

CS 3335
Exam I
Sept. 26, 2008
100 points

Name: _____

For all queries, provide documentation and label all output columns appropriately.

1. In a single SQL query, find the total number of credit hours for each students in some engineering major (engineering appears anywhere in the major). Include the students who have not taken any courses. Output the name of the student, their total number of hours, and their classification. Students with less than 120 hours are classified as undergraduates and 120 hours or more are classified as alumni. (20)

2. GPA is calculated by taking the total number of grade points and dividing by the total number of Credit_Hours. Grade points are awarded as 4 for an A, 3 for a B, 2 for a C and 1 for a D. GPA is null if the student has no grades. In a single SQL query, find the total number of grade points for each student. Output the students ID, name and total grade points. You may assume GPA has already been calculated. (15)

3. Bobby Baylor (student ID 2008) received a grade of B in CSI 3335 in fall 2008. There was only one section of that course offered that semester. Update the database to show this new grade. (7)

4. Bobby's grade in CSI 3335 was changed to an A. Update the database to show this new grade. (7)

5. The research department has decided that no professors should do advising. Update the database to show this new situation. (7)

6. In a single SQL query, find the names of students and professors such that the professor advises the student and in fall 2008, that student took all of the classes taught by the professor. (15)

7. Consider the SQL query (9)

```
Select *  
From students left outer join advises using (StudentId)  
             right outer join professors using(ProfId);
```

Describe the results of the query. Include a description of the columns and the number of rows.

8. What is a derived table? (3)

9. What is the three-valued logic result of (3)

x Not In(null)?

10. What are the 5 aggregate operators in SQL? (5)

11. In terms of rows returned, explain the difference between EXCEPT and EXCEPT ALL, UNION and UNION ALL, and INTERSECT and INTERSECT ALL. (6)

12. What must be the case for (3)

`x = ALL (select y from t)`

to evaluate to true?

13. EXTRA CREDIT. This is a take home extra credit problem, due Monday at the beginning of class. In a single SQL query, update the database to calculate every student's GPA. The GPA should be null if no grades have been assigned.