

ELEC 2220 Computer Systems
 Homework #6
 Due: Monday, 6-7-2010

1. Study section 4.6 of the book (memory addressing modes.)
2. Given the CPU12 program below, sketch a diagram of the data memory, beginning at address \$0800. As in the previous homework, label each byte of memory with its address, indicate which byte of memory corresponds to each symbolic label, and enter the value of each byte. Use hexadecimal form for each number.
3. Determine the values loaded into the indicated registers by the following CPU instructions, and enter those on the lines to the right of the instructions.
4. Create a CodeWarrior project, enter the program below, assemble it, and single-step through the program in the debugger to check your answers. Next to your answers, record the register values observed in the debugger, and comment on any values that are different from what you found in part 3.

; Data memory definition

```

      org    $0800
pp:   dc.w  $2345
ir:   dc.b  5,6,7,8
ts:   dc.w  $0805
fr:   dc.b  'A'
reg:  dc.w  18,-20,15,-10
mem:  ds.b  $20
tmp:  dc.w  $1234,$5678

```

; Test program

org	\$4000	;Register contents after instruction:
Entry: ldaa	#10	;A = _____
ldaa	\$803	;A = _____
ldaa	pp	;A = _____
ldaa	ir+2	;A = _____
ldaa	\$80D	;A = _____
ldaa	fr	;A = _____
ldx	\$080B	;X = _____
ldx	ts	;X = _____
ldaa	0,x	;A = _____
ldaa	5,x	;A = _____
ldaa	-5,x	;A = _____
ldx	#\$0800	;X = _____
ldaa	\$31,x	;A = _____
bra	*	;Effectively "halts" the program