

Question 1:

a.

```
SELECT p.name, p.city
FROM PUBLISHER as p, DISTRIBUTE as d
WHERE p.name = d.pname
      AND d.pname IN (SELECT pname
                      FROM DISTRIBUTE
                      WHERE ISBN IN
                        (SELECT ISBN
                         FROM BOOK
                         WHERE Colour = 'Red')
                      AND
                      sname IN
                        (SELECT name
                         FROM SCHOOL
                         WHERE city != 'Calgary'));
```

b.

```
SELECT DISTINCT s.director FROM SCHOOL as s, DISTRIBUTE as d
WHERE d.sname = s.name AND d.sname IN(
  SELECT sname FROM DISTRIBUTE WHERE sname IN(
    SELECT name FROM SCHOOL WHERE city = 'Paris')
  and pname IN(
    SELECT name FROM PUBLISHER WHERE city = 'London'));
```

c.

```
SELECT DISTINCT d.sname FROM distribute AS d
WHERE exists(
    SELECT p.name FROM publisher AS p
    WHERE p.city = 'roma' AND d.pname = p.name AND EXISTS(
        SELECT * FROM distribute AS d2
        WHERE d2.pname = p.name AND d2.sname IN(
            SELECT s.name FROM school AS s
            WHERE s.city = 'toronto'))));
```

d.

```
SELECT b.title, sum(d.quantity)
from book as b, distribute as d
where b.isbn = d.isbn and NOT EXISTS(
    select s.name from school as s where s.city = 'calgary'
    and s.name NOT IN(
        select d2.sname from distribute as d2
        where d2.isbn = b.isbn and d2.sname IN(
            select name from school where city = 'calgary'))))
and b.isbn NOT IN(
    select d3.isbn from distribute as d3
    where d3.sname IN(
        select name from school where city <> 'calgary'))
GROUP BY b.title;
```

e.

```
select b.title, sum(d.quantity)
from book as b, distribute as d
where b.isbn= d.isbn
and NOT EXISTS(
    select s.name from school as s where s.city IN(
        select p.city from publisher as p
        where p.name = d.pname)
    AND s.name NOT IN(select sname from distribute where d.pname = pname and d.isbn = isbn))
AND d.sname in(
    select name from school where city IN(
        select city from publisher where name = d.pname))
GROUP BY b.title;
```

Question 2:

a.

```
select s.stno from street as s where
NOT EXISTS(
select * from street as s2 where s2.city-name IN(
    select c.city-name from city as c where c.country-name = 'Canada')
and s2.length > s.length and s2.city-name = s.city-name)
AND s.city-name IN(
    select city-name from city where country-name = 'Canada');
```

b.

```
select distinct h.owner-name from HOUSE as h
where NOT EXISTS(
    select city-name from city where country-name = 'Canada'
    and city-name NOT IN(
        select s.city-name from street as s
        where s.stno IN(select stno from house where h.owner-name = owner-
name)));
```

c.

```
select distinct h1.owner-name from house as h1
where EXISTS(
    select * from street where h1.stno = stno AND
        city-name IN(select city-name from city where country-name = 'USA')
    AND EXISTS(
        select owner-name, count(*)
        from HOUSE
        where owner-name = h1.owner-name
        AND stno IN(select stno from street where city-name IN(
            select city-name from city where country-name <> 'USA'))
    GROUP BY owner-name
    HAVING count(*) > 1));
```

d.

```
select name from country
where name IN(select country-name1 from border where country-name2 = 'Germany')
OR name IN(select country-name2 from border where country-name1 = 'Germany');
```

e.

```
select distinct h1.owner-name from house as h1
where NOT EXISTS(
    select c.name from country as c
        where (c.name IN(select country-name1 from border where country-name2 = 'Spain')
            OR c.name IN(select country-name2 from border where country-name1 =
'Spain'))
    and c.name NOT IN(
        select country-name from city where city-name IN(
            select city-name from street where stno IN(
                select stno from house where owner-name = h1.owner-name))));
```