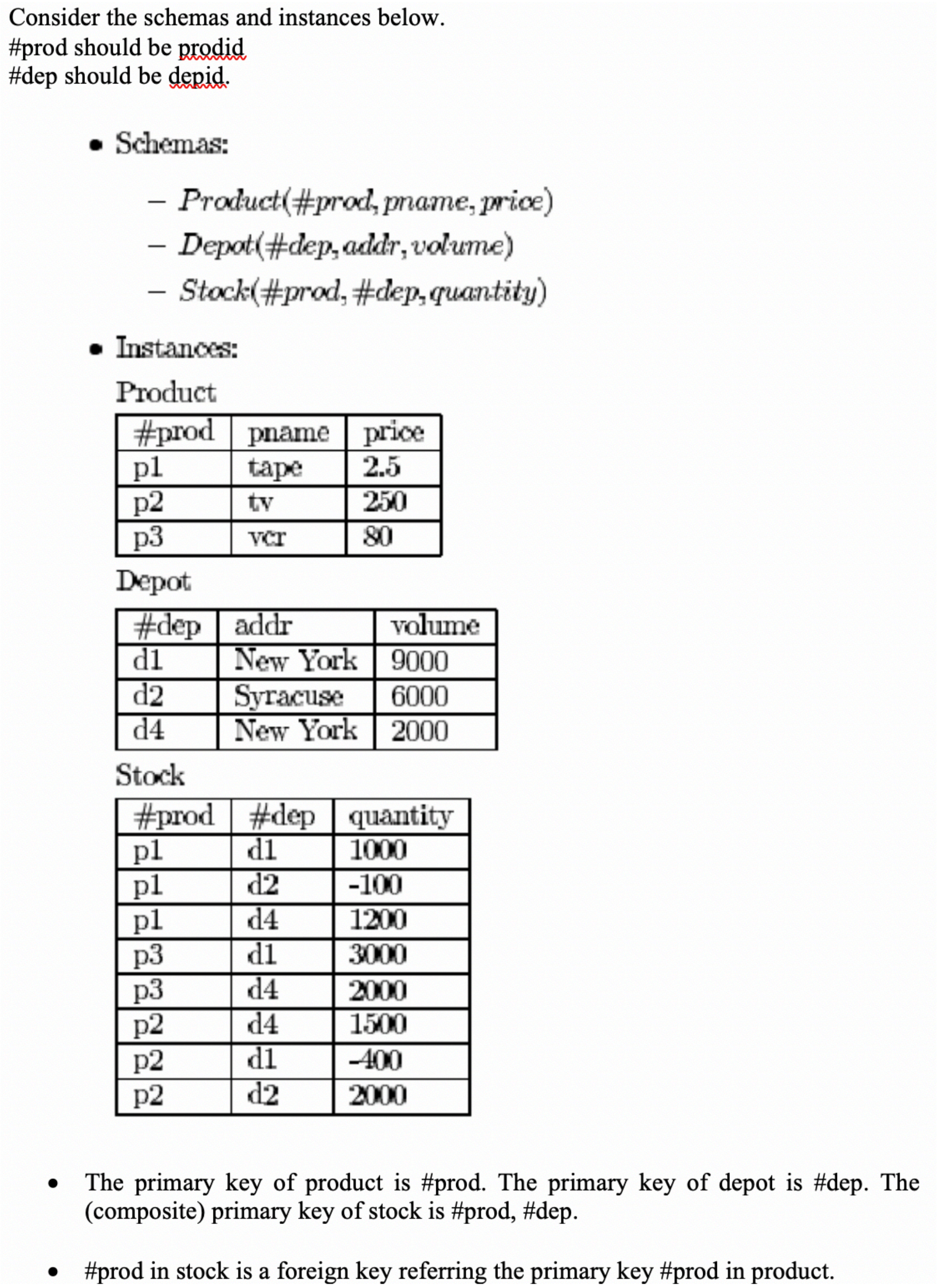
Homework #5: Michael McGinnis



Consider the schemas and instances below.
#prod should be prodid
#dep should be depid.

- Schemas:
  - *Product(#prod, pname, price)*
  - *Depot(#dep, addr, volume)*
  - *Stock(#prod, #dep, quantity)*
- Instances:

Product

#prod	pname	price
p1	tape	2.5
p2	tv	250
p3	vcr	80

Depot

#dep	addr	volume
d1	New York	9000
d2	Syracuse	6000
d4	New York	2000

Stock

#prod	#dep	quantity
p1	d1	1000
p1	d2	-100
p1	d4	1200
p3	d1	3000
p3	d4	2000
p2	d4	1500
p2	d1	-400
p2	d2	2000

- The primary key of product is #prod. The primary key of depot is #dep. The (composite) primary key of stock is #prod, #dep.
- #prod in stock is a foreign key referring the primary key #prod in product.

