Database Management System – cs422 DE

Lab 1 – Wk 3 & 4

This Lab is based on lecture 3 & 4 (chapters 6 & 7).

- Submit your *own work* on time. No credit will be given if the lab is submitted after the due date.
- Note that the completed lab should be submitted in .zip or .rar format only.
- If you think that your answer needs explanation to get credit then please write it down.

Solve the questions from 6.32 to 6.40 in the Case Study 2 on page no. 173 (5th edition).

You are required to run & test all these queries in SQL Server. Note that you'll need to create and populate the tables first.

To get full credit for this lab, you need to submit the following:
(1) Screenshots for at least 4 of the queries with output.
(2) Answer SQL queries for all of the mentioned exercises.

For your quick reference, the schema and the questions are given below.

Employee (**empID**, fName, lName, address, DOB, sex, position, deptNo)

Department (**deptNo**, deptName, mgrEmpID)

Project (**projNo**, projName, deptNo)

WorksOn (**empID**, **projNo**, hoursWorked)

where

- *Employee* contains employee details and *empID* is the key.
- *Department* contains department details and *deptNo* is the key. *mgrEmpID* identifies the employee who is the manager of the department. There is only one manager for each department.
- *Project* contains details of the projects in each department and the key is *projNo* (no two departments can run the same project).
- *WorksOn* contains details of the hours worked by employees on each project, and *empID/projNo* form the key.

Exercises

1. List all employees in alphabetical order of surname and within surname, first name.
   ANS: Select * from employee order by lname, fName

```
1 SELECT * FROM employee ORDER BY lname, fName
```

empID	fName	lName	address	DOB	sex	position	deptNo
1	John	Doe	123 Main St	1990-05-15	M	Manager	1
3	Alice	Johnson	789 Oak St	1988-07-10	F	Analyst	1
2	Jane	Smith	456 Elm St	1992-09-20	F	Engineer	2

2. List all the details of employees who are female.
   ANS: Select * from employee where sex='F'

```
1 SELECT * FROM employee WHERE sex='F'
```

empID	fName	lName	address	DOB	sex	position	deptNo
2	Jane	Smith	456 Elm St	1992-09-20	F	Engineer	2
3	Alice	Johnson	789 Oak St	1988-07-10	F	Analyst	1

3. List the names and addresses of all employees who are Managers.
   ANS: Select fName, lName, address from employee where position='Manager'

```
1 SELECT fName, lName, address FROM employee WHERE position='Manager'
```

fName	lName	address
John	Doe	123 Main St

4. Produce a list of the names and addresses of all employees who work for the IT department.
   ANS: Select fName, lName, address from employee e join Department d on e.deptNo=d.deptNo Where d.deptName='IT'

```
1 SELECT fName, lName, address FROM employee e JOIN Department d ON e.deptNo=d.deptNo WHERE d.deptName='IT'
```

fName	lName	address
Jane	Smith	456 Elm St

5. Produce a complete list of all managers who are due to retire this year, in alphabetical order of surname.
   ANS: Select * from employee where position='Manager' and year(getdate()) - year(DOB) >= 65 order by lName

6. Find out how many employees are managed by 'James Adams'.
   ANS: Select e1.* from employee e1 join Department d on e1.deptNo = d.deptNo join employee e2 on e2.deptNo = d.deptNo where CONCAT(e2.fName, ' ' ,e2.lName) = 'James Adams'

7. Produce a report of the total hours worked by each employee, arranged in order of department number and within department, alphabetically by employee surname.
   ANS: Select e.deptNo, e.lName, e.fName, sum(w.hoursWorked) totalHoursWorked from employee e join worksOn w on e.empID = w.empID group by e.fName, e.lName, e.deptNo order by e.deptNo, lName

8. For each project on which more than two employees worked, list the project number, project name and the number of employees who work on that project.
   ANS: Select p.projNo, projName, count(w.empID) numOfEmp from Project p join WorksOn w On p.projNo = w.projNo group by p.projNo, projName having count(w.empID) >=2

```sql
SELECT p.projNo, projName, COUNT(w.empID) numOfEmp FROM Project p JOIN WorksOn w ON p.projNo = w.projNo
GROUP BY p.projNo, projName
HAVING COUNT(w.empID) >=2
```

projNo	projName	numOfEmp
102	Software Development	2

9. List the total number of employees in each department for those departments with more than 10 employees. Create an appropriate heading for the columns of the results table.
   ANS: select d.deptName, count(e.empID) as numOfEmployee from employee e join Department d on e.deptNo = d.deptNo group by d.deptName having count(e.empID) >= 10