CHAPTER 7: More SQL: Complex Queries, Triggers, Views, and Schema Modification

Answers to Selected Exercises

7.5 - Specify the following additional queries on the database of Figure 3.5 in SQL. Show the query results if applied to the database of Figure 3.6.

     (a) For each department whose average employee salary is more than $30,000, retrieve the department name and the number of employees working for that department.

     (b) Suppose we want the number of *male* employees in each department rather than all employees (as in Exercise 5.4a). Can we specify this query in SQL? Why or why not?

Answers:
(a) SELECT DNAME, COUNT (*)
FROM DEPARTMENT, EMPLOYEE
WHERE DNUMBER=DNO
GROUP BY DNAME
HAVING AVG (SALARY) > 30000

Result:
DNAME DNUMBER COUNT(*)
Research 5 4
Administration 4 3
Headquarters 1 1

(b) The query may still be specified in SQL by using a nested query as follows (not all implementations may support this type of query):
SELECT DNAME, COUNT (*)
FROM DEPARTMENT, EMPLOYEE
WHERE DNUMBER=DNO AND SEX='M' AND DNO IN (SELECT DNO
FROM EMPLOYEE
GROUP BY DNO
HAVING AVG (SALARY) > 30000)
GROUP BY DNAME

Result:
DNAME DNUMBER COUNT(*)
Research 5 3
Administration 4 1
Headquarters 1 1

7.6 - Specify the following queries in SQL on the database schema of Figure 1.2.

     (a) Retrieve the names and major departments of all straight-A students (students who have a grade of A in all their courses).

     (b) Retrieve the names and major departments of all students who do not have any grade of A in any of their courses.

Answers:
(a) SELECT Name, Major
FROM STUDENT
WHERE NOT EXISTS (SELECT *
FROM GRADE_REPORT
WHERE StudentNumber= STUDENT.StudentNumber AND NOT(Grade='A'))

(b) SELECT Name, Major
FROM STUDENT
WHERE NOT EXISTS (SELECT *
FROM GRADE_REPORT
WHERE StudentNumber= STUDENT.StudentNumber AND Grade='A')

7.7 - In SQL, specify the following queries on the database specified in Figure 3.5 using the concept of nested queries and the concepts described in this chapter.

     a. Retrieve the names of all employees who work in the department that has the employee with the highest salary among all employees.
     b. Retrieve the names of all employees whose supervisor's supervisor has '888665555' for Ssn.
     c. Retrieve the names of employees who make at least $10,000 more than the employee who is paid the least in the company.

Answers:
a)   SELECT LNAME FROM EMPLOYEE WHERE DNO =
          (SELECT DNO FROM EMPLOYEE WHERE SALARY =
                (SELECT MAX(SALARY) FROM EMPLOYEE))
b)   SELECT LNAME FROM EMPLOYEE WHERE SUPERSSN IN
(SELECT SSN FROM EMPLOYEE WHERE SUPERSSN = '888665555')
c)   SELECT LNAME FROM EMPLOYEE WHERE SALARY >= 10000 +
(SELECT MIN(SALARY) FROM EMPLOYEE)

7.8 – No solution provided.

7.9 – No solution provided.