The University of British Columbia

Computer Science 304

Midterm Examination
June 6, 2011

Time: 50 minutes   Total marks: 30

Instructor: Rachel Pottinger

Name_____Student No_____

(PRINT)   (Last)   (First)

Signature_____

<u>This examination has 2 doublesided pages.</u>

<u>Check that you have a complete paper.</u>

This is a closed book, closed notes exam. No books or other material may be used.

Answer all the questions on this paper.

Give very **short but precise** answers.

State any assumptions you make

Work fast and do the easy questions first. Leave some time to review your exam at the end.

Good Luck

Question	Mark	Out of
1.a		5
1.b		5
2.a		5
2.b		5
2.c		5
2.d		5
TOTAL		Out of 30

All queries for this exam use the same schema as in class and in the SQL exercises in the book:

Student(*snum:* integer, *sname:* string, *major:* string, *level:* string, *age:* integer)
Class(*name:* string, *meets at:* string, *room:* string, *fid:* integer)
Enrolled(*snum:* integer, *cname:* string)
Faculty(*fid:* integer, *fname:* string, *deptid:* integer)

The schema will be repeated on following pages for easy reference.   The meaning of these relations is straightforward; for example, Enrolled has one record per student-class pair such that the student is enrolled in the class.

1. {10 marks} Relational Algebra. For each query return EXACTLY the following:
    a. Find the student numbers of the students who have taken classes from teachers with the same name (e.g., you'd return the student ID of the student "Elizabeth Taylor" if she also took a class from "Elizabeth Taylor")

    b. Find the names of all students who have taken all courses taught by Elizabeth Taylor.

The schema again:

      Student(*snum:* integer, *sname:* string, *major:* string, *level:* string, *age:* integer)
      Class(*name:* string, *meets at:* string, *room:* string, *fid:* integer)
      Enrolled(*snum:* integer, *cname:* string)
      Faculty(*fid*: integer, *fname:* string, *deptid:* integer)

2.   {20 marks} **SQL Queries. For each query return EXACTLY the following (i.e., remove duplicates from your final answers where they are not explicitly requested, and include no extra columns):**

    a. List in reverse alphabetical order the names of all students who have **_not_** taken a class with "Intro" in the title

    b. How many classes have an unknown meeting time?

The schema again:

      Student(*snum:* integer, *sname:* string, *major:* string, *level:* string, *age:* integer)
      Class(*name:* string, *meets at:* string, *room:* string, *fid:* integer)
      Enrolled(*snum:* integer, *cname:* string)
      Faculty(*fid*: integer, *fname:* string, *deptid:* integer)

     c. Find the age of the oldest student who is either a Economics major or enrolled in a course taught by John Williams

     d. Find the names of the students enrolled in the maximum number of classes.