

We have this table:

Dependency	Possible(Yes/No)	Explain
$A \rightarrow B$	No	$A1 = B1, B2$
$A \rightarrow C$	No	$A1 = C1, C3$
$A \rightarrow D$	No	$A1 = D3, D4$
$B \rightarrow A$	No	$B2 = A1, A2$
$B \rightarrow C$	Yes	C is uniquely defined by B($B1 \rightarrow C1, B2 \rightarrow C3, B3 \rightarrow C5$)
$B \rightarrow D$	No	$B2 = D2, D4$
$C \rightarrow A$	No	$C3 = A1, A2$
$C \rightarrow B$	Yes	B is uniquely defined by C($C1 \rightarrow B1, C3 \rightarrow B2, C5 \rightarrow B3$)
$C \rightarrow D$	No	$C3 = D2, D4$
$\{A, B\} \rightarrow C$	Yes	$\{A1, B2\} = \{A2, B2\} = C3, \{A1, B1\} = C1, \{A3, B3\} = C5$
$\{A, B\} \rightarrow D$	Yes	$\{A2, B2\} = \{A3, B3\} = D4, \{A1, B1\} = D3, \{A1, B2\} = D2$
$\{A, C\} \rightarrow B$	Yes	$\{A1, C3\} = \{A2, C3\} = B2; \{A1, C1\} = B1, \{A3, C5\} = B3$
$\{A, C\} \rightarrow D$	Yes	$\{A3, C5\} = \{A2, C3\} = D4; \{A1, C1\} = D3, \{A1, C3\} = D2$
$\{B, C\} \rightarrow A$	No	$\{B2, C3\} = A1, A2$
$\{B, C\} \rightarrow D$	No	$\{B2, C3\} = D2, D4$
$\{C, D\} \rightarrow A$	Yes	$\{C1, D3\} = \{C3, D2\} = A1, \{C3, D4\} = A2, \{C5, D4\} = A3$
$\{C, D\} \rightarrow B$	Yes	$\{C3, D2\} = \{C3, D4\} = B2, \{C1, D3\} = B1, \{C5, D4\} = B3$

From this table, it can be seen that while B and C are functionally dependent, they are not dependent to other attributes, and so are other single attribute. Therefore, a single key cannot be a primary key, and it is necessary for a composite key to become primary key(as regarded to {A,B}, {A, C} and {C, D}).