

Relational Algebra Exercises

A note about the domain: A course may or may not satisfy the “breadth” requirement.

Schema

Student(sID, surName, firstName, campus, email, cgpa)

Course(dept, cNum, name, breadth)

Offering(oID, dept, cNum, term, instructor)

Took(sID, oID, grade)

Offering[dept, cNum] \subseteq Course[dept, cNum]

Took[sID] \subseteq Student[sID]

Took[oID] \subseteq Offering[oID]

Queries

Write a query for each of the following:

1. Student number of all students who have taken csc343.
2. Student number of all students who have taken csc343 and earned an A+ in it.
3. The names of all such students.
4. The names of all students who have passed a breadth course with Professor Picky.
5. sID of all students who have earned some grade over 80 and some grade below 50.
6. Terms when Cook and Pitassi were both teaching something.
7. Terms when either of them was teaching csc363.
8. sID of students who have earned a grade of 85 or more, or who have passed a course taught by Atwood.
9. Terms when csc369 was not offered.
10. cID of courses that have never been offered.
11. Names of all pairs of students who've taken a course together.
12. sID of student(s) with the highest grade in csc343, in term 20099.
13. sID of students who have a grade of 100 at least twice.
14. sID of students who have a grade of 100 exactly twice.
15. sID of students who have a grade of 100 at most twice.
16. cID of all courses that have been taught in every term when csc448 was taught.
17. Name of all students who have taken, at some point, every course Gries has taught (but not necessarily taken them from Gries).