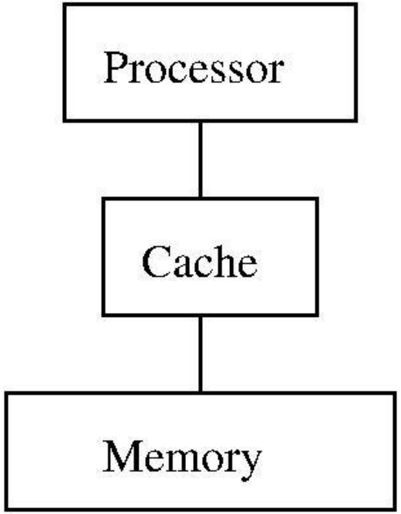
# Multiprocessor caching and false sharing

# Recall: Caching

- Cache(s) sit between processor and memory
  - Handle memory accesses w/o going all the way to memory
  - Exploit temporal locality and spatial locality



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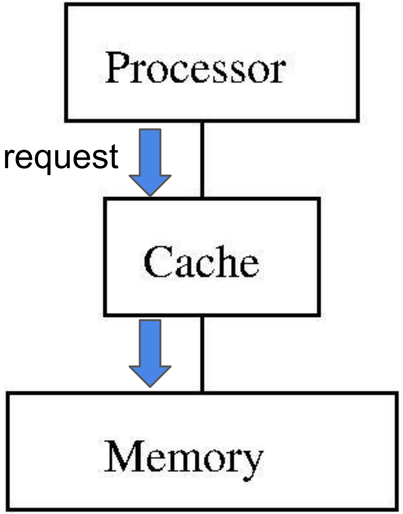

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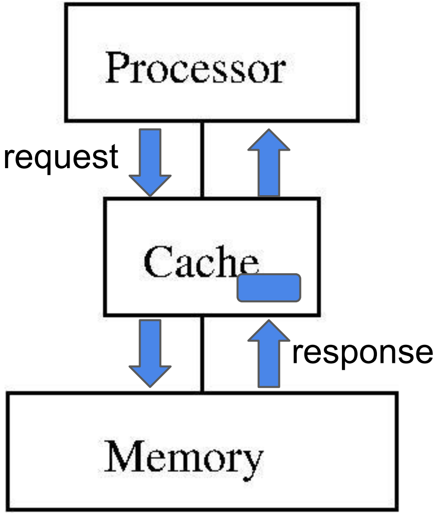

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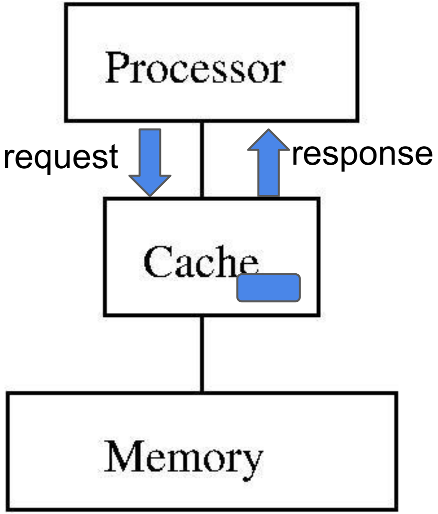

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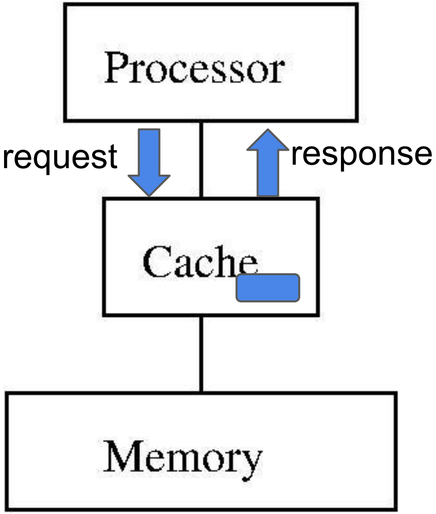
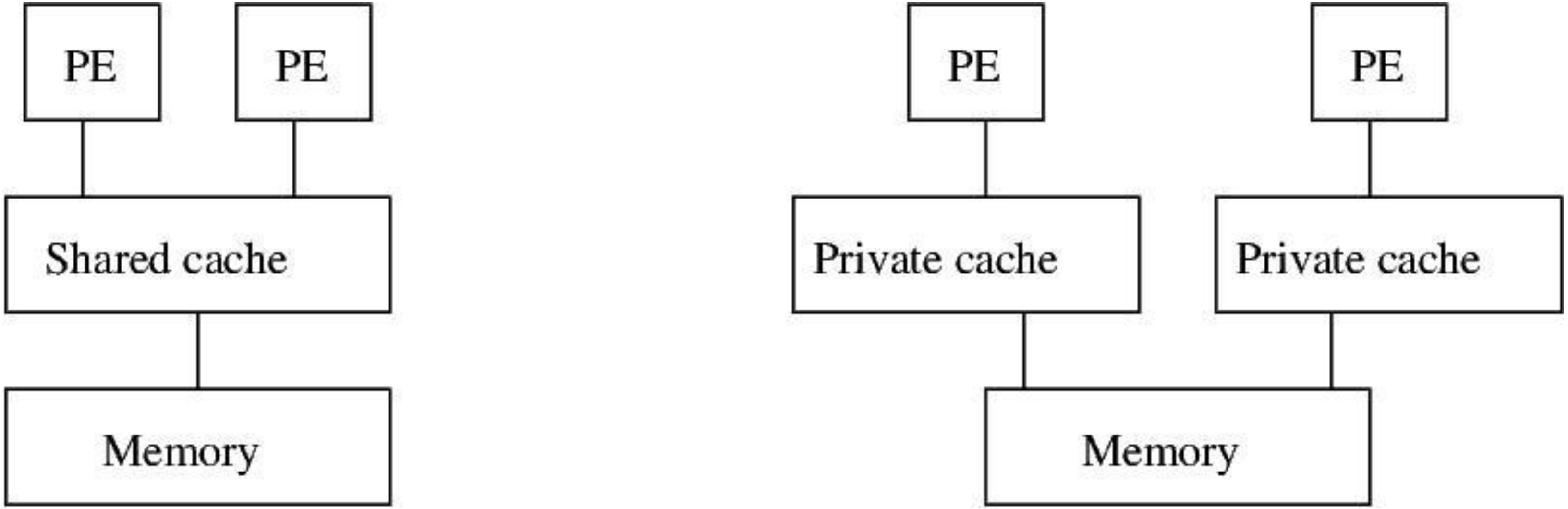


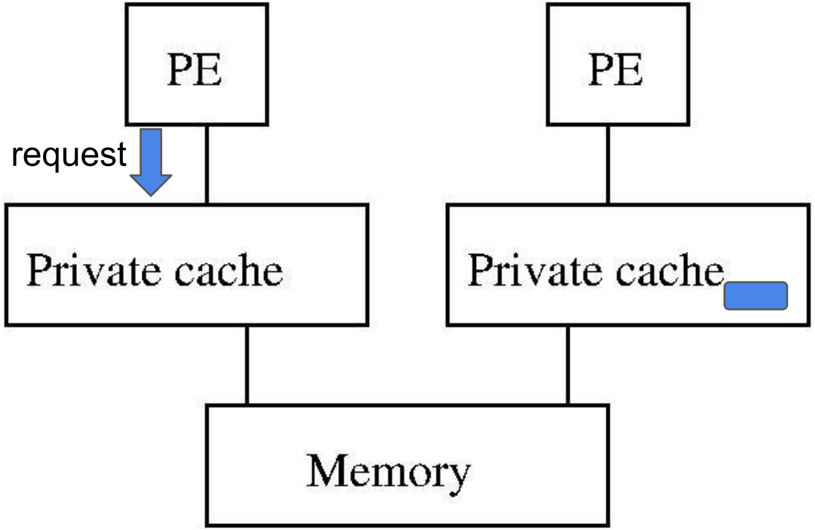
- Store lines that with recently accessed memory locations and other locations nearby

