

Problem 1. What is SQL? What is DML? What is DDL? Recite the most important SQL commands.

Perform a research (e.g. in Google or Wikipedia) and provide an information about SQL, data manipulation language, data definition language and the most important SQL commands.

SQL (Structured Query Language) is a special-purpose programming language designed for managing data held in a relational database management system (RDBMS), or for stream processing in a relational data stream management system (RDSMS).

Originally based upon relational algebra and tuple relational calculus, SQL consists of a data definition language and a data manipulation language. The scope of SQL includes data insert, query, update and delete, schema creation and modification, and data access control. Although SQL is often described as, and to a great extent is, a declarative language, it also includes procedural elements.

- *DDL (Data definition language)*

Data Definition Language (DDL) is a standard for commands that define the different structures in a database. DDL statements create, modify, and remove database objects such as tables, indexes, and users. Common DDL statements:

- **CREATE** - to create objects in the database
- **ALTER** - alters the structure of the database
- **DROP** - delete objects from the database
- **TRUNCATE** - remove all records from a table, including all spaces allocated for the records are removed
- **COMMENT** - add comments to the data dictionary
- **RENAME** - rename an object

- *DML (Data manipulation language)*

Data Manipulation Language (DML) is a set of statements used to store, retrieve, modify, and erase data from a database. There are two types of DML: procedural, in which the user specifies what data is needed and how to get it; and nonprocedural, in which the user specifies only what data is needed. Common DML statements:

- **SELECT** - retrieve data from the a database
- **INSERT** - insert data into a table
- **UPDATE** - updates existing data within a table
- **DELETE** - deletes all records from a table, the space for the records remain
- **MERGE** - UPSERT operation (insert or update)
- **CALL** - call a PL/SQL or Java subprogram
- **EXPLAIN PLAN** - explain access path to data
- **LOCK TABLE** - control concurrency

- *Data Control Language (DCL)*

The Data Control Language (DCL) is a subset of the Structured Query Language (SQL) that allows database administrators to configure security access to relational databases. Common DCL statements:

- **GRANT** - gives user's access privileges to database
- **REVOKE** - withdraw access privileges given with the GRANT command
- **DENY** - prevent a user from receiving a particular permission

- *Transaction Control Language (TCL)*

A Transaction Control Language (TCL) is a computer language and a subset of SQL, used to control transactional processing in a database. A transaction is logical unit of work that comprises one or more SQL statements, usually a group of Data Manipulation Language (DML) statements. Common TCL statements:

- **COMMIT** - save work done
- **SAVEPOINT** - identify a point in a transaction to which you can later roll back
- **ROLLBACK** - restore database to original since the last COMMIT
- **SET TRANSACTION** - Change transaction options like isolation level and what rollback segment to use