

CSE 344 Section 10

1. You're given the following relations and grocery store stats:

Safeway(id, name, category, price)

$T=1000$, $V(\text{name})=900$, $V(\text{category})=10$, $V(\text{price})=200$, $\text{Range}(\text{price}) = [1,50]$

QFC(id, name, category, price)

$T=2000$, $V(\text{name})=1900$, $V(\text{category})=12$, $V(\text{price})=500$

Estimate the cardinality for the following queries:

- Select * from Safeway where id = 45

1 tuple

- Select * from Safeway where name = 'Milk'

10/9 tuples

- Select * from Safeway where price < 20

$(20-1)/(50-1) * 1000$ tuples

- Select * from Safeway S, Qfc Q where S.id = Q.id

1000 tuples

- Select * from Safeway S, Qfc Q where S.name = Q.name

$(1000*2000)/\max\{900,1900\}$ tuples

Suppose that we store all the data for our social network in a single dataset of Users:

```
[ {"handle": "biebs",
  "name": "Justin Bieber",
  "home_city": "Somewhere, Canada",
  "bio": "...",
  "friends": ["kimkardashian", "shaq", ...],
  "messages": [
    {"text": ":-* :-* :-* :-*", "from_city": "Los Angeles, CA"},
    {"text": "New. Music. Friday.", "from_city": "Los Angeles, CA"},
    ...]
}, ...]
```

1. For each home city, compute a list of users from that home city. Your query should return a list where each element consists of a home city name and a list of user handles.

```
SELECT DISTINCT x.home_city AS homeCity,
  (SELECT y.handle
   FROM Users y
   WHERE y.home_city = x.home_city ) AS userHandleList
FROM Users x;
```

2. Return pairs of users that have at least one common friend.

```
SELECT DISTINCT x.handle, y.handle
  FROM Users x, x.friends xf, Users y, y.friends yf
 WHERE x.handle < y.handle AND xf = yf;
```

We use '<' operator to remove duplicate pairs – (a,b) and (b,a)