

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:

$$STUDENT_1 \text{ at sites } 1, 2$$
$$STUDENT_2 \text{ at sites } 3, 4$$

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:

$$STUDENT_1 = SL_{DEPT="CSE"} STUDENT$$
$$STUDENT_2 = SL_{DEPT="EEE"} STUDENT$$
$$COURSE_1 = COURSE SJ_{COURSE.DEPT=STUDENT1.DEPT} STUDENT_1$$
$$COURSE_2 = COURSE SJ_{COURSE.DEPT=STUDENT2.DEPT} STUDENT_2$$
$$TEACHER_1 = TEACHER SJ_{TEACHER.DEPT=COURSE1.DEPT} COURSE_1$$
$$TEACHER_2 = TEACHER SJ_{TEACHER.DEPT=COURSE2.DEPT} COURSE_2$$

Allocation Schema:

$$STUDENT_1 \text{ at sites } 1, 2$$
$$STUDENT_2 \text{ at site } 3$$
$$COURSE_1 \text{ at sites } 1, 2$$
$$COURSE_2 \text{ at site } 3$$
$$TEACHER_1 \text{ at sites } 1, 2$$
$$TEACHER_2 \text{ at sites } 1, 2$$

$APP_1 = SELECT * FROM STUDENT_1 \text{ where } DEPT = \$dept;$

$APP_2 = SELECT TNAME FROM TEACHER \text{ where } TNUM = \$tnum;$

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.