For this assignment, please begin by signing up for an Oracle account, which should be accessible from eniac. (For those who do not have eniac accounts, please email the instructor.) Then read over the Oracle setup instructions from the course web page and modify your eniac .cshrc file as directed. Also read over the Oracle guide referenced from the course web pages. Finally, download hw2.sql to your eniac account, launch Oracle (using the command sql), and then start hw2 to create some sample tables for Problems 1 and 2. These will only be sparsely populated — to test your solutions, you may need to INSERT more VALUES into the tables.

Reminder: the SQL string datatype is VARCHAR(length), and you’ll need to choose an appropriate length.

Problem 1: Consider the following schema:

```
Supplies(sid: integer, sname: string, address: string)
Parts(pid: integer, pname: string, color: string)
Catalog(sid: integer, pid: integer, cost: real)
```

Write the following SQL queries:

1. Find the pnames of parts for which there is some supplier.

2. Find the snames of suppliers who supply every red part.

3. Find the pnames of parts that are supplied only by Acme Widget Company.

4. Find the sids of suppliers who charge more for some part than the average cost of that part.

5. Find the sids of suppliers who supply only red parts.

6. Find the sids of suppliers who supply a red part or a green part.

7. For every supplier that supplies a green part and a red part, print the name and price of the most expensive part that the supplier supplies.
Problem 2: Consider the following schema. An employee can work in more than one department. The percentage of time that a given employee spends in a given department is shown by the \textit{pct\_time} field.

\begin{verbatim}
Empy(eid: integer, ename: string, age: integer, salary: real)
Works(eid: integer, did: integer, pct\_time: integer)
Dept(did: integer, budget: real, managerid: integer)
\end{verbatim}

Write the following queries in SQL:

1. Given a department, we can consider part-time employees to be “fractional full-time-equivalent” employees based on the \textit{pct\_time} they work in the department (so two employees who work in a department 50\% of the time will be counted as one full-time-equivalent employee) — the total number of full-time-equivalent employees is the sum of all full-time employees plus the (truncated) sum of “fractional full-time-equivalent” employees. For each department with more than 20 full-time-equivalent employees, print the \textit{did} together with the number of employees who work in the department.

2. Find the \textit{enames} of managers who manage only the departments with budget larger than \$1 million, but at least one department with budget less than \$5 million.

Problem 3: Consider the following relations:

\begin{verbatim}
Student(snum: integer, sname: string, major: string, lvl: string, age: integer)
Class(name: string, meets\_at: char(5), room: string, fid: integer)
Enrolled(snum: integer, cname: string)
Faculty(fid: integer, fname: string, deptid: integer)
\end{verbatim}

The key fields are underlined. Write the SQL statements required to create these relations, including appropriate versions of all primary and foreign key integrity constraints.