**Relational** **Algebra** **Examples:** (Not: *SQL*)

Consider the following relations: Student(ssn, name, address, major) Course(code, title) Registered(ssn,code)

1. List the codes of courses in which at least one student is registered (registered courses):

∏code (Registered)

2. List the titles of registered courses (of those in 1.)

∏Title (Course ∞ Registered)

3. Show the student’s details with CSE major

σ major = ”CSE” (Student)

4. List the codes of courses for which no student is registered

∏code (Course ) - ∏code ( Registered )

5. Students who are not registered to any courses.

∏ssn (Student ) - ∏ssn ( Registered )

5.1. Students name who are not registered to any courses.

∏name (Student ) - ∏name (Student ∞ Registered )

Or,

∏name ((∏ssn (Student ) - ∏ssn ( Registered )) ∞ Student)

6. The titles of courses for which no student is registered.

*In* *the* *previous* *query* *we* *found* *the* *codes;* *natural* *join* *with* *Course* *to* *find* *the* *titles.*

∏title( (∏code ( Course ) - ∏code ( Registered )) ∞ Course)

Or

(∏title ( Course ) )- (∏title ( Registered ∞ Course))

7. Names of students and the titles of courses they registered to.

∏ s.name, c.title ( Student ∞ Registered ∞ Course)

8. Names of students who are registered for ‘Database Systems’ or(v) ‘Analysis and Design’.

∏name σ title=”DBMS” **v** Title=”SAD” (Student ∞ Registered ∞ Course)

9. SSNs of students who are registered for both ‘Database Systems’ and ‘Analysis of Algorithms’.

∏ssn (σ title=”DBMS” ( Registered ∞ Course))

∩

∏ssn (σ title=”SAD” ( Registered ∞ Course))

10. The name of those students who are registered for both ‘Database Systems’ and ‘Analysis of Algorithms’

∏Name (σ title=”DBMS” ( Student ∞Registered ∞ Course))

∩

∏Name (σ title=”SAD” ( Student ∞Registered ∞ Course))