ACS – 3902 - 002

Database Systems

Assignment 2:

Student#: 3129620

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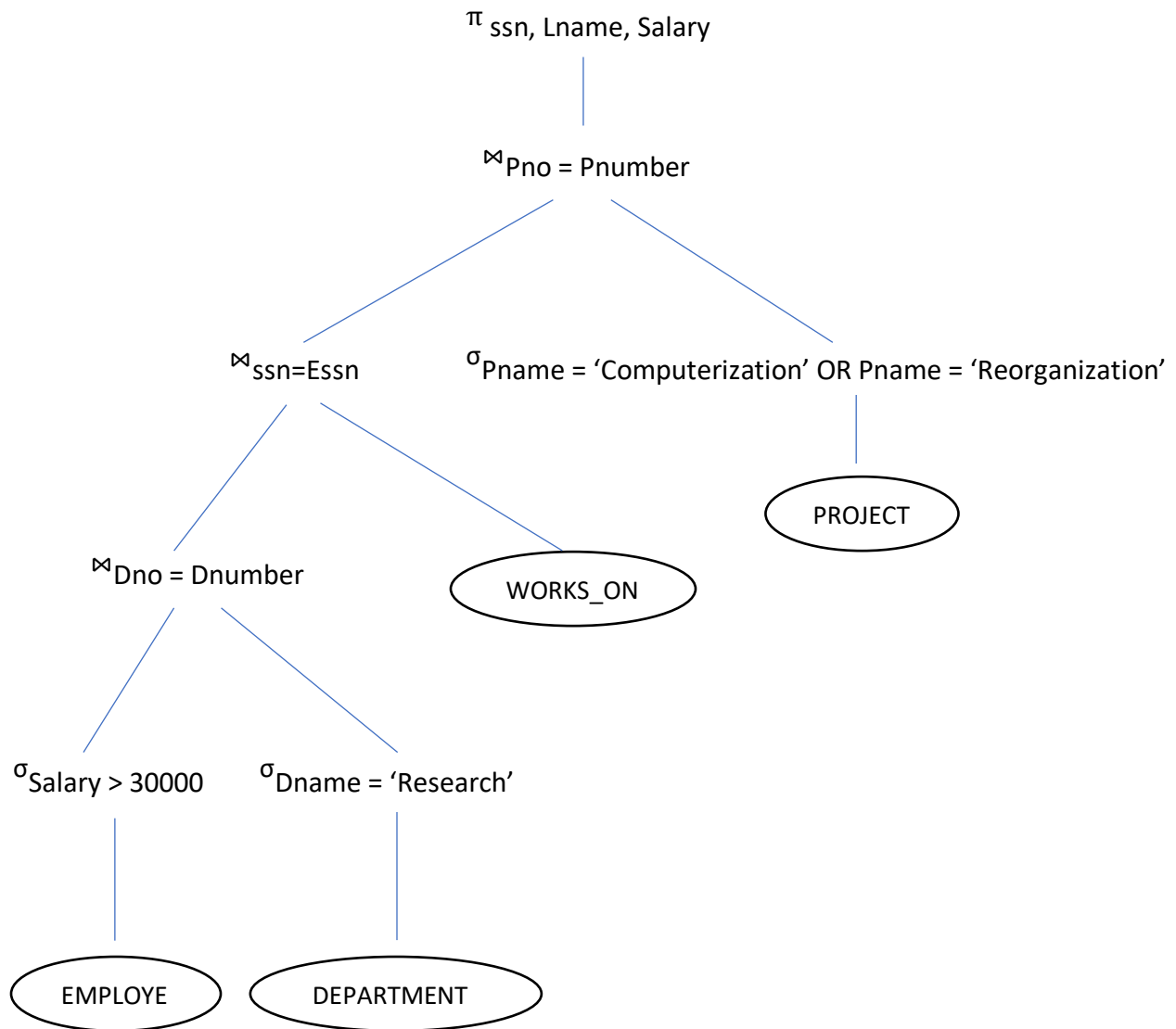
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a.

i.

SELECT ssn, Lname, Address

FROM EMPLOYEE e

INNER JOIN DEPARTMENT d ON e.Dno = d.Dnumber

INNER JOIN WORKS_ON w ON e.ssn = w.Essn

INNER JOIN PROJECT p ON w.Pno = p.Pnumber

WHERE d.Dname = 'Research' AND e.Salary > 30000 AND (p.Pname = 'Computerization' OR p.Pname = 'Reorganization');

ii.

RESULT1 <- (EMPLOYEE) $\bowtie_{Dno=Dnumber}$ (DEPARTMENT)

RESULT2 <- (RESULT1) $\bowtie_{ssn=Essn}$ (WORKS_ON)

RESULT3 <- (RESULT2) $\bowtie_{Pno=Pnumber}$ (PROJECT)

RESULT4 <- $\sigma_{(Dname = 'Research' AND Salary >30000 AND ((Pname = 'Computerization') OR (Pname = 'Reorganization')))}$(RESULT3)

RESULT <- $\pi_{ssn, Lname, Salary}$ (RESULT4)

iii.

$$\pi_{\text{ssn, Lname, Salary}}$$

$$\bowtie_{\text{Pno = Pnumber}}$$

$$\bowtie_{\text{ssn=Essn}} \qquad \sigma_{\text{Pname = 'Computerization' OR Pname = 'Reorganization'}}$$

PROJECT

$$\bowtie_{\text{Dno = Dnumber}} \qquad \text{WORKS\_ON}$$

$$\sigma_{\text{Salary > 30000}} \qquad \sigma_{\text{Dname = 'Research'}}$$

EMPLOYE   DEPARTMENT

b.

i.

SELECT e.ssn, e.Lname, e.Bdate, d.Dname

FROM EMPLOYEE e

INNER JOIN EMPLOYEE s ON e.Super_ssn = s.ssn

INNER JOIN DEPARTMENT d ON e.Dno = d.Dnumber

WHERE e.Bdate BETWEEN '1960-01-01' AND '1969-12-31' AND e.Bdate > s.Bdate

ii.

SUPERVISOR <- σ(EMPLOYEE)

RESULT1 <- (EMPLOYEE) ⋈_{Super_ssn = ssn} (SUPERVISOR)

RESULT2 <- (RESULT2) ⋈_{Dno=Dnumber} (DEPARTMENT)

RESULT3 <- σ_(Bdate < '1969-12-31' AND Bdate > '1960-01-01' AND EMPLOYEE.bDate > SUPERVISOR.Bdate)(RESULT2)

RESULT <- π_{EMPLOYEE.ssn, EMPLOYEE.Lname, EMPLOYEE.Bdate, Department.Dname}(RESULT3)

iii.

π EMPLOYEE.ssn, EMPLOYEE.Lname, EMPLOYEE.Bdate, DEPARTMENT.Dname

|

σ EMPLOYEE.Bdate > SUPERVISOR.Bdate

|

⋈ Pno = Pnumber

⋈ ssn=Essn   PROJECT

σ Bdate > '1960-01-01' AND Bdate < '1969-12-31'   SUPERVISOR

EMPLOYE