Khoi Duong

Prof. VB

CS457L

11/12/2022

HW#4A

Homework 4A - From 7-17 to the end of Chapter 7. Leave out Assertion and Trigger commands.

Rest all required with commands and output.

Q17

```
MariaDB [19610dm]> select distinct Essn from WORKS_ON where Pno in (1,2,3);
+-----------+
| Essn      |
+-----------+
| 123456789 |
| 453453453 |
| 333445555 |
| 666884444 |
+-----------+
4 rows in set (0.000 sec)
```

The query will select rows with Pno in the list (1,2,3) and only select distinct Essn values.

Q8A

```
MariaDB [19610dm]> select E.Lname as Employee_name, S.Lname as Supervisor_name
    -> from EMPLOYEE as E, EMPLOYEE as S where E.Super_ssn = S.Ssn;
+---------------+-----------------+
| Employee_name | Supervisor_name |
+---------------+-----------------+
| Smith         | Borg            |
| Smith         | Wong            |
| Wong          | Borg            |
| English       | Wong            |
| Narayan       | Wong            |
+---------------+-----------------+
5 rows in set (0.000 sec)
```

The query will select Lname of Employee and Supervisor of that Employee (with the condition E.Super_ssn = S.Ssn). The Lname of Employee is selected as Employee_name, and Lname of Supervisor is selected as Supervisor_name

Q1A

```
MariaDB [19610dm]> select Fname, Lname, Address
    -> from (EMPLOYEE join DEPARTMENT on Dno = Dnumber)
    -> where Dname = 'Research';
+----------+---------+-------------------------+
| Fname    | Lname   | Address                 |
+----------+---------+-------------------------+
| John     | Smith   | 731 Fondren, Houston, TX |
| Franklin | Wong    | 638 Voss, Houston, TX    |
| Joyce    | English | 5631 Rice, Houston, TX   |
| Ramesh   | Narayan | 975 Fire Oak, Humble, TX |
+----------+---------+-------------------------+
4 rows in set (0.000 sec)
```

The query will first join the two tables EMPLOYEE and DEPARTMENT having Dno equal to Dnumber. Then from the joining result, it will select Fname, Lname, and Address where the Dname value is ‘Research’

Q1B

```
MariaDB [19610dm]> select Fname, Lname, Address
    -> from (EMPLOYEE NATURAL JOIN DEPARTMENT)
    -> where Dname = 'Research';
+----------+---------+--------------------------+
| Fname    | Lname   | Address                  |
+----------+---------+--------------------------+
| Alicia   | Smith   | 235 Fire, Spring, TX     |
| John     | Smith   | 731 Fondren, Houston, TX |
| Franklin | Wong    | 638 Voss, Houston, TX    |
| Joyce    | English | 5631 Rice, Houston, TX   |
| Ramesh   | Narayan | 975 Fire Oak, Humble, TX |
| John     | Zelaya  | 3848 Limpert, Humble, TX |
| James    | Borg    | 450 Stone, Houston, TX   |
+----------+---------+--------------------------+
7 rows in set (0.000 sec)
```

First, the query will join EMPLOYEE and DEPARTMENT tables. Then, it will select Fname, Lname, and Address from the joining table where Dname value is ‘Research’

Q2A

```
MariaDB [19610dm]> select Pnumber, Dnum, Lname, Address, Bdate
    -> from ((PROJECT join DEPARTMENT on Dnum = Dnumber)
    -> join EMPLOYEE on Mgr_ssn = Ssn)
    -> where Plocation = 'Stafford';
Empty set (0.000 sec)
```

The query will join PROJECT and DEPARTMENT tables where Dnum = Dnumber, then continue to join with EMPLOYEE tables where Mgr_ssn = Ssn. Then, it will select Pnumber, Dnum, Lname, Address, and Bdate where Plocation value is ‘Stafford’

Q19

```
MariaDB [19610dm]> select sum(Salary), max(Salary), min(Salary), avg(Salary)
    -> from EMPLOYEE;
+-------------+-------------+-------------+--------------+
| sum(Salary) | max(Salary) | min(Salary) | avg(Salary)  |
+-------------+-------------+-------------+--------------+
|   280300.00 |    55000.00 |    27500.00 | 40042.857143 |
+-------------+-------------+-------------+--------------+
1 row in set (0.000 sec)
```

The query will select the sum, max, min, and average Salary values in the EMPLOYEE table.

