

## Database Systems

### CmpE 226 Extra Assignment – Key Answers Spring 2003

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#### Part 1:

Assume the following three relations:

***Vendors(vid, vname, vcity)***

Where *vid* is the identifier of a vendor (primary key), *vname* is the vendor's name, and *vcity* is the vendor's city.

***Devices(did, speed, ram, hd, type)***

Where *did* is the device identifier (primary key), *speed* is the speed of the processor in the device, *hd* is the size of the hard disk in the device, *type* is the device's type, i.e. computer, printer, ...

***Inventory(vid, did, cost)***

Inventory specify which vendor makes which devices at which cost (vid and did are primary key)

Write the following queries n SQL:

1. List the vendor name for vendors located in San Jose.

```
SELECT vname
FROM Vendors
WHERE vcity = "San Jose"
```

2. List all devices supplied by "YourStore" and not supplied by "CircuitCity" where "YourStore" and "CircuitCity" are vendors' names.

```
SELECT did
FROM Vendors, Inventory
WHERE Vendors.vid = Inventory.vid and vname = "YourStore"
      and did NOT IN (SELECT vid
                      FROM Vendors, Inventory
                      WHERE Vendors.vid = Inventory.vid and vname = "CircuitCity")
```

3. Find the device with the cheapest price for vendor "CircuitCity"

```
SELECT did
FROM Vendors, Devices, Inventory
WHERE Vendors.vid = Inventory.vid and Inventory.did = Devices.did
      and vname = "CircuitCity"
      and cost = (SELECT min (cost)
                  FROM Vendors, Devices, Inventory
                  WHERE Vendors.vid = Inventory.vid and Inventory.did = Devices.did and
                        vname = "CircuitCity")
```

OR

```
CREATE VIEW sup-cost AS
SELECT vname, did, cost
FROM Vendors, Devices, Inventory
WHERE Vendors.vid = Inventory.vid and Inventory.did = Devices.did
```

```
SELECT did
FROM sup-cost
WHERE vname = "CircuitCity"
      and SELECT min (cost)
      FROM sup-cost
      WHERE vname = "CircuitCity")
```

4. List the vendor name for vendors who supply all the hard disk sizes that vendor "YourStore" Supplies.

```
SELECT vname
FROM Vendors as V
WHERE NOT EXISTS
  (SELECT hd
   FROM Vendors, Devices, Inventory
   WHERE Vendors.vid = Inventory.vid and Inventory.did = Devices.did
   and vname = "YourStore"
   and hd NOT IN (SELECT hd
                  FROM Vendors, Devices, Inventory
                  WHERE Vendors.vid = Inventory.vid and
                  Inventory.did = Devices.did and Vendors.vid = V.vid))
```

5. List the vendor name for vendors who supply none of the hard disk sizes that vendor "YourStore" Supplies.

```
SELECT vname
FROM Vendors as V
WHERE NOT EXIST
  (SELECT hd
   FROM Vendors, Devices, Inventory
   WHERE Vendors.vid = Inventory.vid and Inventory.did = Devices.did
   and vname = "YourStore"
   and hd IN (SELECT hd
              FROM Vendors, Devices, Inventory
              WHERE Vendors.vid = Inventory.vid and
              Inventory.did = Devices.did and Vendors.vid = V.vid))
```

OR

```
SELECT vname
FROM Vendors
WHERE vname NOT IN
  (SELECT Vendors.vname
   FROM Vendors as V, Devices as D, Inventory as I
```

```
WHERE Vendors.vid = Inventory.vid and Inventory.did = Devices.did
and V.vid = I.vid and I.did = D.did
and V.vname = "YourStore"
and Devices.hd = D.hd)
```

OR

```
CREATE VIEW vendors-disk AS
SELECT vname, hd
FROM Vendors, Devices, Inventory
WHERE Vendors.vid = Inventory.vid and Inventory.did = Devices.did
```

```
SELECT vname
FROM vendors-disk
WHERE vname NOT IN (SELECT vendors-disk.vname
                    FROM vendors-disk AS VD
                    WHERE vendors-disk.hd = VD.hd and
                    VD.name = "YourStore")
```

OR

```
SELECT vname
FROM Vendors as V
WHERE NOT EXISTS
  (SELECT hd
   FROM Vendors, Devices, Inventory
   WHERE Vendors.vid = Inventory.vid and Inventory.did = Devices.did
   and vname = "YourStore")
INTERSECT
(SELECT hd
 FROM Vendors, Devices, Inventory
 WHERE Vendors.vid = Inventory.vid and
       Inventory.did = Devices.did and Vendors.vid = V.vid))
```

## Part 2:

Using the given spatiotemporal input relations, express the following queries in SQL:

### 1. Relations:

Snow: which describes the snow cover on the top of the mountain  
Rock: which describes a rocky area on its side.

Query (a) -- What part of the rock will be free from snow at time 10?

**Rock (x, y, time)**

**Snow (x, y, time)**

**select x, y from Rock where time=10 and x, y not in (select x, y from Snow)**