

Problem #2 (40 points) Consider the following instructions given in the table below. For each instruction determine its length (in words), the instruction words (in hexadecimal), source operand addressing mode, and the content of register R7 after execution of each instruction. Fill in the empty cells in the table. The initial content of memory is given below. Initial value of registers R5, R6, and R7 is as follows: R5=0xF000, R6=0xF008, R7=0xFFFF. Assume the starting conditions are the same for each question (i.e., always start from initial conditions in memory) and given register values.

	Instr. Address	Instruction	Instr. Length [words]	Instruction Word(s) [hex]	Source Operand Addressing Mode	R7=? [HEX]
(i)	0x1116	MOV R5, R7	1	0x4507	Register	0xF000
(ii)	0x1116	MOV.B R5, R7	1	0x4447	Register	0x0000
(a)	0x1116	MOV 4(R5), R7				
(b)	0x1116	MOV.B 3(R5), R7				
(c)	0x1116	MOV.B -3(R6), R7				
(d)	0x1116	MOV TONI, R7				
(e)	0x1116	MOV.B EDE, R7				
(f)	0x1116	MOV &EDE, R7				
(g)	0x1116	MOV.B @R5, R7				
(h)	0x1116	MOV @R5+, R7				
(i)	0x1116	MOV #45, R7				
(j)	0x1116	MOV.B #45, R7				

Label	Address [hex]	Memory[15:0] [hex]
	0xF000	0x0504
	0xF002	0xFFEE
TONI	0xF004	0x0203
	0xF006	0x3304
	0xF008	0xF014
	0xF00A	0x2244
EDE	0xF00C	0xCDDA
	0xF00E	0xEFDD

Problem #3 (35 points) Consider the following instructions given in the table below. For each instruction determine changes in registers after its execution. Fill in the empty cells in the table. Initial value of registers R2, R5, and R7 is as follows: R2=0x0007, R5=0xAA55, R7=0x1357. Assume the starting conditions are the same for each question (i.e., always start from the initial conditions in registers).

Instruction	R7=0x????	V	N	Z	C
ADD.B R5, R7	0x00AC	1	1	0	0
ADD R5, R7					
ADDC R5, R7					
SUB.B R5, R7					
SUBC R5, R7					
CMP.B R5, R7					
CMP R5, R7					
BIT R5, R7					
BIC R5, R7					
BIS R5, R7					
AND R5, R7					
XOR.B R5, R7					
SWB R7					
RRC.B R7					
RRC R7					
RRA.B R7					
RRA R7					