Q19A

```
MariaDB [19610dm]> select sum(Salary) as Total_Sal, max(Salary) as Highest_Sal,
    -> min(Salary) as Lowest_Sal, avg(Salary) as Average_Sal
    -> from EMPLOYEE;
+-----------+-------------+------------+--------------+
| Total_Sal | Highest_Sal | Lowest_Sal | Average_Sal  |
+-----------+-------------+------------+--------------+
| 280300.00 |    55000.00 |   27500.00 | 40042.857143 |
+-----------+-------------+------------+--------------+
1 row in set (0.000 sec)
```

The query will do the same thing as Q19 but it will change the name of the selected value before showing the result.

Q20

```
MariaDB [19610dm]> select sum(Salary), max(Salary), min(Salary), avg(Salary)
    -> from (EMPLOYEE join DEPARTMENT on Dno = Dnumber)
    -> where Dname = 'Research';
+-------------+-------------+-------------+--------------+
| sum(Salary) | max(Salary) | min(Salary) | avg(Salary)  |
+-------------+-------------+-------------+--------------+
|   146300.00 |    44000.00 |    27500.00 | 36575.000000 |
+-------------+-------------+-------------+--------------+
1 row in set (0.000 sec)
```

The query will first join EMPLOYEE and DEPARTMENT where Dno = Dnumber, then calculate the sum, max, min, and the average of Salary based on the condition of Dname value ('Research')

Q21

```
MariaDB [19610dm]> select count(*) from EMPLOYEE;
+----------+
| count(*) |
+----------+
|        7 |
+----------+
1 row in set (0.000 sec)
```

The query retrieves the number of employees in the EMPLOYEE table.

Q22

```
MariaDB [19610dm]> select count(*) from EMPLOYEE, DEPARTMENT
    -> where Dno = Dnumber and Dname = 'Research';
+----------+
| count(*) |
+----------+
|        4 |
+----------+
1 row in set (0.000 sec)
```

The query retrieves the number of employees in the Research department.

Q24

```
MariaDB [19610dm]> select Dno, count(*), avg(Salary)
    -> from EMPLOYEE group by Dno;
+-----+----------+--------------+
| Dno | count(*) | avg(Salary)  |
+-----+----------+--------------+
|   1 |        1 | 55000.000000 |
|   4 |        2 | 39500.000000 |
|   5 |        4 | 36575.000000 |
+-----+----------+--------------+
3 rows in set (0.000 sec)
```

The query retrieves the Dno, the number of employees, and the average salary from the EMPLOYEE table that have the same value of Dno (GROUP BY)

Q25

```
MariaDB [19610dm]> select Pnumber, Pname, count(*)
    -> from PROJECT, WORKS_ON
    -> where Pnumber = Pno
    -> group by Pnumber, Pname;
+---------+-----------------+----------+
| Pnumber | Pname           | count(*) |
+---------+-----------------+----------+
|       1 | ProductX        |        2 |
|       2 | ProductY        |        3 |
|       3 | ProductZ        |        2 |
|      10 | Computerization |        3 |
|      20 | Reorganization  |        3 |
|      30 | Newbenefits     |        3 |
+---------+-----------------+----------+
6 rows in set (0.001 sec)
```

The query will select the amount of project in the PROJECT table that has the same Project number with the WORKS_ON table.

Q26

```
MariaDB [19610dm]> select Pnumber, Pname, count(*)
    -> from PROJECT, WORKS_ON where Pnumber = Pno
    -> group by Pnumber, Pname having count(*) > 2;
+---------+-----------------+----------+
| Pnumber | Pname           | count(*) |
+---------+-----------------+----------+
|       2 | ProductY        |        3 |
|      10 | Computerization |        3 |
|      20 | Reorganization  |        3 |
|      30 | Newbenefits     |        3 |
+---------+-----------------+----------+
4 rows in set (0.000 sec)
```

The query will do the same thing as Q25, but it only shows the results having the amount larger than 3.

Q28

```
MariaDB [19610dm]> select Dnumber, count(*)
    -> from DEPARTMENT, EMPLOYEE
    -> where Dnumber = Dno and Salary > 40000 and
    -> (select Dno from EMPLOYEE group by Dno having count(*)>5);
+---------+----------+
| Dnumber | count(*) |
+---------+----------+
|    NULL |        0 |
+---------+----------+
1 row in set (0.000 sec)
```

For each department that has more than 5 employees, retrieve the Department number and the number of its employees making more than $40000.

