

Abstract DVD Player Models

Work in progress...

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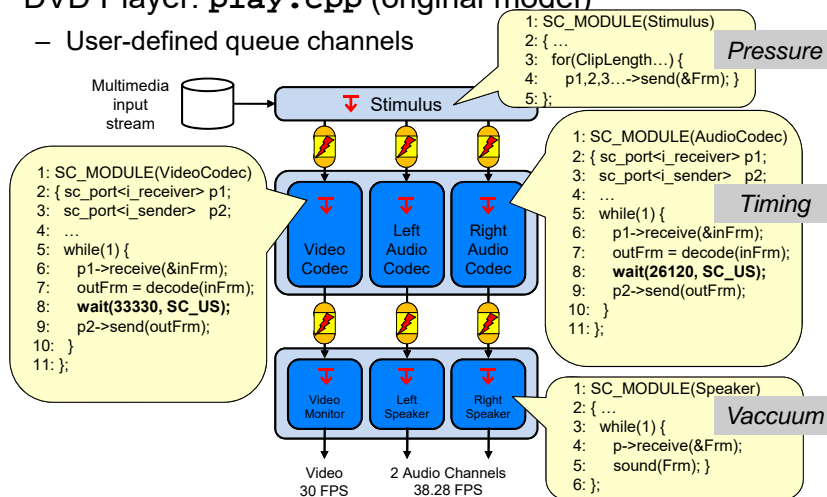
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Classic TLM Example

- DVD Player: `play.cpp` (original model)

- User-defined queue channels



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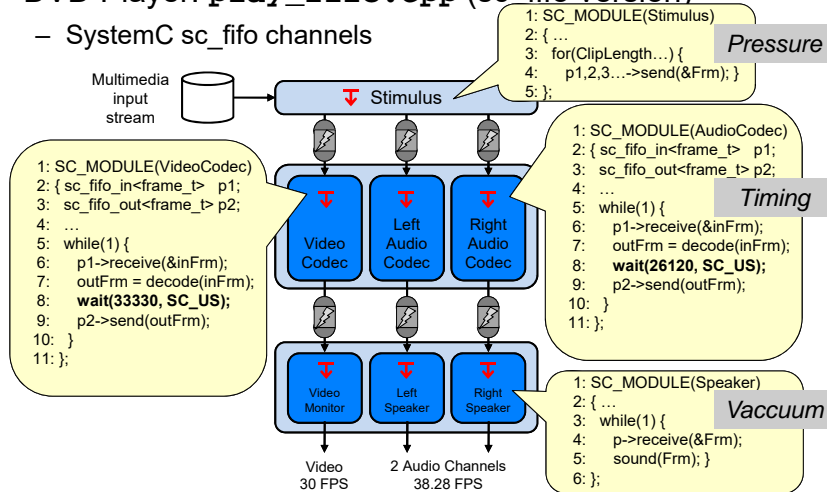
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Classic TLM Example

- DVD Player: `play_fifo.cpp` (sc_fifo version)

- SystemC sc_fifo channels



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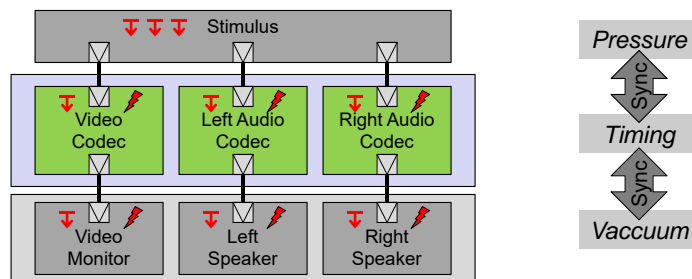
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TLM-2.0 Example

- DVD Player: `play_TLM2.cpp` (ZC)

- cross-hierarchy socket binding, event handshakes in targets



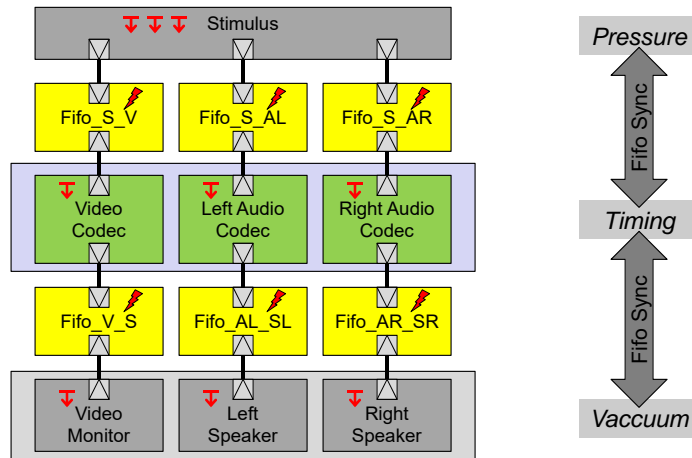
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TLM-2.0 Example

- DVD Player: `play_TLM2_fifo.cpp` (ZC)
 - cross-hierarchy socket binding, event handshakes in Fifo



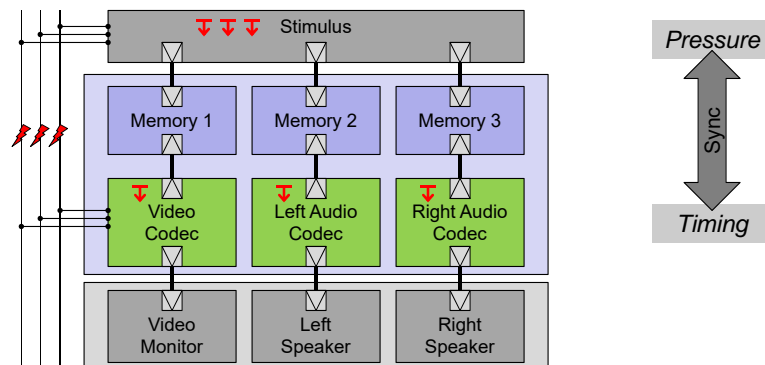
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TLM-2.0 Example

- DVD Player: `play_TLM2_3memX.cpp` (RD)
 - cross-hierarchy socket binding, event handshakes btw. initiators



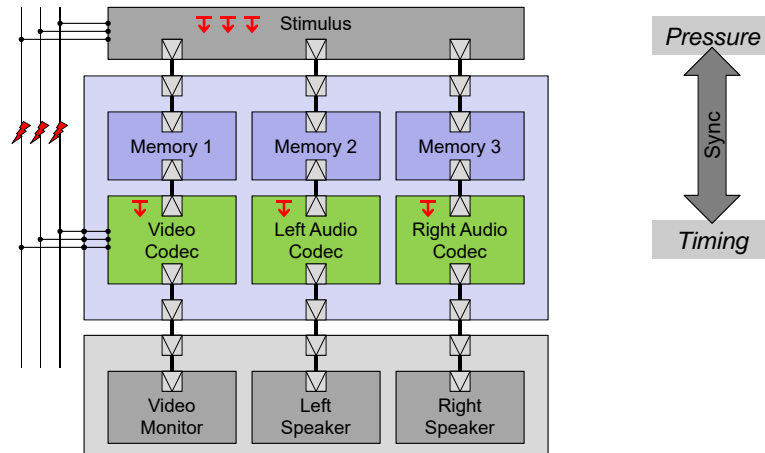
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TLM-2.0 Example

- DVD Player: `play_TLM2_3mem.cpp` (RD)
 - hierarchical socket binding, event handshakes btw. initiators



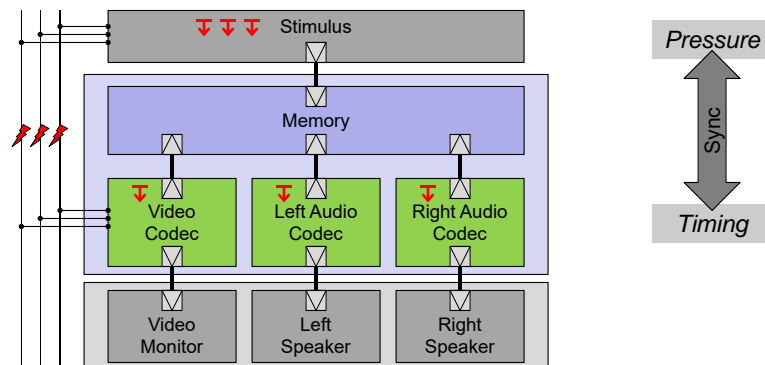
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TLM-2.0 Example

- DVD Player: `play_TLM2_memX.cpp` (RD)
 - cross-hierarchy socket binding, event handshakes btw. initiators



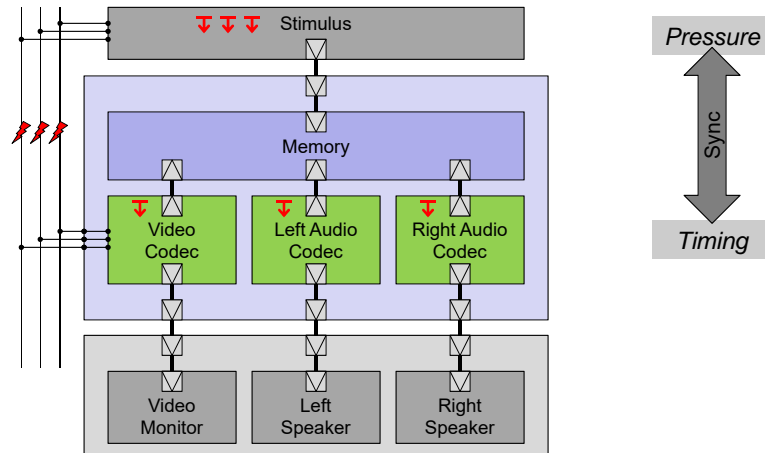
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TLM-2.0 Example

- DVD Player: `play_TLM2_mem.cpp` (RD)
 - hierarchical socket binding, event handshakes btw. initiators



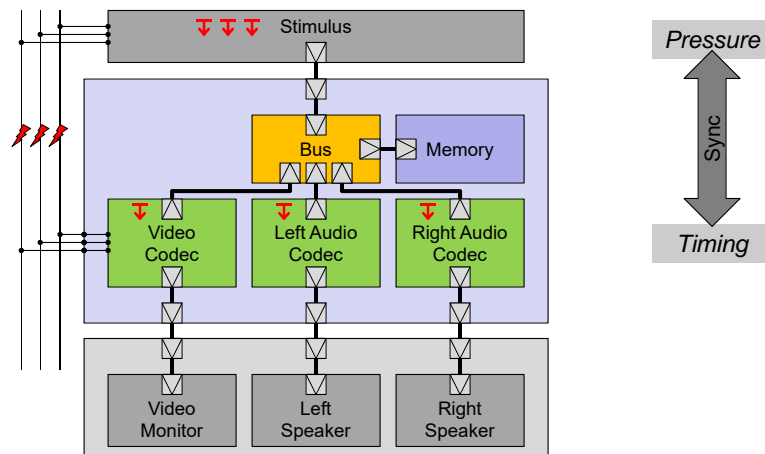
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TLM-2.0 Example

- DVD Player: `play_TLM2_bus_mem.cpp` (RD)
 - hierarchical socket binding, event handshakes btw. initiators



