Database Design, CSCI 340, Spring 2016
Class exercise, Relational Algebra, March 2

Consider the following tables:

EMP

Name	Office	Dept	Rank
Smith	400	CS	Assistant
Jones	220	Econ	Adjunct
Green	160	Econ	Assistant
Brown	420	CS	Associate
Smith	500	Fin	Associate

DEPART

Dept	MainOffice	Phone
CS	404	555-1212
Econ	200	555-1234
Fin	501	555-4321
Hist	100	555-9876

What would be the output of the following expressions:

1. $\sigma_{\text{Rank = 'Associate'}} (\sigma_{\text{Dept = 'CS'}} \text{EMP})$

2. $\sigma_{\text{Dept = 'CS'}} (\sigma_{\text{Rank = 'Associate'}} \text{EMP})$

3. $\sigma_{\text{Rank = 'Associate'} \lor \text{Dept = 'CS'}} (\text{EMP})$

4. $\sigma_{\lnot (\text{Rank = 'Adjunct'} \land \text{Dept = 'CS'})} (\text{EMP})$

5. π_{name} ($\sigma_{\text{Dept = 'CS'}}$ (EMP))

6. $\pi_{\text{name, rank}}$ ($\sigma_{\neg \text{(Rank = 'Adjunct'} \wedge \text{Dept = 'CS')}}$ (EMP))

7. $\pi_{\text{name, rank,}}$ ($\sigma_{\text{office > 300}}$ ($\pi_{\text{name, rank, office}}$ (EMP)))

8. EMP $\bowtie$ DEPART

9. $EMP \bowtie_{EMP.Dept = DEPART.Dept} DEPART$

10. $EMP \bowtie_{(EMP.office < DEPARTt.mainoffice) \wedge (EMP.dept = DEPART.dept)} DEPART$