Oracle Functions

Reference: SQL Manual 12C available from Moodle Chapter 7 pp 7-1 - 7-447 or online at: https://docs.oracle.com/database/121/SQLRF/toc.htm

Oracle functions are useful for manipulating data by decomposing data elements. They use numerical, date or string values and may appear in a SQL statement wherever a value or attribute is used. Functions are categorised according to their operand types:

- Arithmetic for manipulation of numerical data
- Text for manipulation of alphanumeric data
- Date for manipulation of date/time-related data
- General for manipulation of any data type
- Conversion for manipulation of data type conversions, and
- Group for manipulation sets of values

The examples below show the uses for some of the more common Oracle SQL function

Arithmetic Functions

abs(n)

The column's absolute value

```
select abs(sallower - salupper) from salgrade;
```

ceil(n)

Nearest whole integer greater than or equal to number

```
select ceil(10.6) from dual;
```

floor(n)

Largest integer equal to or less than n

```
select floor(10.6) from dual;
```

mod(m,n)

Remainder of m divided by n. If n=0, then m is returned

```
select mod(7,5) from dual;
```

power(m,n)

Number m raised to the power of n

```
select power(3,2) from dual;
```

round(n,m)

Results rounded to m places to the right of decimal point

```
select round(15.193,1) from dual;
```

sign(n)

If n=0, returns 0; if n>0, returns 1; if n<0, returns -1

```
select sign(12 - 45) from dual;
```

sqrt(n)

Square root of n

```
select sqrt(120) from dual;
select round(sqrt(120),2) from dual;
```

Text Functions

initcap(char)

Changes the first character of each character string to uppercase

```
select initcap('mr teplow') from dual;
```

lower(char), upper(char)

Makes the entire string lowercase/uppercase

```
select lower(ename) from employee;
```

replace(char, str1, str2)

Character string with every occurrence of str1 being replaced with str2

```
select replace('jack and jue','j','bl') from dual;
```

substr(char,m,n)

Picks off part of the character string char starting in position m for n characters

```
select substr('ABCDEF',2,1) from dual;
```

length(char)

Length of char

```
select length('Anderson') from dual;
```

str1 || str2

Concatenates two character fields together

```
select deptname || ', ' || deptlocation as "Department Name and
Location"
from department;
```

lpad(char,n,char2)/rpad(char,n,char2)

Pads char left/right to size n using char2

```
select lpad('Page 1', 15, '*') as "Lpad example"
from dual;
select rpad('Page 1', 15, '*') as "Rpad example"
from dual;
```

ltrim(char[, k]), rtrim(char[, k])

remove characters from the left/right of char, until the first character not in k - if k is not specified blanks are trimmed

```
select ltrim('Intro to SQL', 'InorSt ') from dual;
```

Date Functions

last_day

Last day of the month
```
select last_day(SYSDATE) from dual;
```

add_months(d,n)

Adds or subtracts n months from date d
```
select add_months(SYSDATE, 2) from dual;
```

months_between(f,s)

Difference in months between date f and date s
```
select months_between(sysdate, '1-JAN-2006') from dual;
```

next_day(d,day)

Date that is the specified day of the week after d
```
select next_day(SYSDATE, 'Monday') from dual;
```

extract(c from d)

Extract date/time component c from expression d
```
select bdate,
      extract (year from bdate) AS year_of_birth,
      extract (month from bdate) AS month_of_birth,
      extract (day from bdate) AS day_of_birth
from employee;
```

General Functions

greatest(a, b, …)

greatest value of the function arguments

least(a, b, …)

least value of the function arguments
```
select greatest(12*6, 148/2, 73), least(12*6, 148/2, 73) from dual;
```

nullif(a, b)

NULL if a = b; otherwise a

NVL(x, y)

y if x is NULL; otherwise x

decode (x, a1, b1, a2, b2, …., an, bn [, y])

b1 if x = a1, b2 if x = a2, …. bn if x = an, and otherwise y (or default:NULL)

Conversion Functions

to_char

converts any data type to character data using a format model (*picture*) eg. 'DD Mon YYYY' or '$9999.99'

```
select to_char(sysdate,'DD Mon YYYY') from dual;
```

to_number

converts a valid set of numeric character data to number data type

```
select 123, to_char(123, '$9999.99'), to_number('123') from dual;
```

to_date

converts character data of the proper format to date data type
uses format models - a character literal eg. dd-Mon-yyyy to control how Oracle interprets the string

Format Model elements for date/time conversion:

Y or YY or YYYY

Last one, two or four digits of year.

```
select to_char(sysdate, 'YYYY') from dual;
```

Q

Quarter of year (Jan thru March = 1)

```
select to_char(sysdate, 'Q') from dual;
```

MM, RM

Month(01-12), Roman numeral month (eg. IV for April)

```
select to_char(sysdate, 'MM) from dual;
select to_char(sysdate, 'RM') from dual;
```

Month

Name of month

```
select to_char(sysdate, 'Month') from dual;
```

WW, W

Week of year, Week of month

```
select to_char(sysdate, 'WW') from dual;
select to_char(sysdate, 'W') from dual;
```

DDD, DD, D

Day of the year, month, week

```
select to_char(sysdate, 'DDD') from dual;
select to_char(sysdate, 'DD') from dual;
select to_char(sysdate, 'D') from dual;
```

DY, DAY

Abbreviated, full name of day

```
select to_char(sysdate, 'DY') from dual;
```

HH or HH12

Hour of day using 12 hour format

```
select to_char(sysdate, 'HH') from dual;
```

HH24

Hour of day using 24-hour clock

MI

Minutes (0-59)

SS

Seconds (0-59)

```
select to_char(sysdate, 'HH24:MI:SS') from dual;
```