CSE 103
DISCRETE MATHEMATICS
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Chapter : 1 , Section : 2

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Question :

Are these system specifications consistent? "The router can send packets to the edge system only if it supports the new address space. For the router to support the new address space it is necessary that the latest software release be installed. The router can send packets to the edge system if the latest software release is installed, The router does not support the new address space."

Answer:

Let s be "The router can send packets to the edge system"; let a be "The router supports the new address space"; let r be "The latest software release is installed." Then we are told $s \rightarrow a$, $a \rightarrow r$, $r \rightarrow s$. Since a is false, the first conditional statement tells us that s must be false. From that we deduce from the third conditional statement that r must be false. If indeed all three propositions are false, then all four specifications are true, so they are consistent.