

CS422

Computer Architecture

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<http://web.cse.iitk.ac.in/~cs422/index.html>

Lecture Outline

- Cache coherence protocols (continued)
 - Snooping-based schemes
 - Directory-based schemes
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- *Scribe for today?*

Snooping-Based Protocols

- Applicable for write-through as well as write-back caches
- Optimizations:
 - Shared/Exclusive bit
 - Write miss and invalidate messages
 - Shared+single versus truly shared blocks
 - Maintaining separate tags
- Dirty bit required?

Towards Directory-Based Protocols

- What properties of the multi-processor does a snooping-based protocol use?
 - Broadcast-based bus, all-to-all communication
- What if this is not possible?
 - Communication goes through a directory
 - Directory is logically shared across processors
 - Physically centralized or distributed
 - Directory entry per memory-block
 - Possible states: uncached, shared, exclusive
 - Use bit-vectors for storing these