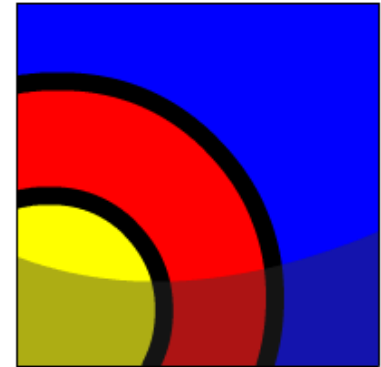


Case and Character Manipulation

What Will I Learn?

In this lesson, you will learn to:

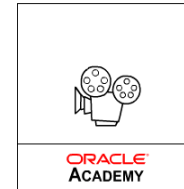
- Select and apply single-row functions that perform case conversion and/or character manipulation
- Select and apply character case-manipulation functions LOWER, UPPER, and INITCAP in a SQL query
- Select and apply character-manipulation functions CONCAT, SUBSTR, LENGTH, INSTR, LPAD, RPAD, TRIM, and REPLACE in a SQL query





Why Learn It?

Have you ever thought about the different ways in which we present ourselves? We dress up for special occasions, dress casually for play, and put on uniforms for sports events and band concerts. Being able to change the way we look for different situations is important. How would you choose to present yourself for a job interview?



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Why Learn It?

Being able to change the way in which data is presented is important when dealing with data from a database. Most of the time in SQL, we need to change the way that data appears depending on the requirements of the task we are trying to accomplish.

In this section, you will learn several ways in which to transform data to fit a particular situation.

Tell Me / Show Me

DUAL TABLE

The DUAL table has one row called "X" and one column called "DUMMY." The DUAL table is used to create SELECT statements and execute commands not directly related to a specific database table.

Queries using the DUAL table return one row as a result. DUAL can be useful to do calculations such as the following example and also to evaluate expressions that are not derived from a table.



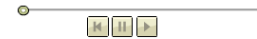
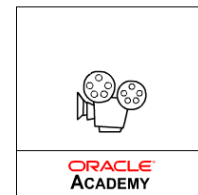
DUMMY
X

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DUAL TABLE

DUAL will be used to learn many of the single-row functions.

```
SELECT (319/29) +12  
FROM DUAL;
```



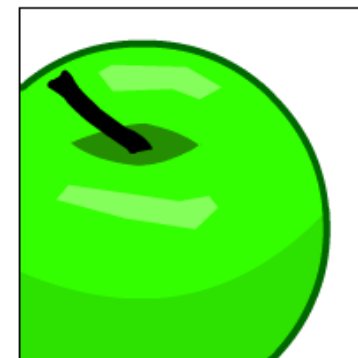
sdp_s01_l01_a02

(319/29)+12
23

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SINGLE-ROW CHARACTER FUNCTIONS

Single-row character functions are divided into two categories: functions that convert the case of character strings and functions that can join, extract, show, find, pad, and trim character strings.

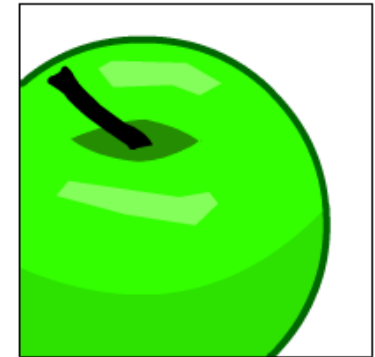


Single-row functions can be used in the SELECT, WHERE, and ORDER BY clauses.

Tell Me / Show Me

SINGLE-ROW CHARACTER FUNCTIONS

Case-manipulation functions are important because you may not always know which case (upper, lower, or mixed) the data is stored in in the database. Case manipulation allows you to temporarily convert the database data to a case of your choosing. Mismatches between database case storage and query case requests are avoided.



