Homework 2

Due Date: 15 September 2:00 PM

1. Consider a 3 space addressing machine instruction:

ADD $R1, A [$R0], @B

The first operand "A [$R0]" uses indexed addressing mode with R0 as the index register and the second operand @B uses indirect addressing mode. A, B and C are memory addresses. How many memory accesses read and writes (by memory we mean only main memory not register) do we need? (10)

2. The memory locations 1000, 1001 and 1020 have values 18, 1 and 16 respectively before this program is executed. Rd and Rs are registers.

```
MOVI   $Rs, 1                  #Move immediate

LOAD   $Rd, 1000 ($Rs)              #Load from memory indexed

ADDI   $Rd, $zero, 1000        #Add immediate

SW     0($Rd), 20              #Store in memory indexed
```

What are the values of the memory locations 1000, 1001 and 1020? (20)

3. Given the following memory values and a one address machine what will the following instructions load into the accumulator?

- Location 20 contains 40
- Location 30 contains 50
- Location 50 contains 30

a) Load immediate 20
b) Load memory direct 20
c) Load memory indirect 30 (30)

4. Write all the addressing modes of all the lines that you can of the stack program posted in blackboard. (40)