

CS2102 Database Systems
2014/2015 Semester I
Tutorial #5 Normal Forms

1. Consider the relation $R(A, B, C, D, E)$ with the set of FDs
 $F = \{ \{A\} \rightarrow \{B\}, \{BC\} \rightarrow \{E\}, \{ED\} \rightarrow \{A\} \}$.
 - a. List all the keys of R .
 - b. Is R in 3NF?
 - c. Is R in BCNF?
2. Consider the relation $R(A, B, C, D, E)$ with the set of FDs $F = \{A \rightarrow B, C \rightarrow D\}$.
 - a. If R in 3NF? If not, decompose it into a collection of 3NF relations.
 - b. If R in BCNF? If not, decompose it into a collection of BCNF relations.
3. Suppose we have the following instance of a relation S with three attributes ABC .

A	B	C
1	2	3
4	2	3
5	3	3

Which of the following dependencies can you infer does not hold over relation S ?

- a. $A \rightarrow B$
- b. $BC \rightarrow A$
- c. $B \rightarrow C$

Can you identify any dependencies that hold over relation S ?