

Homework 3: Relational Algebra II

Name:

Instructions: Print this assignment using single-side pages. Fill in your name above, and write in the solutions in the space provided below each question. You are allowed to use the back of each page. If you used any scratch paper to show your work, append those to the end. **Note:** It is important you use this format for gradescope.

Submission: After you've filled in the answers, scan all pages into a PDF, and submit to canvas.

Problems

For all problems, consider the relation instances below that model competitions in the world of college sports. Assume that each city may have multiple schools (e.g., both Columbia and NYU are in New York). Schools are split into two conferences: A and B. Within each conference, there are four divisions: North, South, East, and West. Games are played by “home” and “away” (i.e., the traveling) schools, identified by the schoolIDs. For instance, game 7 was between GaTech (24 points) and ASU (6 points) on 9/8/1980.

Feel free to use temporary variables for storing intermediate results in your queries. In many cases, you'll want to, in order to organize your work.

School

schoolID	city	school	conference	division	spent
0	Seattle	Washington	B	West	500M
1	Cleveland	Case	A	North	100M
2	Pittsburgh	CMU	A	North	-50M
3	San Francisco	Berkeley	B	West	800M
4	Oakland	Mills	A	West	350M
5	Tempe	ASU	A	West	400M
6	Miami	Miami	A	East	200M
7	Houston	Rice	B	South	250M
8	New York	Columbia	A	East	800M
9	New York	NYU	A	East	400M
10	Buffalo	SUNY	B	East	100M
11	Atlanta	GaTech	A	South	200M
12	Baltimore	JHU	A	North	0M
13	Lafayette	Purdue	A	South	90M

Game

gameID	Away	Home	date	year	awayScore	homeScore
0	0	11	9/2	2012	0	3
1	3	13	10/17	2009	23	0
2	5	10	10/10	2012	10	10
3	4	9	11/20	2015	17	7
4	2	7	9/27	2014	7	14
5	9	8	10/30	1990	14	15
6	8	3	8/30	1980	21	9
7	11	5	9/8	1980	24	6
8	4	2	10/28	1981	35	15
9	12	10	11/27	2012	3	40
...

Coach

name	schoolID	title
Carroll	0	Head Coach
Jackson	1	Head Coach
Tomlin	2	Head Coach
Kelly	3	Assistant Coach
Brown	1	Head Coach
Day	0	Assistant Coach
...

1. Suppose that schoolID 17 (not shown in figures) has decided to end their athletics program. Remove all of their historical records from the School and Game tables. The coaches that once worked for that school, however, should not be removed – they are simply without a job, so update their employer to NULL.
2. What is the highest and lowest number of points scored by the *home teams* during the 1975 season? The result should just be two columns: highest and lowest, and a single row containing their values.

- 5

7. What's the number of 'Assistant Coaches' for each school spending more than \$100M? Your result should contain two columns: the school's name and a corresponding count.
8. Which year(s) did the school '*Case*' record its fewest wins? Note that there may be multiple years during which '*Case*' recorded their lowest win total. Do not assume you know what Case's schoolID is. (Yes this one may be long – I am so sorry)