



5. Consider the following schedule, where each operation is performed on a single variable  $x$ .

P0: W(1) R(2) W(3)  
P1: R(1) W(2)  
P2: W(4) R(1)  
P3: R(4) R(1) R(3) R(2)

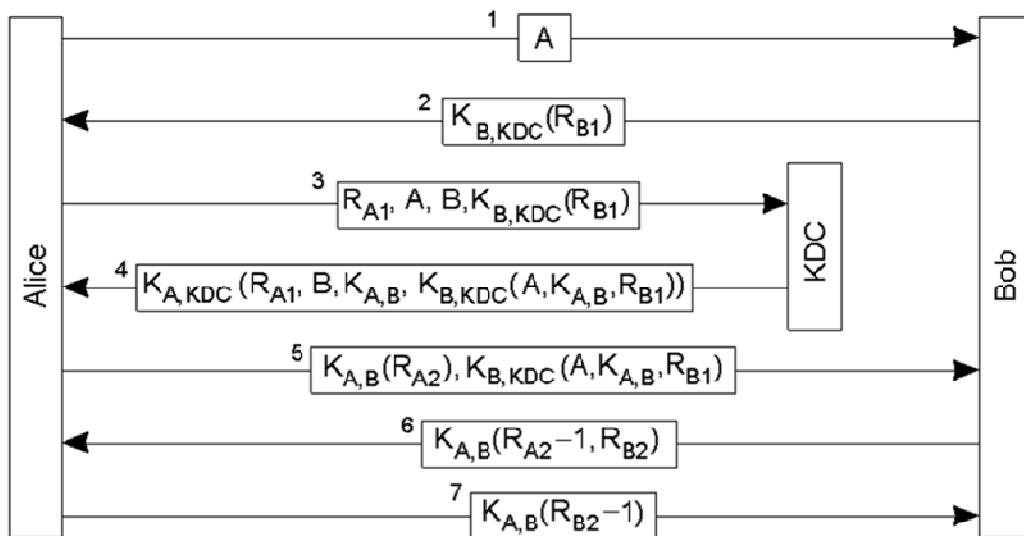
a) Is the schedule consistent with respect to the following consistency models: FIFO, causal, sequential? Motivate your answers.

Now assume a weak consistency model is adopted; the synchronization variable is used as follows:

P0: W(1) R(2) W(3) S  
P1: R(1) W(2) S  
P2: W(4) R(1) S  
P3: R(4) R(1) R(3) R(2) S

b) Is the schedule consistent? Motivate your answer.

6. Consider the following protocol:



- Which problem does it solve?
- Why does the KDC put  $B$  inside message 4?
- Why does the KDC put  $R_{A1}$  inside message 4?
- Why does the KDC put  $R_{B1}$  inside message 4?