**Part 1 (Composition Synthesis)**
Given the following the available services \( A_1 \) and \( A_2 \) and the target service \( T \), check whether a composition realizing it exists, and if it does, produce the output relation of orchestrator generator. If not, single out the target state that cannot be (ND-)simulated, and propose a change to the available services so as to guarantee the composition.

**Part 2 (Theoretical Question)**
Write the definition of bisimulation and simulation. Then consider the following transition systems.

(a) *Are they bisimilar?* If so, write a bisimulation relation. If not, show where bisimulation breaks.
(b) *Does S simulates T?* If so, write a simulation relation. If not, show where simulation breaks.
(c) *Does T simulates S?* If so, write a simulation relation. If not, show where simulation breaks.