

# Problem solving in SQL

Request: description of required information from database.

Pre-req: know your schema

Look for keywords in request to identify required data :

- tell me the names of all students...
- how many students failed ...
- what is the highest mark in ...
- which courses are ... (course codes?)

# Problem solving in SQL

Developing SQL queries ...

- relate required data to attributes in schema
- identify which tables contain these attributes
- combine data from relevant tables (FROM, join)
- specify conditions to select relevant data (WHERE)
- [optional] define grouping attributes (GROUP BY)
- develop expressions to compute output values (SELECT)

# Exercises ...

Consider a database about suppliers and parts with the following schema:

```
Supplier(sid, sname, address)
```

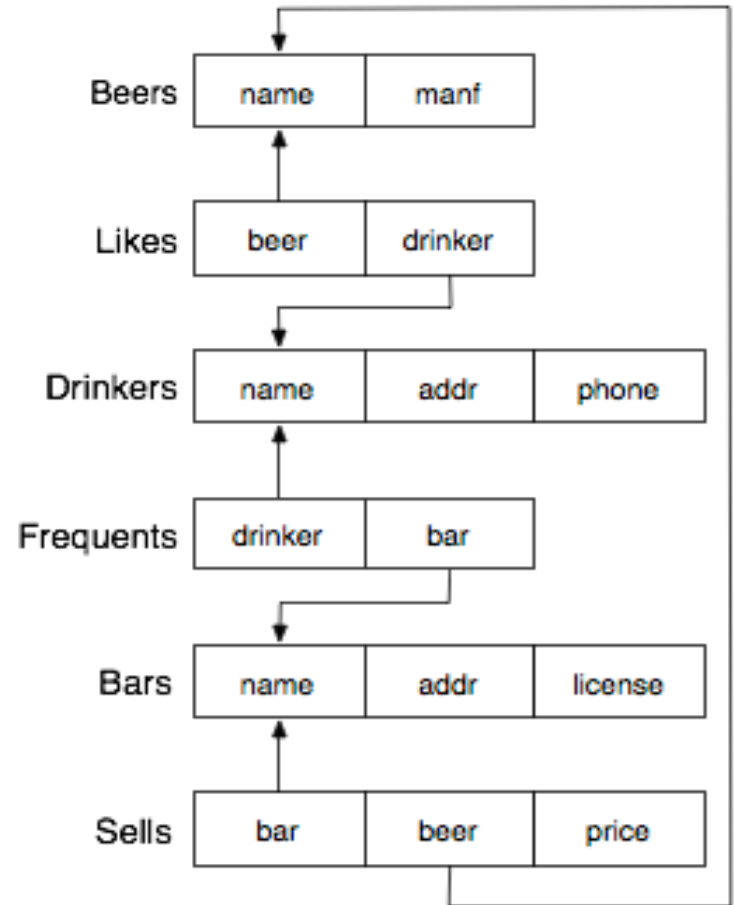
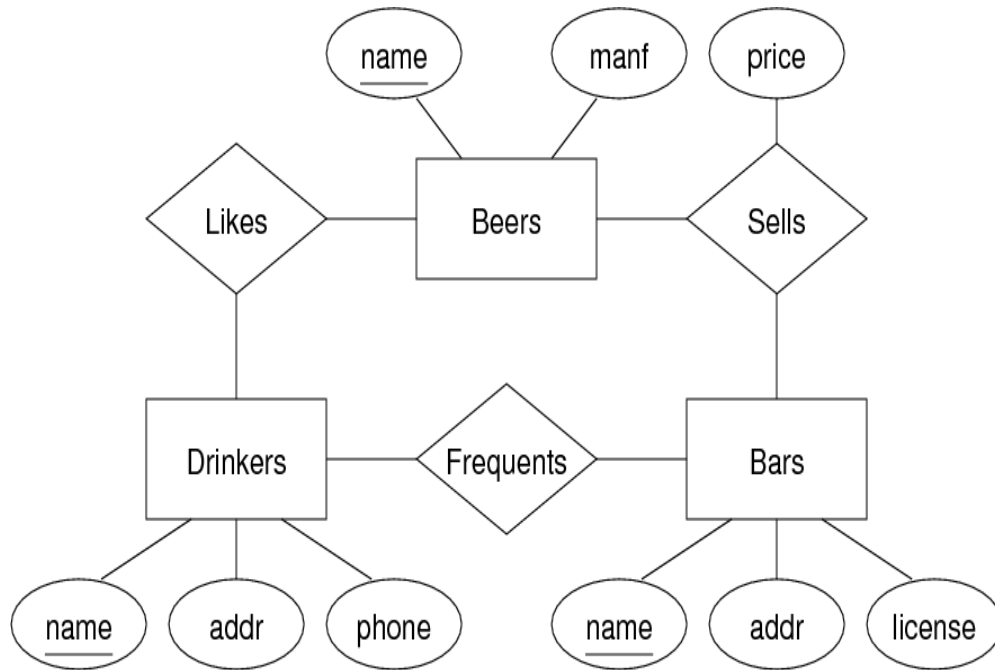
```
Part(pid, pname, colour)
```

```
Catalog(sid, pid, cost)
```

