CS 5/7330 Project Part 2 **Deuce Palmer**

From Part 1:

You are to ***design*** a database to keep track of building inspections required by the department of Faulty or Damaged Buildings (FODB). Implementation will be done in part 2.

Part 2 Requirements:

Complete the implementation of your design and populate your database with the provided data. Then, develop and execute queries to determine answers to the following questions. Instructor testing will be done after submitting Part 2 answers and database dump.

1. List all buildings (building#, address, type) that have not taken or passed a final (FNL, FN2, FN3) inspection.

```
SELECT builder_license, address, type
FROM Building
WHERE address NOT IN (SELECT address FROM Inspection WHERE type = 'FNL' OR
type = 'FN2' OR type = 'FN3');
```

```
mysql> SELECT builder_license, address, type
    -> FROM Building
    -> WHERE address NOT IN (SELECT address FROM Inspection WHERE type = 'FNL' OR type = 'FN2' OR type = 'FN3');
+----------------+-----------------------------------+-------------+
| builder_license | address                           | type        |
+----------------+-----------------------------------+-------------+
| 12345          | 100 Main St., Dallas, TX          | commerical  |
| 45678          | 100 Winding Wood, Carrollton, TX  | residential |
| 23456          | 101 Industrial Ave., Fort Worth, TX | commerical  |
| 23456          | 102 Industrial Ave., Fort Worth, TX | commerical  |
| 45678          | 102 Winding Wood, Carrollton, TX  | residential |
| 23456          | 103 Industrial Ave., Fort Worth, TX | commerical  |
| 23456          | 104 Industrial Ave., Fort Worth, TX | commerical  |
| 23456          | 105 Industrial Ave., Fort Worth, TX | commerical  |
| 12321          | 210 Cherry Bark Lane, Plano, TX   | residential |
| 12321          | 212 Cherry Bark Lane, Plano, TX   | residential |
| 12321          | 214 Cherry Bark Lane, Plano, TX   | residential |
| 12321          | 216 Cherry Bark Lane, Plano, TX   | residential |
| 12345          | 304 Oak St., Dallas, TX           | residential |
| 12345          | 306 Oak St., Dallas, TX           | residential |
| 12345          | 308 Oak St., Dallas, TX           | residential |
+----------------+-----------------------------------+-------------+
15 rows in set (0.02 sec)
```

2. List the id and name of inspectors who have given at least one failing score.

```
SELECT ID, name
FROM Inspector
WHERE ID IN (SELECT inspectorID FROM Inspection WHERE score < 75);
```

```
mysql> SELECT ID, name
    -> FROM Inspector
    -> where ID IN (SELECT inspectorID FROM Inspection WHERE score < 75);
+-----+-------------+
| ID  | name        |
+-----+-------------+
| 102 | Inspector-2 |
+-----+-------------+
1 row in set (0.01 sec)
```

3. What inspection type(s) have never been failed?

```
SELECT type
FROM Inspection_Type
WHERE type NOT IN (SELECT type FROM Inspection WHERE score < 75);
```

```
mysql> SELECT type
    -> FROM Inspection_Type
    -> WHERE type NOT IN (SELECT type FROM Inspection WHERE score < 75);
+------+
| type |
+------+
| ELE  |
| FN2  |
| FN3  |
| FNL  |
| FRM  |
| HAC  |
| HIS  |
| POL  |
| SAF  |
+------+
9 rows in set (0.00 sec)
```

4. What is the total cost of all inspections for builder 12345?

```
SELECT SUM(Inspection.cost) AS 'Total Cost'
FROM Inspection
JOIN Building ON Building.address = Inspection.address
WHERE Building.builder_license = '12345';
```

```
mysql> SELECT SUM(Inspection.cost) AS 'Total Cost'
    -> FROM Inspection
    -> JOIN Building ON Building.address = Inspection.address
    -> WHERE Building.builder_license = '12345';
+------------+
| Total Cost |
+------------+
|    1400.00 |
+------------+
1 row in set (0.01 sec)
```

5. What is the average score for all inspections performed by Inspector 102?

```
SELECT AVG(score) AS 'Average Score'
FROM Inspection
WHERE inspectorID = 102;
```

```
mysql> SELECT AVG(score) AS 'Average Score'
    -> FROM Inspection
    -> WHERE inspectorID = 102;
+---------------+
| Average Score |
+---------------+
|       80.5000 |
+---------------+
1 row in set (0.02 sec)
```

6. How much revenue did FODB receive for inspections during October?

```
SELECT SUM(Inspection.cost) AS 'Total Cost'
FROM Inspection
WHERE MONTH(Inspection.date) = '10';
```

```
mysql> SELECT SUM(Inspection.cost) AS 'Total Cost'
    -> FROM Inspection
    -> WHERE MONTH(Inspection.date) = '10';
+------------+
| Total Cost |
+------------+
|    1550.00 |
+------------+
1 row in set (0.01 sec)
```

7. How much revenue was generated this year by inspectors with more than 15 years seniority?

```
SELECT SUM(Inspection.cost) AS 'Total Cost'
FROM Inspection
JOIN Inspector ON Inspector.ID = Inspection.inspectorID
WHERE Inspector.hire_date NOT BETWEEN DATE_SUB(NOW(), INTERVAL 15 YEAR) AND
NOW();
```

```
mysql> SELECT SUM(Inspection.cost) AS 'Total Cost'
    -> FROM Inspection
    -> JOIN Inspector ON Inspector.ID = Inspection.inspectorID
    -> WHERE Inspector.hire_date NOT BETWEEN DATE_SUB(NOW(), INTERVAL 15 YEAR) AND NOW();
+------------+
| Total Cost |
+------------+
|    2600.00 |
+------------+
1 row in set (0.01 sec)
```

Implement these changes (in the order given) to your database.

