Boise State University

CS Department

CS410/510 Spring '15

Assignment 2, Question 4

Retrieve the names of students who only took courses from his/her major department.

Relational Algebra	*English explanation*	*Notes*
R1 = GRADE_REPORT $\bowtie_{(gr.courseno = c.courseno)}$ COURSE	Join GRADE_REPORT with COURSE	
R2 = R1 $\bowtie_{(r1.ssn = s.ssn)}$ STUDENT	Join STUDENT with R1	R2 holds Grade_Report x Course x Student
R3 = R2 $\triangleright_{(ssn,deptcode)}$ MAJOR	$\triangleright$ is the symbol for anti-join. R3 includes only those tuples in R2 for which there is no tuple in MAJOR where ssn and deptcode match.	R3 contains the R2 records for each course taken by each student outside that student's major.
R4 = ($\pi_{(fname, lname)}$ STUDENT) – R3		Since we want the other students (those who only took courses in their major(s)) we subtract the students with

		tuples in R3 from the set of all students.

Assignment 2, Question 9

Retrieve the name of each student who has claimed minor(s), but has not yet received any grade from any of his/her minor departments.

Relational Algebra	*English Explanation*	*Notes*
R1 = GRADE_REPORT $\bowtie$ (gr.courseno = c.courseno) COURSE		
R2 = R1 $\bowtie$ (r1.ssn = s.ssn) STUDENT	R2 holds Grade_Report x Course x Student	Same as R2 for Q4.
R3 = R2 $\bowtie$ (r3.ssn = r2.ssn) MINOR	Join R2 with a student's minor(s)	Result will contain only students with declared MINOR
R4 (ssn, count_of_deptcodes) = ssn $\Im$ count (σ (m.deptcode = c.deptcode) (R3))	R4 now contains the ssn of the student, and the number of courses the student has taken that are in that student's MINOR.	
R5 = ssn σ (count_of_deptcodes >0) R4	R5 contains the set of students who have taken at least one student in their MINOR.	
R6 = π (fname, lname) STUDENT – R5	R6 contains the set of students who haven't taken a course in their declared MINOR.	