

1. The time to access a byte from a cache is 20ns. The time to access a byte from the memory is 100ns. A write back policy is used. The line size is 64 bytes. The hit ratio is .998. What is the effective access time of the cache/memory system? What hit ratio is required for the cache based system to be faster than not using a cache? What assumptions are you making?
2. A direct mapped 16KB cache uses 128B/line. If byte addresses are 32 bits, how is an address divided into fields? How many overhead bits does the cache require?
3. A 4 way set associative 16KB cache uses 128B/line. If byte addresses are 32 bits, how is an address divided into fields? How many overhead bits does the cache require?
4. A fully associative 16KB cache uses 128B/line. If byte addresses are 32 bits, how is an address divided into fields? How many overhead bits does the cache require?