SQL COMMANDS

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DQL(Data Query Language)

To fetch the data from the database

Example: SELECT

DML(Data Manipulation Language)-

To modify the database objects

Example: INSERT,UPDATE,DELETE

DDL(Data Definition Language)

To create & modify database objects

Example: CREATE,DROP,ALTER,TRUNCATE

1.Fundamentals of SQL

CREATE

CREATE statement is used to create a table

Syntax:

```
CREATE TABLE ''TABLE_NAME''(
    ''COLUMN1''  ''DATA_TYPE''  CONSTRAINTS,
    ''COLUMN2''  ''DATA_TYPE''  CONSTRAINTS,
    ''COLUMN3''  ''DATA_TYPE''  CONSTRAINTS,
    ……..
```

''COLUMN N'' ''DATA_TYPE'' CONSTRAINTS

);

INSERT

INSERT statement is used insert new data into the table

Syntax:

INSERT INTO
"TABLE_NAME" (COL1, COL2, ……..COL_N)

VALUES (Col_val_1,Col_val_2, ……. Col_val_N);

Import data from file(PostgreSQL)

For csv file

COPY TABLE_NAME(column1, column2,…) FROM FILE_PATH DELIMITER ' , ' CSV HEADER;

For txt file

COPY TABLE_NAME(column1, column2,…) FROM FILE_PATH DELIMITER ' , ' ;

SELECT

SELECT statement is used to retrieve data from the table

Syntax

SELECT * FROM “TABLE_NAME”;

For select one column

SELECT “COLUMN_NAME” FROM “TABLE_NAME”;

For select multiple columns

SELECT “COLUMN1,COLUMN2,…”

FROM “TABLE_NAME”;

For select all columns

SELECT * FROM “TABLE_NAME”;

DISTINCT

DISTINCT keyword is used to eliminate all duplicate records & fetch only unique records

Syntax:

SELECT DISTINCT(*) FROM “TABLE_NAME”;

WHERE

WHERE clause is used to filter a records

Syntax:

SELECT "COLUMN_NAME(S)"

FROM "TABLE_NAME "

WHERE CONDITION;

AND/OR

The AND/OR is used to combine multiple conditions

Syntax:

SELECT "COLUMN_NAMES(s)"

FROM "TABLE_NAME"

WHERE CONDITION AND/OR CONDITION;

UPDATE

It is used to modify the existing data in the table

Syntax:

```
UPDATE "TABLE_NAME"
SET COL_1=VAL_1,COL_2=VAL_2,...
WHERE CONDITION;
```

DELETE

It is used to delete existing records in the table

Syntax:

For delete all rows

DELETE FROM "TABLE_NAME";

For delete single/multiple row(s)

DELETE FROM "TABLE_NAME "

WHERE CONDITION;

ALTER

It is used to change the definition or structure of the table

Syntax:

ADD COLUMN

ALTER TABLE " TABLE_NAME"

ADD "COLUMN_NAME " "DATA_TYPE";

DROP COLUMN

ALETR TABLE "TABLE_NAME"

DROP "COLUMN_NAME";

MODIFY DATA TYPE

ALTER TABLE "TABLE_NAME"

ALTER COLUMN "COL_NAME" TYPE NEW_DATA_TYPE; **RENAME COLUMN**

ALTER TABLE “TABLE_NAME”

RENAME COLUMN “COL_NAME” TO “NEW_NAME”;

ADD CONSTRAINTS

ALTER TABLE “TABLE_NAME”

ADD CONSTRAINT COL_NAME CHECK CONDITION;

2.Filtering Commands

IN

Used to reduce multiple OR logical operator in SELECT,DELETE,INSERT & UPDATE statements

Syntax:

SELECT “COL_NAME” FROM “TABLE_NAME”

WHERE “COL_NAME” IN (‘VAL1’, ’VAL2’,…);

BETWEEN

Used to retrieve data within a given range

SELECT “COL_NAME(S)” FROM “TABLE_NAME”

WHERE “COL_NAME” BETWEEN “VAL1” AND “VAL2”;

