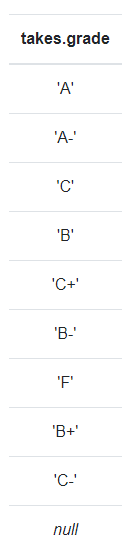
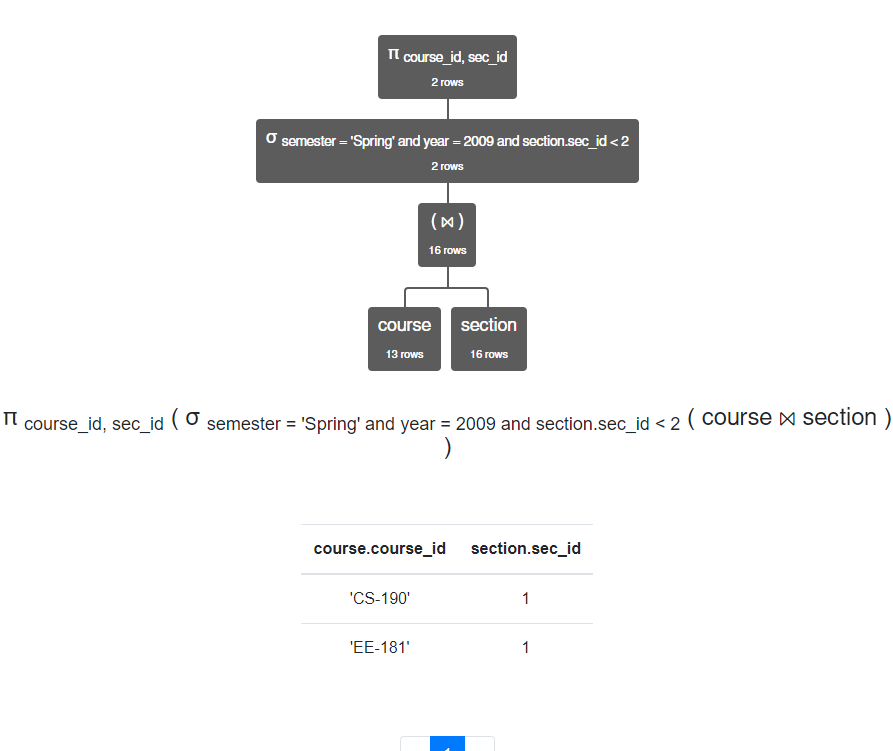
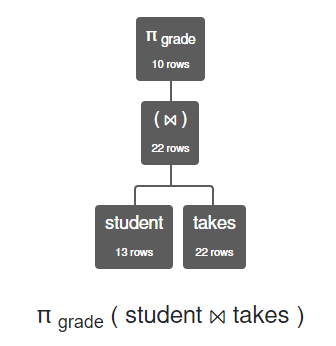
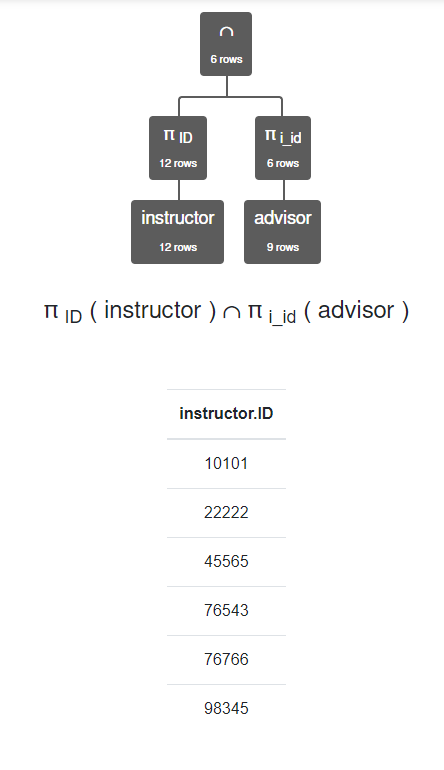
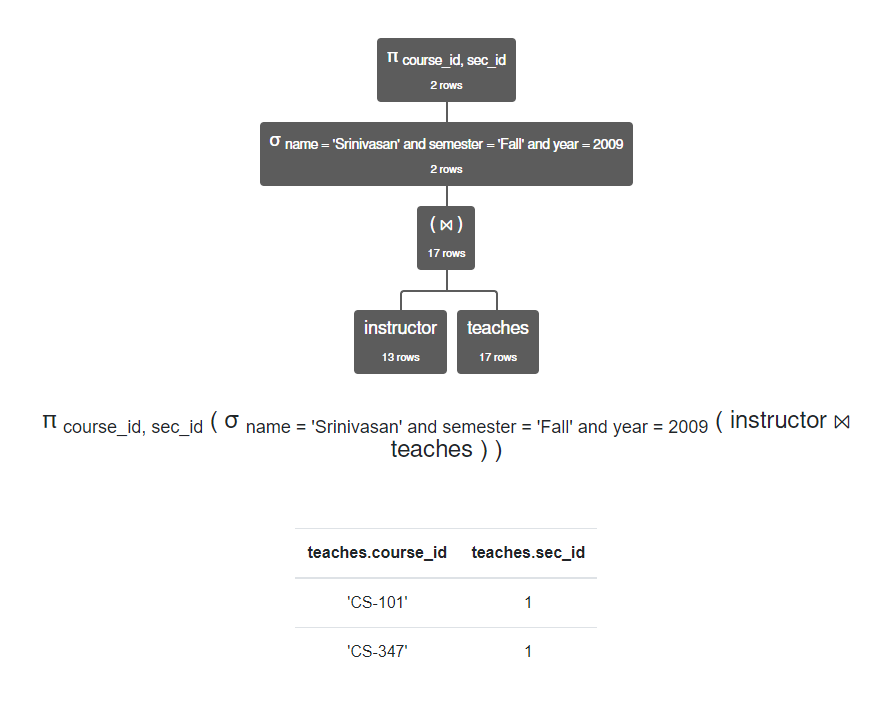
Project 1 - Relational Algebra

