

## 1. DDL - Data Definition Language

Command	Description
Create	Creates objects in the database/database objects
Alter	Alters the structures of the database/ database objects
Drop	Deletes objects from the database
Truncate	Removes all records from a table permanently
Rename	Renames an object

### CREATE

**SELECT** - is used to retrieve data from database

The screenshot shows a SQL IDE interface. On the left is a 'Navigator' pane with a tree view of schemas: 'address' (containing 'Tables', 'Views', 'Stored Procedures', 'Functions'), 'sakila', 'sys', and 'world'. The 'address' schema is expanded, showing 'Tables' with 'people'. The main editor shows 'Query 1' with the following SQL code:

```
1 CREATE TABLE employees(  
2     emp_id INT NOT NULL,  
3     first_name VARCHAR(20),  
4     last_name VARCHAR(20),  
5     salary INT(20),  
6     PRIMARY KEY (emp_id)  
7 );  
8 SELECT * FROM address.employees;  
9
```

Below the editor is a 'Result Grid' showing a single row with all NULL values for the columns: emp\_id, first\_name, last\_name, salary.

### **DESCRIBE -**

The screenshot shows the same SQL IDE interface. The SQL code in 'Query 1' now includes a DESCRIBE statement:

```
1 CREATE TABLE employees(  
2     emp_id INT NOT NULL,  
3     first_name VARCHAR(20),  
4     last_name VARCHAR(20),  
5     salary INT(20),  
6     PRIMARY KEY (emp_id)  
7 );  
8 SELECT * FROM address.employees;  
9 DESCRIBE employees;  
10
```

The 'Result Grid' below shows the output of the DESCRIBE command:

Field	Type	Null	Key	Default	Extra
emp_id	int	NO	PRI	NULL	
first_name	varchar(20)	YES		NULL	
last_name	varchar(20)	YES		NULL	
salary	int	YES		NULL	

## ALTER

The screenshot shows the SQL Developer interface. The left pane displays the 'SCHEMAS' tree with 'address' expanded, showing 'employees' and 'people' tables. The main query window contains the following SQL script:

```
1 CREATE TABLE employees(  
2     emp_id INT NOT NULL,  
3     first_name VARCHAR(20),  
4     last_name VARCHAR(20),  
5     salary INT(20),  
6     PRIMARY KEY (emp_id)  
7 );  
8 • SELECT * FROM address.employees;  
9 • DESCRIBE employees;  
10 • ALTER TABLE employees ADD COLUMN contact INT(10);  
11 • SELECT * FROM address.employees;
```

The 'Result Grid' at the bottom shows the output of the SELECT statement, displaying columns: emp\_id, first\_name, last\_name, salary, and contact. The first row shows NULL values for all columns.

	emp_id	first_name	last_name	salary	contact
*	NULL	NULL	NULL	NULL	NULL

## RENAME

The screenshot shows the SQL Developer interface. The left pane displays the 'SCHEMAS' tree with 'address' expanded, showing 'employees' and 'people' tables. The main query window contains the following SQL script:

```
1 CREATE TABLE employees(  
2     emp_id INT NOT NULL,  
3     first_name VARCHAR(20),  
4     last_name VARCHAR(20),  
5     salary INT(20),  
6     PRIMARY KEY (emp_id)  
7 );  
8 • SELECT * FROM address.employees;  
9 • DESCRIBE employees;  
10 • ALTER TABLE employees ADD COLUMN contact INT(10);  
11 • SELECT * FROM address.employees;  
12 • ALTER TABLE employees RENAME COLUMN contact TO job_code;  
13 • SELECT * FROM address.employees;
```

The 'Result Grid' at the bottom shows the output of the SELECT statement, displaying columns: emp\_id, first\_name, last\_name, salary, and job\_code. The first row shows NULL values for all columns.

	emp_id	first_name	last_name	salary	job_code
*	NULL	NULL	NULL	NULL	NULL

At the bottom of the interface, the 'Administration' tab is selected, and the 'Schemas' section is visible.

