

Lab 02B: SQL Functions

Objective

This lab introduces students to SQL syntax and basic SQL queries.

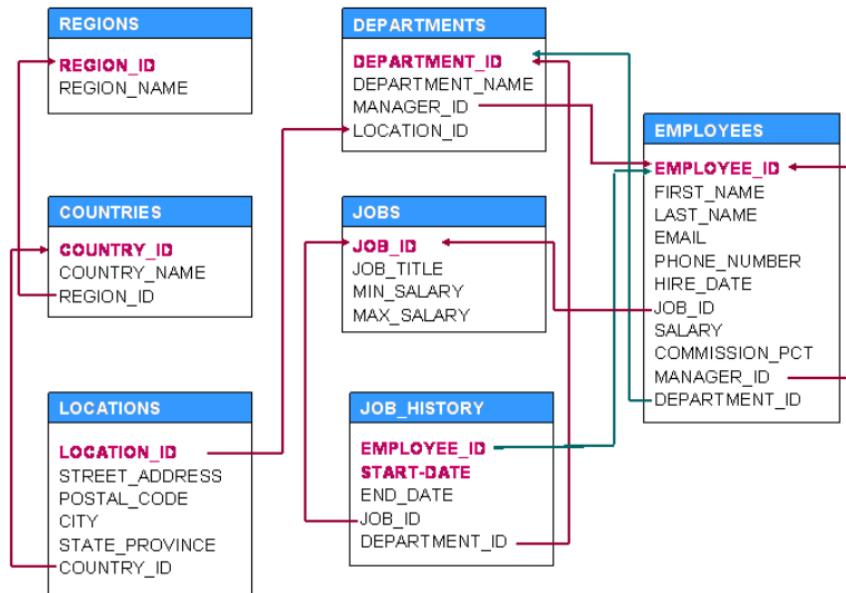
The students should be able to:

1. Use single row functions to customize query output. Single-row functions return a single result row for every row of a queried table or view.
2. Use character case conversion functions like LOWER, UPPER, INITCAP
3. Use character manipulation functions like CONCAT, SUBSTR, LENGTH, INSTR, LPAD, RPAD, REPLACE, TRIM, LTRIM, and RTRIM
4. Use number functions like ROUND, TRUNC and MOD
5. Use date functions like MONTHS_BETWEEN, ADD_MONTHS, NEXT_DAY, LAST_DAY, ROUND and TRUNC
6. Use built in values like SYSDATE
7. Understand arithmetic operations with date values

Submission Requirements

Save your script file and upload it to LMS.

HR Database Schema



SQL Queries

Write and Execute SQL queries for the following information needs:

1. Display all the locations (cities) in US (country) using uppercase function.
2. Display STREET_ADDRESS in uppercase, CITY in lowercase, concatenate CITY and STATE_PROVINCE and display it as a new attribute called CITY_STATE_PROVINCE.
3. Display all the employees whose FIRST_NAME is 'Michael' . We suspect that first name can be in small letters due to typos , so we need to search the name irrespective of the case.
4. Display FIRST_NAME and LAST_NAME after converting the first letter of each name to upper case and the rest to lower case.
5. Display the FULL_NAME , JOB_ID and MANAGER_ID of all employees. There should be a space first_name and last_name in FULL_NAME
6. Display the list of employees where the first part of JOB_ID is 'FI' or the last part is 'CLERK' . Use character function SUBSTR instead of '_' wild card characters. Hint: SUBSTR(string, starting position, total characters to extract)
7. Display FIRST_NAME, LAST_NAME , length of PHONE_NUMBER as PHONE_FORMAT and number of digits in salary as SALARY_DIGITS.
8. Display the position of space character in JOB_TITLE. Hint: use INSTR function to return the position of the character
9. Display the first word in JOB_TITLE

10. Demonstrate LPAD on any random string. Hint: use DUAL when you only have one row and no known schema
11. Demonstrate RPAD on any random string
12. Demonstrate TRIM function on your name or any random string
13. Demonstrate LTRIM function to remove spaces
14. Demonstrate RTRIM function to remove spaces
15. Demonstrate REPLACE function
16. Demonstrate ROUND function to round a number to 3 decimal places
17. Demonstrate ROUND function to round a number to an integer
18. Demonstrate number function TRUNC to extract 4 decimal places without rounding off
19. Demonstrate number function MOD to find the remainder
20. Display your age in months. Hint: use the sysdate and the months between function
21. Display FIRST_NAME, LAST_NAME , JOB_ID and EXPERIENCE_IN_YEARS of all the employees
22. Demonstrate ADD_MONTHS function
23. What will be the date on the first Sunday of 22nd century.
24. Demonstrate ROUND on SYSDATE by rounding the months
25. Demonstrate ROUND on SYSDATE by rounding the years
26. Demonstrate TRUNC on SYSDATE by truncating the 'MONTH'
27. Demonstrate TRUNC on SYSDATE by truncating the 'YEAR'
28. How many employees have been hired in the month of June? Hint: use the TO_CHAR function.

Oracle String Functions

Function	Example	Result	Purpose
CONCAT	CONCAT('A','BC')	'ABC'	Concatenate two strings and return the combined string.
CONVERT	CONVERT('Ä Ê Ì', 'US7ASCII', 'WE8ISO8859P1')	'A E I'	Convert a character string from one character set to another.
INITCAP	INITCAP('hi there')	'Hi There'	Converts the first character in each word in a specified string to uppercase and the rest to lowercase.
INSTR	INSTR('This is a playlist', 'is')	3	Search for a substring and return the location of the substring in a string
LENGTH	LENGTH('ABC')	3	Return the number of characters (or length) of a specified string
LOWER	LOWER('Abc')	'abc'	Return a string with all characters converted to lowercase.
LPAD	LPAD('ABC',5,'*')	'**ABC'	Return a string that is left-padded with the specified characters to a certain length.
LTRIM	LTRIM(' ABC ')	'ABC '	Remove spaces or other specified characters in a set from the left end of a string.
REPLACE	REPLACE('JACK AND JOND','J','BL');	'BLACK AND BLOND'	Replace all occurrences of a substring by another substring in a string.
RPAD	RPAD('ABC',5,'*')	'ABC**'	Return a string that is right-padded with the specified characters to a certain length.
RTRIM	RTRIM(' ABC ')	' ABC'	Remove all spaces or specified character in a set from the right end of a string.
SUBSTR	SUBSTR('Oracle Substring', 1, 6)	'Oracle'	Extract a substring from a string.
TRIM	TRIM(' ABC ')	'ABC'	Remove the space character or other specified characters either from the start or end of a string.
UPPER	UPPER('Abc')	'ABC'	Convert all characters in a specified string to uppercase.

Learn more here [Oracle String Functions By Examples \(oracletutorial.com\)](https://www.oracle.com/technetwork/database/enterprise-education/oracle-string-functions-by-examples-2814991.pdf)

Oracle Numeric Functions

Functions	Description
FLOOR	Returns the largest whole number equal to or less than a specified number.
MOD	Returns the modulus of a number.
POWER	Returns m_value raised to the n_value power

REMAINDER	Returns the remainder after one numeric expression is divided by another.
ROUND	Returns the number rounded to the nearest multiple of a second number you specify or to the number of decimal places indicated by the second number.
SQRT	Computes the square root of an expression.
TRUNC	Truncates a number to a specified number of decimal places.

Learn more here [Oracle Numeric Functions - w3resource](#)

Oracle Date Functions

Function	Example	Result	Description
ADD_MONTHS	ADD_MONTHS(DATE '2016-02-29', 1)	31-MAR-16	Add a number of months (n) to a date and return the same day which is n of months away.
CURRENT_DATE	SELECT CURRENT_DATE FROM dual	06-AUG-2017 19:43:44	Return the current date and time in the session time zone
EXTRACT	EXTRACT(YEAR FROM SYSDATE)	2017	Extract a value of a date time field e.g., YEAR, MONTH, DAY, ... from a date time value.
LAST_DAY	LAST_DAY(DATE '2016-02-01')	29-FEB-16	Gets the last day of the month of a specified date.
MONTHS_BETWEEN	MONTHS_BETWEEN(DATE '2017-07-01', DATE '2017-01-01')	6	Return the number of months between two dates.
NEXT_DAY	NEXT_DAY(DATE '2000-01-01', 'SUNDAY')	02-JAN-00	Get the first weekday that is later than a specified date.
ROUND	ROUND(DATE '2017-07-16', 'MM')	01-AUG-17	Return a date rounded to a specific unit of measure.
SYSDATE	SYSDATE	01-AUG-17	Return the current system date and time of the operating system where the Oracle Database resides.
TO_CHAR	TO_CHAR(DATE '2017-01-01', 'DL')	Sunday, January 01, 2017	Convert a DATE or an INTERVAL value to a character string in a specified format.
TO_DATE	TO_DATE('01 Jan 2017', 'DD MON YYYY')	01-JAN-17	Convert a date which is in the character string to a DATE value.
TRUNC	TRUNC(DATE '2017-07-16', 'MM')	01-JUL-17	Return a date truncated to a specific unit of measure.

Learn more here [Oracle Date Functions \(oracletutorial.com\)](#)