Bradley Harper

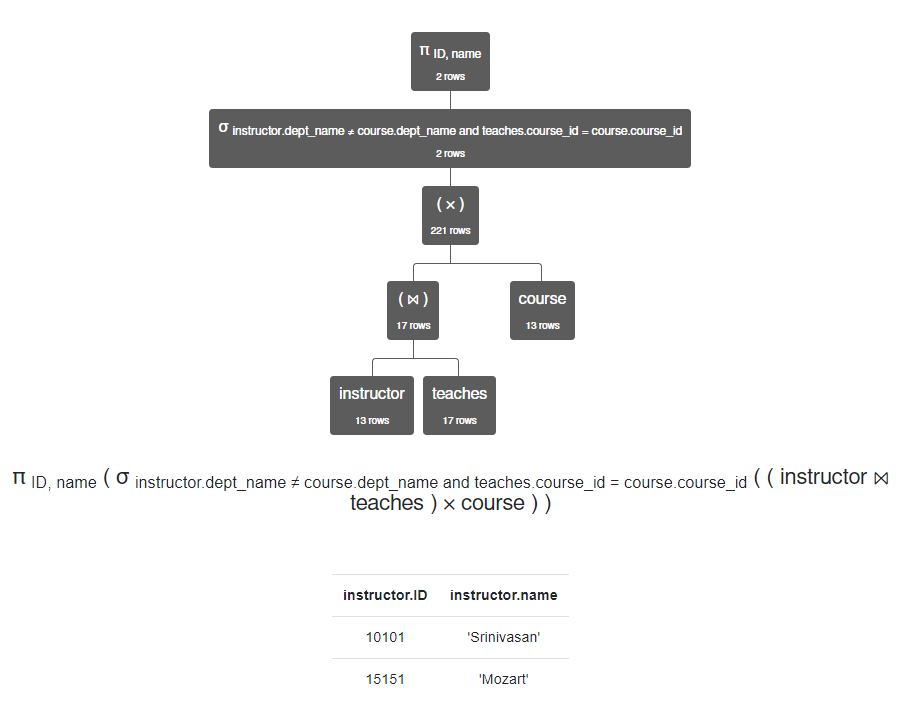
CSC 3300 Databases

Dr. Kubiak

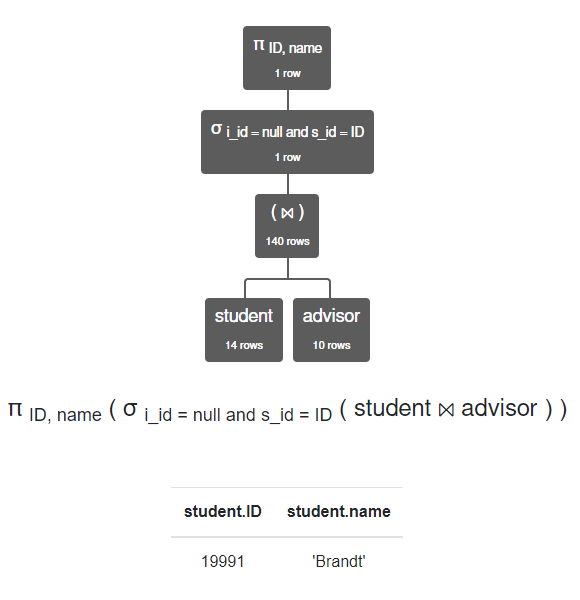
1. πcourse\_id, sec\_id (σsemester = 'Spring' ∧ year = 2009 ∧ section.sec\_id < 2 (course ⨝ section))
2. πgrade (student ⨝ takes) or just πgrade ( takes)
3. πID (instructor) ∩ πi\_id (advisor) 
4. πcourse\_id, sec\_id (σname = 'Srinivasan' ∧ semester = 'Fall' ∧ year = 2009 (instructor ⨝ teaches))



