HW 5

CS 3083 Intro to Database Systems Fall 2020

DUE Thurs Nov 7, 11:59pm

Write SQL queries for each of these. Also add some data to the data sets if needed and show the results of executing. We will post two hand in pages HW 5.1 and 5.2 on GradeScope.

Hand in

1) A pdf including the queries, any extra data you added, and the results
2) A text file with the queries, insert statements for additional data you added to test your queries. Label it clearly

As usual, you may work in groups of up to 3 people. These queries are harder than the previous HW sets, so allow plenty of time to work on this and test them thoroughly.

1. Find IDs and names of students who took CS-101 and did not take CS-319.

2.

a) Create a table gradepoint(letter,points) to associate letter grades with points and fill it with the appropriate values ('A', 4.0), ('A-' ,3.7), etc.
b) Use it to create a view StudentGPA(id, dept, gpa) showing each student's ID, dept_name, and grade point average.

   Hint/Note: The following query would work **if** all courses had the same number of credits:

```
SELECT id, avg( points )
FROM takes
NATURAL JOIN gradepoint
GROUP BY id
```

3. Find the Comp Sci student with the highest GPA (among Comp Sci students)

4. Find IDs of students who got a higher grade in CS-101 than they got in CS-319

5. Find the course id of each course that has been offered two years in a row in the same semester.

6. This problem will lead you toward writing two different queries to Find IDs and names of instructors who have taught all CS courses (i.e. courses with title LIKE (CS%)). Do this with the following steps:

a) Draw Venn diagram depicting all CS courses and the set of courses taught by instructor 12345, and label the region which would be empty if instructor 12345 taught all CS courses.
b) Write a predicate that returns true if and only if instructor 12345 taught all CS courses.
c) Use a modified version of (b) with a correlated attribute instead of 12345 as part of a query to find the IDs and names of instructors who have taught all CS courses.
d) Write a query to count the number of CS courses instructor 12345 has taught (if they taught the same course multiple times, just count it once)
e) Write a query to count the number of CS courses
f) Use (e) and a modified version of (d) replacing 12345 by a correlation variable as part of a query to find the IDs and names of instructors who have taught all CS courses.

7. Find the names and IDs of People who watched every movie that the Person 74 watched.

8. Find movies that no one rated with 5 stars.