Relational Algebra Practice

1. 執行relational\_1.2,exe; 請記錄安裝目錄。
2. 找到relational 的安裝路徑, 刪去.csv 檔, 將壓縮檔中的所有csv 檔複製到該安裝目錄下。
3. 執行 relational
4. Load relation (分別load 各個table)

Database schema 如下

classroom(building, room\_number, capacity)

department(dept\_name, building, budget)

course(course\_id, title, dept\_name, credits)

instructor(i\_ID, name, dept\_name, salary)

section(course\_id, sec\_id, semester, year, building, room\_number, time\_slot\_id)

teaches(i\_ID, course\_id, sec\_id, semester,year)

student(s\_ID, name, dept\_name, tot\_cred)

takes(s\_ID, course\_id, sec\_id, semester, year, grade)

advisor(s\_ID, i\_ID)

time\_slot(time\_slot\_id, day, start\_hr, start\_min, end\_hr, end\_min)

prereq(course\_id, prereq\_id)

1. 執行 σdept\_name=='Physics'(instructor)
2. 執行 πi\_ID, name, salary (instructor)
3. 執行r1=πcourse\_id (σsemester=='Fall' (σ year==2009 (section)))

執行r2=πcourse\_id (σsemester=='Spring' (σ year==2010 (section)))

執行 r1 - r2

執行r1 ∪ r2

1. 執行(ρ i\_ID→ID (instructor)) \* teaches

執行σdept\_name=='Physics'((ρ i\_ID→ID (instructor)) \* teaches)

執行

πname,course\_id(σID==i\_ID(σdept\_name=='Physics'((ρ i\_ID→ID (instructor)) \* teaches)))

1. 執行d=πsalary(instructor)

執行d2=πsalary(σsalary<s((ρ salary→s(d))\*d))

執行d-d2

1. Write the following queries in relational algebra and write the results
2. Find the titles of courses in the Comp. Sci. department that have 3 credits.
3. Find the IDs of all students who were taught by an instructor named Einstein.
4. Find the highest credit of all courses.
5. Find the IDs of all instructors who didn’t teach any course.
6. Find the course\_id of all courses whose teacher didn’t in the table of instructors.
7. Find all instructors earning the lowest salary.