

## Normalization Exercises

Relation and FDs	Key	Normal Form	Culprit FD*
R(A,B,C,D) { $A \rightarrow B, A \rightarrow C$ }	AD	1NF	$A \rightarrow B, A \rightarrow C$
R(A,B,C,D) { $A \rightarrow B, A \rightarrow C, B \rightarrow D$ }	A	2NF	$B \rightarrow D$
R(A,B,C,D) { $AB \rightarrow C, AB \rightarrow D$ }	AB	BCNF/4NF	None
R(A,B,C,D) { $AB \rightarrow C, B \rightarrow C, AB \rightarrow D$ }	AB	1NF	$B \rightarrow C$
R(A,B,C,D) { $AB \rightarrow C, D \rightarrow A, AB \rightarrow D$ }	AB	3NF	$D \rightarrow A$
R(A,B,C) { }. That is no FDs	ABC	BCNF/4NF	None
R (A, B, C, D, E, F) { $A \rightarrow B, B \rightarrow CDE$ }	AF	1NF	$A \rightarrow B, B \rightarrow C, B \rightarrow D, B \rightarrow E$
R(A, B, C, D) { $A \rightarrow BCD, B \rightarrow CD$ }	A	2NF	$B \rightarrow C, B \rightarrow D$