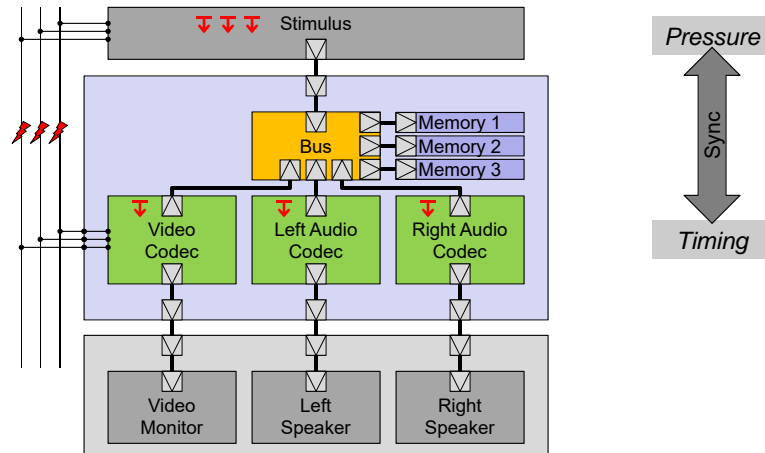
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TLM-2.0 Example

- DVD Player: `play_TLM2_bus_3mem.cpp` (RD)
 - hierarchical socket binding, event handshakes btw. initiators



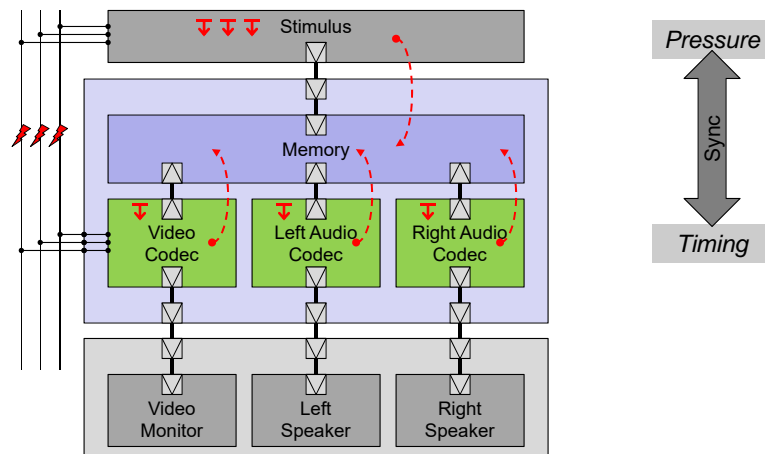
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TLM-2.0 Example

- DVD Player: `play_TLM2_dmi.cpp` (RD)
 - hierarchical socket binding, event handshakes btw. initiators



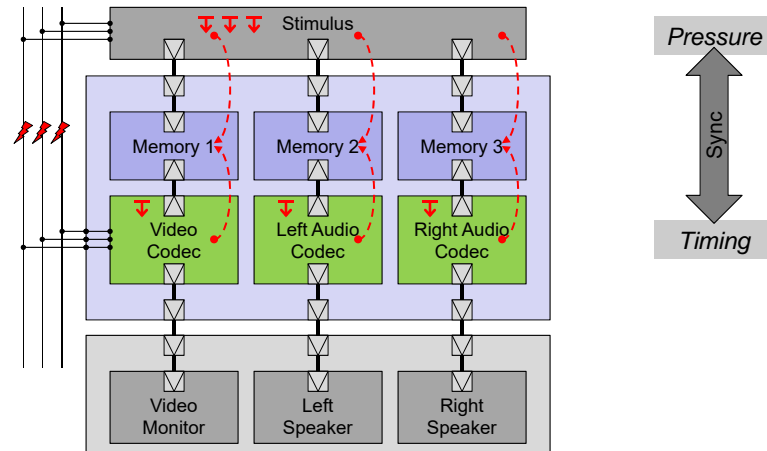
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TLM-2.0 Example

