CMIS 310 Section 7380 (Spring 2016) HOMEWORK #3

Feel free to insert as much additional space between questions as needed to accommodate your work and answers.

1. How many bits are required to address a 6M X 32 main memory if

    a) Main memory is byte addressable? _____

    b) Main memory is word addressable? _____

2. A digital computer has a memory unit with 30 bits per word. The instruction set consists of 257 different operations. All instructions have an operation code part (opcode), and an address part (allowing for only one address). Each instruction is stored in one word of memory.

    a) How many bits are needed for the opcode? _____

    b) How many bits are left for the address part of the instruction? _____

    c) What is the maximum allowable size for memory? _____

3. Write a MARIE program to add up a set of numbers. The first input will be the number of numbers to be added. You may assume that this input is positive. Subsequent inputs will be the numbers to be added. These may be positive, negative, or zero. When all numbers have been added, output the sum.

    Example: if the inputs are 5, 2, -3, 6, 27, -1, then the output should be 36.

    USING THE ASSEMBLER/SIMULATOR PROVIDED IN THIS CLASS, assemble and test your program. Provide a text file with your assembly code and machine code, and a screen shot of the simulator at the completion of the program.

4. .