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New Computer Analysis

- Analysis (New Computer): Pretend you are designing a new computer. Use your simulator, the memory traces that you generated, and assumptions about cache and memory performance vs. cache and memory dollar cost to design the data cache for your machine. Assume that you will only have an L1 cache. What would be the appropriate parameters (e.g., size, block size, associativity, etc.) for your cache and given workload?
    - Personally, in designing a new computer I would look for highest performance and lowest cost. So, I would choose an L1 cache in each core of the processor with overall size of 32,000 bytes, block size of 64 bytes, an 8-way set associative write-back pattern for instructions, and an 8-way set associative write-through pattern for data. This will allow us to achieve the fastest and cheapest cache performance.
- EXTRA CREDIT Analysis: Repeat the above analysis (that is, design the data cache subsystem) assuming that you can have both an L1 and L2 cache. What would be the appropriate parameters for the two caches?
    - In this case, I would choose the same parameters for the L1 cache:
        - An L1 cache in each core of the processor with overall size of 32,000 bytes, block size of 64 bytes, an 8-way set associative write-back pattern for instructions, and an 8-way set associative write-through pattern for data. This will allow us to achieve the fastest and cheapest cache performance.
    - For the L2 cache:
        - An L2 cache of size 256,000 bytes in each core of the processor with block size of 64 bytes and an 8-way set associative write-back pattern. (To reduce latency as much as possible)