

10127 Database Systems

Lab 4

Table Normalization

1. In the relation R (A, B, C, D, E, F)

A and B together are the key, and the following dependencies exist:

- 1) $A \rightarrow D$
- 2) $B \rightarrow E, F$
- 3) $E \rightarrow F$
- 4) $A, B \rightarrow C$

a. Which dependencies violate 2NF?

1, 2, 3

b. Which dependencies violate 3NF?

3 (also 1,2 because not 2NF)

c. Normalize the table to 3NF.

Each dependency is moved to its own table, and we get rid of duplicate:

R1 (A, D)

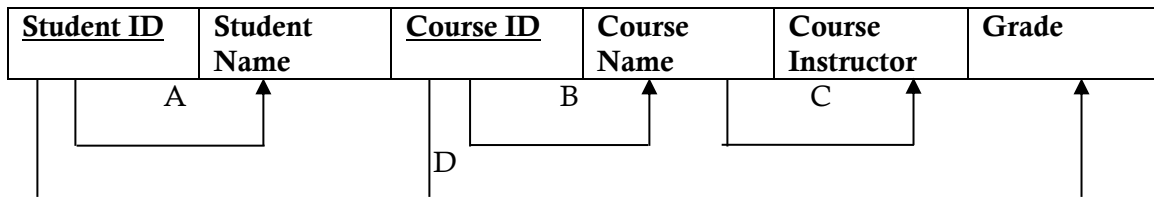
R2 (B, E, F)

R3 (A, B, C)

R4 (B, E)

R5 (E, F)

2. Given the following table and functional dependencies



Entire Key: Student ID + Course ID

- Which dependencies violate 2NF? A, B, C
- Which dependencies violate 3NF? C (also A, B because not 2NF)
- Normalize the tables.

Student (SID, SName)

Course (CID, CName)

Instructor (CName, Instructor)

Grade (SID, CID, Grade)