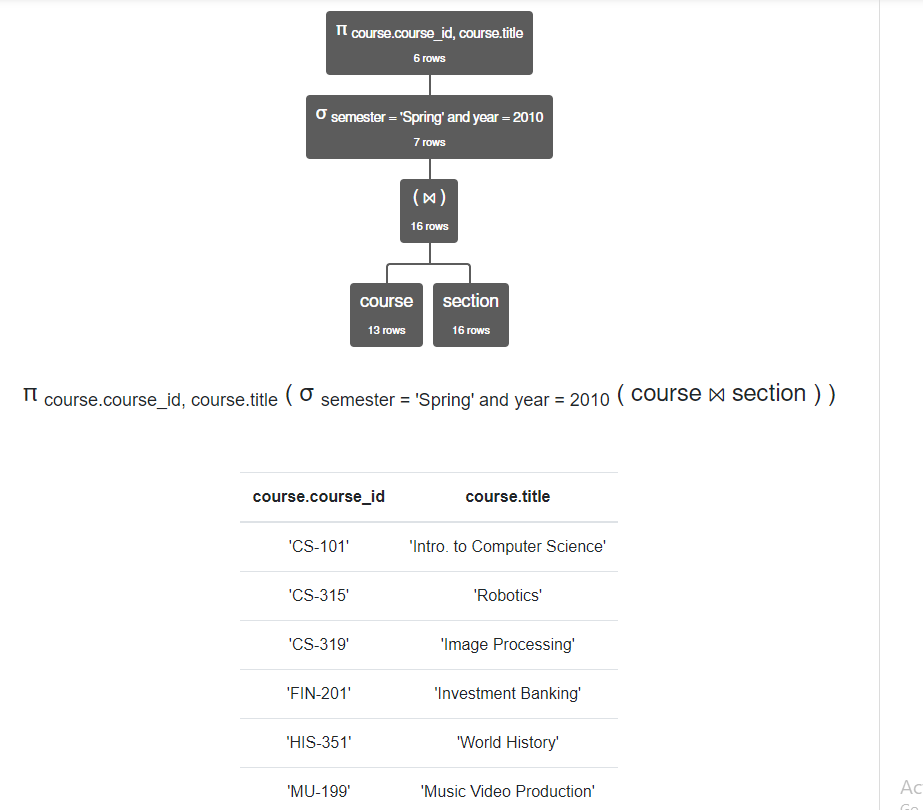
1. πID, name (σinstructor.dept\_name ≠ course.dept\_name ∧ teaches.course\_id = course.course\_id ((instructor ⨝ teaches) ⨯ course))



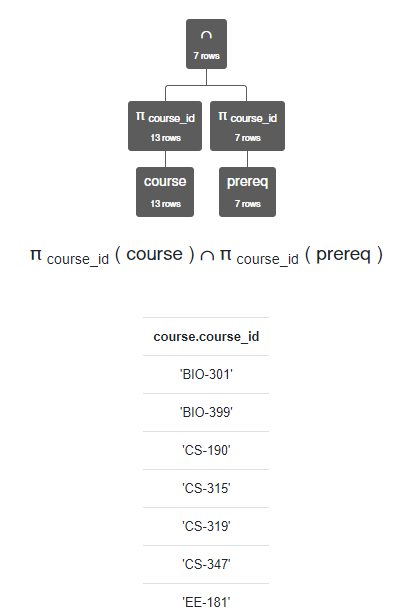
1. πID, name (σi\_id = null ∧ s\_id = ID (student ⨝ advisor))



