

**EEEN 3449**

**Lab # 5 Bit Manipulation**

**Fall 2009**

Assign #B9 or #%10111001 to memory location \$2000, and load the memory location to Accumulator A or B to perform the bit manipulation. Then store Accumulator A or B back to the same memory location.

- a) Write an instruction sequence to toggle bits 6, 4, 2, and 0 of memory location at \$1500 and clear the other four bits (7, 5, 3, & 1) of the same location. Provide comment statement for each instruction.
- b) Write an instruction sequence to toggle bits 7, 5, 3, and 1 of memory location at \$1500 and clear the other four bits (6, 4, 2, & 0) of the same location. Provide comment statement for each instruction.
- c) Write an instruction sequence to toggle the upper four bits of a memory location and let the lower four bits unchanged. Provide comment statement for each instruction.
- d) Write an instruction sequence to toggle the lower four bits of a memory location and let the upper four bits unchanged. Provide comment statement for each instruction.
- e) Write an instruction sequence to swap the upper four bits and the lower four bits of accumulator B. (swap bit 7 with bit 3, bit 6 with bit 2, and so on).
- f) Write an instruction sequence to swap the upper four bits and the lower four bits of accumulator A. (swap bit 7 with bit 3, bit 6 with bit 2, and so on).

Provide a schematic flowchart for each of your programs in your lab report.

You also need to print out the memory display of your output data.

**You have to demonstrate how your program works to your TA.**

<i>bit</i>	7	6	5	4	3	2	1	0
\$2000	1	0	1	1	1	0	0	1