Formulate the following queries in SQL:

- 1) Find the names of suppliers who supply some red part.
- 2) Find the IDs of suppliers who supply some red or green part
- 3) Find the IDs of suppliers who supply some red part and are based at 21 George Street
- 4) Find pairs of IDs such that for some part the supplier with the first ID charges more than the supplier with the second ID.
- 5) For each supplier, return the maximal and the average cost of the parts they offer.
- 6) List those red parts that cost no more than the average cost of all parts
- 7) List the names of those red parts that are offered by at least three suppliers.
- 8) Suppliers that supply *only* red parts
- 9) Suppliers that supply *all* red parts

# Problem solving on Beer Database



# Setting up Beer DB

Assuming that you are in VLAB (i.e., your CSE account) or using a terminal on CSE server:

```
% wget http://www.cse.unsw.edu.au/~cs9311/22T3/lecs/beer.zip
```

```
% unzip beer.zip          -- you will get schema.sql, data.sql
```

```
% ssh nw-syd-vxdb
```

Then, start the server, then do the following:

```
% createdb beer
```

```
% psql beer
```

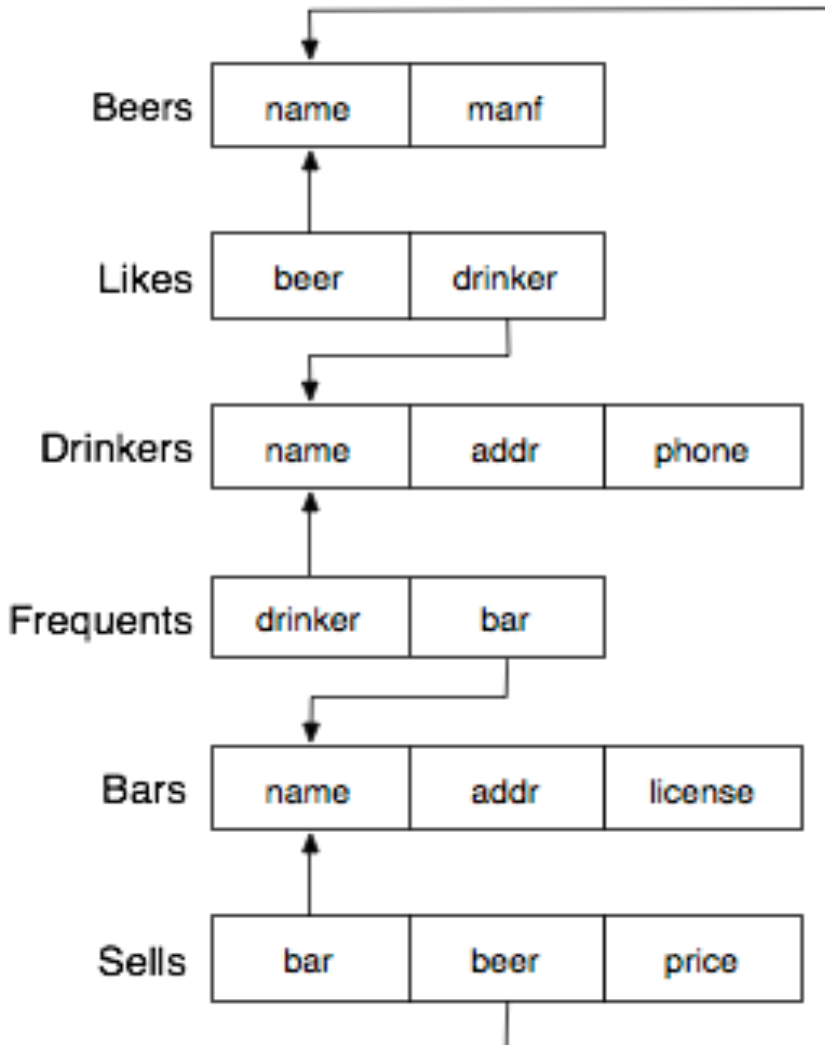
```
beer=# \i schema.sql      -- this creates the tables
```

```
beer=# \i data.sql        -- this inserts tuples
```

```
beer=# \d                 -- this displays the table names in DB
```