- DVD Player: `play_TLM2_3dmi.cpp` (RD)
 - hierarchical socket binding, event handshakes btw. initiators



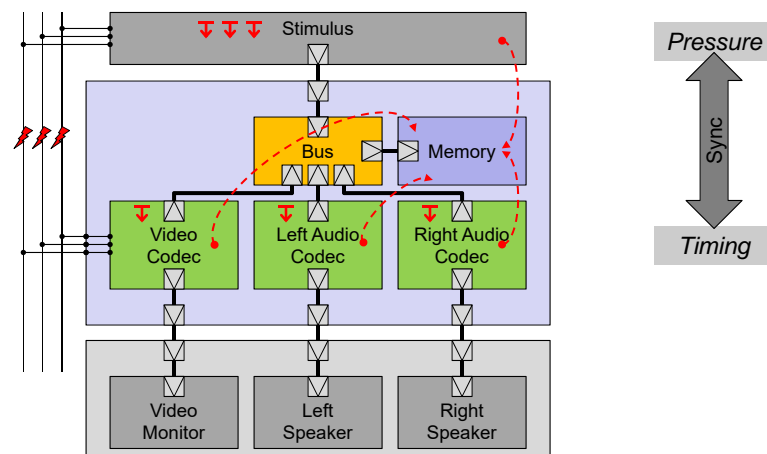
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TLM-2.0 Example

- DVD Player: `play_TLM2_bus_dmi.cpp` (RD)
 - hierarchical socket binding, event handshakes btw. initiators



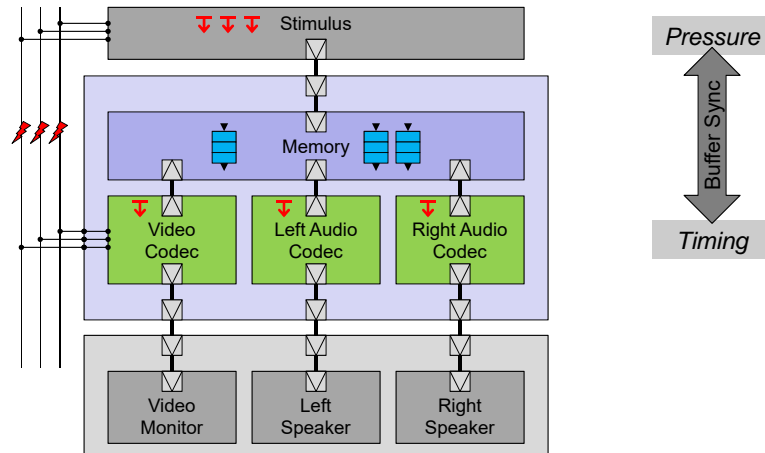
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TLM-2.0 Example

- DVD Player: `play_TLM2_membuf.cpp` (RD)
 - hierarchical socket binding, event-sync'd buffers in memory



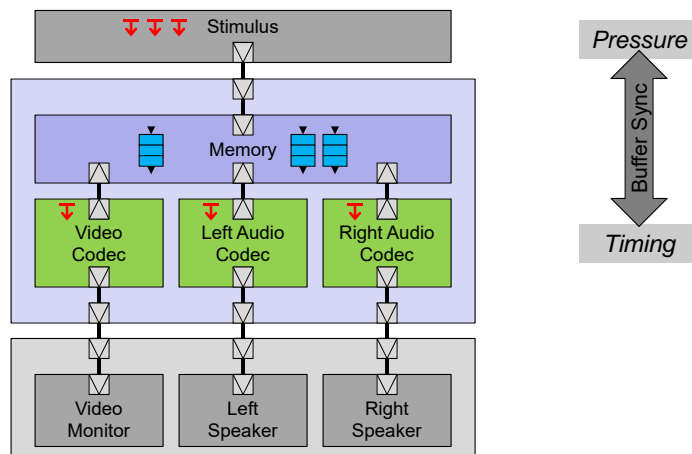
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TLM-2.0 Example

