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Funções (Functions)

Objetivos

- Funções Single-row
- Gerais
- Caracter
- Number
- Datas
- Funções Multi-row
- Group by

Funções

- Single-Row (para cada linha → 1 resultado)
  - diversas …

- Multiple-Row (atua sobre varias linhas → 1 resultado)
  - COUNT
  - SUM
  - AVG
  - MIN
  - MAX

  podem ser utilizadas em conjunto com a clausula GROUP BY

Funções

- Single-Row (para cada linha → 1 resultado)

Gerais
- NVL
- CASE
- DECODE
- TO_CHAR

Caracter
- LOWER
- UPPER
- SUBSTR
- LENGTH
- REPLACE
- LPAD
- RPAD
- TRIM

Number
- ROUND
- TRUNC
- MOD

Datas
- SYSDATE
- MONTHS_BETWEEN
- ADD_MONTHS
- NEXT_DAY
- LAST_DAY
- ROUND
- TRUNC
- TO_DATE

NVL

- Tratamento de valores nulos

```
1 select first_name, commission_pct
2 from hr.employees;
3
```

FIRST_NAME	COMMISSION_PCT
Steven	-
Neena	-
Lex	-
Alexander	-

```
1 select first_name, nvl(commission_pct, 0) as comissiao
2 from hr.employees;
3
```

FIRST_NAME	COMISSIAO
Steven	0
Neena	0
Lex	0
Alexander	0

CASE

```
select   ...
         CASE expr
                 WHEN comp1 THEN value1
                 WHEN comp2 THEN value2
                 WHEN ...   THEN ...
              ELSE valuen
         END
from     ...
```

```
1  select  first_name, job_id, salary as sal_orig,
2      CASE job_id
3      WHEN 'IT_PROG'  THEN salary*1.1
4      WHEN 'ST_CLERK' THEN salary*1.15
5      WHEN 'SA_REP'   THEN salary*1.2
6      ELSE salary
7      END as salario_revisado
8  from    hr.employees;
9
```

FIRST_NAME	JOB_ID	SAL_ORIG	SALARIO_REVISADO
Steven	AD_PRES	24000	24000
Neena	AD_VP	17000	17000
Lex	AD_VP	17000	17000
Alexander	IT_PROG	9000	9900
Bruce	IT_PROG	6000	6600
David	IT_PROG	4800	5280
Valli	IT_PROG	4800	5280

DECODE

- Similar a um (IF, then elseif, then, … else)

```
1  select first_name, job_id,
2      decode(job_id, 'SA_REP', 'Vendas', 'IT_PROG', 'TI', 'Outros') as Descr_Job
3  from hr.employees;
```

FIRST_NAME	JOB_ID	DESCR_JOB
Ellen	SA_REP	Vendas
Sundar	SA_REP	Vendas
Mozhe	ST_CLERK	Outros
David	IT_PROG	TI
Hermann	PR_REP	Outros
Shelli	PU_CLERK	Outros
Amit	SA_REP	Vendas

TO_CHAR

```
1  select  to_char( hire_date, 'dd-MON-yyyy') as contratacao,
2          to_char( salary, '999990.00' ) as salario
3  from    hr.employees;
```

CONTRATACAO	SALARIO
17-JUN-2003	24000.00
21-SEP-2005	17000.00
13-JAN-2001	17000.00
03-JAN-2006	9000.00
21-MAY-2007	6000.00

Numéricas: **ROUND, TRUNC, MOD**

```
1 select first_name, salary, salary / 12, round(salary/12), trunc(salary/12), mod(salary, 12)
2 from hr.employees;
```

FIRST_NAME	SALARY	SALARY/12	ROUND(SALARY/12)	TRUNC(SALARY/12)	MOD(SALARY,12)
Steven	24000	2000	2000	2000	0
Neena	17000	1416.66666666666666666666666666666666667	1417	1416	8
Lex	17000	1416.66666666666666666666666666666666667	1417	1416	8
Alexander	9000	750	750	750	0
Bruce	6000	500	500	500	0
David	4800	400	400	400	0
Valli	4800	400	400	400	0
Diana	4200	350	350	350	0
Nancy	12008	1000.66666666666666666666666666666666667	1001	1000	8
Daniel	9000	750	750	750	0

Caracter: **LOWER, UPPER, SUBSTR, LEGTH**

```
1 select first_name, lower(first_name), upper(first_name), substr(first_name,1,3), length(first_name)
2 from hr.employees;
```

FIRST_NAME	LOWER(FIRST_NAME)	UPPER(FIRST_NAME)	SUBSTR(FIRST_NAME,1,3)	LENGTH(FIRST_NAME)
Ellen	ellen	ELLEN	Ell	5
Sundar	sundar	SUNDAR	Sun	6
Mozhe	mozhe	MOZHE	Moz	5
David	david	DAVID	Dav	5
Hermann	hermann	HERMANN	Her	7
Shelli	shelli	SHELLI	She	6
Amit	amit	AMIT	Ami	4
Elizabeth	elizabeth	ELIZABETH	Eli	9

Caracter: **REPLACE, TRIM**

```
1  select  first_name,
2          replace(first_name, 'a', '@'),
3          trim(first_name), trim('n' from first_name)
4  from hr.employees;
```

FIRST_NAME	REPLACE(FIRST_NAME,'A','@')	TRIM(FIRST_NAME)	TRIM('N'FROMFIRST_NAME)
Ellen	Ellen	Ellen	Elle
Sundar	Sund@r	Sundar	Sundar
Mozhe	Mozhe	Mozhe	Mozhe
David	D@vid	David	David
Hermann	Herm@nn	Hermann	Herma
Shelli	Shelli	Shelli	Shelli
Amit	Amit	Amit	Amit

Caracter: **RPAD, LPAD**

```
1  select  first_name,
2          rpad( first_name, 10, '.'),
3          lpad( first_name, 10, '.')
4  from hr.employees;
```

FIRST_NAME	RPAD(FIRST_NAME,10,'.')	LPAD(FIRST_NAME,10,'.')
Ellen	Ellen.....	.....Ellen
Sundar	Sundar....	....Sundar
Mozhe	Mozhe.....	.....Mozhe
David	David.....	.....David
Hermann	Hermann...	...Hermann
Shelli	Shelli....	....Shelli
Amit	Amit......	......Amit

Datas: **SYSDATE**

```
1  select sysdate from dual;
2
3
4
```

SYSDATE
01-OCT-24

```
1  alter session set nls_date_format='dd/mm/yyyy hh24:mi:ss';
2  select sysdate from dual;
3
4
```

```
Statement processed.
```

SYSDATE
01/10/2024 19:08:32

Datas: **MONTHS_BETWEEN, ADD_MONTHS, NEXT_DAY**

```
1  select  first_name, hire_date,
2          months_between(sysdate, hire_date),
3          add_months( hire_date, 2 ),
4          next_day( hire_date, 'Mon' )
5  from hr.employees;
6
```

FIRST_NAME	HIRE_DATE	MONTHS_BETWEEN(SYSDATE,HIRE_DATE)	ADD_MONTHS(HIRE_DATE,2)	NEXT_DAY(HIRE_DATE,'MON')
Steven	17/06/2003	255.509675179211469534050179211469534 05	17/08/2003	23/06/2003
Neena	21/09/2005	228.380642921146953405017921146953405018	21/11/2005	26/09/2005
Lex	13/01/2001	284.638707437275985663082437275985663082	13/03/2001	15/01/2001
Alexander	03/01/2006	224.961288082437275985663082437275985663	03/03/2006	09/01/2006
Bruce	21/05/2007	208.380642921146953405017921146953405018	21/07/2007	28/05/2007
David	25/06/2005	231.251610663082437275985663082437275986	25/08/2005	27/06/2005
Valli	05/02/2006	223.896771953405017921146953405017921147	05/04/2006	06/02/2006
Diana	07/02/2007	211.832255824372759856630824372759856631	07/04/2007	12/02/2007
Nancy	17/08/2002	265.509675179211469534050179211469534 05	17/10/2002	19/08/2002

Datas: **LAST_DAY, TRUNC**

```
1  select  first_name, hire_date,
2          last_day(hire_date),
3          trunc(hire_date, 'mm'), trunc(hire_date, 'yyyy')
4  from hr.employees;
5
6
```