NOTE: If you are not comfortable with doing the above steps, you really should be seeking help from your tutors ...

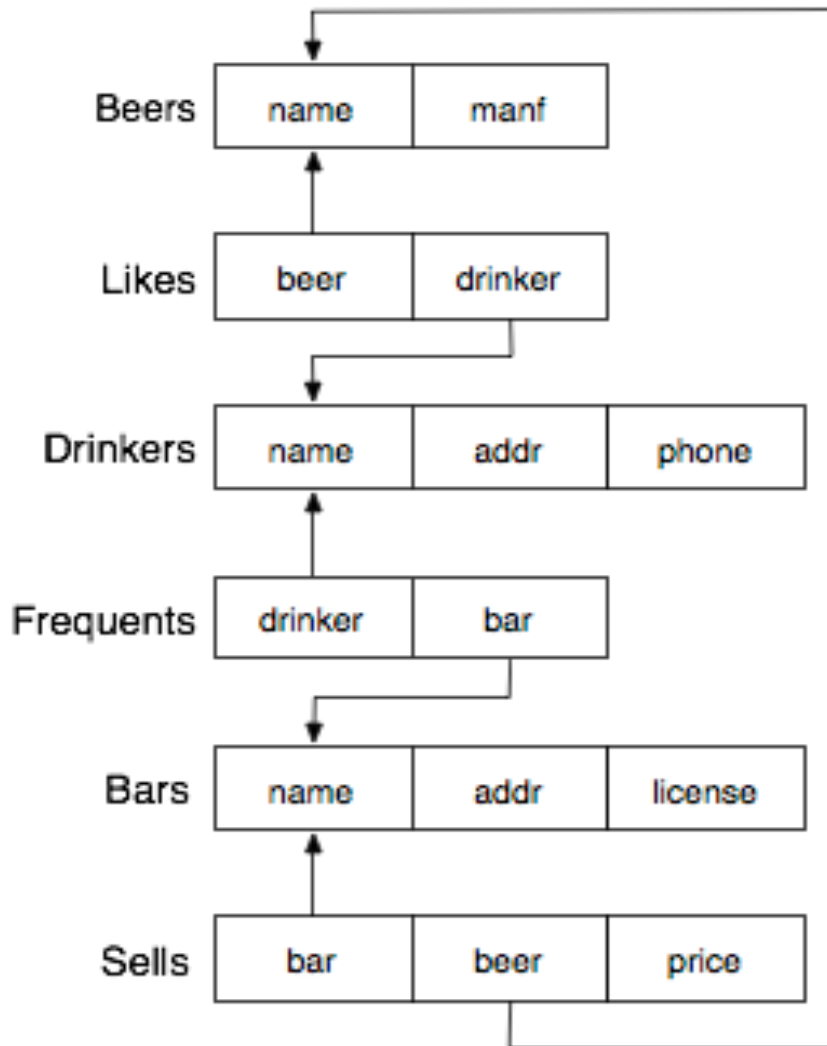
# Problem solving on Beer Database



Answer these queries on the Beer database:

- 1) What beers are made by Toohey's?
- 2) Show beers with headings "Beer", "Brewer".
- 3) Find the brewers whose beers John likes.
- 4) Find pairs of beers by the same manufacturer.
- 5) Find beers that are the only one by their brewer.
- 6) Find the beers sold at bars where John drinks.
- 7) How many different beers are there?
- 8) How many different brewers are there?

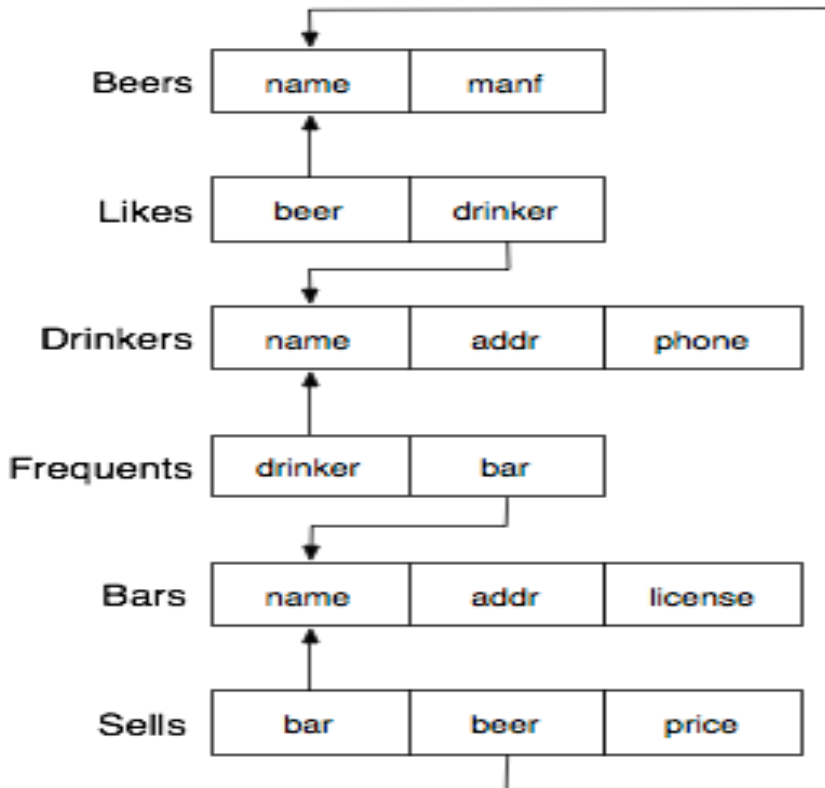
# Problem solving on Beer Database



Answer these queries on the Beer database:

- 9) How many beers does each brewer make?
- 10) Which brewer makes the most beers?
- 11) Bars where either Gernot or John drink.
- 12) Bars where both Gernot and John drink.
- 13) Find bars that serve New at the same price as the Coogee Bay Hotel charges for VB.
- 14) Find the average price of common beers (i.e. served in more than two hotels).
- 15) Which bar sells 'New' cheapest?

# Problem solving on Beer Database



Answer these queries on the Beer database:

- 16) Which bar is most popular? (Most drinkers)
- 17) Which bar is most expensive? (Highest average price)
- 18) Which beers are sold at all bars?
- 19) Price of cheapest beer at each bar?
- 20) Name of cheapest beer at each bar?
- 21) How many drinkers are in each suburb?
- 22) How many bars in suburbs where drinkers live? (Must include suburbs with no bars)