SCHOOL OF
COMPUTER AND SECURITY SCIENCE

AUSTRALIA ECU EDITH COWAN UNIVERSITY

CSG1207/CSI5135: Systems and Database Design
Lab 09

Introduction

This lab allows you to practise the SQL covered in this week's lecture. Do your best to answer the following questions and write the specified queries. You are encouraged to experiment with SQL – it is a very flexible language, so if you can think of something that would be useful to achieve in a query, it can probably be done. This lab uses the "company" database, which you can create by running the script file Module 5 of the unit materials. It is assumed that you are working in SQL Server Management Studio, also covered in Module 5.

If you are having trouble writing an SQL query, read any error messages and try to fix the error. Search for examples in the unit materials, and ask your tutor for assistance if needed. Contact your tutor if you spot something which appears to be incorrect in any of the labs.

Note

Rather than a challenge query, this lab contains 15 tasks instead of 10. Since this module's lecture covers a few very important concepts, the extra tasks allow us to practise them all.

Lab Tasks

Q1. Write a query which selects the full name (e.g. "Steven King"), salary and department name of all employees who earn over $10,000.

Q2. Write a query which shows a unique list of the job titles of employees in department 50.

Q3. Write a query which selects the last name, commission, department name, and city name of all employees who earn a commission (i.e. have a non-NULL commission). Order the results by commission, in descending order.

Q4. Describe the difference between a LEFT OUTER JOIN, a RIGHT OUTER JOIN and a FULL OUTER JOIN, and explain why the word "OUTER" is optional in the syntax for outer joins.

Q5. Write a query which selects all countries in the country table and the name of the region they are in. Make sure your query includes all regions, even those that do not match any of the countries.

Q6. The following query is trying to show the last name, job title and department name of all employees (including those who are not in a department), but it contains errors. Identify the errors and fix the query so that it works as intended.

```
SELECT last_name, job_title, department_name
FROM employee AS e INNER JOIN job AS j
     ON e.employee_id = j.job_id
FROM employee AS e RIGHT OUTER JOIN department AS d
     ON e.department_id = d.department_id;
```

Q7. Write query which selects the last name, salary, job title and job's minimum salary for all employees who are earning less than the minimum salary for their job.

Q8. Write a query which selects the full name of employees and the full name of their manager. Order the results by the full name of the employee, and be sure to include all employees – even those who have no manager.

Q9. Write a query which displays the average minimum salary and average maximum salary of all jobs. Be sure to give the columns appropriate aliases.

Q10. Write a query which displays the job ID and salary of the lowest paid employee in each job, and the number of employees in each job. Give all columns appropriate aliases.

Q11. Write a query which displays the department name, number of employees, average salary, minimum salary and maximum salary of employees, grouped by department name. Order the results by department name.

Q12. Modify your query from the previous task so that it groups by department name then gender, and includes employee gender in the results. Order the results by department name then gender.

Q13. Write a query which selects all the last name of employees, their department's name, the name of the city their department is in, the name of the country the city is in and the name of the region the country is in. Use full outer joins to ensure that all employees, departments, locations, cities, countries and regions are returned.

Q14. Write a query which selects the department name of all departments where the average salary of employees working in the department is less than $7,500.

Q15. Write a query which selects the employee last name and their manager's last name for all employees who have a higher salary than their manager. Also include the difference between the two salaries in the results.