

198:336 Spring 2005
Homework Two
Due at the Start of Class/Recitation
Wednesday, March 9

This homework is just to do exercises 5.2 and 5.4 from the textbook: Ramakrishnan and Gehrke. In the third edition, the problems can be found on pages 175–177. This just repeats the problem statement, for those of you who may not have been able to get the up-to-date edition of the book.

For those of you interested in testing out the queries—and that should be most of you—the schemas and data have been uploaded to the department Oracle server. Instructions for accessing Oracle are available on the course web site.

If you have another database platform you prefer to use, detailed instructions for setting up these schemas and data are available through the book’s webpage at

<http://www.cs.wisc.edu/~dbbook>

Problem 5.2

Consider the following schema:

```
suppliers(sid: integer, sname: string, address: string)
parts(pid: integer, pname: string, color: string)
catalog(sid: integer, pid: integer, cost: real)
```

The catalog relation lists the prices charged for parts by suppliers. These relations are available on our Oracle server as `mdstone.suppliers`, `mdstone.parts` and `mdstone.catalog`.

Write the following queries in SQL:

1. Find the *pname* of parts for which there is some supplier.
2. Find the *sname*s of suppliers who supply every part.
3. Find the *sname*s of suppliers who supply every red part.
4. Find the *pnames* of parts supplied by Acme Widget Suppliers and no one else.
5. Find the *sids* of suppliers who charge more for some part than the average cost of that part.
6. For each part, find the *sname* of the supplier who charges the most for that part.
7. Find the *sids* of suppliers who supply only red parts.
8. Find the *sids* of suppliers who supply a red part and a green part.
9. Find the *sids* of suppliers who supply a red part or a green part.

10. For every supplier that only supplies green parts print the name of the supplier and the total number of parts that she supplies.
11. For every supplier that supplies a green part and a red part, print the name and price of the most expensive part that she supplies.

Problem 5.4

Consider the following relational schema. An employee can work in more than one department; the *pct_time* field of the works relation shows the percentage of time that a given employee works in a given department.

```
emp(eid: integer, ename: string, age: integer, salary: real)
dept(did: integer, budget: real, managerid: integer)
works(eid: integer, did: integer, pct_time: integer)
```

These relations are visible on Oracle as mdstone.emp, mdstone.dept and mdstone.works.

Write the following queries in SQL:

1. Print the names and ages of each employee who works in both the Hardware department and the Software department.
2. For each department with more than 20 full-time equivalent employees print the *did* together with the number of employees that work in that department.
3. Print the name of each employee whose salary exceeds the budget of all of the departments that he or she works in.
4. Find the *managerids* of managers who manage only departments with budgets greater than \$1 million.
5. Find the *enames* of managers who manage the departments with the largest budgets.
6. If a manager manages more than one department, he or she *controls* the sum of all the budgets for those departments. Find the *managerids* of managers who control more than \$5 million.
7. Find the *managerids* of managers who control the largest amounts.
8. Find the *enames* of managers who manage only departments with budgets larger than \$1 million, but at least one dept with budget less than \$5 million.