

ELE 555  
Spring 2016

Homework 6A

Due 3/29/2016

Beginning of class

1) Similar to problem 4 in the 455 HW:

a) Given an 4K block direct mapped cache and a 20 bit address space, fill in the table below, given the following memory references (assume 32 bit words)

b) With the same memory addresses, the order of the data has shifted compared to the 455 solution – explain? - 10 pts

Memory Location (hex)	Data value (hex)
3B2B4	0x12212345
699FC	0x0110ABCD
83158	0xFFEE9876

use HEX for all values

Index	Valid	Tag	Data (4 bytes)
0			
...			
<input type="text"/>			
...			
<input type="text"/>			
...			
<input type="text"/>			
...			
0x3FF			

2) Similar to problem 5 in the 455 HW:

a) Calculate the total number of bits in a 64KB direct mapped cache assume 8 word blocks, 32 bit words, a 32bit address space AND 3 bit parity per word.

b) Calculate the % overhead in the memory array - 10 pts

3) Do a quick search on the internet and choose a 1TByte HDD and a 1TByte SSD.

A) Create a table comparing: price, access times, and physical dimensions

B) Suggest reasons for the differences - 10 pts