Syntax:

LIKE

Used to perform pattern matching/regex using wildcards(% , _)

% - match any string of any length

_ - match on a single character

Syntax:

SELECT "COL_NAME" FROM "TABLE_NAME"

WHERE "COL_NAME" LIKE 'PATTERN';

3.Ordering Commands

ORDER BY

Used to sort the data & it is only used in SELECT statement

Syntax:

SELECT "COL_NAME(s)" FROM "TABLE_NAME"

ORDER BY "COL_NAME" ASC/DESC;

LIMIT

Used to limit the number of records based on a given limit

Syntax:

SELECT "COL_NAME(S)" FROM "TABLE_NAME"

[WHERE & ORDER BY – Optional]

LIMIT "LIMIT_VALUE";

4.ALIAS

AS

Used to assign an alias to the column

SELECT "COL_NAME" as "COL_ALIAS"

FROM "TABLE_NAME";

Syntax:

5.AGGREGATE COMMANDS

COUNT

Used to count the expression

Syntax:

SELECT COUNT(COL_NAME) FROM “TABLE_NAME”;

SUM

Used to sum the expression

Syntax:

SELECT SUM(COL_NAME) FROM “TABLE_NAME”; **AVG**

Used to average the expression

Syntax:

SELECT AVG(COL_NAME) FROM “TABLE_NAME”;

MIN

Used to retrieve the minimum value Syntax:

SELECT MIN(COL_NAME) FROM “TABLE_NAME”;

MAX

Used to retrieve the maximum value

Syntax:

SELECT MAX(COL_NAME) FROM “TABLE_NAME”;

6.GROUP BY COMMANDS

GROUP BY

GROUP BY clause is used to group the results by one or more columns

Syntax:

SELECT "COL_1", "COL_2",..... FROM "TABLE_NAME"

GROUP BY "COL_NAME";

HAVING

HAVING clause is added to SQL because the WHERE keyword cannot be used with aggregate functions Syntax:

SELECT "COL_1", "COL_2",..... FROM "TABLE_NAME"

GROUP BY "COL_NAME"

HAVING 'CONDITION';

7.CONDITIONAL STATEMENT

CASE

CASE expression is a conditional expression

Syntax:

```
CASE
    WHEN  CONDITION THEN RESULT
   [WHEN  CONDITION THEN RESULT]
   [WHEN  CONDITION THEN RESULT]
    ELSE RESULT
END
```

8.JOINS

JOINS used to fetch data from multiple tables TYPES:

INNER JOIN

INNER JOIN produces only the set of records that match in table A and table B

Syntax:

```
SELECT COL1,COL2,.....
FROM  "TABLE_1"
INNER JOIN "TABLE_2"
ON TABLE_1. COMMON_COL = TABLE_2.
COMMON_COL;
```

LEFT JOIN

LEFT JOIN returns all the rows in the table A(Left),even if there is no matches in the table B(Right)

Syntax:

```
SELECT  COL_1,COL_2,...
FROM  "TABLE_1"
LEFT JOIN  "TABLE_2"
ON TABLE_1. COMMON_COL = TABLE_2.
COMMON_COL;
```

RIGHT JOIN

RIGHT JOIN returns all the rows in the table B(Right),even if there is no matches in the table A(left)

Syntax:

```
SELECT  COL_1,COL_2,…
FROM  “TABLE_1”
RIGHT JOIN  “TABLE_2”
ON TABLE_1.COMMON_COL = TABLE_2. COMMON_COL;
```

FULL JOIN

FULL JOIN combines the results of both right & left join

Syntax:

```
SELECT  COL_1,COL_2,…
FROM  “TABLE_1”
FULL JOIN  “TABLE_2”
ON TABLE_1.COMMON_COL = TABLE_2. COMMON_COL;
```

CROSS JOIN

CROSS JOIN creates Cartesian product between two sets

Syntax:

```
SELECT  TAB1.COL,TAB2.COL,…..
```

FROM “TABLE_1”, “TABLE_2”,……..

