Bharathidasan University

Centre for Differently Abled Persons

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Online
Computing
DBMS
Business

RELATIONAL QUERY LANGUAGE

Relational Query Language

Relational query languages use relational algebra to break the user requests

Relational Algebra in DBMS has 6 fundamental operations.

1. Select (σ)

Select (σ) – This is a unary relational operation.

It use operators like <, >, <=, >=, = and != to filter the data from the relation.

2.Project (∏)

Project (∏) – This is a unary operator and is similar to select operation

It selects only selected columns/attributes from the relation.

3. Rename (ρ)

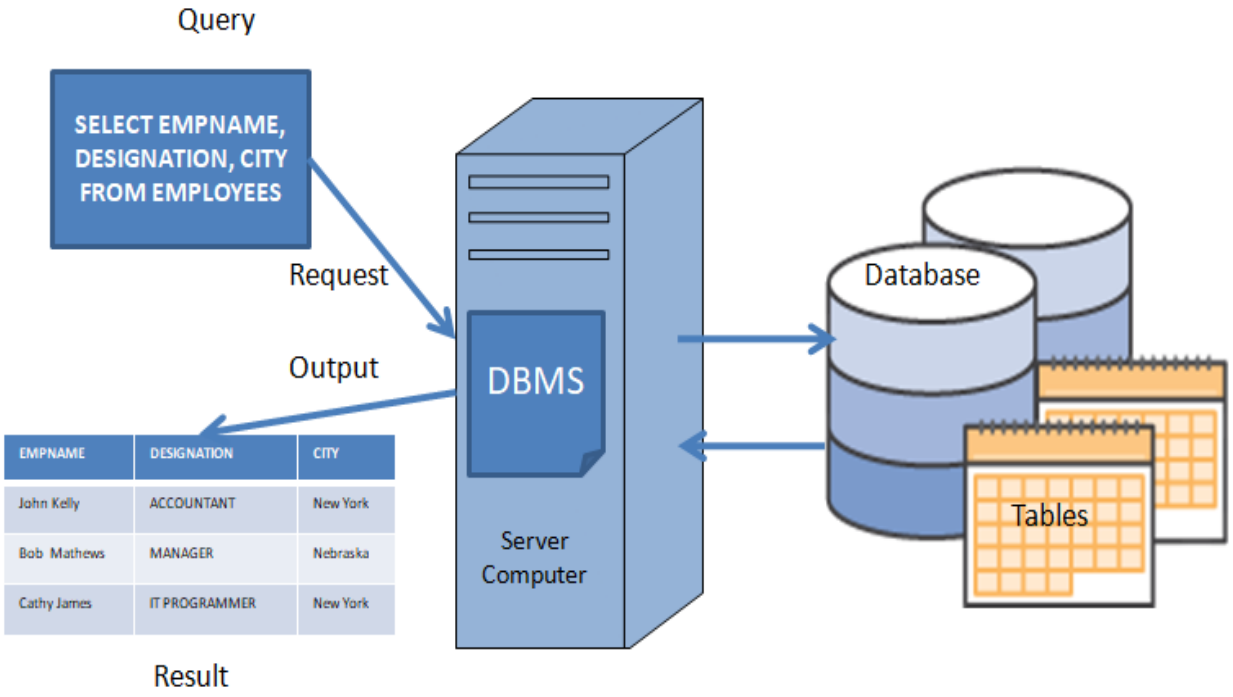
Rename (ρ) – This is a unary operator used to rename the tables and columns of a relation.

SQL

Stuctured Query Language

Structured Query Language (SQL)

- SQL stands for Structured Query Language
- SQL is a standard language for storing, manipulating and retrieving data in databases.



Characteristics of SQL:

1. SQL allows the user to create, update, delete, and retrieve data from a database.
2. SQL is very simple and easy to learn.
3. SQL works with database programs like Oracle, MS Access, Sybase, MS SQL

Advantages of SQL

- No coding needed
- Well defined standards

SQL DATA TYPES

Data types are used to represent the data that can be stored in the database table.

String Data types

Numeric Data types

Date and time Data types

1. String Data types:

- char(n)- It is a fixed width character string data type.
- varchar(n)- It is a variable width character string data type

2. Numeric Data types:

- Int - It allows whole numbers
- float(n) - It is used to specify floating precision number data from.

3. Date and Time Data types:

- Datetime - It is used to specify date and time combination.
- Date - It is used to store date only.

