

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)

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'; _____
```