

Suppose you are given a relation R with four attributes ABCD and the following set of FDs:

a. Identify the candidate key(s) for R

$F = \{A \rightarrow B, B \rightarrow C, D \rightarrow B\}$ .

$K = ?$

$F^+ = ?$

b. Is R in BCNF? Is R in 3NF? If it is not in BCNF, decompose to BCNF.

X	X+
A	A,B,C
B	B,C
C	C
D	D,B,C
AB	A,B,C
AC	A,C,B
AD	A,D,B,C
BC	B,C
BD	B,D,C
CD	C,D,B
ABC	A,B,C
ABD	
ACD	
BCD	B,C,D

$K = AD$

$F^+ = \{A \rightarrow B, B \rightarrow C, D \rightarrow B, A \rightarrow C, D \rightarrow C\}$

BCNF?

BCNF Violation?

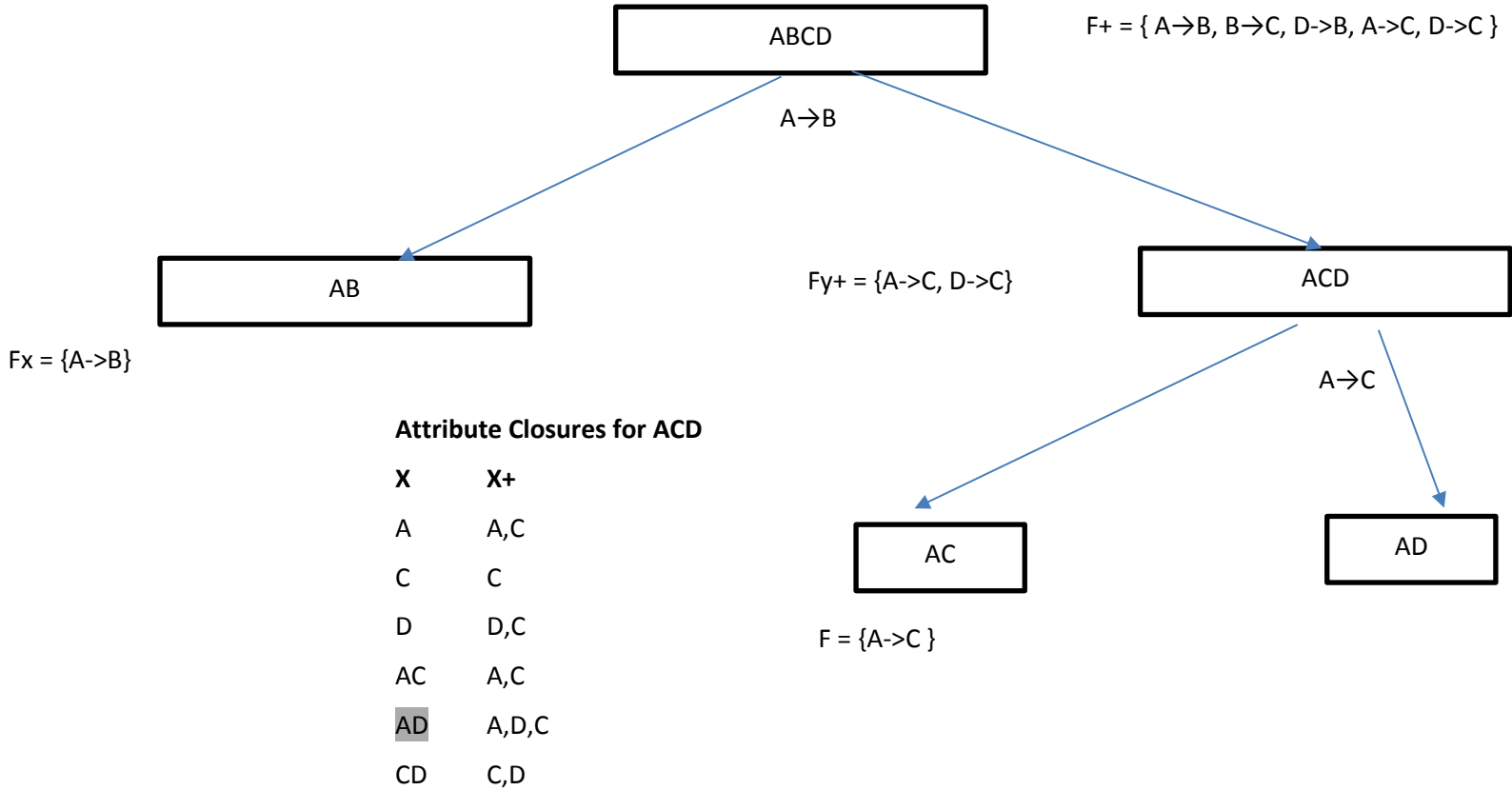
3NF Violation?

A->B	YES	YES
B->C	YES	YES
D->B	YES	YES
A->C	YES	YES
D->C	YES	YES

NOT BCNF and NOT 3NF

If not BCNF, decompose.

Case 1:



Case 2:

