

Practice questions on Distribution Transparency for Read-Only Application

Open the lecture of previous class. Solve the following two questions.

1. Consider the following global, fragmentation, and allocation schemata:

Global Schema: *STUDENT*(*NUMBER*, *NAME*, *DEPT*)

Fragmentation Schema:

$STUDENT_1 = SL_{DEPT="EEE"} STUDENT$

$STUDENT_2 = SL_{DEPT="CSE"} STUDENT$

Allocation Schema:

$STUDENT_1$ at sites 1, 2

$STUDENT_2$ at sites 3, 4

Assume that "EEE" and "CSE" are the only possible values for DEPT attribute.

Write an application that requires the student number from the terminal and outputs the name and department, at levels 1, 2 and 3 of distribution transparency.

2. Consider the following global, fragmentation, and allocation schemata:

Global Schema: *STUDENT*(*SNUM*, *SNAME*, *DEPT*, *SEM*)

TEACHER (*TNUM*, *TNAME*, *DEPT*)

COURSE (*CNUM*, *TNUM*, *DEPT*, *CREDIT*)

Fragmentation Schema:

$STUDENT_1 = SL_{DEPT="CSE"} STUDENT$

$STUDENT_2 = SL_{DEPT="EEE"} STUDENT$

$COURSE_1 = COURSE SJ_{COURSE.DEPT=STUDENT_1.DEPT} STUDENT_1$

$COURSE_2 = COURSE SJ_{COURSE.DEPT=STUDENT_2.DEPT} STUDENT_2$

$TEACHER_1 = TEACHER SJ_{TEACHER.DEPT=COURSE_1.DEPT} COURSE_1$

$TEACHER_2 = TEACHER SJ_{TEACHER.DEPT=COURSE_2.DEPT} COURSE_2$

Allocation Schema:

$STUDENT_1$ at sites 1, 2

$STUDENT_2$ at site 3

$COURSE_1$ at sites 1, 2

$COURSE_2$ at site 3

$TEACHER_1$ at sites 1, 2

$TEACHER_2$ at sites 1, 2

App1 = Select * from Student1@site1 where
Dept = \$dept; --- For level (k+1) or Level 3

App2 = Select Tname from Teacher1 where
Tnum = \$tnum
if not found Select Tname from
Teacher2 where Tnum = \$tnum; For Level 2

$APP_1 = SELECT * FROM STUDENT_1$ where $DEPT = \$dept$; For App1, $k=2$

$APP_2 = SELECT TNAME FROM TEACHER$ where $TNUM = \$tnum$; For App2, $k=1$

At which levels of distribution transparency (k), the individual applications APP1 and APP2 will perform properly? Determine this k for each of these applications. Rewrite these applications for level ($k+1$) distribution transparency.

App1 = Select * from Student1@site1 where Dept = \$dept; --- For level (k+1) or Level 3

App2 = Select Tname from Teacher1 where Tname = \$tnum
if not found
Select Tname from Teacher2 where Tname = \$tnum; --- For level (k+1) or Level 2