DBMS Lab

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Lab-2

ORACLE FUNCTIONS

DUAL Table

- Small oracle worktable, which consists of only one row and one column and contains a value X of varchar2.
- Dual table is owned by SYS and is available to all users.
- Used for arithmetic calculation and date retrieval.
- SELECT 2*5 FROM DUAL;
- SELECT SYSDATE FROM DUAL:

Function

- Serve the purpose of manipulating data items and returning a result.
- Group or Aggregate Functions
- Scalar or Single row Functions

Employees

EMP_NO	E_NAME	JOB	MGR	HIREDATE	SAL	COMM	DEPT_NO
7369	SUMATHI	CLERK	7902	17-Dec-80	800		20
7699	RAJAN	SALESMAN	7698	20-Feb-81	1600	300	30
7521	JOSEPH	SALESMAN	7698	22-Feb-81	1250	500	30
7566	JHON	MANAGER	7839	2-Apr-81	2975		20
7654	SEKAR	SALESMAN	7698	28-Sep-81	1250	1400	30
7698	DAVID	MANAGER	7839	1-May-81	2850		30
7782	RAJI	MANAGER	7839	9-Jun-81	2480		10
7788	SOUBA	ANALYST	7566	9-Dec-82	3000		20
7839	KING	PRESIDENT		17-Nov-81	5000		10
7844	PUPPLE	SALESMAN	7698	8-Sep-81	1500	0	30
7846	JERALD	CLERK	7788	12-Jan-83	1100		20
7900	JACK	CLERK	7698	3-Dec-81	950		30
7902	MARY	ANALYST	7566	4-Dec-81	3000		20
7934	MILLER	CLERK	7782	23-Jan-82	1300		10

A. Group/ Aggregate Functions

- They return a value based on the values in a column.

a. COUNT([DISTINCT] Columnname)

returns the no of rows where the Columnname is not NULL.

SELECT COUNT(MGR) FROM EMP;

COUNT(MGR)
13

SELECT COUNT(DISTINCT MGR) FROM EMP;

COUNT(DISTINCT MGR)
6

b. COUNT(*)

returns the no of rows in the table including duplicates and those with NULL.

SELECT COUNT(*) FROM EMP;

COUNT(*)
14

c. SUM([DISTINCT] columnname)

returns the sum of the values of columnname, ignores NULL values

```
SELECT SUM(SAL) FROM EMP;
```

SUM(SAL)
29055

d. AVG([DISTINCT] columnname)

returns the average of the values of columnname, ignores NULL values

```
SELECT AVG(SAL) FROM EMP;
```

AVG(SAL)
2075.35

e. MAX([DISTINCT] columnname)

returns the maximum value of the columnname, ignores NULL values

SELECT MAX(SAL) FROM EMP;

MAX(SAL)
5000

f. MIN([DISTINCT] columnname)

returns the minimum value of the columnname, ignores NULL values

SELECT MIN(SAL) FROM EMP;

MIN(SAL)
800

B. Scalar Functions

- Act on one value at a time
- Returns one value for every row query in a SELECT statement.
- Date functions
- Numeric functions
- Character functions
- Conversion functions
- Miscellaneous functions

B.1. Date Functions

a. SYSDATE

pseudo column that returns the current date and time of type DATE.

```
SELECT SYSDATE FROM DUAL;
```

SYSDATE
21-JAN-09

b.ADD_MONTHS(d,n)

add or subtract months to or from a date and returns a date as result.

```
SELECTADD_MONTHS(HIREDATE, 4)
FROM EMPWHERE EMP_NO=7369;
```

ADD_MONTHS(HIREDATE,4)
17-APR-81

c. LAST_DAY(d)

returns the last day of the month specified.

LAST_DAY(SYSDATE)
31-JAN-09

SELECT LAST_DAY(SYSDATE) FROM DUAL;

d. MONTHS_BETWEEN(d1,d2)

returns the no of month between d1 & d2 .

SELECT MONTHS_BETWEEN(SYSDATE,'23-JAN-89') FROM DUAL;

MONTHS_BETWEEN(SYSDATE,"23-JAN-89"))
239.90

e. NEXT_DAY(d,day)

returns the date of next specified day of the week after the date.

SELECT NEXT_DAY(SYSDATE,“MONDAY“) FROM DUAL;

NEXT_DAY(SYSDATE,“MONDAY“))
26-JAN-09

f. EXTRACT(YEAR/MONTH/DAYFROMdate)

extracts the year, month or day from a date value.