Using the schema from homework #3 as a reference.

SQL - product, depot, stock

Write the following queries in SQL.

1. What are the #prods whose name begins with a 'p' and are less than $300.00?
2. Names of the products stocked in "d2".
   (a) without in/not in
   (b) with in/not in
3. #prod and names of the products that are out of stock.
   (a) without in/not in
   (b) with in/not in
4. Addresses of the depots where the product "p1" is stocked.
   (a) without exists/not exists and without in/not in
   (b) with in/not in
   (c) with exists/not exists
5. #prods whose price is between $250.00 and $400.00.
   (a) using intersect.
   (b) without intersect.
6. How many products are out of stock?
7. Average of the prices of the products stocked in the "d2" depot.
8. #deps of the depot(s) with the largest capacity (volume).
9. Sum of the stocked quantity of each product.
10. Products names stocked in at least 3 depots.
    (a) using count
    (b) without using count
11. #prod stocked in all depots.
    (a) using count
    (b) using exists/not exists

(Personal note: Remember #prod = prodid & #dep = depid)

(All syntax commands will be in green to use as a study tool and for ease of reading)

1) What are the #prods whose name begins with a ’p’ and are less than $300.00?

```
SELECT prodid FROM product WHERE pname LIKE ‘p%’ AND price < 300;
```

2) Names of the products stocked in ”d2”.

(a) without in/not in & (b) with in/not in

```
SELECT stock.depid, product.pname FROM stock, product WHERE stock.prodid =
product.prodid AND stock.depid = ‘d2’;
```

(b)

```
SELECT stock.depid, product.pname FROM stock, product WHERE stock.prodid =
product.prodid AND stock.depid IN (‘d2’);
```

3) #prod and names of the products that are out of stock.

(a) without in/not in (b) with in/not in

```
SELECT product.pname, product.prodid FROM product, stock WHERE product.prodid =
stock.prodid AND stock.quantity = 0;
```

(b)

```
SELECT product.pname, product.prodid FROM product, stock WHERE product.prodid =
stock.prodid AND stock.quantity IN (SELECT quantity FROM stock WHERE quantity = 0);
```

4) Addresses of the depots where the product ”p1” is stocked.

(a) without exists/not exists and without in/not in

```
SELECT depot.addr FROM depot, stock WHERE depot.depid = stock.depid AND
stock.prodid = ‘p1’ AND stock.quantity > 0;
```

(b) with in/not in

```
SELECT depot.addr FROM depot, stock WHERE depot.depid = stock.depid AND
stock.prodid IN (‘p1’) AND stock.quantity IN (SELECT quantity FROM stock WHERE
quantity > 0);
```

(c) with exists/not exists I am not sure how to finish this. This is a little confusing.

```
SELECT depot.addr FROM depot, stock WHERE EXISTS(SELECT stock.prodid FROM
depot WHERE xxxxx ???
```

5) #prods whose price is between $250.00 and $400.00.

(a) using intersect

```
SELECT prodid FROM product WHERE price >= 250 INTERSECT (SELECT prodid
FROM product WHERE price <= 400);
```

(b) without intersect.

```
SELECT prodid FROM product WHERE price BETWEEN 250 AND 400;
```

6) How many products are out of stock?

```
SELECT COUNT(prodid) FROM stock WHERE quantity = 0;
```

7) Average of the prices of the products stocked in the ”d2” depot.

```
SELECT AVG(product.price) FROM product, stock WHERE product.prodid = stock.prodid
AND stock.depid = ‘d2’;
```

8) #deps of the depot(s) with the largest capacity (volume).

```
SELECT depid FROM depot WHERE volume IN (SELECT MAX(volume) FROM depot);
```

9) Sum of the stocked quantity of each product.

```
SELECT prodid, SUM (quantity) AS totaleach FROM stock GROUP BY prodid;
```

10) Products names stocked in at least 3 depots.

(a) using count

```
SELECT product.pname COUNT(stock.depid) FROM product, stock WHERE
product.prodid = stock.prodid GROUP BY product.pname HAVING COUNT(depid) >= 3;
```

(b) without using count

```
SELECT product.pname FROM (SELECT prodid, SUM(1) AS depid FROM stock GROUP
BY prodid) p1, product p2 WHERE p1.prodid = p2.prodid AND p1.depid >= 3;
```

11) #prod stocked in all depots.

(a) using count

```
SELECT COUNT(depid), prodid FROM stock GROUP BY prodid HAVING
COUNT(depid) = 3;
```

(b) using exists/not exists

```
SELECT product.prodid FROM product p WHERE NOT EXISTS(SELECT depid FROM
stock.depid EXCEPT SELECT depid FROM stock WHERE prodid = prodid);
```