

ECE 271 - Homework #4

1. How many bytes of memory does each of the following instructions take?
 - a. Increment accumulator A.
 - b. Increment accumulator X
 - c. Load accumulator A with the number at memory location \$9000.
 - d. Load accumulator A with the number 7.
 - e. Load accumulator A with the memory location pointed to by the X register.
 - f. Load the X register with the number at memory location \$9000.
 - g. Load the X register with the number 7.
2. How many bus cycles would you expect each of the above instructions to take based on the number of memory accesses? Break this down into how many bus cycles it takes to fetch the instruction, and how many bus cycles it takes to execute the instruction. Only count cycles in which bytes are loaded from or stored to memory.
3. The following instructions are in memory beginning at address \$1000. Give the actual machine code. (Note Appendix A.)

LDAB \$2000

LDAB \$20

LDAB #\$20

LDX \$2000

LDX \$20

LDX #\$20

LDY \$2000

4. Give the instruction that corresponds to each of the following op-codes. Also indicate how many additional bytes each instruction takes.

5F

DB

B7

4C

5. Write code to load accumulator A with memory location \$2000, add the number \$12 to it, and store the result in the memory location pointed to by the X register.
6. Write a code segment which will wait until the switches on PortC all read a value of "1".
7. Work problem 2-10 in the 3rd edition of text (problem 2-3 in 2nd edition)
8. Work problem 2-11 in the 3rd edition of text (problem 2-4 in 2nd edition)