SELECT EXTRACT(MONTH FROM SYSDATE) FROM DUAL;

SELECT EXTRACT(YEAR FROM SYSDATE) FROM DUAL;

B.2. Numeric Functions

a. ABS(n)

returns absolute value of n.

SELECT ABS(5), ABS(-100) FROM DUAL;

ABS(5), ABS(-100)	
5	100

b. CEIL(N)

returns the ceilingvalue of the number n

SELECT CEIL(-5.2) FROM DUAL;

CEIL(-5.2)
-5

SELECT CEIL(5.7) FROM DUAL;

CEIL(5.7)
6

c. FLOOR(n)

returns the floor value of n.

```
SELECT FLOOR(-5.2) FROM DUAL;
SELECT FLOOR(5.7) FROM DUAL;
```

FLOOR(-5.2)
-6

FLOOR(5.7)
5

d.EXP(n)

returns e^n value

```
SELECT EXP(5) FROM DUAL;
```

EXP(5)
148.413159

e. LN(n)

returns natural logarithm of n.

SELECT LN(2) FROM DUAL;

LN(2)
0.693147181

f. LOG(n,b)

returns $\log_n b$ value

SELECT LOG(4,10) FROM DUAL;

LOG(4,10)
1.660964

g. MOD(n,m)

returns n%m.

SELECT MOD(15,4) FROM DUAL;

MOD(15,4)
3

h.POWER(m,n)

returns m^n value

SELECTPOWER(4,3)FROMDUAL;

POWER(4,3)
64

i. SIGN(n)

returns the sign of number n.

-1 for –ve, 0 for zero, 1 for +ve.

```
SELECT SIGN(-8.5) FROM DUAL;
```

SIGN(-8.5)
-1

j.SQRT(n)

returnssquarerootof n.

```
SELECT SQRT(25)FROM DUAL;
```

SQRT(25)
5

```
SELECT SQRT(-25)FROM DUAL;
```

ORA-01428: argument '-25' is out of range

k. ROUND(m,[n])

returns m, rounded to n places to the right of a decimal point.

```
SELECT ROUND(15.19,1) FROM DUAL;
SELECT ROUND(15.19)FROM DUAL;
```

ROUND(15.19,1)
15.2

ROUND(15.19)
15

l.TRUNC(m,n)

returns the truncated value of m up to n positions.

```
SELECT TRUNC(15.19,1) FROM DUAL;
```

TRUNC(15.19,1)
15.1

m. SIN(n)

returns sine of n, where n is in radian

```
SELECT SIN(60) FROM DUAL;
SELECT SIN(1.047167)FROM DUAL;
```

SIN(60)
-.3048106

SIN(1.047167)
0.8660

n. COS(n)

o. TAN(n)

p. SINH(n)

q. COSH(n)

r.TANH(n)

B.3. Character Functions

a. CHR(n)

returns the ASCII character correspondingto n.

SELECT CHR(70) FROM DUAL;

CHR(70)
F

b. CONCAT(s1, s2)

used for concatenation

SELECT CONCAT('RAM','KRISHNA') FROM DUAL;

SELECT 'RAM'||'KRISHNA' FROM DUAL;

CONCAT ('RAM','KRISHNA')
RAMKRISHNA

'RAM'||'KRISHNA'
RAMKRISHNA

c. INITCAP(s)

returns the string with capitalization of the first letter in each word.

```
SELECT INITCAP('HELLO') FROM DUAL;

SELECT INITCAP(E_NAME) FROM EMP;
```

INITCAP('HELLO')
Hello

d. LOWER(s)

converts to lowercase.

```
SELECT LOWER('HELLO') FROM DUAL;
```

LOWER('HELLO')
hello

e. UPPER(s)

convertsto uppercase.

```
SELECT UPPER('HeLLo') FROM DUAL;
```

UPPER('HeLLo')
HELLO

f. LPAD(s,n,[char1])

returns the string s, left padded with char1 upto length n.

```
SELECT LPAD('ORACLE',10,'*') FROM DUAL;
```

LPAD('ORACLE',10,'*')
****ORACLE

g. RPAD(s,n,[char1])

returns the string s, right padded with char1 upto length n.

```
SELECT RPAD('ORACLE',10,'*') FROM DUAL;
```

RPAD('ORACLE',10,'*')
ORACLE****

h. LTRIM(s,[char1])

trims the string s from the left when the characters specified in char1 is present in s.

SELECT LTRIM(E_NAME,'S')FROM EMP;

removes the 1st character of E_NAME field if it is 'S' from EMP table.

i. RTRIM(s,[char1])

trims the string s from the right when the characters specified in char1 is present in s.

