

Winter 2009

### COSC 3P92 Assignment 3

B. Ross

Due date: Monday April 6, 12:00 noon. **No lates!**

Instructions: Show ALL your work. Correct answers without supporting work will get partial marks only. Incorrect answers without supporting work will receive zero. Typed text is preferred for written answers.

Text questions:

Chapter 5: 15 (see variation below), 16, 17, 18, 26

Chapter 4: 5, 6, 8, 9, 10, 11

Additional/edited questions:

5-15: Translate this expression instead of the one in the text:

$$(((2 - 3) - 4) / 6) * 7$$

A. Create Mic-1 code for a new instruction: DBL

This takes the top word on the stack, and replaces it with twice its original value.

B. Perform a hand simulation of the direct-mapped cache discussed in class. Recall that it uses 4 byte blocks, 1 byte words, and 8 slots in the cache. Addresses have the form:

11 bits Block (tag) #	3 bits Slot #	2 bits Word #
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Assume the cache is empty at the start of the simulation.

The addresses of the accesses (in order) are:

\$A7F3, A7F4, A7F8, 022F, 022C, 0231, A7F5, A7F2, A7F3, 0232

Show all your work, describing what happens for each individual access.

C. Determine the cache efficiency for the above hand simulation.