

Course No: CSE 4125

Course Title: Distributed Database

Marks - 10, Time - 4.00 to 4.50 PM

Department of CSE, AUST

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Consider the following global relational schemata.

EMP (EMPNUM, DEPTNUM, NAME, SAL, AGE)

DEPT (DEPTNUM, NAME, AREA, MGRNUM)

Assume that, relation EMP has three horizontal fragments such as EMP<sub>1</sub>, EMP<sub>2</sub> and EMP<sub>3</sub>

Query:

$(\sigma_{AGE > 20} \text{ EMP } \bowtie_{DEPTNUM = DEPTNUM} \text{ PJ}_{AREA, DEPTNUM} \text{ DEPT}) \bowtie_{NJN}$

$((\sigma_{SAL > 25K} \text{ EMP } \bowtie_{DEPTNUM = DEPTNUM} \text{ PJ}_{NAME, DEPTNUM} \text{ DEPT})$

$\bowtie_{NJN}$

$((\text{ EMP } \bowtie_{DEPTNUM = DEPTNUM} \text{ DEPT}) \text{ DF } (\sigma_{SAL \leq 25K} \text{ EMP } \bowtie_{DEPTNUM = DEPTNUM} \text{ DEPT})))$

Question: Draw the operator tree. Perform step by step transformations to simplify the operator tree, indicating which rule and criterion is applied at each step.

Transform the simplified query into fragment query by applying canonical expression. Write the equivalent query obtained from the tree. [ 2 + 5 + 2 + 1 ]