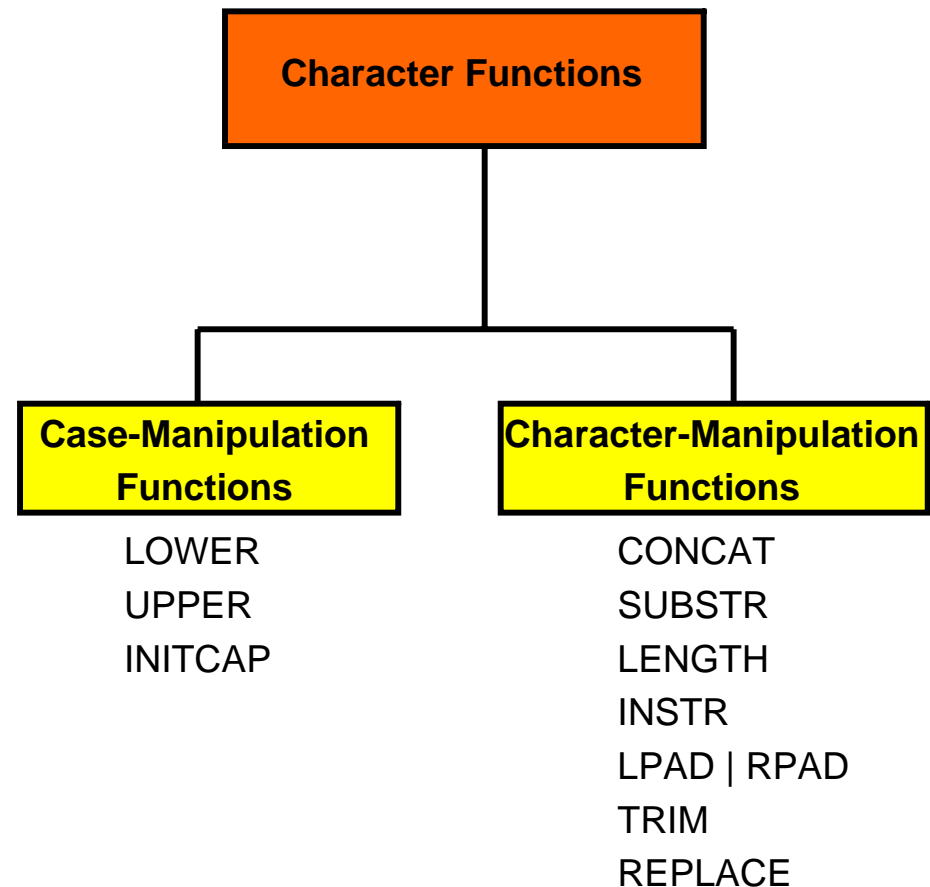
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CASE-MANIPULATION FUNCTIONS

Case-manipulation functions are used to convert from lower to upper or mixed case. These conversions can be used to format the output and when doing searches for specific strings.

So they can be used in most parts of a SQL Statement.

CHARACTER FUNCTIONS



Tell Me / Show Me CASE-MANIPULATION FUNCTIONS

As can be seen in the following examples Case-manipulation functions are often helpful when you are searching for data in an Oracle database if you do not know which case the data records are stored in. From Oracle's point of view 'V' and 'v' are NOT the same character, and it will therefore not return the record if you are not using the correct case when searching.

LOWER(column | expression) converts alpha characters to lower-case.

```
SELECT title  
FROM d_cds  
WHERE LOWER(title) = 'carpe diem';
```



Tell Me / Show Me

CASE-MANIPULATION FUNCTIONS

UPPER(column | expression) converts alpha characters to upper-case.

```
SELECT title  
FROM d_cds  
WHERE UPPER(title) = 'CARPE DIEM';
```

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

```
SELECT title  
FROM d_cds  
WHERE INITCAP(title) = 'Carpe Diem';
```



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CHARACTER-MANIPULATION FUNCTIONS

Character manipulation functions are used to extract, change, format or alter in some way a character string.

One or more characters or words are passed into the function and the function will then perform its functionality on the input character strings and return the changed, extracted, counted or altered value.

