot give permissions to other user. This can be enabled using WITH GRANT OPTION.
  - GRANT ALL ON *.* TO user@host WITH GRANT OPTION;
- Permissions for the user can be listed using SHOW GRANTS command.
- Permissions assigned to any user can be withdrawn using REVOKE command.
  - REVOKE SELECT, INSERT ON db.table FROM user@host;


# Thank you!

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