Q28' (alternate approach of Q28)

```
MariaDB [19610dm]> with BIGDEPTS(Dno) as
    -> (select Dno from EMPLOYEE group by Dno having count(*)>5)
    -> select Dno, count(*)
    -> from EMPLOYEE
    -> where Dno IN BIGDEPTS and Salary > 40000
    -> group by Dno;
```

```
+---------+----------+
| Dnumber | count(*) |
+---------+----------+
|    NULL |        0 |
+---------+----------+
1 row in set (0.000 sec)
```

U6'

```
MariaDB [19610dm]> update EMPLOYEE set Salary = case when Dno = 5 then Salary + 2000
when Dno = 4 then Salary + 1500 when Dno = 1 then Salary + 3000 else Salary + 0 end;
Query OK, 7 rows affected (0.002 sec)
Rows matched: 7  Changed: 7  Warnings: 0
```

Q29

```
MariaDB [19610dm]> with recursive SUP_EMP(SupSsn, EmpSsn) as (select Super_ssn, Ssn from EMPLOYEE UNION
select E.Ssn, S.SupSsn from EMPLOYEE as E, SUP_EMP as S where E.Super_ssn = S.EmpSsn) select * from SUP_
EMP;
+-----------+-----------+
| SupSsn    | EmpSsn    |
+-----------+-----------+
| 888665555 | 123123123 |
| 333445555 | 123456789 |
| 888665555 | 333445555 |
| 333445555 | 453453453 |
| 333445555 | 666884444 |
| 987654321 | 777883333 |
| NULL      | 888665555 |
| 123123123 | NULL      |
| 123456789 | 888665555 |
| 333445555 | NULL      |
| 453453453 | 888665555 |
| 666884444 | 888665555 |
| 123123123 | 666884444 |
| 123123123 | 453453453 |
| 123123123 | 123456789 |
+-----------+-----------+
15 rows in set (0.000 sec)
```

V1

```
MariaDB [19610dm]> create view WORKS_ON1
    -> as select Fname, Lname, Pname, Hours
    -> from EMPLOYEE, PROJECT, WORKS_ON
    -> where Ssn = Essn and Pno = Pnumber;
Query OK, 0 rows affected (0.004 sec)

MariaDB [19610dm]> select * from WORKS_ON1;
+----------+---------+-----------------+-------+
| Fname    | Lname   | Pname           | Hours |
+----------+---------+-----------------+-------+
| John     | Smith   | ProductX        |  32.5 |
| John     | Smith   | ProductY        |   7.5 |
| Franklin | Wong    | ProductY        |  10.0 |
| Franklin | Wong    | ProductZ        |  10.0 |
| Franklin | Wong    | Computerization |  10.0 |
| Franklin | Wong    | Reorganization  |  10.0 |
| Joyce    | English | ProductX        |  20.0 |
| Joyce    | English | ProductY        |  20.0 |
| Ramesh   | Narayan | ProductZ        |  40.0 |
| James    | Borg    | Reorganization  |  10.0 |
+----------+---------+-----------------+-------+
10 rows in set (0.001 sec)
```

V2

```
MariaDB [19610dm]> create view DEPT_INFO(Dept_name, No_of_emps, Total_sal) a
s select Dname, count(*), sum(Salary) from DEPARTMENT, EMPLOYEE where Dnumbe
r = Dno group by Dname;
Query OK, 0 rows affected (0.003 sec)

MariaDB [19610dm]> select * from DEPT_INFO;
+----------------+------------+-----------+
| Dept_name      | No_of_emps | Total_sal |
+----------------+------------+-----------+
| Administration |          2 |  88000.00 |
| Headquarters   |          1 |  64000.00 |
| Research       |          4 | 170300.00 |
+----------------+------------+-----------+
3 rows in set (0.001 sec)
```

QV1

```
MariaDB [19610dm]> select Fname, Lname from WORKS_ON1
    -> where Pname = 'ProductX';
+-------+---------+
| Fname | Lname   |
+-------+---------+
| John  | Smith   |
| Joyce | English |
+-------+---------+
2 rows in set (0.001 sec)
```

V1A

```
MariaDB [19610dm]> drop view WORKS_ON1;
Query OK, 0 rows affected (0.000 sec)
```

The queries UV1 and UV2 show potential problems when updating a view. Therefore, it is an error query and the result cannot be shown.