

Section A

Given the following the relational database schema :

Employee (**Ename, Essn, Address, Salary**)
Department (**DeptNo, MgrSsn, DeptLoc**)
Project (**ProjectNo, DeptNo, ProjectLoc**)
WorksFor (**Essn, DeptNo**)
WorksOn (**Essn, ProjectNo, Hours**)
Manages (**MgrSsn, Essn**)

Specify a relational algebra expression for each of the following query, write your answer carefully!

1. Find of all Employees who have the highest salary!
2. Find Name and Address of all Employees who works on Project located in “LA”, but whose department is not located in “LA”
3. Find all Employees who are managed by “Mr DB” and earn more than “Mr DB”
4. Find all employees who works on all projects

Section B

Consider to the following schema :

Suppliers (**sid, sname, saddr**)
Parts (**pid, pname, color**)
Catalog (**sid, pid, cost**)

State what the following queries compute:

1. $\pi_{sname}(\pi_{sid}((\sigma_{color='red'} Parts) \bowtie (\sigma_{cost < 100} Catalog)) \bowtie Suppliers)$
2. $\pi_{sname}(\pi_{sid}((\sigma_{color='red'} Parts) \bowtie (\sigma_{cost < 100} Catalog) \bowtie Suppliers))$
3. $(\pi_{sname}((\sigma_{color='red'} Parts) \bowtie (\sigma_{cost < 100} Catalog) \bowtie Suppliers)) \cap$
 $(\pi_{sname}((\sigma_{color='green'} Parts) \bowtie (\sigma_{cost < 100} Catalog) \bowtie Suppliers))$