Matthew Bowker

Homework 9

Due beginning of class, Thursday, November 21

What are the differences among direct-mapped cache, set-associative cache and fully associative cache? What are the advantages and disadvantages of each?

Direct-mapped Cache – Each location in main memory gets only one location in the cache. Easier to set up and configure, but if there's a miss it can nock memory out.

Set-Associative Cache – Each location in main memory can be cached in multiple cache locations. Reduces misses and locks, but can be harder to maintain and more complex

Fully Associative Cache – Any memory location can be stored at any cache location. Most robust, with fewest misses, but hardest to implement.

How does a cache determine if a data request is a hit or miss?

The cache is able to check using a check bit. If the bit is set properly, the read is a hit. If not, the read is a miss.

What is the difference between write-through and write-back cache?

Write-through – Writing is done to the cache and main memory simultaneously.

Write-back – Writing is done to the cache only.