CSE370 Database Systems: Lab Assignment 2

Objective	Practice advanced SQL operations using a single table in MySQL.		
Due Date:	1 Week, submit before next class	Number of Questions:	10

Scenario:

You are working as a database administrator for a growing tech company. The HR department needs you to analyze employee data to generate various reports about salaries, departments, and organizational structure. All operations will be performed on a single table called `employees`.

Part 1: Understanding the Data

You will use a database called `Company_<Your8DigitStudentID>`.

Example:

CREATE DATABASE Company_12345678;
USE Company_12345678;

The `employees` table has the following attributes and data types.

Table Name: *employees*	
Attribute Name	**Attribute type**
e_id	char(4)
first_name	varchar(20)
last_name	varchar(20)
hire_date	date
job_id	char(10)
salary	int
commission_pct	decimal(5,3)
manager_id	char(4)
department_id	char(3)

The HR department has collected the following employee data:

e_id	first_name	last_name	hire_date	job_id	salary	commission_pct	manager_id	dept_id
E001	John	Doe	2020-01-15	IT_PROG	65000	NULL	E010	D01
E002	Jane	Smith	2019-03-22	SA_REP	55000	0.150	E011	D02
E003	Michael	Johnson	2021-06-10	IT_PROG	62000	NULL	E010	D01
E004	Emily	Davis	2018-11-05	SA_REP	58000	0.200	E011	D02
E005	David	Wilson	2022-02-14	IT_PROG	60000	NULL	E010	D01
E006	Sarah	Brown	2020-07-30	HR_REP	50000	0.150	E012	D03
E007	James	Taylor	2019-09-18	SA_REP	60000	0.180	E011	D02
E008	Lisa	Anderson	2021-04-25	FI_ACC	52000	NULL	E013	D04
E009	Robert	Martinez	2020-12-01	IT_PROG	67000	NULL	E010	D01
E010	Patricia	Garcia	2017-05-10	IT_MAN	85000	NULL	NULL	D01
E011	Thomas	Lee	2016-08-20	SA_MAN	80000	0.100	NULL	D02
E012	Maria	White	2018-02-15	HR_MAN	75000	NULL	NULL	D03
E013	Daniel	Harris	2019-10-30	FI_MAN	78000	NULL	NULL	D04
E014	Jessica	Clark	2021-01-20	HR_REP	48000	0.100	E012	D03
E015	Kevin	Lewis	2022-03-12	FI_ACC	51000	NULL	E013	D04

Note: `commission_pct` is the commission percentage (for sales representatives only). `manager_id` references another employee who is the manager (NULL means the employee has no manager). `dept_id` indicates which department the employee belongs to.

Part 2: Questions

IMPORTANT: Provide one single query per question! Your query should not be hard coded, it should provide the logic mentioned in the question.

Write SQL queries to complete the following tasks: [10 * 1 = 10]

Q1. Create the employees table with appropriate data types for all columns shown above.

Q2. Insert all the given data displayed in the table above into the employees table.

Q3. Find the first_name, last_name, hire_date, and department_id of all employees with the latest hire_date.

Q4. Find the first_name, last_name, e_id, salary, and department_id of the employee with the highest salary in each department.

Q5. Find the first_name, last_name, e_id, commission_pct, and department_id of all employees in department 'D02' who have a higher commission_pct than all employees in department 'D01'.

Q6. Find the department_id and total number of employees of each department that does not have any employee with a salary greater than 70000.

Q7. For each department, find the department_id, job_id, and salary where the salary is less than at least one other job_id in that same department.

Q8. Find the manager_id of managers who do not have any employee under them with a salary less than 55000.

Q9. Find the first_name, last_name, e_id, salary, department_id, and commission_pct of the employee with the highest commission_pct under each manager.

Q10. Find the job_id and average salary of job positions where the average salary is less than the overall average salary of all employees.

Submission Instructions

Make a copy of the **submission template** in your own Google Drive. For each task in Part 2:

1. Write the MySQL command in your submission document.
2. Execute the command in XAMPP shell (MySQL command line), take a screenshot showing the command and output, then paste it below the command in your document.
3. Repeat for all 10 tasks.
4. Download your document as PDF.
5. Rename using format: ID_Name_CSE370_Lab_Sec##_Assignment02_Spring26.pdf

   Example: 12345678_JohnDoe_CSE370_Lab_Sec12_Assignment02_Spring26.pdf
6. Submit via the Google Form in your Discord section channel.