SQL general functions | NVL, NVL2, DECODE, COALESCE, NULLIF, LNNVL and NANVL

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In this article, we'll be discussing some powerful SQL general functions, which are – NVL, NVL2, DECODE, COALESCE, NULLIF, LNNVL and NANVL.

These functions work with any data type and pertain to the use of null values in the expression list. These are all **single row function** i.e. provide one result per row.

- **NVL(expr1, expr2)** : In SQL, NVL() converts a null value to an actual value. Data types that can be used are date, character and number. Data type must match with each other i.e. expr1 and expr2 must of same data type.
  Syntax –

```
NVL (expr1, expr2)
```

  expr1 is the source value or expression that may contain a null.
  expr2 is the target value for converting the null.

  Example –

```
SELECT  salary, NVL(commission_pct, 0),
    (salary*12) + (salary*12*NVL(commission_pct, 0))
      annual_salary FROM employees;
```

  Output :

SALARY	COMMISSION_PCT	NVL(COMMISSION_PCT,0)	ANNUAL_SALARY
8400	.2	.2	120960
7000	.15	.15	96600
6200	.1	.1	81840
3200		0	38400
3100		0	37200
2500		0	30000

- **NVL2(expr1, expr2, expr3)** : The NVL2 function examines the first expression. If the first expression is not null, then the NVL2 function returns the second expression. If the first expression is null, then the third expression is returned i.e. If expr1 is not null, NVL2 returns expr2. If expr1 is null, NVL2 returns expr3. The argument expr1 can have any data type.
  Syntax –

```
NVL2 (expr1, expr2, expr3)
```

  expr1 is the source value or expression that may contain null
  expr2 is the value returned if expr1 is not null
  expr3 is the value returned if expr1 is null

  Example –

```
SELECT last_name, salary, commission_pct,
 NVL2(commission_pct, 'SAL+COMM', 'SAL')
 income FROM employees;
```

  Output :

LAST_NAME	SALARY	COMMISSION_PCT	INCOME
Livingston	8400	.2	SAL+COMM
Grant	7000	.15	SAL+COMM
Johnson	6200	.1	SAL+COMM
Taylor	3200		SAL
Fleaur	3100		SAL
Sullivan	2500		SAL

- **DECODE()** : Facilitates conditional inquiries by doing the work of a CASE or IF-THEN-ELSE statement.
  The DECODE function decodes an expression in a way similar to the IF-THEN-ELSE logic

used in various languages. The DECODE function decodes expression after comparing it to each search value. If the expression is the same as search, result is returned.
If the default value is omitted, a null value is returned where a search value does not match any of the result values.
Syntax –

```
DECODE(col|expression, search1, result1
 [, search2, result2,...,][, default])
```

Example –

```
SELECT last_name, job_id, salary,
   DECODE(job_id, 'IT_PROG', 1.10*salary,
    'ST_CLERK', 1.15*salary,
    'SA_REP', 1.20*salary,salary)
     REVISED_SALARY FROM employees;
```

Output :

LAST_NAME	JOB_ID	SALARY	REVISED_SALARY
Lorentz	IT_PROG	4200	4620
Sarchand	SH_CLERK	4200	4200
Whalen	AD_ASST	4400	4400
Austin	IT_PROG	4800	5280
Pataballa	IT_PROG	4800	5280
Mourgos	ST_MAN	5800	5800
Ernst	IT_PROG	6000	6600
Fay	MK_REP	6000	6000
Kumar	SA_REP	6100	7320
Banda	SA_REP	6200	7440

- **COALESCE()** : The COALESCE() function examines the first expression, if the first expression is not null, it returns that expression; Otherwise, it does a COALESCE of the remaining expressions.
  The advantage of the COALESCE() function over the NVL() function is that the COALESCE function can take multiple alternate values. In simple words COALESCE() function returns the first non-null expression in the list.
  Syntax –

```
COALESCE (expr_1, expr_2, ... expr_n)
```