Function	Result
CONCAT ('Hello', 'World')	HelloWorld
SUBSTR ('HelloWorld', 1, 5)	Hello

CONCAT: Joins two values together.

SUBSTR: Extracts a string of a determined length.



Tell Me / Show Me

CHARACTER-MANIPULATION FUNCTIONS

LENGTH: Shows the length of a string as a number value.

INSTR: Finds the numeric position of a named character.

LPAD: Pads the left side of a character, resulting in a right-justified value.

RPAD: Pads the right-hand side of a character, resulting in a left-justified value.

TRIM: Removes all specified characters from either the beginning or the ending of a string.

The syntax for the trim function is: trim ([leading | trailing | both [character(s) to be removed]] string to trim)

Function	Result
LENGTH ('HelloWorld')	10
INSTR ('HelloWorld', 'W')	6
LPAD (salary, 10, '*')	*****24000
RPAD (salary, 10, '*')	24000*****
TRIM ('H', FROM 'HelloWorld')	elloWorld



Tell Me / Show Me

CHARACTER-MANIPULATION FUNCTIONS

REPLACE: Replaces a sequence of characters in a string with another set of characters. The syntax for the REPLACE function is:

```
replace (string1, string_to_replace, [replacement_string] )
```

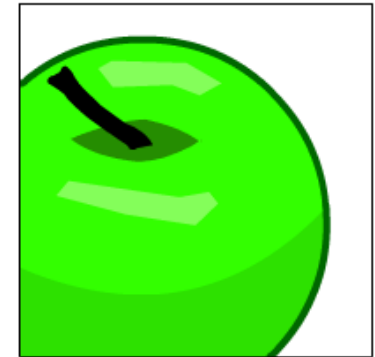
string1 is the string that will have characters replaced in it.
string_to_replace is the string that will be searched for and taken out of string1.
[replacement_string] is the new string to be inserted in string1.

Function	Result
REPLACE('JACK and JUE','J','BL')	BLACK and BLUE

```
SELECT REPLACE('JACK and JUE','J','BL') "Changes"  
FROM DUAL
```

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All functions operate on values that are in parentheses, and each function name decides its purpose, which is helpful to remember when constructing a query. Also, note the use of column aliases for columns with functions. In the following examples, the alias "User Name" has replaced the function syntax. By default, the column name appears as the column heading. In this query, however, there is no column in the table for the results produced, so the query syntax is used instead.



```
SELECT LOWER  
(last_name)||LOWER(SUBSTR(first_name,1,1)) AS  
"User Name"  
FROM f_staffs;
```

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Terminology

Key terms used in this lesson include:

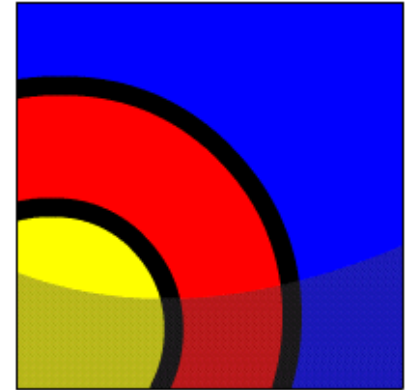
Character functions	CONCAT
DUAL	Expression
Format	INITCAP
Input	INSTR
LENGTH	LOWER
LPAD	Output
REPLACE	RPAD
Single- row functions	SUBSTR
TRIM	UPPER



Summary

In this lesson you have learned to:

- Differentiate between operations of single-row functions and multiple-row functions
- Select and apply single-row functions that perform case conversion and/or character manipulation
- Select and apply character case-manipulation functions LOWER, UPPER, and INITCAP in a SQL query
- Select and apply character-manipulation functions CONCAT, SUBSTR, LENGTH, INSTR, LPAD, RPAD, TRIM, and REPLACE in a SQL query



Summary

Practice Guide

The link for the lesson practice guide can be found in the course outline.

