Practice Questions on Creating SQL Statements

Consider the following insurance database, where the primary keys are underlined.

person(sin, name, address)
car(license, year, model)
owns(sin, license)
accident(acc#, license, sin, date, city, damage)

Construct the following SQL queries for this relational database.

1. Find the total number of people whose cars were involved in accidents in 2002.

2. Count the number of accidents in which the person was driving a car belonging to them.

3. Add a new customer to the database.

4. Delete the car 'Mazda' belonging to 'John Smith'.

5. Add a new accident that happened in Vancouver on 02/12/31 and involved the Toyota belonging to and driven by "Jones". The accident id is 2222 and the damage is unknown.

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Answers

1. Find the total number of people whose cars were involved in accidents in 2002.

```
SELECT count(DISTINCT sin)
FROM accident, owns
WHERE accident.license = owns.license AND  date between 02/01/01 and 02/12/31
```

In this question, you cannot use the following query as an answer:

```
SELECT COUNT(DISTINCT sin)
FROM accident
WHERE date between 02/01/01 AND 02/12/31
```

The person who gets into the accident may not be the person who owns the car. For example, Linda owns two cars. Linda's two kids each drive one of her cars. In the accident table, the SIN attribute refers to the SIN of the driver who was in the accident, not the owner of the vehicle. If both of Linda's kids get into an accident, then we don't want to count them as two people since the owner of those two cars is the same person.

2. Count the number of accidents in which the person was driving a car belonging to them.

```
SELECT A.sin, count(DISTINCT acc#)
FROM accident A, owns O
WHERE A.license = O.license AND O.sin = A.sin
GROUP BY O.sin
```

3. Add a new customer to the database.

```
INSERT INTO person
VALUES ('123-456-789', 'Henry Thomas', '17 Maple St.')
```

4. Delete the car 'Mazda' belonging to 'John Smith'.

Since model is not a key of the car relation, we can either assume that only one of John Smith's cars is a Mazda, or delete all of John Smith's Mazdas (the query is the same). Again, assume *name* is a key for *person*.

```
DELETE car
WHERE model = 'Mazda' and license IN (
      SELECT license
      FROM person p, owns o
      WHERE p.name = 'John Smith' AND p.sin = o.sin
)
```

5. Add a new accident that happened in Vancouver on 02/12/31 and involved the Toyota belonging to and driven by "Jones". The accident id is 2222 and the damage is unknown.

We assume that 'Jones' only has one Toyota.

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```
INSERT INTO accident
    SELECT 2222, c.license, p.sin, 02/12/31, null
    FROM person p, owns o, car c
    WHERE p.name = 'Jones' AND p.sin = o.sin AND o.license = c.license AND c.model =
    'Toyota'
```