



CSI3344 Distributed Systems

Workshop 07

Q1. The statement of causal consistency is:

*Writes that are potentially casually related must be seen by all processes **in the same order**. Concurrent writes may be seen in a different order on different machines.*

Given four processes P1, P2, P3 and P4, and their following 5 execution sequences, **explain** which sequence is causally consistent, and which one is not.

(a)

P1:	W(x)a			W(x)c
P2:		R(x)a	W(x)b	
P3:		R(x)a		R(x)c
P4:		R(x)a		R(x)b

(b)

P1:	W(x)a			W(x)c
P2:		W(x)b		
P3:			R(x)a	R(x)c
P4:			R(x)b	R(x)a

(c)

P1: W(x)a

P2: R(x)a W(x)b

P3: R(x)b R(x)a

P4: R(x)a R(x)b

(d)

P1: W(x)a

P2: R(x)a W(x)b

P3: R(x)a R(x)b

P4: R(x)a R(x)b

(e)

P1: W(x)a

P2: W(x)b

P3: R(x)b R(x)a

P4: R(x)a R(x)b

- Q2. Consider the example given in lecture slide No.15: Although slide No.16 listed 4 possible execution sequences, there exist many other possible valid execution sequences for this example.
List 4 other valid execution sequences, and their corresponding sequences of Prints and Signatures for the example.

The following questions are *Optional*:

- Q3. Continue with Q2, work out all other valid execution sequences for this example, and list all other possible Prints and Signatures.

Does the number of the Prints equal to the number of the Signatures in this case?

END OF THE WORKSHOP