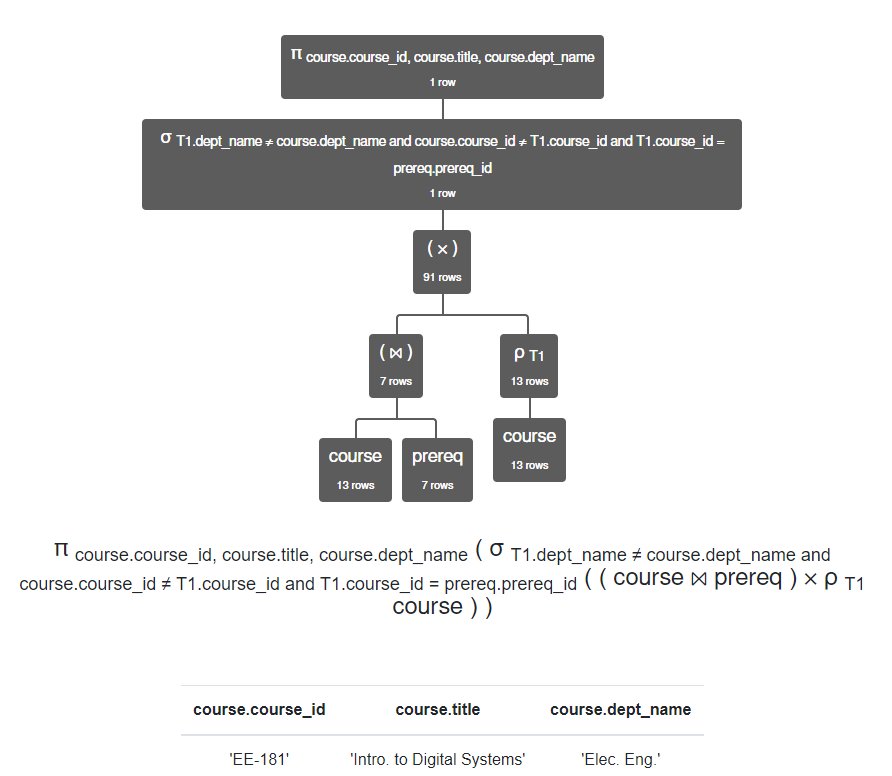
1. πcourse.course\_id, course.title (σsemester = 'Spring' ∧ year = 2010 (course ⨝ section))



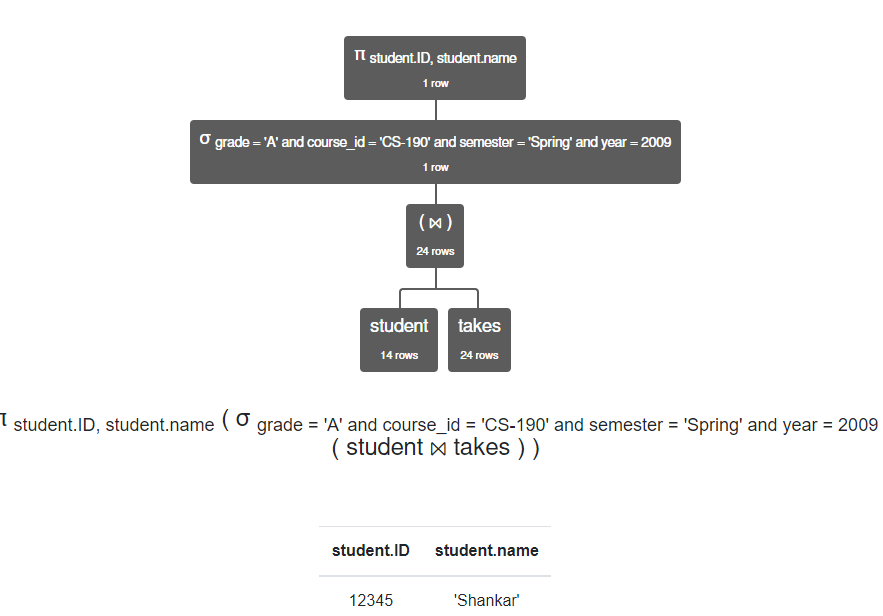
1. πcourse\_id (course) ∩ πcourse\_id (prereq)



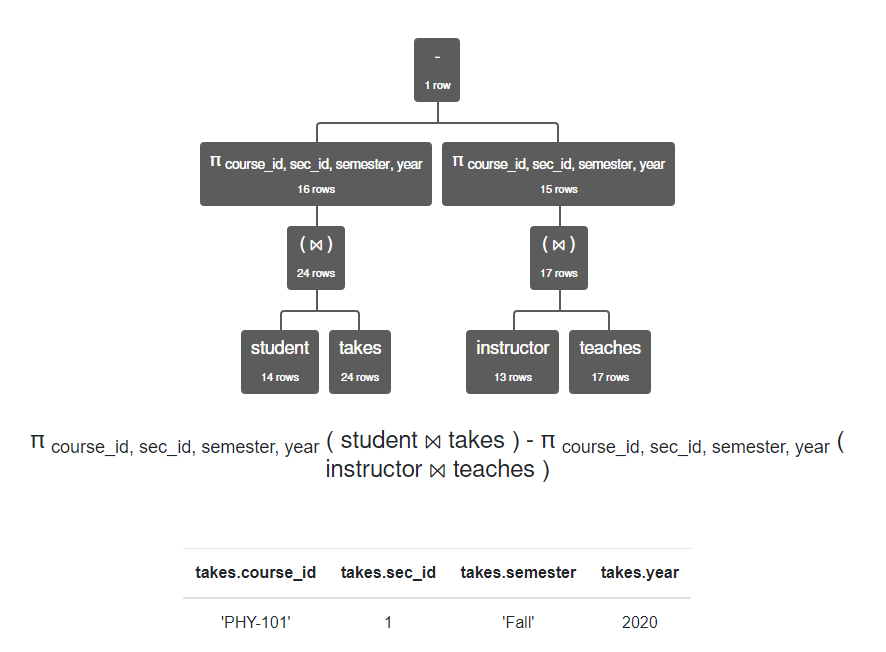
1. πcourse.course\_id, course.title, course.dept\_name (σT1.dept\_name ≠ course.dept\_name ∧ course.course\_id ≠ T1.course\_id ∧ T1.course\_id = prereq.prereq\_id ((course ⨝ prereq) ⨯ ρT1 course))



