

Base de données distribuées

QCM et tests de connaissance

MaDSI 2019

Exercice 1. Fragmentation horizontale dans la conception de base de données distribuée

Etant donné la relation suivante EMP et les prédicats suivants:

- p1: SAL > 23000
- p2: SAL < 23000

ID	Name	Salary
1289	Guru	12000
8907	Siva	67050
7643	Shalini	51980
0988	Kavin	23000
6543	Surya	28760
0986	Kavitha	23000
2345	Anees	29999

1. Effectuez une fragmentation horizontale du tableau en fonction des prédicats donnés.
2. Est-ce une fragmentation correcte?
3. Si la réponse à (b) est non, expliquez pourquoi et donnez les prédicats qui fragmenteraient correctement le tableau.

Solution.

a) Horizontal fragmentation of given table as per the given predicates is as follows;

ID	Name	Salary
8907	Siva	67050
7643	Shalini	51980
6543	Surya	28760
2345	Anees	29999

Fragment 1: According to predicate P1 (Salary > 23000)

*SQL query: SELECT * FROM emp WHERE salary > 23000*

ID	Name	Salary
1289	Guru	12000

Fragment 2: According to predicate P2 (Salary < 23000)

*SQL query: SELECT * FROM emp WHERE salary < 23000*

b) This fragmentation is not correct. We have fragmented the given table into two fragments. Because none of the predicates include the equality condition, the records with the salary value 23000 has not listed in either fragments.

The following two records from the base table are not available in none of the fragments. Hence, the fragmentation that we did is incorrect.

ID	Name	Salary
0988	Kavin	23000
0986	Kavitha	23000

c) When we fragment the relation using the given predicates we end up excluding one tuple, which violates the *completeness* rule for correct fragmentation. Correct predicates should be one of the following;

- P1: SAL \geq 23000, P2: SAL $<$ 23000

or

- P1: SAL $>$ 23000, P2: SAL \leq 23000.