

Section 4 Worksheet

Part 1: Interpreting SQL and Relational Data

A. (Midterm 12AU)

Clinic(cid, name, street, state)

Equipment(eid, type, model)

Assignment(cid, eid)

Find the count of clinics that do not have a fridge (of model 1004) assigned to it.

B. (Midterm 15AU)

Item(oid, category, price)

Gift(pid, rid, oid) -- pid gifts oid to rid

```
SELECT O1.category, max(abs(O1.price - O2.price))
  FROM Gift AS G1, Gift AS G2, Item AS O1, Item AS O2
 WHERE G1.pid = G2.rid AND
       G2.pid = G1.rid AND
       O1.oid = G1.oid AND
       O2.oid = G2.oid AND
       O1.category = O2.category
 GROUP BY O1.category
 HAVING count(*) > 5;
```

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Part 2. Datalog Practice

Consider a graph of colored vertices and undirected edges where the vertices can be red, green, blue. In particular, you have the relations

Vertex(x, color)

Edge(x, y)

The Edge relation is symmetric in that if (x, y) is in Edge, then (y, x) is in Edge.

Your goal is to write a datalog program to answer each of the following questions.

1. Find all green vertices.
2. Find all pairs of blue vertices connected by one edge.
3. Find all triangles where all the vertices are the same color. Output the three vertices and their color.
4. Find all vertices that don't have any neighbors.
5. Find all vertices such that they only have red neighbors.
6. Find all vertices such that they only have neighbors with the same color. Return the vertex and color.
7. For some vertex v , find all vertexes connected to v by blue vertexes (this one requires recursion).