**TRUNCATE** – Deletes all data of table

The screenshot shows the SQL Server Enterprise Manager interface. On the left, the 'SCHEMAS' pane shows a tree view with 'address' expanded, containing 'employees' and 'people' tables. The main query window, titled 'Query 1', contains the following SQL code:

```
1 • TRUNCATE TABLE employees;
2 • SELECT * from employees;
```

Below the query window, the 'Result Grid' shows the results of the SELECT statement. The columns are 'emp\_id', 'first\_name', 'last\_name', and 'salary'. The first row shows all values as NULL.

emp_id	first_name	last_name	salary
NULL	NULL	NULL	NULL

**DROP**

The screenshot shows the SQL Server Enterprise Manager interface. On the left, the 'SCHEMAS' pane shows a tree view with 'address' expanded, containing 'employees' and 'people' tables. The main query window, titled 'Query 1', contains the following SQL code:

```
1 • CREATE TABLE employees(
2 •   emp_id INT NOT NULL,
3 •   first_name VARCHAR(20),
4 •   last_name VARCHAR(20),
5 •   salary INT(20),
6 •   PRIMARY KEY (emp_id)
7 • );
8 • SELECT * FROM address.employees;
9 • DESCRIBE employees;
10 • ALTER TABLE employees ADD COLUMN contact INT(10);
11 • SELECT * FROM address.employees;
12 • ALTER TABLE employees RENAME COLUMN contact TO job_code;
13 • SELECT * FROM address.employees;
14 • DROP TABLE employees;
15 • SELECT * FROM address.employees;
```

Below the query window, the 'Output' pane shows the results of the SQL commands. The output is a table with columns: '#', 'Time', 'Action', 'Message', and 'Duration / Fetch'.

#	Time	Action	Message	Duration / Fetch
12	00:14:51	SELECT * FROM employees LIMIT 0, 1000	0 row(s) returned	0.000 sec / 0.000 sec
13	00:17:25	SELECT * FROM address.employees LIMIT 0, 1000	0 row(s) returned	0.000 sec / 0.000 sec
14	00:18:37	DESCRIBE employees	4 row(s) returned	0.000 sec / 0.000 sec
15	00:21:03	ALTER TABLE employees ADD COLUMN contact ...	0 row(s) affected, 1 warning(s): 1681 Integer display...	1.093 sec
16	00:21:16	SELECT * FROM address.employees LIMIT 0, 1000	0 row(s) returned	0.000 sec / 0.000 sec
17	00:23:34	ALTER TABLE employees RENAME COLUMN co...	Error Code: 1064. You have an error in your SQL sy...	0.000 sec
18	00:23:42	ALTER TABLE employees RENAME COLUMN co...	0 row(s) affected Records: 0 Duplicates: 0 Warnin...	0.625 sec
19	00:23:47	SELECT * FROM address.employees LIMIT 0, 1000	0 row(s) returned	0.015 sec / 0.000 sec
20	00:27:09	DROP TABLE employees	0 row(s) affected	0.390 sec
21	00:27:28	SELECT * FROM address.employees LIMIT 0, 1000	Error Code: 1146. Table 'address.employees' doesn't...	0.000 sec



## 2. DML - Data Manipulation Language

Command	Description
Insert	Insert data into a table
Update	Updates existing data within a table
Delete	Deletes specified/all records from a table

### INSERT

The screenshot shows the SQL Server Enterprise Manager interface. On the left, the 'SCHEMAS' pane shows the 'address' schema with tables 'employees' and 'people'. The 'Query 1' window displays the following SQL script:

```
1 CREATE TABLE employees(  
2   emp_id INT NOT NULL,  
3   first_name VARCHAR(20),  
4   last_name VARCHAR(20),  
5   salary INT(20),  
6   PRIMARY KEY (emp_id)  
7 );  
8 SELECT * FROM address.employees;  
9 INSERT INTO employees(emp_id,first_name,last_name,salary) VALUES (103,'PRAKASH','NAYAK',50000);  
10 SELECT * FROM address.employees;  
11
```

The 'Result Grid' at the bottom shows the data after the insert operation:

emp_id	first_name	last_name	salary
101	RAKESH	DAS	30000
102	PARESH	DAS	40000
103	PRAKASH	NAYAK	50000
NULL	NULL	NULL	NULL