EXCEPT

Used to fetch all the data from table A except that matches with table B

Syntax:

```
SELECT  COL1,COL2,……..
FROM  TABLE_A  [WHERE]
EXCEPT
SELECT  COL_1,COL_2,……
FROM  TABLE_B  [WHERE];
```

UNION

Used to combine two or more SELECT statements

Syntax:

```
SELECT  COL1,COL2,……..
FROM  TABLE_A  [WHERE]
UNION
SELECT  COL_1,COL_2,……
FROM  TABLE_B  [WHERE];
```

SUBQUERY

SUBQUERY is a query within a query

Syntax:

SUBQUERY is in WHERE clause

```
SELECT "COL_1" FROM "TABLE_NAME_1"
 WHERE  "COL_2" [operator]
(SELECT  "COL_3"  FROM  "TABLE_NAME_2"
WHERE CONDITION);
```

VIEW

VIEW is a virtual table created by a query joining one or more tables Syntax:

```
CREATE[OR RESPONSE] view_name  AS
 SELECT  "COL_NAME(S)"
FROM  "TABLE_NAME"
```

INDEX

An INDEX creates an entry for each value that appears in the indexed column Syntax:

CREATE[UNIQUE] INDEX “index_name”

ON “TABLE_NAME”

(index_col1 [ASC/DESC],……..

11.STRING FUNCTIONS

LENGTH:

LENGTH function retrieves the length of the specified string Syntax:

LENGTH(‘string’)

UPPER/LOWER

UPPER/LOWER function converts all the characters in the specified string to uppercase/lowercase Syntax:

upper(‘string’)

lower(‘string’)

REPLACE

REPLACE function replaces all the occurrences of the specified string Syntax:

REPLACE('string', 'from string', to string')

TRIM

TRIM function removes all specified characters either from beginning or end of the string or both

Syntax:

TRIM([Leading|Trailing|Both] [trim char] from string)

RTRIM

RTRIM function removes all specified characters from RHS of the string Syntax:

RTRIM('string', trim char)

LTRIM

LTRIM function removes all specified characters from LHS of the string

Syntax:

LTRIM('string', trim char)

CONCATENATION

|| operator used to concatenate two or more strings

Syntax:

'string_1' || 'string_2' || 'string_3'

SUBSTRING

SUBSTRING function used to extract substring from a string Syntax:

SUBSTRING('string' [start position]

[substring length]);

STRING_AGG

String aggregate function concatenates input values into a string, separated by a delimiter

Syntax

STRING_AGG('expression', delimiter)

12.MATHEMATICAL FUNCTIONS

CEIL

CEIL function returns the smallest integer value which is greater than or equal to a number Syntax:

CEIL(number)

FLOOR

FLOOR function returns the largest integer value which is less than or equal to a number Syntax:

FLOOR(number)

RANDOM

RANDOM function used to generate random number between 0 & 1 (1 will be excluded) Syntax:

RANDOM( );

SETSEED

SETSEED function used to set a seed for the next time that we call the RANDOM function Syntax:

SETSEED(seed)

[seed can have a value between 1 and -1(both are inclusive]

ROUND

ROUND function rounds a number to a specified number of decimal places Syntax:

ROUND(number)

POWER

POWER function returns m raised to the nth power

Syntax:

POWER(m,n)

13. DATE-TIME FUNCTIONS

CURRENT_DATE

CURRENT_DATE function returns the current date

Syntax:

CURRENT_DATE( )

CURRENT_TIME

CURRENT_TIME function returns the current time with the time zone Syntax:

CURRENT_TIME( ) **CURRENT_TIMESTAMP**

CURRENT_ TIMESTAMP function returns the current date & current time with the time zone Syntax:

CURRENT_ TIMESTAMP ( )

AGE

AGE function returns the difference between two dates

Syntax:

AGE(date1,date2)

EXTRACT

EXTRACT function extract specified parts from date Syntax:

EXTRACT('unit' FROM 'date')

[unit will be day,month,year,doy,decade,hour,minute, second,etc.,]

14.PATTERN MATCHING

There are three different approaches to pattern matching

- Using LIKE
- Using SIMILAR TO
- Using Regular Expression

- | denotes alternation (either of two alternatives).
- * denotes repetition of the previous item zero or more times.
- + denotes repetition of the previous item one or more times.
- ? denotes repetition of the previous item zero or one time.
- {***m***} denotes repetition of the previous item exactly ***m*** times.
- {***m***,} denotes repetition of the previous item ***m*** or more times.
- {***m***,***n***} denotes repetition of the previous item at least ***m*** and not more than ***n*** times.

