

Exercise 3. Scalar Functions and Arithmetic

What This Exercise Is About

This exercise provides an opportunity to work with scalar functions and arithmetic expressions.

What You Should Be Able to Do

At the end of the lab, you should be able to:

- Code queries that use scalar functions
- Code queries by using calculated expressions in the select list and in the WHERE clause
- Use basic scalar functions
- Use the CONCAT operator

Introduction

See the data model at the start of this exercise guide to get the column names and descriptions for each table.

Required Materials

- Student handout
- *SQL Reference*

Problem List

Problem 1

For employees whose salary, increased by 5 percent, is less than or equal to \$20,000, list the following:

- Last name
- Current Salary
- Salary increased by 5 percent
- Monthly salary increased by 5 percent

Use the following column names for the two generated columns:

INC-Y-SALARY and INC-M-SALARY Use the proper conversion function to display the increased salary and monthly salary with two of the digits to the right of the decimal point. Sort the results by annual salary.

Problem 2

All employees with an education level of 18 or 20 will receive a salary increase of \$1,200 and their bonus will be cut in half. List last name, education level, new salary, and new bonus for these employees. Display the new bonus with two digits to the right of the decimal point.

Use the column names NEW-SALARY and NEW-BONUS for the generated columns.

Employees with an education level of 20 should be listed first. For employees with the same education level, sort the list by salary.

Problem 3

The salary will be decreased by \$1,000 for all employees matching the following criteria:

- They belong to department D11
- Their salary is more than or equal to 80 percent of \$20,000
- Their salary is less than or equal to 120 percent of \$20,000

Use the name DECR-SALARY for the generated column.

List department number, last name, salary, and decreased salary. Sort the result by salary.

Problem 4

Produce a list of all employees in department D11 that have an income (sum of salary, commission, and bonus) that is greater than their salary increased by 10 percent.

Name the generated column INCOME.

List department number, last name, and income. Sort the result in descending order by income.

For this problem assume that all employees have non-null salaries, commissions, and bonuses.

Problem 5

List all departments that have no manager assigned. List department number, department name, and manager number. Replace unknown manager numbers with the word UNKNOWN and name the column MGRNO.

Problem 6

List the project number and major project number for all projects that have a project number beginning with MA. If the major project number is unknown, display the text 'MAIN PROJECT.'

Name the derived column MAJOR PROJECT.

Sequence the results by PROJNO.

Problem 7

List all employees who were younger than 25 when they joined the company.

List their employee number, last name, and age when they joined the company.

Name the derived column AGE.

Sort the result by age and then by employee number.

Problem 8

Provide a list of all projects which ended on December 1, 1982. Display the year and month of the starting date and the project number. Sort the result by project number.

Name the derived columns YEAR and MONTH.

Problem 9

List the project number and duration, in weeks, of all projects that have a project number beginning with MA. The duration should be rounded and displayed with one decimal position.

Name the derived column WEEKS.

Order the list by the project number.

Problem 10

For projects that have a project number beginning with MA, list the project number, project ending date, and a modified ending date assuming the projects will be delayed by 10 percent.

Name the column containing PRENDATE, ESTIMATED. Name the derived column EXPECTED.

Order the list by project number.

Problem 11

How many days are between the first manned landing on the moon (July 20, 1969) and the first day of the year 2000?

Since no columns from a specific table are used in this problem, you can use any table in the FROM clause but you should indicate a WHERE condition that derives a single result row (unique key). You may also select from the SYSIBM.SYSDUMMY1 table which produces a one row result.

Name the derived column DAYS.

END OF LAB