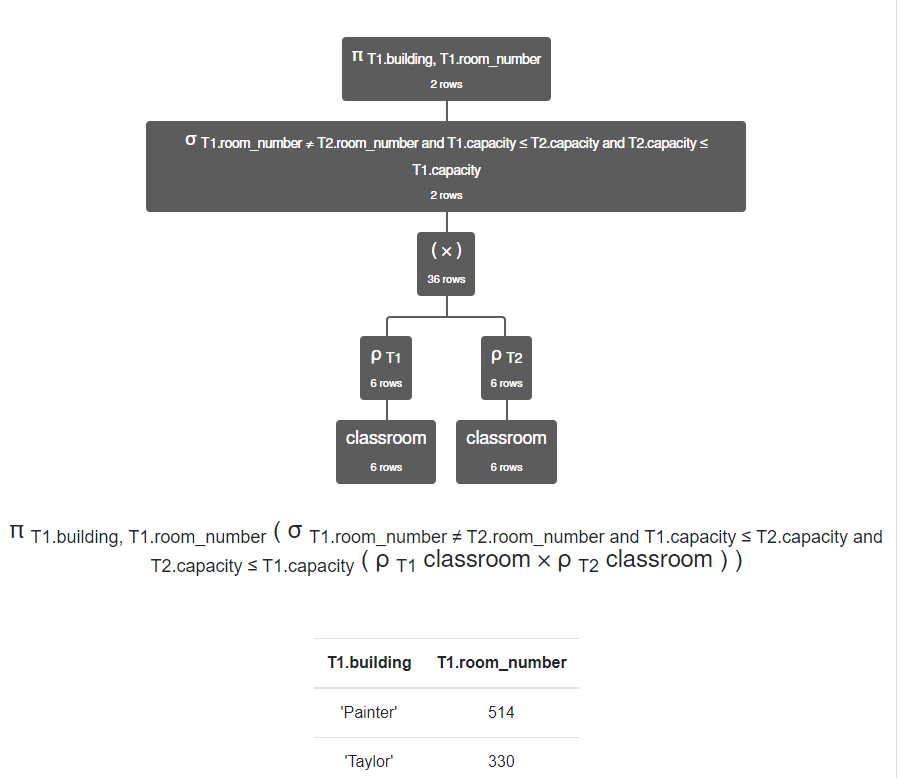
1. πstudent.ID, student.name (σgrade = 'A' ∧ course\_id = 'CS-190' ∧ semester = 'Spring' ∧ year = 2009 (student ⨝ takes))



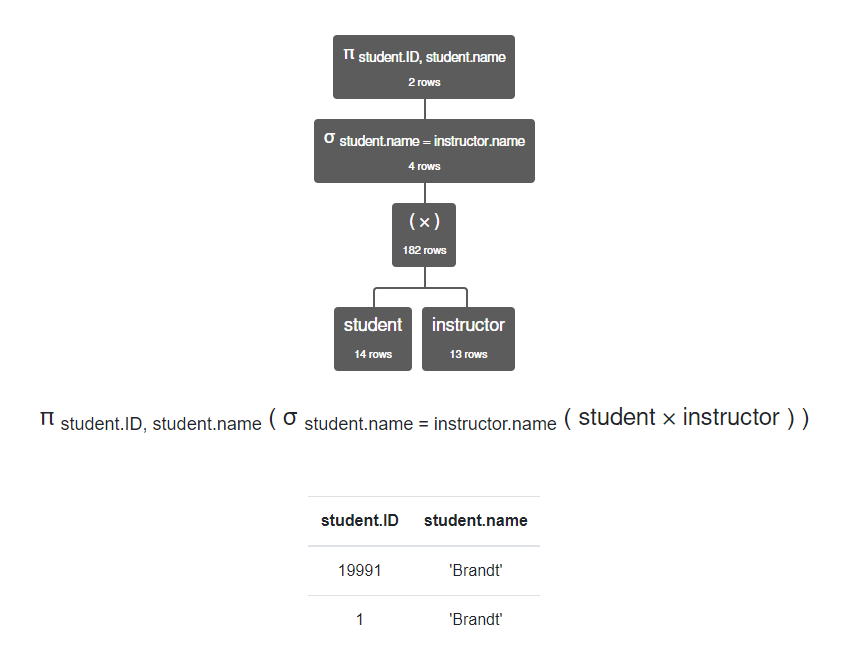
1. πcourse\_id, sec\_id, semester, year (student ⨝ takes) - πcourse\_id, sec\_id, semester, year (instructor ⨝ teaches)



