

Distributed DBMSs – Concepts and Design

Exercises [dipresentasikan sebagai bagian nilai UAS].

A multinational engineering company has decided to distribute its project management information at the regional level in mainland Britain. The current centralized relational schema is as follows:

Employee	(NIN, fName, lName, address, DOB, sex, salary, taxCode, deptNo)
Department	(deptNo, deptName, managerNIN, businessAreaNo, regionNo)
Project	(projNo, projName, contractPrice, projectManagerNIN, deptNo)
WorksOn	(NIN, projNo, hoursWorked)
Business	(businessAreaNo, businessAreaName)
Region	(regionNo, regionName)

where	Employee	contains employee details and the national insurance number NIN is the key.
	Department	contains department details and deptNo is the key. managerNIN identifies the employee who is the manager of the department. There is only one manager for each department.
	Project	contains details of the projects in the company and the key is projNo . The project manager is identified by the projectManagerNIN , and the department responsible for the project by deptNo .
	WorksOn	contains details of the hours worked by employees on each project and (NIN, projNo) forms the key.
	Business	contains names of the business areas and the key is businessAreaNo .
	Region	contains names of the regions and the key is regionNo .

Departments are grouped regionally as follows:

- Region 1: Scotland
- Region 2: Wales
- Region 3: England

Information is required by business area, which covers: Software Engineering, Mechanical Engineering, and Electrical Engineering. There is no Software Engineering in Wales and all Electrical Engineering departments are in England. Projects are staffed by local department offices. As well as distributing the data regionally, there is an additional requirement to access the employee data either by personal information (by Personnel) or by work related information (by Payroll).

22.15 Draw an Entity–Relationship (ER) diagram to represent this system.

22.16 Using the ER diagram from Exercise 22.15, produce a distributed database design for this system, and include:

- (a) a suitable fragmentation schema for the system;
- (b) in the case of primary horizontal fragmentation, a minimal set of predicates;
- (c) the reconstructionP of global relations from fragments.

State any assumptions necessary to support your design.

CLUE:

1. Jangan membuat fragmentasi Business atau Region di semua site, karena hanya berisi sedikit record yang tidak sering berubah.
2. Lakukan fragementtasi horizontal untuk Department.
3. Lakukan fragmentasi vertical untuk Employee.
4. Gunakan derived fragmentation untuk Project, dan WorksOn
5. Gunakan data dummy (data contoh) untuk percobaan.