Examples –

```
SELECT last_name,
    COALESCE(commission_pct, salary, 10) comm
    FROM employees ORDER BY commission_pct;
```

Output :

LAST_NAME	COMM
Livingston	.2
Grant	.15
Johnson	.1
Taylor	3200
Fleaur	3100
Sullivan	2500
Geoni	2800
Sarchand	4200
Bull	4100
Dellinger	3400
Cabrio	3000

- **NULLIF()** : The NULLIF function compares two expressions. If they are equal, the function returns null. If they are not equal, the function returns the first expression. You cannot specify the literal NULL for first expression.
  Syntax –

```
NULLIF (expr_1, expr_2)
```

Examples –

```
SELECT LENGTH(first_name) "expr1",
   LENGTH(last_name) "expr2",
   NULLIF(LENGTH(first_name),LENGTH(last_name))
    result FROM employees;
```

Output :

LENGTH(FIRST_NAME)	LENGTH(LAST_NAME)	RESULT
8	5	8
6	5	6
5	5	
7	9	7
7	7	
6	6	
3	3	
5	6	5
4	6	4
6	3	6
4	5	4

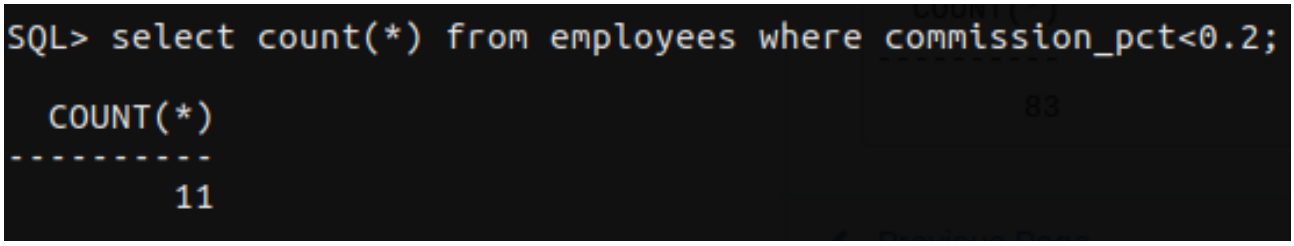
- **LNNVL()** : LNNVL evaluate a condition when one or both operands of the condition may be null. The function can be used only in the WHERE clause of a query. It takes as an argument a condition and returns TRUE if the condition is FALSE or UNKNOWN and FALSE if the condition is TRUE.
  Syntax –

```
LNNVL( condition(s) )
```

Examples –

```
SELECT COUNT(*) FROM employees
      WHERE commission_pct < .2;
```

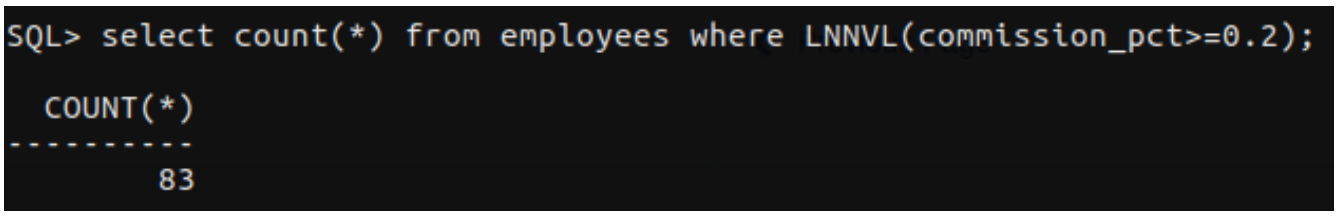
Output :



Now the above examples does not considered those employees who have no commission at all.
To include them as well we use LNNVL()

```
SELECT COUNT(*) FROM employees
  WHERE LNNVL(commission_pct >= .2);
```