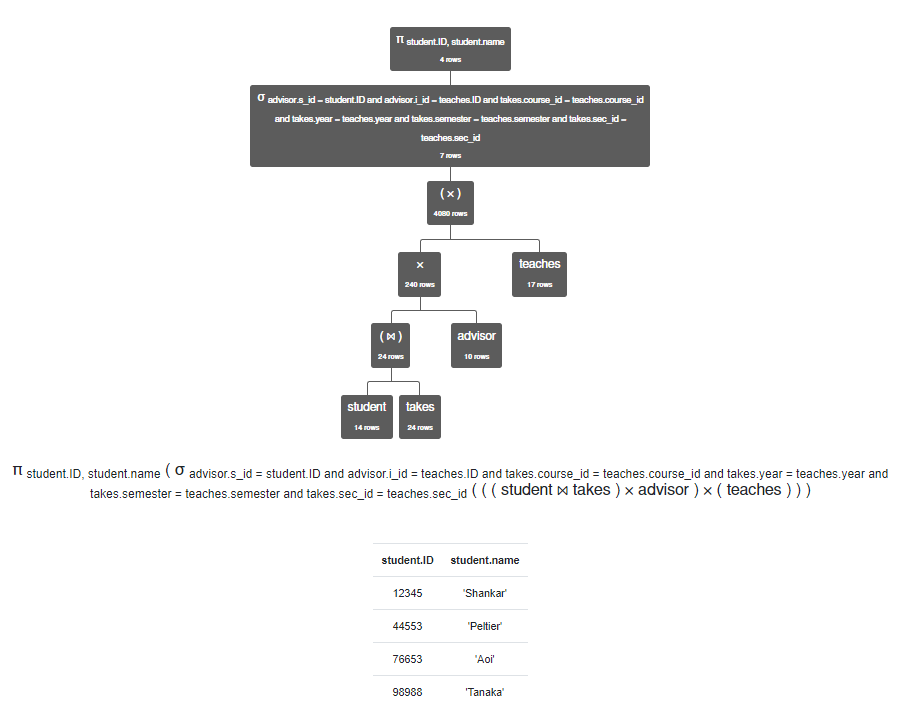
1. πT1.building, T1.room\_number (σT1.room\_number ≠ T2.room\_number ∧ T1.capacity ≤ T2.capacity ∧ T2.capacity ≤ T1.capacity (ρT1 classroom ⨯ ρT2 classroom))



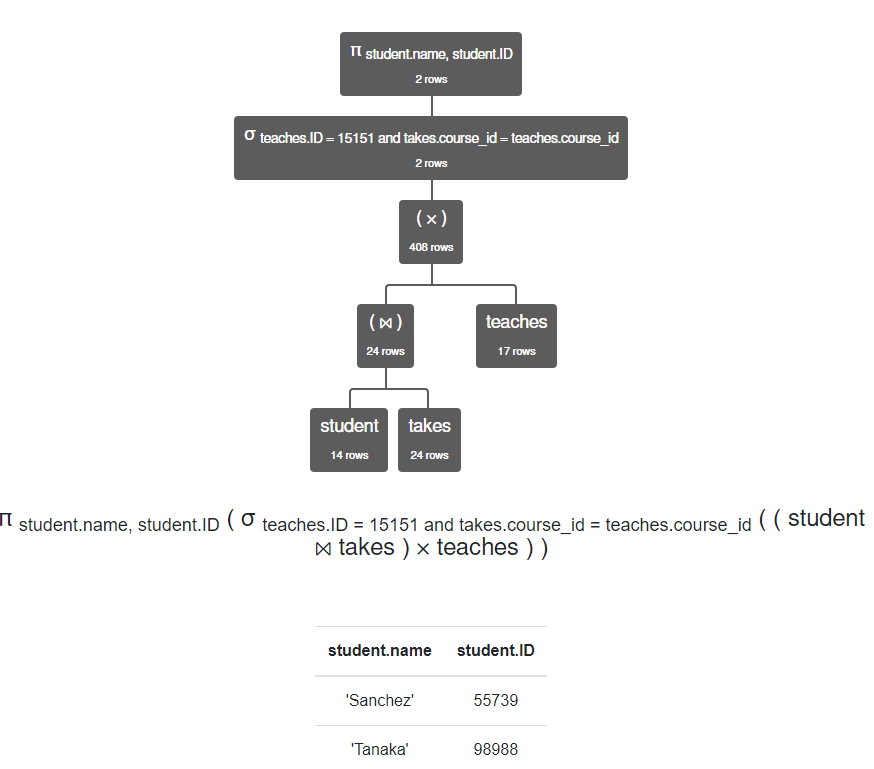
1. πstudent.ID, student.name (σstudent.name = instructor.name (student ⨯ instructor))