### Multiple;

The screenshot shows the SQL Server Enterprise Manager interface. On the left, the 'SCHEMAS' pane shows the 'address' schema with tables 'employees' and 'people'. The 'Query 1' window displays the following SQL script:

```
1 CREATE TABLE employees(  
2   emp_id INT NOT NULL,  
3   first_name VARCHAR(20),  
4   last_name VARCHAR(20),  
5   salary INT(20),  
6   PRIMARY KEY (emp_id)  
7 );  
8 SELECT * FROM address.employees;  
9 INSERT INTO  
10   employees(emp_id,first_name,last_name,salary)  
11   VALUES  
12     (104,'MEERA','NAYAK',60000),  
13     (105,'MAYESH','NAYAK',70000);  
14 SELECT * FROM address.employees;
```

The 'Result Grid' at the bottom shows the data after the insert operation:

emp_id	first_name	last_name	salary
101	RAKESH	DAS	30000
102	PARESH	DAS	40000
103	PRAKASH	NAYAK	50000
104	MEERA	NAYAK	60000
105	MAYESH	NAYAK	70000
NULL	NULL	NULL	NULL

## UPDATE

The screenshot shows the SQL Enterprise Manager interface. On the left, the 'SCHEMAS' pane displays a tree view with 'address' expanded, showing 'employees' and 'people' tables. The main query window, titled 'Query 1', contains the following SQL code:

```
1 CREATE TABLE employees(  
2     emp_id INT NOT NULL,  
3     first_name VARCHAR(20),  
4     last_name VARCHAR(20),  
5     salary INT(20),  
6     PRIMARY KEY (emp_id)  
7 );  
8 INSERT INTO  
9     employees(emp_id,first_name,last_name,salary)  
10 VALUES  
11     (104,'MEERA','NAYAK',60000),  
12     (105,'MAYESH','NAYAK',70000);  
13 UPDATE employees  
14     SET first_name='SUBHAM'  
15     WHERE emp_id=105;  
16 SELECT * FROM employees;  
17
```

Below the query window, the 'Result Grid' shows the data after the update. The 'Filter Rows' field is empty. The data is as follows:

emp_id	first_name	last_name	salary
101	RAKESH	DAS	30000
102	PARESH	DAS	40000
103	PRAKASH	NAYAK	50000
104	MEERA	NAYAK	60000
105	SUBHAM	NAYAK	70000
NULL	NULL	NULL	NULL

## DELETE

The screenshot shows the SQL Enterprise Manager interface. On the left, the 'SCHEMAS' pane displays a tree view with 'address' expanded, showing 'employees' and 'people' tables. The main query window, titled 'Query 1', contains the following SQL code:

```
1 SELECT * FROM employees;  
2 DELETE FROM employees  
3     WHERE emp_id IN (102,104);  
4 SELECT * FROM employees;  
5
```

Below the query window, the 'Result Grid' shows the data after the deletion. The 'Filter Rows' field is empty. The data is as follows:

emp_id	first_name	last_name	salary
101	RAKESH	DAS	30000
103	PRAKASH	NAYAK	50000
105	SUBHAM	NAYAK	70000
NULL	NULL	NULL	NULL

## INSERT NEW AFTER DELETION

The screenshot shows a database management interface. On the left, a 'SCHEMAS' pane lists databases: address, sakila, sys, and world. The 'address' database is expanded, showing tables 'employees' and 'people', views, stored procedures, and functions. The main area displays SQL commands:

```
1 • DELETE FROM employees
2   WHERE emp_id IN (102,104);
3 • INSERT INTO
4   employees(emp_id,first_name,last_name,salary)
5   VALUES
6   (102,'PARESH','DAS',40000),
7   (104,'ANKIT','DAS',40000);
8 • SELECT * FROM employees;
```

Below the SQL editor is a 'Result Grid' showing the output of the SELECT statement. It has columns for emp\_id, first\_name, last\_name, and salary. The data rows are:

emp_id	first_name	last_name	salary
101	RAKESH	DAS	30000
102	PARESH	DAS	40000
103	PRAKASH	NAYAK	50000
104	ANKIT	DAS	40000
105	SUBHAM	NAYAK	70000
NULL	NULL	NULL	NULL

### 3. DCL - Data Control Language

Command	Description
Grant	Gives access privileges to database
Revoke	Withdraws access privileges given with the grant command

GRANT <Privilege list> ON  
<Relation Name> TO  
<USER>

REVOKE <Privilege list> ON  
<Relation Name> TO  
<USER>

### 4. TCL – Transaction Control Language

Command	Description
Commit	Saves the work done
Rollback	Restores database to origin state since the last commit
Savepoint	Identify a point in a transaction to which you can roll back later