**Quiz 4**

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# **Question 1**

## Snooping Solution (Snoopy Bus):

# Send all requests for data to all processors

# Processors snoop to see if they have a copy and respond accordingly

# Requires broadcast, since caching information is at processors

# Works well with bus (natural broadcast medium)

# Dominates for small scale machines (most of the market)

## Directory-Based Schemes

# Keep track of what is being shared in one centralized place

# Distributed memory => distributed directory (avoids bottlenecks)

# Send point-to-point requests to processors

# Scales better than Snoop

* Actually existed BEFORE Snoop-based schemes

# **Question 2**

* This event is a true sharing miss, since xl was read previously by P2 and needs to be

invalidated from P2.

* This event is a false sharing miss, since x2 was invalidated by the write of xl by Pl at time

step 1, but that value of xl is not used in P2.

* This event is a false sharing miss, since the block containing xl is marked shared due to the

read in P2 (at time step 2), but P2 did not read xl. The cache block containing xl will be in

the shard state after the read by P2; a write miss (upgrade) is required to obtain exclusive

access to the block.

* This event is a false sharing miss for the same reason as time step 3.
* This event is a true sharing miss, since the value being read was written by P2 in time step 4.