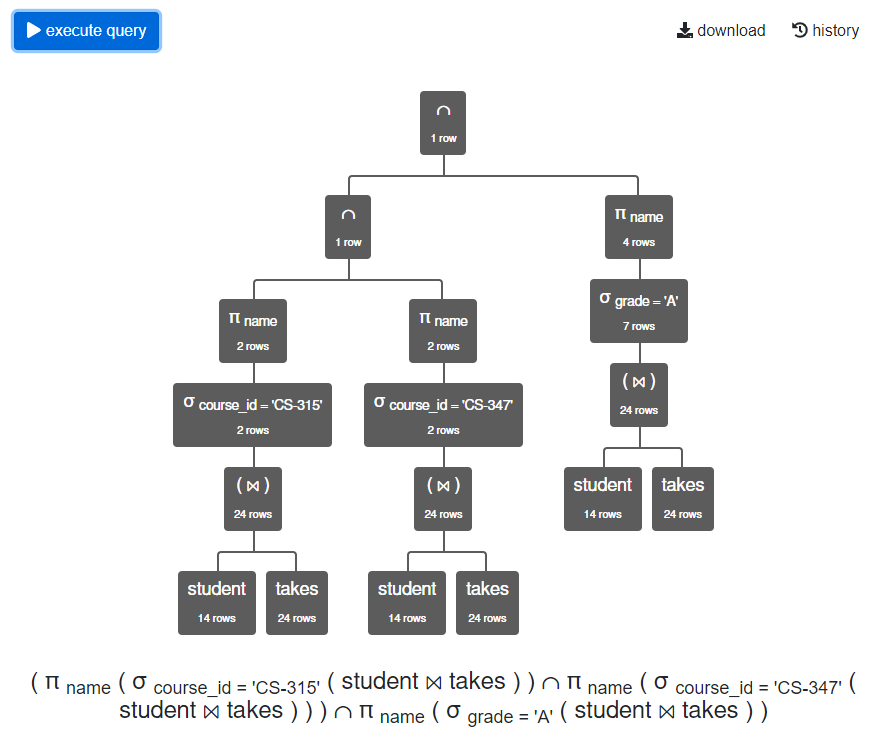
1. πstudent.ID, student.name (σadvisor.s\_id = student.ID ∧ advisor.i\_id = teaches.ID ∧ takes.course\_id = teaches.course\_id ∧ takes.year = teaches.year ∧ takes.semester = teaches.semester ∧ takes.sec\_id = teaches.sec\_id ((student ⨝ takes) ⨯ advisor ⨯ (teaches)))



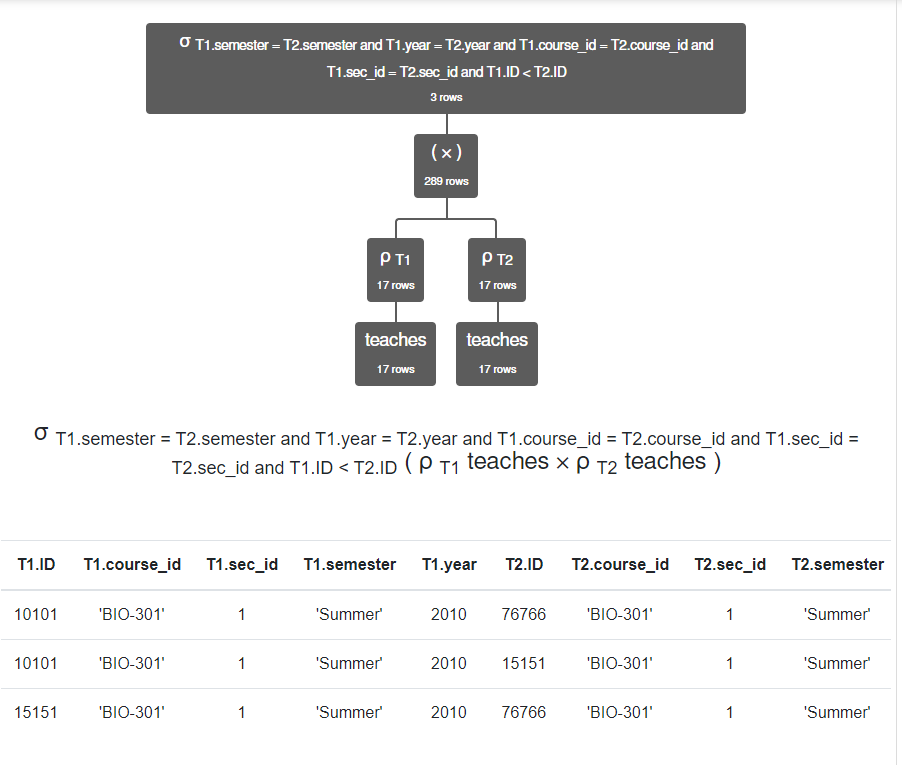
1. πstudent.name, student.ID (σteaches.ID = 15151 ∧ takes.course\_id = teaches.course\_id ∧ takes.sec\_id = teaches.sec\_id ((student ⨝ takes) ⨯ teaches))



