|  |  |  |  |
| --- | --- | --- | --- |
| A | B | C | D |
| A | B1 | CA | DA |
| A | B1 | CA | DA |

1. disprove using table (he did not show)

2. prove by closure

a)

W -> Y given

WX -> YX augmentation 1

WX -> Y decompose 2

b)

X -> Y given

X -> W given

WY -> Z given

X -> WY union of 1,2

X -> Z transitivity 3, 4

c)

(Start with XW closure for some reason.

Can’t be closed, so, can’t be proven?

Some subset of XW has to appear on LFS of FDs

So this one is not provable)

(To disprove, create 4 cols, then

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| XW | XY | Y | W | Z |
| 1 |  | 3 | 1 | 1 |
| 1 |  | 4 | 1 | 0 |

XY -> Z

Y -> W

3)

a)

A -> B given

BD -> H given

AD -> BD aug 1

AD -> H transitivity 2, 3

ADC -> HC aug 4

ADC -> H decompose 5

b)

{BE +}

E -> D BED

BD -> H { BEDH }

c)

Attributes:

K+ = (attributes that appear only on LHS, must be in all keys, cannot be determined by a different FD) { C }

K- = (attributes that do not appear on LHS, never participate in a key) { H }

K? = (attributes that appear on both sides) { A, B, D, E }

Check if C is a key:

{C +}

Since C is a key, it is the minimum superkey, ie, the candidate key.

(If you added G to the list, then the key would have to be CG, since you cannot compute G)

4)