SELECT RTRIM(E_NAME,'I')FROM EMP;

removes the last character of E_NAME field if it is 'I' from EMP table.

j. REPLACE(s,s1,s2)

returns the string s with the replacement of s2 in place of s1.

SELECT REPLACE('ORACLE','RAC','V')FROM DUAL;

REPLACE('ORACLE','RAC','V')
OVLE

k. SUBSTR(s,n1,n2)

returns a portion of s, starting at position n1 and going up to n2 characters.

SELECT SUBSTR('DATABASE',3,2)FROM DUAL;

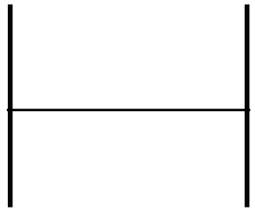
SUBSTR('DATABASE',3,2)
TA

l. LENGTH(s)

returns length of the string s.

SELECT LENGTH('ORACLE') FROM DUAL;

LENGTH('ORACLE')
6



B.4. Conversion Functions

- Converts a value from one data type to another.

a. TO_NUMBER(char)

converts a char value expressing a number to a number data type.

SELECT SUM(SAL) FROM EMP;

SELECT SUM (TO_NUMBER(SAL)) FROM EMP;

b. TO_DATE(char, [fmt])

converts a char field to a date.

SELECT TO_DATE(‘January 7, 1988’,’month dd, yyyy’) FROM DUAL;

TO_DATE('JANUARY 7,1988','MONTH DD,YYYY')
07-JAN-88

SELECT TO_DATE('30-SEP-0810:55A.M.','DD-MON-YYHH:MIA.M.‘)

FROM DUAL;

TO_DATE('30-SEP-0810:55A.M.','DD-MON-YYHH:MIA.M.')
30-SEP-08

c.TO_CHAR(n, [fmt])

converts a number to a VARCHAR2 value based on the format provided.

0→compulsory

9→optional

SELECT TO_CHAR(17145,'$999,999')FROM DUAL;

TO_CHAR(17145,'$999,999')
$17,145

SELECT TO_CHAR(17145,'$000,000')FROM DUAL;

TO_CHAR(17145,'$000,000')
$017,145

d. TO_CHAR(date, [fmt])

converts a date to character type.

```
SELECT TO_CHAR(HIREDATE,'MONTH DD, YYYY') FROM EMP
    WHERE EMP_NO=7566;
```

TO_CHAR(HIREDATE,'MONTH DD,YYYY')
APRIL 02, 1981

Special Date Formats using TO_CHAR()

- Use of 'TH':

  Date is displayed with the addition of 'th'.

  SELECT HIRE_DATE FROM EMPLOYEES WHERE DEPARTMENT_ID=10;

HIREDATE
09-JUN-81
17-NOV-81
23-JAN-82

SELECT TO_CHAR(HIRE_DATE,'DDTH-MON-YY')
FROM EMPLOYEES WHERE DEPARTMENT_ID=10;

TO_CHAR(HIREDATE,'DDTH-MON-YY')
09TH-JUN-81
17TH-NOV-81
23RD-JAN-82

- Use of ‘SP’:

  Date is displayed by spelling the date.

  SELECT TO_CHAR(HIRE_DATE,'DDSP-MON-YY') FROM EMPLOYEES WHERE DEPARTMENT_ID=10;

TO_CHAR(HIREDATE,'DDSP-MON-YY')
NINE-JUN-81
SEVENTEEN-NOV-81
TWENTY-THREE-JAN-82

- Use of ‘SPTH’:

  Date is displayed with the ‘TH’ added to the spelling.

  SELECT TO_CHAR(HIRE_DATE,'DDSPTH-MON-YY') FROM EMPLOYEES WHERE DEPARTMENT_ID=10;

TO_CHAR(HIREDATE,'DDSPTH-MON-YY')
NINTH-JUN-81
SEVENTEENTH-NOV-81
TWENTY-THIRD-JAN-82

B.5. Miscellaneous Functions

a. NVL(column, value)

- Converts a NULL value to an actual value supplied.
- SELECT FIRST_NAME, SALARY+NVL(COMMISSION_PCT, 0) "Total Salary" FROM EMPLOYEES;

b. NVL2(column, notnullvalue, nullvalue)

- If column has a NOT NULL value, 2nd parameter is displayed, else 3rd parameter.
- SELECT FIRST_NAME, NVL2(COMMISSION_PCT, 'YES', 'NO') FROM EMPLOYEES;