Assignment 6

Loading

```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| HR                 |
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
5 rows in set (0.04 sec)

mysql> create database HW6;
Query OK, 1 row affected (0.01 sec)

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| HR                 |
| HW6                |
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
6 rows in set (0.01 sec)

mysql> use HW6;
Database changed

mysql> show tables;
Empty set (0.00 sec)

mysql> source /Users/Home/Documents/Michael_Ghattas/School/DU/MS/
Class/2024/Winter/COMP_3421/Assessments/6/createEmpDeptManages.txt;
Query OK, 0 rows affected (0.00 sec)

Query OK, 0 rows affected, 1 warning (0.01 sec)
```

```
Query OK, 0 rows affected, 1 warning (0.00 sec)

Query OK, 0 rows affected, 1 warning (0.00 sec)

Query OK, 0 rows affected, 1 warning (0.00 sec)

Query OK, 0 rows affected (0.02 sec)

Query OK, 0 rows affected (0.00 sec)

Query OK, 0 rows affected (0.01 sec)

Query OK, 0 rows affected (0.01 sec)

Query OK, 10000 rows affected (0.09 sec)
Records: 10000  Deleted: 0  Skipped: 0  Warnings: 0

Query OK, 500 rows affected (0.00 sec)
Records: 500  Deleted: 0  Skipped: 0  Warnings: 0

Query OK, 500 rows affected (0.01 sec)
Records: 500  Deleted: 0  Skipped: 0  Warnings: 0

Query OK, 11319 rows affected, 2 warnings (0.17 sec)
Records: 11321  Deleted: 0  Skipped: 2  Warnings: 2

mysql> show tables;
+---------------+
| Tables_in_hw6 |
+---------------+
| Department    |
| Employee      |
| Manages       |
| WorksFor      |
+---------------+
4 rows in set (0.01 sec)

mysql> describe Department;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| did          | int         | NO   | PRI | NULL    |       |
| name         | varchar(20) | YES  |     | NULL    |       |
| floor        | int         | YES  |     | NULL    |       |
| supplyBudget | float       | YES  |     | NULL    |       |
| stateLocated | char(2)     | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
5 rows in set (0.01 sec)
```

```
mysql> describe Employee;
+----------------+-------------+------+-----+---------+-------+
| Field          | Type        | Null | Key | Default | Extra |
+----------------+-------------+------+-----+---------+-------+
| eid            | int         | NO   | PRI | NULL    |       |
| name           | varchar(20) | YES  |     | NULL    |       |
| age            | int         | YES  |     | NULL    |       |
| salary         | float       | YES  |     | NULL    |       |
| residenceState | char(2)     | YES  |     | NULL    |       |
| startDate      | date        | YES  |     | NULL    |       |
+----------------+-------------+------+-----+---------+-------+
6 rows in set (0.00 sec)

mysql> describe Manages;
+-----------------+------+------+-----+---------+-------+
| Field           | Type | Null | Key | Default | Extra |
+-----------------+------+------+-----+---------+-------+
| eid             | int  | NO   | PRI | NULL    |       |
| did             | int  | NO   | PRI | NULL    |       |
| managesStartDate | date | YES  |     | NULL    |       |
+-----------------+------+------+-----+---------+-------+
3 rows in set (0.00 sec)

mysql> describe WorksFor;
+-----------+------+------+-----+---------+-------+
| Field     | Type | Null | Key | Default | Extra |
+-----------+------+------+-----+---------+-------+
| eid       | int  | NO   | PRI | NULL    |       |
| did       | int  | NO   | PRI | NULL    |       |
| startDate | date | YES  |     | NULL    |       |
+-----------+------+------+-----+---------+-------+
3 rows in set (0.01 sec)

mysql> select count(*) from Employee;
+----------+
| count(*) |
+----------+
|    10000 |
+----------+
1 row in set (0.01 sec)

mysql> select count(*) from Department;
+----------+
| count(*) |
+----------+
|      500 |
+----------+
1 row in set (0.01 sec)
```

```
mysql> select count(*) from Manages;
+----------+
| count(*) |
+----------+
|      500 |
+----------+
1 row in set (0.00 sec)

mysql> select count(*) from WorksFor;
+----------+
| count(*) |
+----------+
|    11319 |
+----------+
1 row in set (0.00 sec)
```

Queries

Q1: Find all information about managers who are 25 years old or younger and live in California ('CA').

```
mysql> SELECT e.*
    -> FROM Employee e
    -> JOIN Manages m ON e.eid = m.eid
    -> WHERE e.age <= 25
    -> AND e.residenceState = 'CA';
+------+-----------+------+--------+----------------+------------+
| eid  | name      | age  | salary | residenceState | startDate  |
+------+-----------+------+--------+----------------+------------+
| 3172 | Sally3172 |   20 |  36475 | CA             | 2017-10-02 |
| 2937 | Sally2937 |   22 |  65000 | CA             | 2017-04-05 |
+------+-----------+------+--------+----------------+------------+
2 rows in set (0.00 sec)
```

Q2: Find the name, salary, age, and residence state of all 20- year-old or younger managers who live in Indiana ('IN').

```
mysql> SELECT e.name, e.salary, e.age, e.residenceState
    -> FROM Employee e
    -> JOIN Manages m ON e.eid = m.eid
    -> WHERE e.age <= 20
    -> AND e.residenceState = 'IN';
Empty set (0.00 sec)
```

