

Database Creation and Management

DATABASE LANGUAGES

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Outline

- Structured Query Language (SQL)
- Data Definition Language (DDL)
- Data Manipulation Language (DML)
- Data Control Language (DCL)
- Transaction Control Language (TCL)

Structured Query Language (SQL)

- Structured Query Language (SQL) as we all know is the database language by the use of which we can perform certain operations on the existing database and also we can use this language to create a database.
- SQL uses certain commands like Create, Drop, Insert etc. to carry out the required tasks.
- These SQL commands are mainly categorized into four categories as: DDL, DML, TCL, DCL

Data Definition Language

(DDL)

- DDL or Data Definition Language actually consists of the SQL commands that can be used to define the database schema.
- It simply deals with descriptions of the database schema and is used to create and modify the structure of database objects in database.

Cont...

- Examples of DDL commands:
 - CREATE
 - DROP
 - ALTER
 - TRUNCATE
 - COMMENT
 - RENAME

Cont...

- **CREATE** – is used to create the database or its objects (like table, index, function, views, store procedure and triggers).
- **DROP** – is used to delete objects from the database.
- **ALTER**-is used to alter the structure of the database.
- **TRUNCATE**–is used to remove all records from a table, including all spaces allocated for the records are removed.

Cont...

- **COMMENT** –is used to add comments to the data dictionary.
- **RENAME** –is used to rename an object existing in the database.

DATA MANIPULATION LANGUAGE (DML)

- The SQL commands that deals with the manipulation of data present in database belong to DML or Data Manipulation Language and this includes most of the SQL statements.
- Examples of DML:
 - SELECT
 - INSERT
 - UPDATE
 - DELETE

Cont...

- **SELECT** – is used to retrieve data from the database.
- **INSERT** – is used to insert data into a table.
- **UPDATE** – is used to update existing data within a table.
- **DELETE** – is used to delete records from a database table.

DATA CONTROL LANGUAGE

- DCL includes commands such as GRANT and REVOKE which mainly deals with the rights, permissions and other controls of the database system.
- Examples of DCL commands:
 - **GRANT**-gives user's access privileges to database.
 - **REVOKE**-withdraw user's access privileges given by using the GRANT command.

TRANSACTION CONTROL LANGUAGE

- TCL commands deals with the transaction within the database.
- Examples of TCL commands:
 - **COMMIT**– commits a Transaction.
 - **ROLLBACK**– rollbacks a transaction in case of any error occurs.
 - **SAVEPOINT**–sets a savepoint within a transaction.
 - **SET TRANSACTION**–specify characteristics for the transaction.

Common data types

Datatype	Use
INT	used for columns which will store integer values.
FLOAT	used for columns which will store float values.
DOUBLE	used for columns which will store float values.
VARCHAR	used for columns which will be used to store characters and integers, basically a string.
CHAR	used for columns which will store char values(single character).
DATE	used for columns which will store date values.
TEXT	used for columns which will store text which is generally long in length. For example, if you create a table for storing profile information of a social networking website, then for about me section you can have a column of type TEXT.

CREATE Command

- It is a DDL command used to create a table or a database in RDBMS.
- Specify the details of the columns of the tables with the **names** and **datatypes** of various columns in the **create** command itself.

- Syntax:

```
CREATE TABLE  
<TABLE_NAME>
```

```
(  
    column_name1 datatype1,  
    column_name2 datatype2,  
    column_name3 datatype3,  
    column_name4 datatype4  
);
```


Cont...

- Example:

```
CREATE TABLE Student(  
    student_id INT,  
    name VARCHAR(100),  
    age INT);
```


ALTER Command

- Alter command is used for altering the table structure, such as,
 - to add a column to existing table
 - to rename any existing column
 - To change datatype of any column or to modify its size.
 - To drop a column from the table.

ALTER Command: Add new Column

- **Syntax:**

```
ALTER TABLE table_name  
ADD(  
column_name1 datatype1,  
column-name2 datatype2,  
column-name3 datatype3);
```

- **Example:**

```
ALTER TABLE student  
ADD(  
father_name VARCHAR(60),  
mother_name VARCHAR(60),  
dob DATE);
```


ALTER Command: Add new Column

- **Syntax:**

```
ALTER TABLE table_name  
ADD(  
column_name1 datatype1,  
column_name2 datatype2,  
column_name3 datatype3);
```

- **Example:**

```
ALTER TABLE student  
ADD(  
father_name VARCHAR(60),  
mother_name VARCHAR(60),  
dob DATE);
```


ALTER Command: Add Column with default value

- **Syntax:**

```
ALTER TABLE table_name ADD(  
    column-name1 datatype1 DEFAULT  
    some_value  
);
```

- **Example:**

```
ALTER TABLE student ADD(  
    dob DATE DEFAULT '01-Jan-99'  
);
```


ALTER Command: Modify an existing Column

- **Syntax:**

```
ALTER TABLE table_name modify(  
    column_name datatype  
);
```

- **Example:**

```
ALTER TABLE student MODIFY(  
    address varchar(300));
```


ALTER Command: Rename a Column

- **Syntax:**

```
ALTER TABLE table_name RENAME  
    old_column_name TO new_column_name;
```

- **Example:**

```
ALTER TABLE student RENAME address TO location;
```


ALTER Command: Drop a Column

- **Syntax:**

```
ALTER TABLE table_name DROP (  
    column_name);
```

- **Example:**

```
ALTER TABLE student DROP (address);
```