Lecture 12 Activity Solution

Model 1: Caches

1. Most convenient: backpack. Least convenient: parent's house
2. Parent's house.
3. The most important and related books and notes.
4. Move some outdated notes from backpack to dorm or parent's house.

Model 2: Lookup

1. 0x00 00 FF 50
2. The last few bits.
3. Lower bits

Model 3: Hardware

1. s bits are required.
2. b bits are required.
3. m-b-s bits are in the tag.
4. A. fully associative
   B. Direct mapped
   C. Fully associative
5. Memory
6. 16

Model 4: Replacement

1. Omitted.
2. Omitted.
3. A(miss), B(miss), A(hit), C(miss), B(miss), C(hit), A(miss).
4. A policy which evicts the last recently used data could have done better.
5. It should discard the line.

Model 5: Writing to Cache Lines

1. It comes from cache and other memory systems.
2. It shouldn't. There is temporal locality.
3. It must cache the new value. Write the evicted line to memory. It needs a dirty bit.
4. It depends.
5. WBWA: The writes are faster and multiple writes in a block require only one write to the main memory.
WTWNA: It's easier to implement and the data in memory is more consistent.