8. Demonstrate the adding of a new 1600 sq ft residential building for builder #34567 located at 1420 Main St., Lewisville TX.

```
INSERT INTO Building VALUES ('1420 Main St., Lewisville TX', 'residential',
1600, NULL, '34567');
```

```
mysql> INSERT INTO Building VALUES ('1420 Main St., Lewisville TX', 'residential',
1600, NULL, '34567');
Query OK, 1 row affected (0.05 sec)
```

9. Demonstrate the adding of an inspection on the building you just added. This framing inspection occurred on 11/21/2022 by inspector 104, with a score of 50, and note of "work not finished."

```
INSERT INTO Inspection VALUES ('FRM', 50, '2022-11-21', '104', '1420 Main
St., Lewisville TX', 'work not finished.', NULL);
```

```
mysql> INSERT INTO Inspection VALUES ('FRM', 50, '2022-11-21', '104', '1420 Main St
., Lewisville TX', 'work not finished.', NULL);
Query OK, 1 row affected (0.13 sec)
```

10. Demonstrate adding of an inspection on the building you just added. This electrical inspection occurred on 11/22/2022 by inspector 104, with a score of 60, and note of "lights not completed."
Fails since its prerequisite of FRM was not passed

```
INSERT INTO Inspection VALUES ('ELE', 60, '2022-11-22', '104', '1420 Main
St., Lewisville TX', 'lights not completed.', NULL);
```

```
mysql> INSERT INTO Inspection VALUES ('ELE', 60, '2022-11-22', '104', '1420 Main St
., Lewisville TX', 'lights not completed.', NULL);
ERROR 1644 (45000): Cannot perform this inspection until its prerequisite inspectio
ns are passed
```

11. Demonstrate changing the message of the FRM inspection on 11/2/2022 by inspector #105 to "all work completed per checklist."

```
UPDATE Inspection
SET text = 'all work completed per checklist.'
WHERE inspectorID = '105' AND date = '2022-11-02';
```

```
mysql> UPDATE Inspection
    -> SET text = 'all work completed per checklist.'
    -> WHERE inspectorID = '105' AND date = '2022-11-02';
Query OK, 1 row affected (0.15 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

12. Demonstrate the adding of a POL inspection by inspector #103 on 11/28/2022 on the first building associated with builder 45678.
Fails since Inspector 103 has reached his/her 5 inspection limit for November of 2022

```
INSERT INTO Inspection VALUES ('POL', NULL, '2022-11-28', '103', '100
Winding Wood, Carrollton, TX', NULL, NULL);
```

```
mysql> INSERT INTO Inspection VALUES ('POL', NULL, '2022-11-28', '103', '100 Windin
g Wood, Carrollton, TX', NULL, NULL);
ERROR 1644 (45000): Cannot assign the inspection to this inspector. Inspector has r
eached monthly inspection limit
```

13. **GRADUATE**: Demonstrate changing the cost of an ELE inspection changed to $150 effective today, but the cost of prior inspections does not change.

```
UPDATE Inspection_Type
SET cost = 150
```

```
WHERE type = 'ELE';
mysql> UPDATE Inspection_Type
    -> SET cost = 150
    -> WHERE type = 'ELE';
Query OK, 1 row affected (0.34 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

As you can see, previous ELE inspections maintained their cost of $100

```
mysql> SELECT cost FROM Inspection WHERE type = 'ELE';
+--------+
| cost   |
+--------+
| 100.00 |
| 100.00 |
| 100.00 |
| 100.00 |
+--------+
4 rows in set (0.01 sec)
```

When adding a new ELE inspection, we can see it has the updated cost of $150

```
mysql> INSERT INTO Inspection VALUES ('ELE', 100, '2023-04-21', '105', '100 Industria
l Ave., Fort Worth, TX', 'Testing for Question #13', NULL);
Query OK, 1 row affected (0.02 sec)

mysql> SELECT cost FROM Inspection WHERE date = '2023-04-21';
+--------+
| cost   |
+--------+
| 150.00 |
+--------+
1 row in set (0.00 sec)

mysql> SELECT cost FROM Inspection WHERE type = 'ELE';
+--------+
| cost   |
+--------+
| 100.00 |
| 100.00 |
| 100.00 |
| 100.00 |
| 150.00 |
+--------+
5 rows in set (0.00 sec)
```

Leave your database in this state for instructor testing # of Inspection rows = 30

(END)