EECS 388: Computer Systems and Assembly Language

Homework 2

Due Feb. 21, 2007

Justify your answers!

Figure 1 shows a part of the memory (both contents and locations).

Contents	Locations
$20	$4000
$50	$4001
$01	$4002
:	:
:	:
$B5	$5000
$CD	$5001

Figure 1.

Problem 1 (10 Points):

Consider the memory shown in Figure 1. What is in accumulator A and the N, Z, C, V bits in CCR after an LDD #$4001 instruction is executed?

Accumulator A _____ N _____ Z _____ C _____ V _____

Problem 2 (15 Points):

Write a program segment to reverse the bit order of a 6-bit number. Assume this number is stored in $6000. Store the reversed number to $6001 (i.e., if the original number is 0 0 b_5 b_4 b_3 b_2 b_1 b_0, after this program, the number in $6001 will be 0 0 b_0 b_1 b_2 b_3 b_4 b_5).

Problem 3 (20 points):

Write a program segment to multiply a 16-bit number in the D register by 10 using arithmetic left shift instead of multiplication instructions.

Problem 4 (20 points):

Write a program to subtract two 24-bit numbers and store the result to memory locations starting at $6000. The two 24-bit numbers are stored in memory locations starting at $5000 and $5010, respectively.

Problem 5 (20 Points):

If A contains $56, what is the result of each of the following instructions? Assume that A is restored to its original value before each instruction.

a) ANDA #$33

b) ORAA #$33

c) EORA #$33

d) BITA #$80

Problem 6 (15 Points):

Consider the following program:

```
LDD   #$F00D
STD   $8100
BSET  $8100, $44
BCLR  $8101, $11
```

What numbers are in $8100 and $8101 at the end?