Date:
Name 1:
Name 2:

Compute the minimum closure of this set of FDs:

$F = \{ A \rightarrow BC, B \rightarrow CE, A \rightarrow E, AC \rightarrow H, D \rightarrow B \}$

1) $A \rightarrow B$ $B \rightarrow C$ $A \rightarrow E$ $AC \rightarrow H$ $D \rightarrow B$
$A \rightarrow C$ $B \rightarrow E$ (In canonical form)

2) See if any attribute in the left hand side is redundant. We only have to check

$AC \rightarrow H$ $A^+ = \{A B C H\}$

$\Rightarrow$ C is redundant

$\Rightarrow$ $A \rightarrow H$

We now have.

$A \rightarrow B$ $B \rightarrow C$ $A \rightarrow E$ $A \rightarrow H$ $D \rightarrow B$ } New FDs
$A \rightarrow C$ $B \rightarrow E$

3) Remove any redundant FDs.

Test to see if an FD can be generate from the others

Test $A \rightarrow B$ $A^+ = \{A C H\}$ Needed!

Test $A \rightarrow C$ $A^+ = \{A B C E H\}$ Redundant!

$\Rightarrow$ $A \rightarrow B$ $B \rightarrow C$ $A \rightarrow E$ $A \rightarrow H$ $D \rightarrow B$ } New FDs
$B \rightarrow E$

Test $B \rightarrow C$ $\quad B^+ = \{B\ E\}$ $\Rightarrow$ Needed

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Test $B \rightarrow E$ $\quad B^+ = \{B\ C\}$ $\Rightarrow$ Needed

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Test $A \rightarrow E$ $\quad A^+ = \{A\ B\ C\ E\ H\}$ Redundant

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$\Rightarrow$ $A \rightarrow B$ $\quad B \rightarrow C$ $\quad A \rightarrow H$ $\quad D \rightarrow B$ } New FDs

$B \rightarrow E$

Test $A \rightarrow H$ $\quad A^+ = \{A\ B\ C\ E\}$ Needed

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test $D \rightarrow B$ $\quad D^+ = \{D\}$ Needed

$\Rightarrow$ Minimal Cover:

$A \rightarrow B$ $\quad A \rightarrow H$

$B \rightarrow C$ $\quad D \rightarrow B$

$B \rightarrow E$

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