

Lab Assignment No. 2

Name - Mehatab Mahibub Sanadi

Roll No. - CO3056

Title - SQL Queries.

Aim -

- i) Design & develop SQL DDL statements which demonstrate use of SQL objects such as Table, View, Index, Sequence, Synonym, different constraints etc.
- ii) Write at least 10 SQL queries on suitable database application using SQL DML statements.

Software Required - MySQL.

Theory -

Database -

It is structure set of data held in computer, especially one that is accessible in various ways.

Database System -

DBMS is computer software application that interacts with user, other applications & database itself to capture & analyze data.

Structured Query Language (SQL) -

It is programming language for accessing & manipulating databases. It is responsible for

- Executing queries, i.e. questions asked to database.
- Retrieving data
- Editing data: inserting, updating, deleting or creating new records.
- Creating Views
- Setting permissions
- Creating new databases.

Top 7 open source relational databases -

CUBRID, Firebird, MariaDB, MySQL,
PostgreSQL, SQLite.

RBDBMS Terminology -

- i) Database - Collection of tables with data.
- ii) Table - It is matrix with data. In database it look like spreadsheet.
- iii) Column - It contain data of one & same kind, eg. column of postcodes.
- iv) Row - It is group of related data. eg. data of one subscription.
- v) Redundancy - Storing data twice, it make system faster.

- vi) Primary key - It is unique. It can not occur twice in table. It helps to find only 1 row.
- vii) Foreign key - It is linking between two tables.
- viii) Compound key - It consists of multiple columns, because one column is not sufficiently unique.
- ix) Index - It resembles index at back of book.
- x) Referential Integrity - It makes sure that foreign key value always points to existing row.

Administrative MySQL command -

i) USE DatabaseName -

This will be used to select database in MySQL workspace.

ii) SHOW DATABASES -

Lists out databases that are accessible by MySQL DBMS.

iii) SHOW TABLES -

Shows tables in database once database has been selected with use command.

iv) SHOW COLUMNS FROM tablename -

Shows attributes, types of attributes, key info, whether NULL is permitted, default & other info for table.

v) SHOW INDEX FROM tablename -
Presents details of all indexes on
table including PRIMARY KEY.

SQL commands

DDL

CREATE
ALTER
DROP
TRUNCATE
COMMENT
RENAME

DML

SELECT
INSERT
UPDATE
DELETE
MERGE
CALL
EXPLAIN PLAN
LOCK TABLE

DCL

REVOKE

TCL

COMMIT

ROLLBACK

SAVEPOINT

SET TRANSACTION

vi) DROP DATABASE databaseName

- Delete database (irrecoverable!)

vii) DROP DATABASE IF EXISTS databaseName

- Delete if it exists.

viii) CREATE DATABASE databaseName

- Create new database.

ix) CREATE DATABASE IF NOT EXISTS databaseName

- Create only if it does not exist.

x) SHOW DATABASES

- Show all database in server.

- xii) USE databaseName
 - Set default (current) database.
- xiii) SELECT DATABASE()
 - Show default database.
- xiii) SHOW CREATE DATABASE databaseName
 - Show CREATE DATABASE statement
- xiv) DROP TABLE - Delete TABLE (irrecoverable!)
- xv) SHOW TABLES - Show all tables.
- xvi) ALTER TABLE tableName
 - Modify table.

Data Manipulation Language (DML) -

It allows you to modify database instances by inserting, modifying & deleting its data.

1) INSERT -

It is SQL query responsible for insert data into row of table.

Syntax -

```
INSERT INTO TABLE-NAME (col1,col2,col3,...)
VALUES (value1,value2,value3,...)
```

or

```
INSERT INTO TABLE-NAME
VALUES (value1,value2,value3,...)
```

2) UPDATE -

this command is used to update or modify value of column in table.

Syntax -

UPDATE table-name SET [column-name] = value [WHERE condition]

(13) DELETE -

This command is used to remove one or more rows from table.

Syntax -

DELETE FROM table-name [WHERE condition];

Set Operators -

i) It combines results of two component queries into single result.

ii) Queries containing set operators called compound queries.

iii) List of SQL Set Operators are "UNION[ALL], INTERSECT, MINUS Operators"

SQL Functions -

- i) They are built into Oracle Database & available to use in various SQL statements.
- ii) If you call SQL function with argument of another datatype Oracle attempt to convert argument to expected datatype.
- iii) If you call SQL function with null argument, then SQL function automatically returns null.

1) Single-Row Functions -

It return single result row for every row of queried table or view. These can appear in SELECT lists, WHERE clauses, STARTWITH & CONNECT BY clauses & HAVING clauses.

2) Character Functions returning character value

- i) If input argument is CHAR or VARCHAR 2 then value returned is VARCHAR2.
- ii) If input argument is NCHAR or NVARCHAR2, then value returned is NVARCHAR2.

3) Datetime Functions -

They operate on date(DATE), timestamp (TIMESTAMP, TIMESTAMP WITH TIME ZONE & TIMESTAMP WITH LOCAL TIME ZONE) & interval (INTERVAL DAY TO SECOND, INTERVAL YEAR TO MONTH) values.

Data Definition Language *(DDL) -

It is set of SQL commands used to create, modify & delete database structures but not data. These commands are not normally used by general user, it is used by person who access database by application.

1) CREATE - create database or its objects

Syntax - ~~Create~~

CREATE TABLE Table-name(

col1 datatype; col2 datatype, ...);

2) DROP - delete object from database.

Syntax -

DROP TABLE table-name;

3) ALTER - ALTER structure of database.

ALTER TABLE table-name

ADD COLUMN column-name datatype;

4) TRUNCATE - Remove all records from table, including all spaces allocated to records are removed.

Syntax -

TRUNCATE TABLE table-name;

5) COMMENT - Add comment to data dictionary

Syntax -

COMMENT 'comment-text' ON TABLE table-name;

6) RENAME - Rename object existing in database

Syntax -

RENAME TABLE old-table-name TO
new-table-name;

Data Query Language (DQL) -

There is only 1 DQL command i.e.

SELECT - It is used to retrieve data from database.

Syntax -

SELECT column1, column2,

FROM table-name

WHERE condition;

Conclusion -

Students & Here, we have studied & demonstrated various DDL statements in SQL.