- Parentheses () can be used to group items into a single logical item.
- A bracket expression [...] specifies a character class,

15.DATA TYPE CONVERSION FUNCTIONS

TO_CHAR

TO_CHAR function converts number/date to String

Syntax:

TO_CHAR(value,format-mask)

TO_DATE

TO_DATE function converts string to date

Syntax:

TO_DATE(string,format-mask)

T0_NUMBER

T0_NUMBER function converts string to date Syntax:

TO_NUMBER(string,format-mask)

Format	Description
9	Numeric value with the specified number of digits
0	Numeric value with leading zeros
. (period)	decimal point
D	decimal point that uses locale
, (comma)	group (thousand) separator
Format	**Description**
FM	Fill mode, which suppresses padding blanks and leading zeroes.
PR	Negative value in angle brackets.
S	Sign anchored to a number that uses locale
L	Currency symbol that uses locale
G	Group separator that uses locale
MI	Minus sign in the specified position for numbers that are less than 0.

PL	Plus sign in the specified position for numbers that are greater than 0.
SG	Plus / minus sign in the specified position
RN	Roman numeral that ranges from 1 to 3999
TH or th	Upper case or lower case ordinal number suffix

YY	last 2 digits of year
Y	The last digit of year
IYYY	ISO 8601 week-numbering year (4 or more digits)
IYY	Last 3 digits of ISO 8601 week-numbering year
IY	Last 2 digits of ISO 8601 week-numbering year
I	Last digit of ISO 8601 week-numbering year

BC, bc, AD or ad	Era indicator without periods
B.C., b.c., A.D. ora.d.	Era indicator with periods
MONTH	English month name in uppercase
Month	Full capitalized English month name
Month	Full lowercase English month name
MON	Abbreviated uppercase month name e.g., JAN, FEB, etc.
Mon	Abbreviated capitalized month name e.g, Jan, Feb, etc.
Mon	Abbreviated lowercase month name e.g., jan, feb, etc.
MM	month number from 01 to 12
DAY	Full uppercase day name
Day	Full capitalized day name

Day	Full lowercase day name
DY	Abbreviated uppercase day name
Dy	Abbreviated capitalized day name
Dy	Abbreviated lowercase day name

DDD	Day of year (001-366)
IDDD	Day of ISO 8601 week-numbering year (001-371; day 1 o the year is Monday of the first ISO week)
DD	Day of month (01-31)
D	Day of the week, Sunday (1) to Saturday (7)
ID	ISO 8601 day of the week, Monday (1) to Sunday (7)
W	Week of month (1-5) (the first week starts on the firs day of the month)
WW	Week number of year (1-53) (the first week starts on th first day of the year)
IW	Week number of ISO 8601 week-numbering year (01-53; the first Thursday of the year is in week 1)
CC	Century e.g, 21, 22, etc.
J	Julian Day (integer days since November 24, 4714 BC a midnight UTC)
RM	Month in upper case Roman numerals (I-XII; >
Rm	Month in lowercase Roman numerals (i-xii; >
HH	Hour of day (0-12)

HH12	Hour of day (0-12)
HH24	Hour of day (0-23)
MI	Minute (0-59)
SS	Second (0-59)
MS	Millisecond (000-999)
US	Microsecond (000000-999999)
SSSS	Seconds past midnight (0-86399)
AM, am, PM or pm	Meridiem indicator (without periods)
A.M., a.m., P.M. or p.m.	Meridiem indicator (with periods)