

INFS 614 – Quiz #3
11/13/07

Name: _____ G#: _____

1. List all (non-trivial) functional dependencies satisfied by the following relation R, with attributes A, B, and C. Hint: there are 3.

A	B	C
a1	b1	c1
a1	b1	c2
a2	b1	c1
a2	b1	c3

$$F = \{A \rightarrow B, C \rightarrow B, AC \rightarrow B\}$$

2. Given $R = \{A, B, C, G, H, I\}$, $F = \{A \rightarrow B; A \rightarrow C; CG \rightarrow H; CG \rightarrow I; B \rightarrow H\}$, compute the attribute closure $(AH)^+$. Show your work.

$$\mathbf{Result = AH}$$

Consider $A \rightarrow B$ (since $A \subseteq AH$):

$$\mathbf{Result = AH \cup B = ABH}$$

Similarly, for $A \rightarrow C$, we get

$$\mathbf{Result = ABH \cup C = ABCH}$$

We don't consider $CG \rightarrow H$, nor $CG \rightarrow I$ because CG is NOT in $ABCH$.

Consider $B \rightarrow H$ (since $B \subseteq ABCH$):

$$\mathbf{Result = ABCH \cup H = ABCH \text{ (nothing changed).}}$$

We have considered all the FDs, so $(AH)^+ = Result = ABCH$

3. In problem (2), is AH a superkey? Why or why not?

AH is not a superkey, because $(AH)^+$ does not contain ALL the attributes.