LCS_PCOM7E June 2022

Launching into Computer Science

Assignment 1 – Part 3

README

The program is used to solve the questions provided in Assignment 1 Part 3 of LCS_PCOM7E June 2022 Launching into Computer Science. Since there is 5 questions, the program is divided into five parts.

The database "COMPANY1" in this assignment has two tables, namely EMP and DEPT. The table EMP sets out employee's details; while the table DEPT sets out the department's number, name and location.

As some questions involve data from both tables, I create a new table (table name: Q1) which effectively added the department name and location to the table EMP. This new table Q1 will be used in answer questions 1, 3 and 4.

Question 1.

List all Employees whose salary is between 1,000 AND 2,000.

Step 1: Create a new table which contains information of EMP and DEPT (New table: Q1) using CREATE TABLE function. An alternative way is that we can use JOIN function to join two tables (W3 Schools, N.D.), (Tutorialspoint , N.D.). Since the JOIN function is more advance so CREATE TABLE function is used which is simply but served same function. However, JOIN function has been used in question 4 (see below).

Before submission of the final version, I set a check point here

SELECT * FROM Q1;

So that the table Q1 can be visualized to ensure new table Q1 is in order. This checkpoint is hidden in the submitted version to avoid confusion because there are too many tables in the answer.

Step 2: Extract required data from table Q1 to show all employees whose salary is between 1,000 and 2,000 and the SELECT… WHERE function is used.

Question 2.

Count the number of people in department 30 who receive a salary and the number of people who receive a commission.

Step 1: Again a new table Q2 is created which contain people in department 30 only using SELECT… WHERE function.

Same as question 1, before submission of the final version, I set a check point here

SELECT * FROM Q2;

So that the table Q2 can be visualized to ensure new table Q2 is in order. For the same reason in question 1, this checkpoint is hidden in the submitted version to avoid confusion.

Step 2: With the presence new table Q2, answer to Q2 is easy because we could simply count the number of staff (with salary or with commission) using COUNT(*) function.

The alternative way is using count if function, i.e. putting the condition (department number = 30) as a condition to the count function DelfStack. (2021). However, I found the coding using two steps is much simply which is easier to understand and debug, therefore the two-steps method is used.

Question 3.

Find the name and salary of employees in Dallas.

Since we have already create a table Q1 which adds the location of the department to the employees' detail table (table: EMP), therefore answering question 3 is easy. I just select the location, employee's name and salary from Q1 to form a new table.

Question 4.

List all departments that do not have any employees.

Step 1: Create a new table Q4 which counted the number of employee using in each department using the COUNT(EMP.ENAME). Then this data is added to the table DEPT by using the JOIN function. (W3 Schools, N.D.), (Tutorialspoint, N.D.).   In this way, the department which has no employee could still appear in table Q4.

Alternatively we could simply use COUNT(*) function. However, the COUNT(*) function could not return a zero value. (Babic, 2021). Of course we could check out if any department has staff number below 1 but it is indirect. Therefore we use a direct method to build the table.

Same as question 1 and 2, as a check point the content of new table Q4 is checked by

SELECT * FROM Q4;

to ensure it is in order before it is being hidden in the submission version.

With the step 1 above, the next step is simply selecting the department where its number of employee is zero from the new Table Q4.

Question 5.

List the department number and average salary of each department.

In this question, I have calculate average salary using SUM(SAL)/COUNT(SAL) and then group the result using GROUP BY department number.

Reference:

W3 School. (N.D.) SQL Joins. Available: https://www.w3schools.com/sql/sql_join.asp [accessed 26 August 2022]

Tutorialspoint. (N.D.) Using Joins. Available: https://www.tutorialspoint.com/mysql/mysql-using-joins.htm [accessed 26 August 2022]

DelfStack. (2021) Count with IF condition in MySQL query Available: https://www.delftstack.com/howto/mysql/mysql-count-if/ [accessed 26 August 2022]

Babic, T. (2021) How to Include Zero in a COUNT() Aggregate. Available: https://www.my-course.co.uk/mod/assign/view.php?id=659342 [accessed 28 August 2022]