

## Structured Query Language or SQL

SQL is an interpreted language that can be used to create tables. Collection of tables in SQL means a database.

In SQL we have two types of commands

- Data Definition Language Commands (DDL Commands)
- Data Manipulation Language Commands (DML Commands)

These are the following Data Definition Language Commands

- Create Table Command (Creates a table in database)
- Alter Table Command (Modifies the structure of table in database)
- Drop Table Command (Deletes or removes a table from database)

These are the following Data Manipulation Language Commands

- SELECT Command (Retrieves data from Table)
- INSERT Command (Insert data in a Table)
- UPDATE Command (Modifies Records in Table)
- DELETE Command (Deletes Records from Table)

In SQL we have Cardinality and Degree, cardinality means number of records in the table and degree means number of columns in the table. A tuple in SQL means a record in a table.

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Following are the examples of above DDL Commands

create table command

```
create table students(rollno int,name varchar(20),marks int);
```

above command will create a table students with table name as students with three columns in it as rollno with datatype as integer which means only integer can be entered into rollno, second column is name which is varchar(20) which means a string of 20 characters can be entered into name and third column is marks which is also an integer.

alter table command

```
alter table students modify column name varchar(30);
```

In the above command we have modified the column name so that it now takes 30 alphabets instead of 20.

drop table command

```
drop table students;
```

the above command will delete the table students which means it will delete data as well as structure of table in the database or we can say table students will no longer exist in the database.

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Following are the examples of DML Commands

Select Command

Select Command can be used to retrieve data from table

Select \* from students;

the above command will retrieve all the records and columns from table students.

Select rollno,name from students;

the above command will only retrieve two columns rollno and name from table students.

#### INSERT Command

Insert Command is used to insert data into tables

Insert into students values(1,'raman',90);

Above command will insert values 1 in column rollno, name as 'raman' and marks as 90.

Following command will only insert values in two columns rollno and name and marks will be inserted as NULL.

Insert into students(rollno,name) values(1,'raman');

#### UPDATE Command

Update Command is used to modify a record in table.

Update students set name='aman' where rollno=1;

Following command will set name to 'aman' which was 'raman' before where rollno is 1;

We can modify multiple columns using Update command.

Update set name='aman',marks=89 where rollno=1;

Above command will set name to 'aman' and marks to 89 where rollno is 1;

#### DELETE Command

Delete Command is used to delete a single record or multiple records from table.

Following Command will delete all the records from table students;

delete from students;

Following command will delete only those records from table students where rollno is 1;

delete from students where rollno=1;

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In SQL we can link two tables using a Foreign Key

Foreign Key is a single column or a group of columns that is used to link to tables among themselves or we can also say foreign key is used to create a relationship between two tables.

Following are the two tables

employees table

empid	Empname	empsalary	deptid
1	Raman	100000	1
2	Aman	200000	2
3	Ajay	100000	1
4	vijay	300000	3

Following is the table departments

Deptid	Deptname
1	Accounts
2	IT
3	Marketing

Following is the query which will create a foreign key in SQL.

```
create table departments(deptid int,deptname varchar(20));
```

```
create table employees(empid int,empname varchar(20),empsalary int,deptid int references  
departments(deptid));
```

Following is the query to retrieve department names for the corresponding department ids.

```
select employees.empid,employees.empname,employees.empsalary,departments.deptname from  
employees,deptments where employees.deptid=departments.deptid;
```

Following will be the output of the above query

Empid	Empname	Empsalary	Deptname
1	Raman	100000	Accounts
2	Aman	200000	IT
3	Ajay	100000	Accounts
4	Vijay	300000	Marketing

Examples of Database Management Systems are

- MySQL
- Oracle
- Microsoft Access
- Microsoft SQL Server