- DVD Player: `play_TLM2_membufP.cpp` (RD)
 - hierarchical socket binding, polling-sync'd buffers in memory



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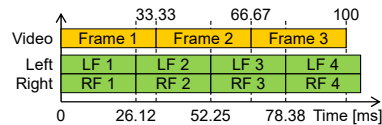
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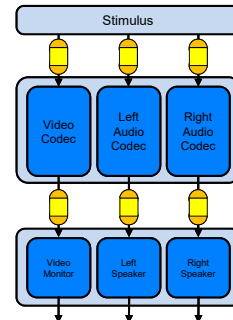
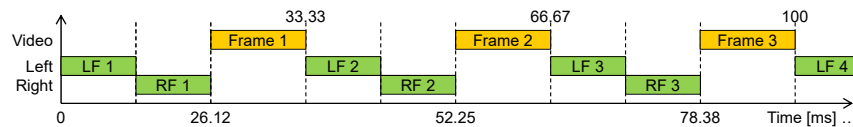
Experiments and Results

- DVD Player Example
 - Parallel video and audio decoding with different frame rates

1. Real time schedule: fully parallel



2. Reference simulator schedule (DES)



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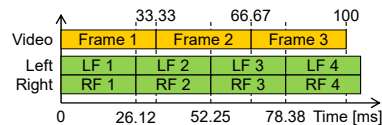
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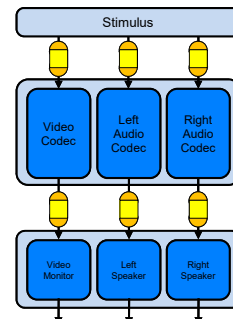
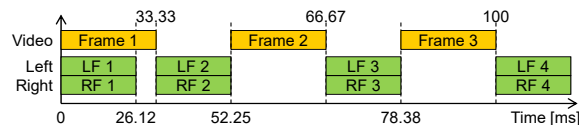
Experiments and Results

- DVD Player Example
 - Parallel video and audio decoding with different frame rates

1. Real time schedule: fully parallel



3. Synchronous parallel schedule (PDES)



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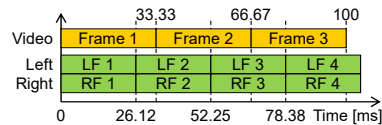
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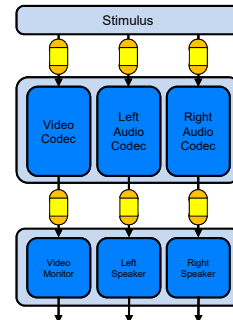
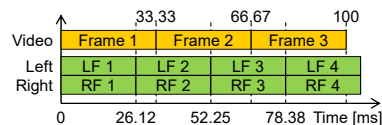
Experiments and Results

- DVD Player Example
 - Parallel video and audio decoding with different frame rates

1. Real time schedule: fully parallel



4. Out-of-order parallel schedule (OoO PDES)



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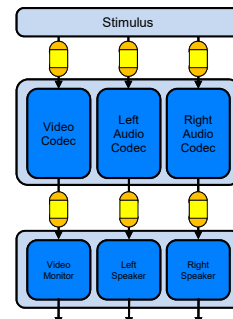
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Experiments and Results

- DVD Player Example
 - Parallel video and audio decoding with different frame rates
- Simulator Run Times
 - 4-core Intel® Xeon® CPU at 3.4 GHz
 - RISC v0.2.1, Posix-threads

		DES	PDES	OoO PDES
10 sec stream	Run Time	6.98 s	4.67 s	2.94 s
	CPU Load	97%	145%	238%
	Speedup	1 x	1.49 x	2.37 x
100 sec stream	Run Time	68.21 s	45.91 s	28.13 s
	CPU Load	100%	149%	251%
	Speedup	1 x	1.49 x	2.42 x



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