Ex. No : 6

CO2:Construct queries using SQL for database creation, interaction, modification, and updation. (Cognitive Knowledge Level: Apply)

Implementation of built-in functions in RDBMS

AIM

RDBMS Built in Functions

There are two types of functions:

1) Single Row Functions: Single row or Scalar functions return a value for every row that is processed in a query.

2) Group Functions: These functions group the rows of data based on the values returned by the query. This is discussed in SQL GROUP Functions. The group functions are used to calculate aggregate values like total or average, which return just one total or one average value after processing a group of rows.

There are four types of single row functions. They are:

1) Numeric Functions: These are functions that accept numeric input and return numeric values.

2) Character or Text Functions: These are functions that accept character input and can return both character and number values.

3) Date Functions: These are functions that take values that are of datatype DATE as input and return values of datatype DATE, except for the MONTHS_BETWEEN function, which returns a number.

4) Conversion Functions: These are functions that help us to convert a value in one form to another form. For Example: a null value into an actual value, or a value from one datatype to another datatype like NVL, TO_CHAR, TO_NUMBER, TO_DATE etc.

Mathematical Functions
SQL> select ABS(-100) from dual;
ABS(-100)

100
SQL> select ABS(-6) from dual;

```
ABS(-6)
----------
6
SQL> select FLOOR(2345.78) FROM DUAL;
FLOOR(2345.78)
--------------
 2345
SQL>        SELECT        GREATEST(23,67,90,123,78,50)        FROM        DUAL;
GREATEST(23,67,90,123,78,50)
----------------------------
123
SQL> SELECT LEAST(34, 21,67,11,89,9) FROM DUAL;
LEAST(34,21,67,11,89,9)
 9
SQL> SELECT LENGTH('RAJESHWARI') FROM DUAL;
LENGTH('RAJESHWARI')
--------------------
10
SQL> SELECT LENGTH(17245637) FROM DUAL;
LENGTH(17245637)
----------------
8
SQL> SELECT SQRT(16) FROM DUAL;
SQRT(16)
----------
4
SQL> SELECT SQRT(99) FROM DUAL;
SQRT(99)
 9.94987437
SQL> SELECT POWER(2,4) FROM DUAL;
POWER(2,4)
----------
16
SQL> SELECT POWER(2,10) FROM DUAL;
POWER(2,10)
-----------
1024
SQL> SELECT power(2,10) FROM DUAL;
POWER(2,10)
-----------
1024
SQL> SELECT ROUND(5.86) FROM DUAL;
ROUND(5.86)
-----------
6
SQL> SELECT ROUND(1001.6) FROM DUAL;
ROUND(1001.6)
```

```
-------------
1002
SQL> SELECT ROUND(1001.3) FROM DUAL;
ROUND(1001.3)
-------------
1001
SQL> SELECT SIN(90) FROM DUAL;
SIN(90)
----------
.893996664
SQL> SELECT COS(45) FROM DUAL;
COS(45)
----------
.525321989
SQL> SELECT TAN(30) FROM DUAL;
TAN(30)
----------
-6.4053312
SQL> SELECT TAN(90) FROM DUAL;
TAN(90)
----------
-1.9952004
SQL> SELECT TAN(180) FROM DUAL;
TAN(180)
----------
1.33869021
SQL> SELECT SIGN(-128) FROM DUAL;
SIGN(-128)
----------
-1
SQL> SELECT SIGN(10) FROM DUAL;
SIGN(10)
----------
1
SQL> SELECT SIGN(0) FROM DUAL;
SIGN(0)
----------
0
SQL> SELECT LN(100) FROM DUAL;
LN(100)
----------
4.60517019
SQL> SELECT LN(10) FROM DUAL;
LN(10)
----------
2.30258509
SQL> SELECT LOG(10,100) FROM DUAL;
```

```
LOG(10,100)
-----------
2
SQL> SELECT LOG(100,10) FROM DUAL;
LOG(100,10)
-----------
.5
SQL> SELECT MOD(4,3) FROM DUAL;
MOD(4,3)
----------
1
SQL> SELECT MOD(4,2) FROM DUAL;
MOD(4,2)
----------
0
SQL> SELECT EXP(2) FROM DUAL;
EXP(2)
----------
7.3890561
SQL> SELECT EXP(-2) FROM DUAL;
EXP(-2)
----------
.135335283
SQL> SELECT EXP(0) FROM DUAL;
EXP(0)
----------
1
```

Date Functions

```
SQL> SELECT CURRENT_DATE FROM DUAL;
CURRENT_D
---------
14-AUG-19
SQL> SELECT EXTRACT(YEAR FROM SYSDATE) FROM DUAL;
EXTRACT(YEARFROMSYSDATE)
------------------------
2019
SQL> SELECT EXTRACT(DAY FROM SYSDATE) FROM DUAL;
EXTRACT(DAYFROMSYSDATE)
-----------------------
14
SQL> SELECT EXTRACT(MONTH FROM SYSDATE) FROM DUAL;
EXTRACT(MONTHFROMSYSDATE)
-------------------------
8
```

```
SQL> SELECT SYSDATE FROM DUAL;
SYSDATE
---------
AUG-19
```

String Functions

```
SQL> select ascii('t') from dual;
ASCII('T')
----------
116
SQL> select ascii('a') from dual;
ASCII('A')
----------
97
SQL> select ascii('A') from dual;
ASCII('A')
----------
65
SQL> select ascii('Z') from dual;
ASCII('Z')
----------
90
SQL> select ascii('z') from dual;
ASCII('Z')
----------
122
SQL> SELECT UPPER('bldea sb arts and kcp science college') from dual;
UPPER('BLDEASBARTSANDKCPSCIENCECOLLEG')
---------------------------------------
BLDEA SB ARTS AND KCP SCIENCE COLLEGE
SQL> select LOWER('welcome to dbms lab') from dual;
LOWER('WELCOMETODBM
-------------------
welcome to dbms lab
SQL> select LOWER('WELCOME TO DBMSLAB') from dual;
LOWER('WELCOMETODB
------------------
welcome to dbmslab
SQL> SELECT REPLACE('HELLO','H','K') FROM DUAL;
REPLA
-----
KELLO
SQL> SELECT REPLACE('COMPUTER','C','K') FROM DUAL;
REPLACE( --------
KOMPUTER
SQL> SELECT REPLACE('HELLO','L','A') FROM DUAL;
```

```
REPLA
-----
HEAAO
SQL> SELECT TRIM('A' FROM 'ANACONDA') FROM DUAL;
TRIM('
--
NACOND
SQL> SELECT LTRIM('ANACONDA','A') FROM DUAL;
LTRIM('
-------
NACONDA
SQL> SELECT LTRIM('ANIL','A') FROM DUAL;
LTR
---
NIL
SQL> SELECT RTRIM('ANITA','A') FROM DUAL;
RTRI
---
ANIT
SQL> SELECT RTRIM('ANACONDA','A') FROM DUAL;
RTRIM('
-------
ANACOND
SQL> SELECT RTRIM('ANACONDA ','A') FROM DUAL;
RTRIM('ANAC
-----------
ANACONDA
```