

Cache Coherence

P1
 $x \leftarrow 5$

P2

P3
 $x \leftarrow 7$
 $x \leftarrow 5$

$x \leftarrow 7$

A memory system is coherent if:

- Write propagation: P1 writes to X, sufficient time elapses, P2 reads X and gets the value written by P1
- Write serialization: Two writes to the same location by two processors are seen in the same order by all processors
- The memory *consistency* model defines “time elapsed” before the effect of a processor is seen by others and the ordering with R/W to other locations (loosely speaking – more later)