SQL Operators…

SQL Operators

It can perform operation such as

- Arithmetic operators
- Comparison operators
- Logical operators

1. SQL Arithmetic operators

Operator	Description	Example
+ (Addition)	Adds values on either side of the operator.	a + b
- (Subtraction)	Subtracts right hand operand from left hand operand.	a - b
* (Multiplication)	Multiplies values on either side of the operator.	a * b
/ (Division)	Divides left hand operand by right hand operand.	a /b
% (Modulo)	Divides left hand operand by right hand operand	a%b

2. SQL Comparison Operator

Operator	Description	Example
=	Checks if the values of two operands are equal or not	(a = b)
!=	The values of two operands are equal or not	(a != b)
<>	The values of two operands are equal or not	(a <> b)
>	The value of left operand is greater than the value of right operand	(a > b)
<	The value of left operand is less than the value of right operand	(a < b)
>=	The value of left operand is greater than or equal to the value of right operand	(a >= b)
<=	The value of left operand is less than or equal to the value of right operand	(a <= b)
!<	The value of left operand is not less than the value of right operand	(a !< b)
!>	The value of left operand is not greater than the value of right operand	(a !> b)

3. SQL Logical Operator

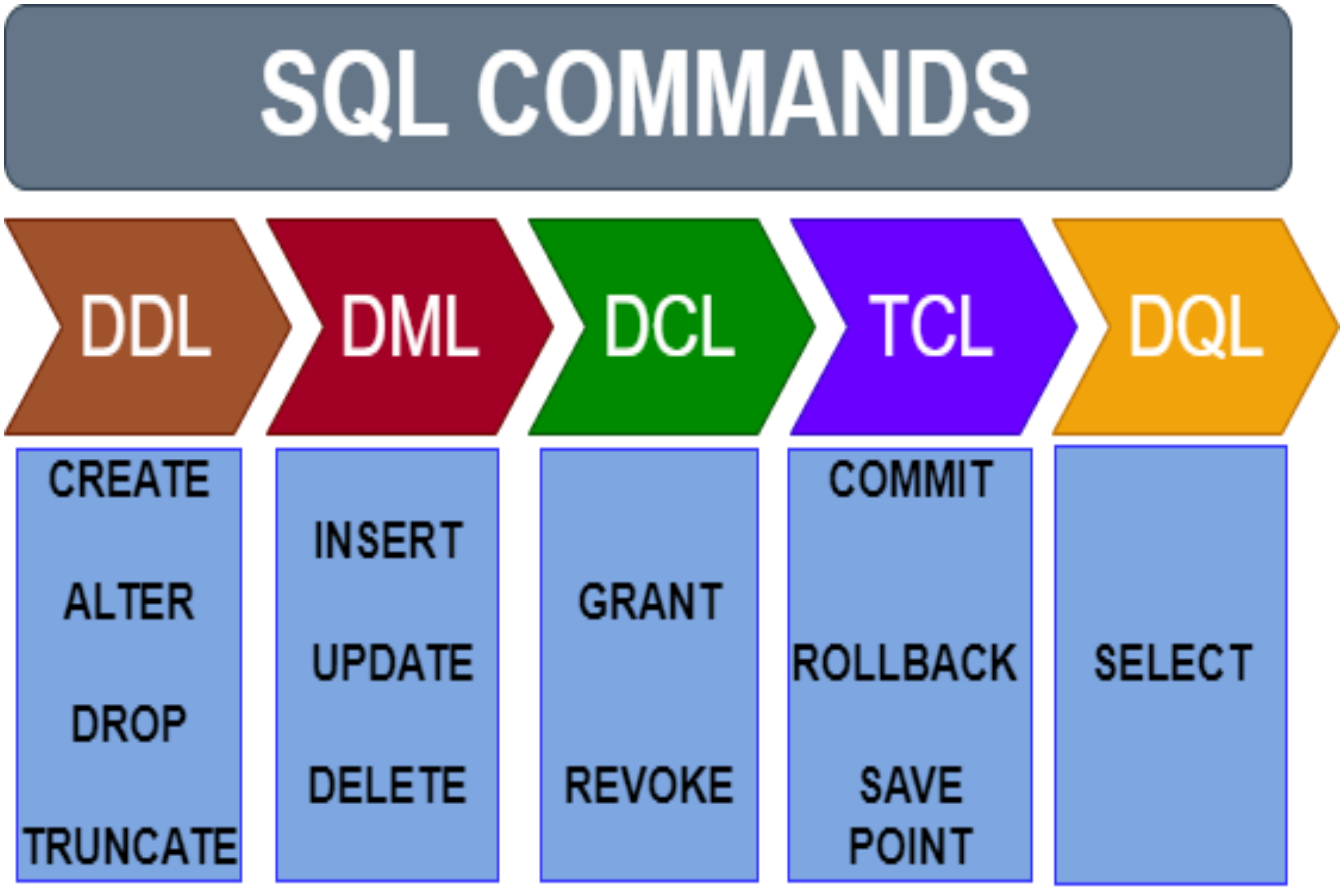
Operator	Description
AND	Returns True if both conditions are true otherwise false.
OR	Returns True if either conditions are true or unknown true or false.
NOT	Return true if the condition is false, otherwise return false.