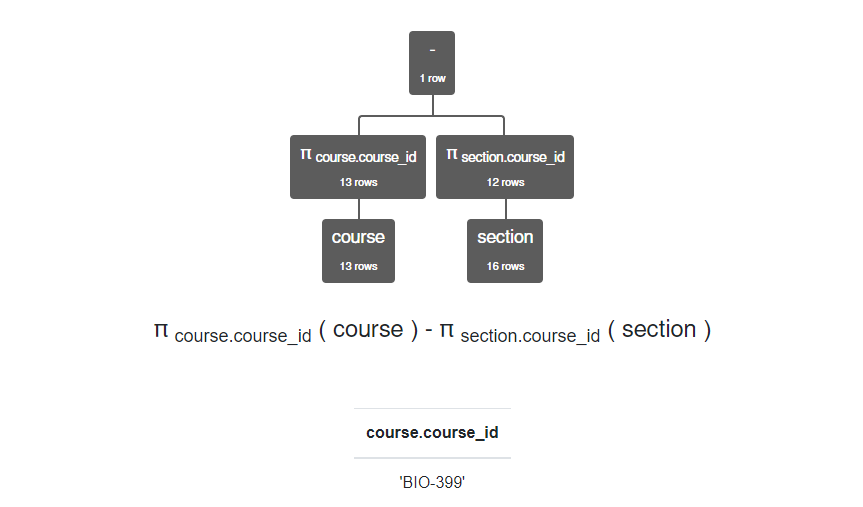
1. πname (σcourse\_id = 'CS-315' (student ⨝ takes)) ∩ πname (σcourse\_id = 'CS-347' (student ⨝ takes)) ∩ πname (σgrade = 'A' (student ⨝ takes))

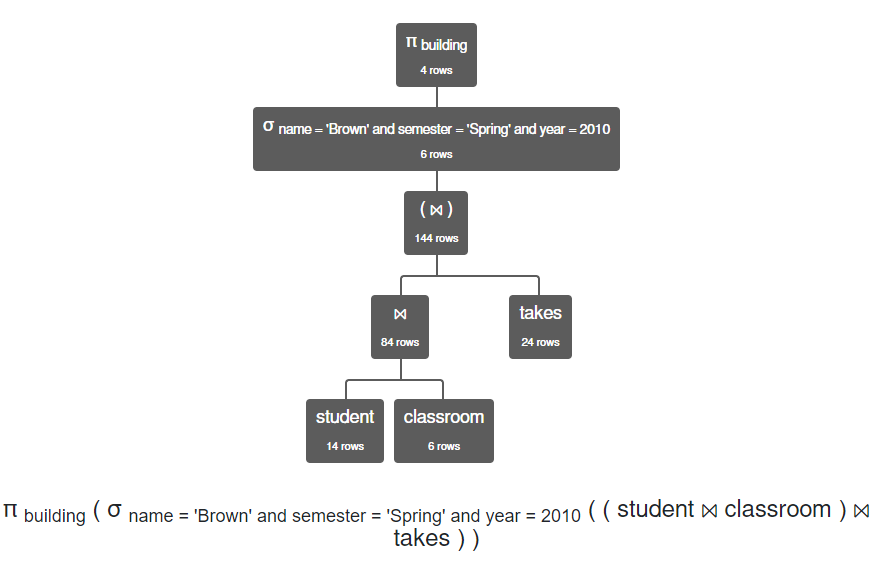


1. πT1.course\_id, T1.sec\_id (σT1.semester = T2.semester ∧ T1.year = T2.year ∧ T1.course\_id = T2.course\_id ∧ T1.sec\_id = T2.sec\_id ∧ T1.ID < T2.ID (ρT1 teaches ⨯ ρT2 teaches))



1. πcourse.course\_id (course) - π section.course\_id (section)



1. πbuilding (σname = 'Brown' ∧ semester = 'Spring' ∧ year = 2010 (student ⨝ classroom ⨝ takes)) 
2. πstudent.name, student.ID (σinstructor.name = 'Gold' ∧ takes.course\_id = teaches.course\_id ∧ takes.sec\_id = teaches.sec\_id ((student ⨝ takes) ⨯ (teaches ⨝ instructor)))

