CHAPTER 8
DISCUSSIONS 2

Discussion 8-4

What is a *trivial functional dependency*? List all trivial FDs in the following schema and explain how the properties of trivial FDs hold.

Student(ID, Name, Address)

Discussion 8-5

Derive additional FDs from your initial set using each of the three *Armstrong's Axioms*.

Student(ID, Name, Address, Sex, Age, Dept, Dept_office, Dept_Chair, College, Dean, AdvisorID, AdvName, AdvDept)

Discussion 8-6

Show that the *Augmentation Rule* in Armstrong's Axioms is sound.

Discussion 8-7

Is the schema in BCNF? If not decompose the relation into a set of relation schemas, each of which is in BCNF.

Student(ID, Name, Address, Sex, Age, Dept, Dept_office, Dept_Chair, College, Dean, AdvisorID, AdvName, AdvDept)

Discussion 8-8

Show that the following is true for any relation $r(R)$ and its decomposition $\{R_1, R_2\}$.

$$r \subseteq \prod_{R1}(r) \bowtie \prod_{R2}(r)$$

Discussion 8-9

It has been emphasized that *redundancy creates problems*. Discuss where redundancy lies in the following relation.

title	*author*	*pub-name*	*pub-branch*	*keyword*
Compilers	Smith	McGraw-Hill	New York	parsing
Compilers	Jones	McGraw-Hill	New York	parsing
Compilers	Smith	McGraw-Hill	New York	analysis
Compilers	Jones	McGraw-Hill	New York	analysis
Networks	Jones	Oxford	London	Internet
Networks	Frick	Oxford	London	Internet
Networks	Jones	Oxford	London	Web
Networks	Frick	Oxford	London	Web