SQL Commands

Basic SQL Commands

There are 6 basic SQL commands

- DDL (Data Definition Language).
- DML (Data Manipulation Language).
- DQL (Data Query Language).
- DCL (Data Control Language).
- TCL (Transaction Control Language).


SQL COMMANDS
DDL
DML
DCL
TCL
DQL
CREATE
ALTER
DROP
TRUNCATE
INSERT
UPDATE
DELETE
GRANT
REVOKE
COMMIT
ROLLBACK
SAVE POINT
SELECT

1.Data Definition Language (DDL)

DDL changes the structure of the table like creating a table, deleting a table, altering a table, etc.

a. CREATE:

It is used to create a new table in the database.

(i) Syntax:

CREATE Table Tablename (column1 datatype,column2 datatype, ...columnN datatype PRIMARY KEY(columns));

(ii) Example:

CREATE table Student(SId varchar(10), SName varchar(30),
Address varchar(30),
Primary key(SId);

b. DROP:

It is used to delete both the structure and record stored in the table.

(i) Syntax:

DROP Table Tablename;

(ii) Example:

DROP Table Student;

c. ALTER:

It is used to alter the structure of the database.

(i) Syntax:

ALTER table tablename ADD(column datatype);

(ii) Example:

ALTER table Student add(Phone_number (20));

d. TRUNCATE:

It is used to delete all the rows from the table and free the space

(i) Syntax:

TRUNCATE Table Tablename;

(ii) Example:

TRUNCATE Table Student;

2. Data Manipulation Language(DML)

DML commands are used to modify the Database

a. INSERT:

It is a SQL query and used to insert data into the row of a table.

(i) Syntax:

INSERT into Tablename (feild1, feild2,..)

VALUES (feild1, feild2, ……);

(ii) Example:

INSERT into Student(SId, SName, Address, Phone_number)
VALUES('20BCA01', 'Priya', 'Trichy', 9087689676);

b. UPDATE:

This command is used to update or modify the value of a column in the table.

(i) Syntax:

UPDATE tablename SET field name WHERE condition;

(ii) Example:

UPDATE Student SET Address =‘Chennai’ where SId = ‘20BCA01’

c. DELETE:

It is used to remove one or more row from a table.

(i) Syntax:

DELETE from tablename WHERE condition;

(ii) Example:

DELETE from Student WHERE SId=’20BCA01’;

3. Data Control Language(DCL)

DCL commands are used to grant and take back authority from any database user.

a. Grant:

It is used to give user access privileges to a database.

b. Revoke:

It is used to take back permissions from the user.

4. Transaction Control Language(TCL)

TCL commands can only use with DML commands like INSERT, DELETE and UPDATE only.

a. Commit:

Commit command is used to save all the transactions to the database.

b. Rollback:

It is used to undo transactions that have not already been saved to the database.

c. SAVEPOINT:

It is used to roll the transaction back to a certain point without rolling back the entire transaction.

5. Data Query Language(DQL)

DQL is used to fetch the data from the database.

It uses only one command: SELECT

a. SELECT:

It is used to select the attribute based on the condition described by WHERE clause.

(i) Syntax:

SELECT * from Tablename;

(ii) Example:

SELECT * from Student;

4. Union (U)

Union (U) – It is a binary operator, which combines the tuples of two relations.

5. Set-difference (-)

Creates a new relation with tuples that are in one relation but not in other relation.

$$R - S$$

Where R and S are the relations.

6. Set Intersection

Set Intersection – This operation is a binary operation.

It results in a relation with tuples that are in both the relations. It is denoted by '∩'.

$$R \cap S$$

What is Query Language?

Requests and retrieves data from database and information systems by sending queries.

THANK YOU