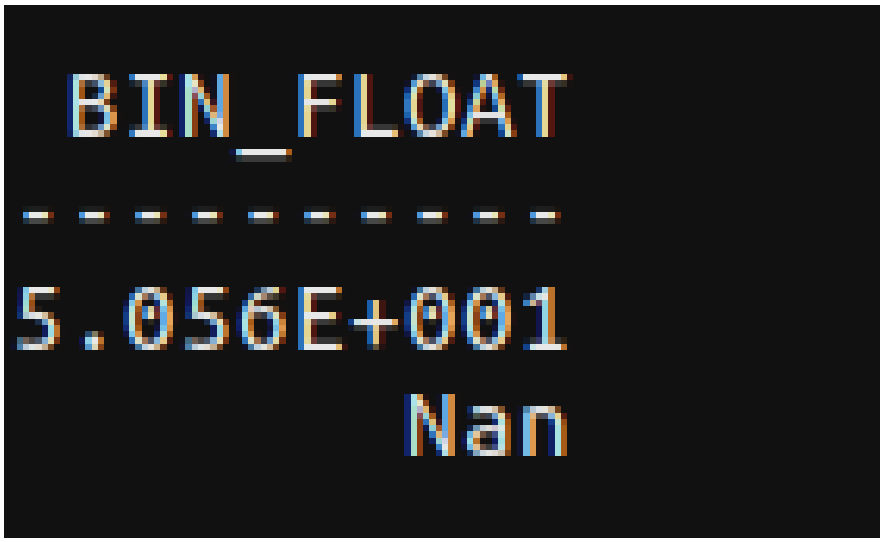
Output :



- **NANVL()** : The NANVL function is useful only for floating-point numbers of type BINARY_FLOAT or BINARY_DOUBLE. It instructs the Database to return an alternative value n2 if the input value n1 is NaN (not a number). If n1 is not NaN, then database returns n1. This function is useful for mapping NaN values to NULL.
  Syntax –

```
NANVL( n1 , n2 )
```

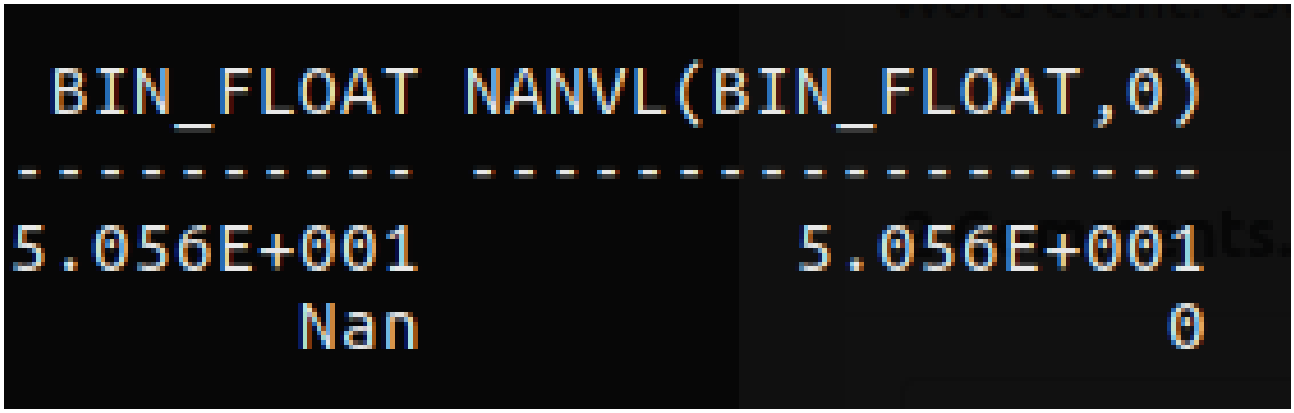
Consider the following table named nanvl_demo :



Example –

```
SELECT bin_float, NANVL(bin_float,0)
  FROM nanvl_demo;
```

Output :



Reference: Introduction to Oracle9i SQL(Volume-1 Book)

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