**Assignment 3**

**CSCI 4335**

**Dr. Abraham**

**Please submit as a word document**

Your Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

You are asked to create an imaginary accumulator architecture machine. I explained a 16bit machine in class. We will use 4bits for Opcode and rest for operand(s). You need to design your own instruction set (which you may have done in the previous assignment). Design machine code and assembly code as discussed in class. Make sure you have these instructions included: Divide, Multiply, Subtract, Subtract Immediate, Add, Add Immediate, Load, Store, Branch Unconditional, Branch on less than, Branch on less than or equal to, Branch on equal, Branch on greater than, Branch on greater than or equal to, ShiftRight, ShiftLeft, and Display the contents of the memory on the output device. It is very important you create diagrams that explain what happens in each of the registers (AC, MAR, MBR, AND IR), ALU, AND IN MEMORY LOCATIONS. FIRST SHOW WHERE IN MEMORY YOUR PROGRAM AND DATA ARE LOCATED.

1. Give the instruction set you designed. Give machine code and assembly code for these instructions.
2. Write the assembly code for C=A-B
3. show what happens in an Accumulator machine using diagrams, arrows, explanations, et.