Database Programming with PL/SQL

Review of SQL Single-Row Functions

Objectives

In this lesson, you will review how to select and apply single-row functions in an SQL query to:

- Change the case of character data
- Concatenate character data
- Determine the length of character data
- Select a substring of character data
- Round or truncate numerical data
- Convert data stored as one data type to another data type

Objectives (cont.)

In this lesson, you will review how to select and apply single-row functions in an SQL query to:

- Perform month-level arithmetic
- Enhance query results containing null values

Purpose

Taking time to review previously learned material helps you to reinforce basic concepts and prepares you for more complicated constructs.

Case Manipulation Functions

Case manipulation functions temporarily convert character data to a specified case.

`LOWER(column | expression)` converts alpha characters to lowercase.

```
SELECT country_id, country_name, area
   FROM wf_countries
   WHERE LOWER(country_name) = 'kingdom of tonga';
```

COUNTRY_ID	COUNTRY_NAME	AREA
676	Kingdom of Tonga	748

Case Manipulation Functions (cont.)

`UPPER(column | expression)` converts alpha characters to uppercase. Example:

```
SELECT country_id, country_name, area
   FROM wf_countries
   WHERE UPPER(country_name) = 'KINGDOM OF TONGA';
```

`INITCAP( column | expression)` converts alpha character values to uppercase for the first letter of each word. Example:

```
SELECT country_id, country_name, area
   FROM wf_countries
   WHERE INITCAP(country_name) = 'Kingdom Of Tonga';
```

Character Manipulation Functions

Character manipulation functions temporarily convert character data to different values.

`CONCAT` joins two values together.

```
SELECT CONCAT (country_name,internet_extension)
    "Country and extension"
FROM wf_countries WHERE country_id = 229;
```

Country and extension
Republic of Benin.bj

Character Manipulation Functions (cont.)

SUBSTR extracts a string of a determined length.

```
SELECT SUBSTR(country_name,3,3)
   FROM wf_countries WHERE country_id = 229;
```

SUBSTR(COUNTRY_NAME,3,3)
pub

LENGTH shows the length of a string as a number value.

```
SELECT LENGTH(country_name )
   FROM wf_countries WHERE country_id = 229;
```

LENGTH(COUNTRY_NAME)
17

Number Functions

Number functions temporarily convert number data to different values.

ROUND: Used to round numbers to a specified number of decimal places.

```
SELECT country_id, median_age, ROUND(median_age,-1)
   FROM wf_countries WHERE country_id = 20;
```

COUNTRY_ID	MEDIAN_AGE	ROUND(MEDIAN_AGE,-1)
20	24	20

Number Functions (cont.)

TRUNC: Used to terminate the column, expression, or value to a specified number of decimal places.

```
SELECT TRUNC(999.128,2) FROM dual;
```

TRUNC(999.128,2)
999.12

MOD: Used to return the remainder when one number is divided by another.

```
SELECT country_id, population, MOD(population,2)
   FROM wf_countries WHERE country_id = 3;
```

COUNTRY_ID	POPULATION	MOD(POPULATION,2)
3	15233244	0

Conversion Functions

`TO_CHAR` converts dates stored in a database from the default DD-MON-YY display format to another format specified by you. The syntax is:

```
TO_CHAR (date, 'format model you specify')
```

Example:

```
SELECT TO_CHAR(SYSDATE,'Month ddth, yyyy') AS TODAY
   FROM dual;
```

TODAY
November 30th, 2006

Conversion Functions (cont.)

TO_CHAR converts columns of number data to a desired format. The syntax is:

```
TO_CHAR (number, 'format model you specify')
```

Example:

```
SELECT country_id, TO_CHAR(population,'99,999,999,999')
   FROM wf_countries;
```

COUNTRY_ID	TO_CHAR(POPULATION,'99,999,999,999')
297	71,891
1268	69,108
971	2,602,713
93	31,056,997
213	32,930,091
994	7,961,619

Conversion Functions (cont.)

`TO_DATE` converts a character string to a date format. The syntax is:

```
TO_DATE('character string', 'format model')
```

Example:

```
SELECT TO_DATE('January 1, 2006','Month DD, RRRR')
     AS "New Year"
  FROM dual;
```

New Year
01-JAN-06

Conversion Functions (cont.)

`TO_NUMBER` converts a character string to a number. The syntax is:

```
TO_NUMBER(character string, 'format model')
```

Example:

```
SELECT TO_NUMBER('95.5','999.9') AS converted
   FROM dual;
```

CONVERTED
95.5

Date Functions

`SYSDATE` is a date function that returns the current database server date and time.

Example:

```
SELECT SYSDATE+1 AS tomorrow
   FROM dual;
```

TOMORROW
01-DEC-06

Date Functions (cont.)

`MONTHS_BETWEEN` returns the number of months between two dates.

Example:

```
SELECT country_name "Country",
        date_of_independence "Independence Day",
        TO_CHAR(MONTHS_BETWEEN(SYSDATE,
          date_of_independence), '999,999,999.99')
          AS "Months Since"
  FROM wf_countries
  WHERE country_id = 229;
```

Country	Independence Day	Months Since
Republic of Benin	1-Aug-1960	555.97

Date Functions (cont.)

`ADD_MONTHS` increments a date by calendar months

Example:

```
SELECT ADD_MONTHS(SYSDATE, 120) "10 yrs from today"
   FROM dual;
```

10 yrs from today
30-NOV-16

General Functions

`NVL` converts a null value to a date, a character, or a number.

The syntax is:

```
NVL(value that may contain a null,
value to replace the null)
```

General Functions (cont.)

NVL examples:

```
SELECT currency_name, comments
   FROM wf_currencies
   WHERE currency_code = 'AUD';
```

CURRENCY_NAME	COMMENTS
Australian dollar	-

```
SELECT currency_name,
         NVL(comments,'No comment') AS comments
  FROM wf_currencies
  WHERE currency_code = 'AUD';
```

CURRENCY_NAME	COMMENTS
Australian dollar	No comment

General Functions (cont.)

`NULLIF` compares two functions. If they are equal, the function returns null. If they are not equal, the function returns the first expression. The syntax is:

```
NULLIF(expression 1, expression 2)
```

```
SELECT country_translated_name "Country Name Trans",
        country_name "Country Name",
        NULLIF(country_translated_name, country_name)
                "nullif returns"
  FROM wf_countries;
```

Country Name Trans	Country Name	nullif returns
-	Aruba	-
-	Antiqua and Barbuda	-
Al Imarat al Arabiyah al Muttahidah	United Arab Emirates	
Afghanistan	Islamic Republic of Afghanistan	Afghanistan
Algeria	Peoples Democratic Republic of Algeria	Algeria
Azerbaijan	Republic of Azerbaijan	Azerbaijan

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