Midterm II Review
CMSC 362
Spring 2014

Name: _____

Indexing

1. Give SQL code for creating an index on a column "points" of the table named "player".

2. PostgreSQL supports several different types of indexes. One technique uses B-trees. Give an example of at least one other data structure which can be used.

Subqueries

3. Give SQL code equivalent to the relational algebra statement

$$\pi_{name,\ score}(\sigma_{score>10}(players)) \cup \pi_{name,\ score}(\sigma_{age>30}(players))$$

4. Give relational algebra equivalent to the following SQL code:

```
SELECT size, color
FROM inventory NATURAL JOIN
SELECT size, color, time
FROM display
WHERE value > 20.00;
```

Joins

Suppose I have the following schema:

Section(year: integer, semester: string, section_number: integer)
Enrollment(year: integer, semester: string, section_number: integer, students: integer)
Schedule(year: integer, semester: string, section_number: integer, room: string,
timeslot: date)

5. Give SQL for a query that performs a natural join on Enrollment and Schedule without using the "NATURAL JOIN" keyword and prints out the number of students, timeslot, and room.

6. Give SQL code for a query that performs a natural join on Enrollment and Schedule **using** the "NATURAL JOIN" keyword and prints out the number of students, timeslot, and room.

7. What is the difference between a LEFT OUTER join and a RIGHT OUTER join?

8. What is the difference between a FULL OUTER join and an INNER join?

9. Write a query that uses INTERSECT, UNION, or EXCEPT keywords to print the year, semester, and section number of any section with fewer than 20 students that is not in the room 'Ruffner 350'.

Views

Suppose I have the following schema:

Section(year: integer, semester: string, section_number: integer)
Enrollment(year: integer, semester: string, section_number: integer, students: integer)
Schedule(year: integer, semester: string, section_number: integer, room: string,
timeslot: date)

10. Give SQL code for creating a view named "spring_schedule_2014" that shows the section number, number of students, room, and timeslot for every section offered in the Spring semester of the year 2014.