FIRST_NAME	HIRE_DATE	LAST_DAY(HIRE_DATE)	TRUNC(HIRE_DATE,'MM')	TRUNC(HIRE_DATE,'YYYY')
Steven	17/06/2003	30/06/2003	01/06/2003	01/01/2003
Neena	21/09/2005	30/09/2005	01/09/2005	01/01/2005
Lex	13/01/2001	31/01/2001	01/01/2001	01/01/2001
Alexander	03/01/2006	31/01/2006	01/01/2006	01/01/2006
Bruce	21/05/2007	31/05/2007	01/05/2007	01/01/2007
David	25/06/2005	30/06/2005	01/06/2005	01/01/2005
Valli	05/02/2006	28/02/2006	01/02/2006	01/01/2006

Aritmética de Datas e TIMESTAMP

- Data corrente: **SYSDATE**
  - SYSDATE : data/hora `dd/mm/yyyy hh24:mi:ss`
  - Data + n soma n dias
  - Data + n/24 soma n horas
  - Data1 – Data2 diferença em dias entre as datas

- Exibição “padrão” (da sessão)

```
alter session set nls_date_format='dd/mm/yyyy hh24:mi:ss’;
```

- Frações de segundos: **SYSTIMESTAMP**

  SYSTIMESTAMP `dd/mm/yyyy hh24:mi:ss.ffffff`

```
alter session set nls_timestamp_tz_format =
                                'dd/mm/yyyy hh24:mi:ss.ff5’;
```

Funções de AGRUPAMENTO (Múltiplas linhas)

- Multiple-Row (atua sobre varias linhas → 1 resultado)
  - COUNT
  - SUM
  - AVG
  - MIN
  - MAX

  podem ser utilizadas em conjunto com a clausula GROUP BY

COUNT, SUM, AVG, MIN, MAX

```
1 select count(*)
2 from hr.employees;
```

COUNT(*)
107

```
1 select sum(salary)
2 from hr.employees;
```

SUM(SALARY)
692016

```
1 select avg(salary)
2 from hr.employees;
```

AVG(SALARY)
6467.439252336448598130841121495327102804

```
1 select min(salary)
2 from hr.employees;
```

MIN(SALARY)
2100

```
1 select max(salary)
2 from hr.employees;
```

MAX(SALARY)
24000

Count ... NULL ... distinct

```
1 select count(1) ,  sum(salary),  avg(salary)
2 from hr.employees;
```

COUNT(1)	SUM(SALARY)	AVG(SALARY)
107	692016	6467.439252336448598130841121495327102804

```
1 select count(1), count(department_id)
2 from hr.employees;
```

COUNT(1)	COUNT(DEPARTMENT_ID)
107	106

```
1 select count(1), count(department_id),  count(distinct  department_id)
2 from hr.employees;
```

COUNT(1)	COUNT(DEPARTMENT_ID)	COUNT(DISTINCTDEPARTMENT_ID)
107	106	11

Agrupamentos - Cláusula: GROUP BY

```
1  select  department_id, count(1) as qtd_funcs
2  from    hr.employees
3  group   BY department_id;
```

DEPARTMENT_ID	QTD_FUNCS
50	45
40	1
110	2
90	3

GROUP BY .... mais de 1 coluna

```
1  select  department_id, job_id,
2                count(1) as qtd_funcs,
3                avg(salary) as media_salarios
4  from    hr.employees
5  group   BY department_id, job_id;
```

DEPARTMENT_ID	JOB_ID	QTD_FUNCS	MEDIA_SALARIOS
90	AD_VP	2	17000
100	FI_MGR	1	12008
80	SA_REP	29	8417.241379310344827586206896551724137931
-	SA_REP	1	7000
90	AD_PRES	1	24000
20	MK_REP	1	6000
110	AC_MGR	1	12008
60	IT_PROG	5	5760
30	PU_CLERK	5	2780
80	SA_MAN	5	12200

GROUP BY ... ORDER BY

```
1  select  department_id, job_id,
2                 count(1) as qtd_funcs,
3                 avg(salary) as media_salarios
4  from    hr.employees
5  group   BY department_id, job_id
6  order   by department_id, job_id;
```

DEPARTMENT_ID	JOB_ID	QTD_FUNCS	MEDIA_SALARIOS
10	AD_ASST	1	4400
20	MK_MAN	1	13000
20	MK_REP	1	6000
30	PU_CLERK	5	2780
30	PU_MAN	1	11000
40	HR_REP	1	6500
50	SH_CLERK	20	3215
50	ST_CLERK	20	2785

Resumo e Dúvidas

- Dúvidas ou comentários ... ?