# Caching for multiple processing elements (PEs)



# Cache coherence

- Potential issue when cache line is in one cache and other PE requests it



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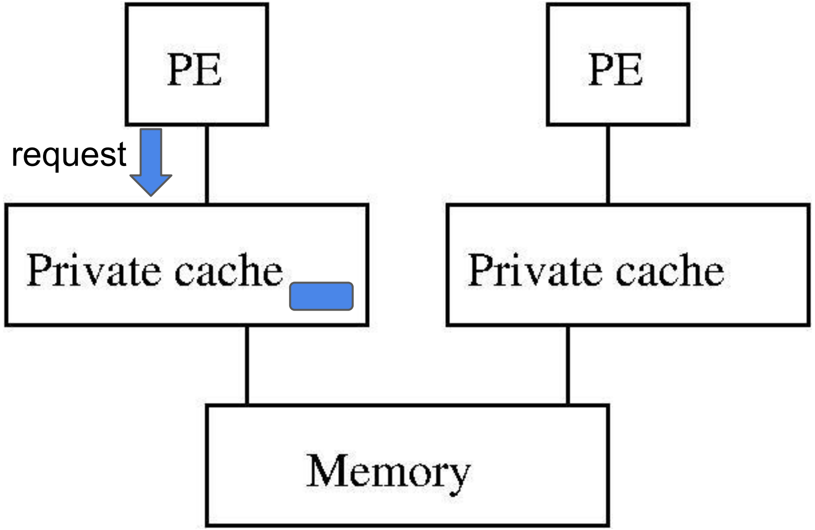

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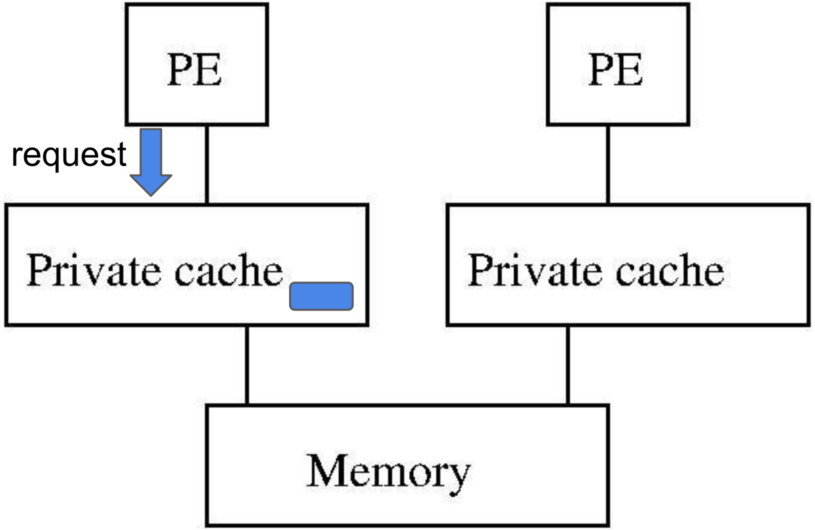

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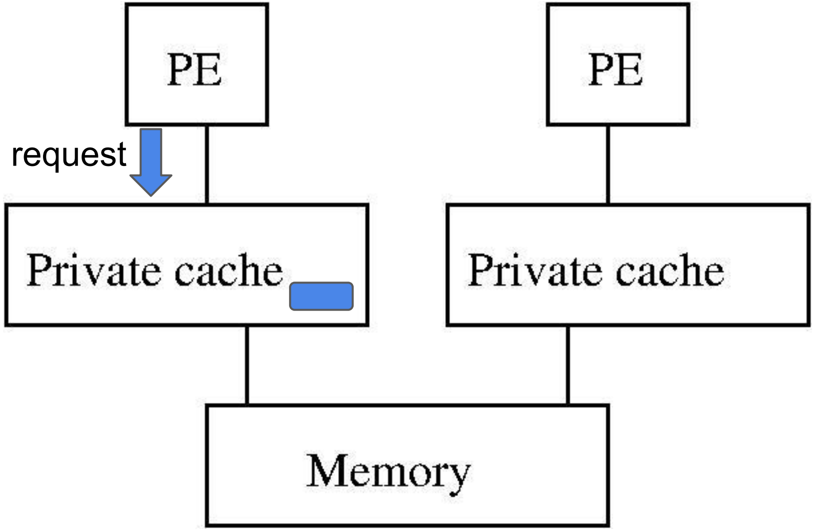

- False sharing: When a memory access causes a cache line to be stolen even though no data is actually being shared