

EE 308 – Homework 3

Due Feb. 3, 2006

1. Reverse assemble the following HC12 op codes:

CE 12 34 18 16 99 20 2D FA 3F

Indicate what instructions these bytes correspond to. For each instruction indicate the addressing mode which is used.

2. Repeat Problem 1 for the following op codes:

A6 2E B7 10 04 20 09 18 20 1F F5 3F

3. Which of the conditional branch instructions in the following list will cause a branch to be taken if the condition code flags are: N=0, Z=1, V=1, C=0:

- (a) BCC label
- (b) BNE label
- (c) BGE label
- (d) BGT label
- (e) BHI label
- (f) BMI label
- (g) BLS label

4. Below shows a sequence of instructions to be executed by a 68HCS12. Fill in the table, showing the value in accumulator A and the state of the condition flags N, Z, V and C after each instruction. The table shows the initial value of the condition flags and A

Instruction	Accumulator A	N	Z	V	C
	\$00	1	0	1	0
SUBA #\$78					
LSLA					
TSTA					
ADDA #\$40					
ROLA					
ADDA #\$CF					

5. Consider an array of 8-bit data located in memory with a starting address of \$2000 and an ending address of \$201F. Write a program which will swap the first element of the array with the last element; the second element with the next-to-last element, etc.
6. Write a program to count the number of even 8-bit numbers in a table of data. The starting address of the table is \$8000, and there are \$1000 numbers in the table. The numbers signed. The program should write the count into memory location \$2000.