Spring 2016, CS122A, UC Irvine, Quiz 6, Prof. Chen Li

Quiz 6 Student ID:_____ Name:_____ Score (out of 7):_____

Consider the following relation: **Flights**(fno INT, distance INT, price REAL)

1. Write a SQL query to find the price and distance of the cheapest flight, not less than 100 dollars, for each distance with at least 2 such flights, sorted by distance, in the increasing order.

SELECT F.distance, min(F.price) as min_price
FROM Flights F
WHERE F.price >= 100
GROUP BY F.distance
HAVING COUNT(*) >= 2
ORDER BY F.distance ASC;

2. Given the below table, what is the result of your query from question 1.

fno	distance	price
1	500	40
2	500	50
3	500	50
4	200	200
5	50	150
6	50	150
7	40	250
8	40	350

distance	**min_price**
40	**250**
50	**150**

3. Write a SQL query to authorize a user called "Lilith" to delete records from a **Flights** table and also let her authorize other database users to delete records from the table as well.

GRANT DELETE ON Flights TO Lilith WITH GRANT OPTION;

4. Suppose that a user "Cedric" receives an authorization from, but not only from, the user "Lilith" to delete records from **Flights**. If the DELETE privilege is revoked only from Lilith, can Cedric continue to delete records from Flights? **(a) YES** (b) NO

5. Create a view of the Flights table, with those having a price more than 40 dollars and less than 200 dollars and not equal to 150 dollars. Include the flight number, origin, and destination.

```
CREATE VIEW FlightsView(fno,origin,destination) AS
SELECT fno,origin,destination
FROM Flights
WHERE price>40 AND price<200 AND price <>150
```

6. Suppose we have a table Dept(did, budget, empCount). We also have a view

```
CREATE VIEW BigDept(did, budget, empCount) AS
SELECT * FROM Dept where empCount > 100;
```

We want to make the view's content always consistent with the content of the base table. Write a row-level trigger to enforce this consistency for INSERT statements into the **Dept** table.

```
CREATE TRIGGER DeptInsert
AFTER INSERT ON Dept
FOR EACH ROW
BEGIN
    IF NEW.empCount > 100 THEN
        INSERT INTO BigDept
        VALUES (NEW.did, NEW.budget, NEW.empCount)
    END IF
END;
```

7. Consider a relational table R(A, B, C, D, E, F) with a set of functional dependencies: A->B, B->C, CD->E, and AD->F. Is AD a candidate key? Why?

Yes, since it determines R and all its attributes, ie, if a given value of AD could uniquely determine a record.

[Here is a possible derivation:
(i) From A->B and B->C, we have A->C (transitivity)
(ii) From A->C, we have AD->CD (augmentation)
(iii) From AD->CD and CD->E, we have AD->E (transitivity)
(iv) From AD->E and AD->F we have AD->EF (union)]