Q3: Find the names and salary of 25-year-old employees who work for departments located on the fourth floor in Alaska ('AK').

```
mysql> SELECT e.name, e.salary
    -> FROM Employee e
    -> JOIN WorksFor w ON e.eid = w.eid
    -> JOIN Department d ON w.did = d.did
    -> WHERE e.age = 25
    -> AND d.floor = 4
    -> AND d.stateLocated = 'AK';
+-----------+--------+
| name      | salary |
+-----------+--------+
| Sally3122 |  21189 |
+-----------+--------+
1 row in set (0.00 sec)
```

Q4: Find the name, salary, and EID of 49-year-old employees who work for a department located in Alaska ('AK') but live in California ('CA').

```
mysql> SELECT e.name, e.salary, e.eid
    -> FROM Employee e
    -> JOIN WorksFor w ON e.eid = w.eid
    -> JOIN Department d ON w.did = d.did
    -> WHERE e.age = 49
    -> AND d.stateLocated = 'AK'
    -> AND e.residenceState = 'CA';
+-----------+--------+------+
| name      | salary | eid  |
+-----------+--------+------+
| Sally4280 |  69137 | 4280 |
+-----------+--------+------+
1 row in set (0.00 sec)
```

Q5: Find the total number of employees.

```
mysql> SELECT count(*)
    -> FROM Employee;
+----------+
| count(*) |
+----------+
|    10000 |
+----------+
1 row in set (0.01 sec)
```

Q6: Find the number of employees who are managers.

```
mysql> SELECT COUNT(DISTINCT eid)
    -> FROM Manages;
```

```
+--------------------+
| COUNT(DISTINCT eid) |
+--------------------+
|                485 |
+--------------------+
1 row in set (0.00 sec)
```

Q7: Find the number of employees who are not managers.

```
mysql> SELECT COUNT(*)
    -> FROM Employee
    -> WHERE eid NOT IN (SELECT eid FROM Manages);
+----------+
| COUNT(*) |
+----------+
|     9515 |
+----------+
1 row in set (0.02 sec)
```

Q8: Find the (eid, number) pair for employees who are managing two or more departments where "number" is the number of departments they are managing.

```
mysql> SELECT eid, COUNT(did) AS number
    -> FROM Manages
    -> GROUP BY eid
    -> HAVING COUNT(did) >= 2;
+------+--------+
| eid  | number |
+------+--------+
| 1085 |      2 |
| 1230 |      2 |
| 1822 |      2 |
| 2093 |      2 |
| 2447 |      2 |
| 5164 |      2 |
| 6244 |      2 |
| 6379 |      2 |
| 7025 |      2 |
| 7096 |      2 |
| 7283 |      2 |
| 7925 |      2 |
| 8601 |      2 |
| 9077 |      2 |
| 9226 |      2 |
+------+--------+
15 rows in set (0.00 sec)
```

Q9: Present the (name1, salary1, name2, salary2), where salary1 is the salary of the employee with name1 and salary2 corresponds with name2, of all employee pairs where both are living in California ('CA'), one is a 24-year-old manager, the other (who can be any age) is not a manager, and the manager earns more than three times the other employee.

```
SELECT e1.name AS name1, e1.salary AS salary1, e2.name AS name2,
e2.salary AS salary2
    -> FROM Employee e1
    -> JOIN Manages m ON e1.eid = m.eid
    -> JOIN Employee e2 ON e1.residenceState = e2.residenceState AND
e1.eid != e2.eid
    -> WHERE e1.age = 24
    -> AND e1.salary > 3 * e2.salary
    -> AND e1.residenceState = 'CA'
    -> AND e2.eid NOT IN (SELECT eid FROM Manages);
Empty set (0.01 sec)
```

Q10: For each department in Alaska ('AK') that has 25 or more employees working for it and a supply budget < $7,000, present the did, budget, and number of employees that work in that department.

```
mysql> SELECT d.did, d.supplyBudget, COUNT(*) AS num_employees
    -> FROM Department d
    -> JOIN WorksFor w ON d.did = w.did
    -> WHERE d.stateLocated = 'AK' AND d.supplyBudget < 7000
    -> GROUP BY d.did
    -> HAVING COUNT(*) >= 25;
```

did	supplyBudget	num_employees
42	6904	26
254	5436	28
365	5459	26

```
3 rows in set (0.01 sec)
```

Q11: For each state, present the salary of the average 20-year- old manager (i.e., average salary of mangers who are 20 years old) who lives in that state and the number of such managers. Note: Your results can omit states that do not have any 20-year- old managers living in them.

```
mysql> SELECT e.residenceState, AVG(e.salary) AS average_salary,
COUNT(*) AS number_of_managers
    -> FROM Employee e
    -> JOIN Manages m ON e.eid = m.eid
    -> WHERE e.age = 20
    -> GROUP BY e.residenceState;
```

```
+----------------+----------------+--------------------+
| residenceState | average_salary | number_of_managers |
+----------------+----------------+--------------------+
| MD             |          56635 |                  2 |
| AK             |          62004 |                  1 |
| IL             |        52069.5 |                  2 |
| CA             |          36475 |                  1 |
| HI             |          45921 |                  1 |
| ME             |          50546 |                  2 |
| CT             |          62845 |                  1 |
+----------------+----------------+--------------------+
7 rows in set (0.00 sec)
```

END.