Questions

1. What does this query do? (The || operator concatenates two strings.)

   SELECT sid, dept || cnum as course, grade
   FROM Took,
     (SELECT *
     FROM Offering
     WHERE instructor = 'Horton') Hoffer ing
   WHERE Took.oid = Hoffer ing.oid;

2. What does this query do?

   SELECT sid, surname
   FROM Student
   WHERE cgpa >
     (SELECT cgpa
      FROM Student
      WHERE sid = 99999);

3. What does this query do?

   SELECT sid, dept || cnum AS course, grade
   FROM Took JOIN Offering ON Took.oid = Offering.oid
   WHERE
     grade >= 80 AND
     (cnum, dept) IN (SELECT cnum, dept
                       FROM Took JOIN Offering ON Took.oid = Offering.oid
                       JOIN Student ON Took.sid = Student.sid
                       WHERE surname = 'Lakemeyer');
4. (a) Suppose we have these relations: $R(a, b)$ and $S(b, c)$. What does this query do?

```
SELECT a
FROM R
WHERE b in (SELECT b FROM S);
```

(b) Can we express this query without using subqueries?

5. What does this query do?

```
SELECT instructor
FROM Offering Off1
WHERE NOT EXISTS (  
  SELECT *
  FROM Offering
  WHERE
    oid <> Off1.oid AND
    instructor = Off1.instructor );
```
6. Now let’s write some queries! For each course find the instructor who has taught the most offerings of it. If there are ties, include them all. Report the course (eg “csc343”), instructor and the number of offerings of the course by that instructor. Suggestion: Use one or more views to hold intermediate step(s).

7. Let’s say that a course has level “junior” if its cNum is between 100 and 299 inclusive, and has level “senior” if its cNum is between 300 and 499 inclusive. Report the average grade, across all departments and course offerings, for all junior courses and for all senior courses. Report your answer in a table that looks like this:

<table>
<thead>
<tr>
<th>level</th>
<th>levelavg</th>
</tr>
</thead>
<tbody>
<tr>
<td>junior</td>
<td></td>
</tr>
<tr>
<td>senior</td>
<td></td>
</tr>
</tbody>
</table>

Each average should be an average of the individual student grades, not an average of the course averages.