

## SQL Review Solutions

Name:

### SQL

1. Circle TRUE or FALSE.

- (a) **TRUE** False SQL is a declarative language that specifies what to produce but not how to compute it.

**Solution:** SQL is declarative programming language which specifies what the user wants to accomplish allowing the system to determine how to accomplish it.

- (b) **TRUE** False The primary key of a relation is the column or set of columns that determine the values of the remaining column.
- (c) True **FALSE** The schema of a table consists of the data stored in the table.

**Solution:** The schema of a table consists of the column names, their types, and any constraints on those columns. The instance of a database is the data stored in the database.

- (d) True **FALSE** The WHERE and HAVING clause can be used interchangeably as they perform the same operation.

**Solution:** The having clause is used to filter out groups, while the where clause operates on individual rows.

### Writing SQL Queries

Consider the following schema:

```
Clowns(cid int, cname text, booth text)
Balloons(bid int, bshape text, bcolor text)
Catalog(cid int, bid int, cost float)
```

Note: The Catalog table contains prices for Balloons sold by different Clowns standing at certain booths in a fair.

2. How may we query for the top 3 most expensive shapes sold by Whompers LeFou, ignoring the possibility that Whompers could be selling the same shape in different colors?

**Solution:**

```
SELECT bshape, cost
FROM Clowns, Balloons, Catalog
WHERE Clowns.cid=Catalog.cid
      AND Balloons.bid=Catalog.bid
      AND cname='Whompers LeFou'
ORDER BY cost DESC
LIMIT 3;
```

3. How may we query for the top 3 most expensive shapes sold by Whompers LeFou, taking into consideration the possibility that Whompers could be selling the same shape in different colors by using the highest-priced color of each shape?

**Solution:**

```
SELECT bshape, MAX(cost)
FROM Clowns, Balloons, Catalog
WHERE Clowns.cid=Catalog.cid
      AND Balloons.bid=Catalog.bid
      AND cname='Whompers LeFou'
GROUP BY bshape
ORDER BY cost DESC
LIMIT 3;
```

4. What is the average cost of a red balloon at booths that offer more than 3 red shapes per clown? Note that each clown at the booth does not necessarily have to be selling more than 3 shapes.

**Solution:**

```
SELECT booth, avg(cost)
FROM Clowns, Balloons, Catalog
WHERE Clowns.cid=Catalog.cid
      AND Balloons.cid=Catalog.cid
      AND bcolor='red'
GROUP BY booth
HAVING COUNT(DISTINCT bshape)/COUNT(DISTINCT Clowns.cid) > 3
```

You can play with a toy version of this schema at:

<https://tinyurl.com/ds100-clowns>

5. Consider the following real estate schema:

Homes(home\_id int, city text, bedrooms int, bathrooms int, area int)

Transactions(home\_id int, buyer\_id int, seller\_id int, transaction\_date date, sale\_price int)

Buyers(buyer\_id int, name text)

Sellers(seller\_id int, name text)

For the query language questions below, fill in the blanks in the answer to complete the query. For each SQL query and nested subquery, please start a new line when you reach a SQL keyword (SELECT, WHERE, AND, etc.). However, do not start a new line for aggregate functions (COUNT, SUM, etc.), and comparisons (LIKE, AS, IN, NOT IN, EXISTS, NOT EXISTS, ANY, or ALL.)

Fill in the blanks in the SQL query to find the duplicate-free set of id's of all homes in Berkeley with at least 6 bedrooms and at least 2 bathrooms that were bought by "Bobby Tables."

```

SELECT _____ DISTINCT H.home_id _____
FROM Homes H, Transactions T, Buyers B
WHERE _____ H.home_id=T.home_id _____
          _____
          AND T.buyer_id=B.buyer_id _____
          _____
          AND H.city="Berkeley" _____
          _____
          AND H.bedrooms>=6 _____
          _____
          AND H.bathrooms>=2 _____
          _____
          AND B.name='Bobby Tables'; _____

```