

ECE 662

Homework #3

Problem:

The OSIAC 662 registers currently contain the following values: AC=\$F000, X=\$01FC, SP=\$0104, and PC=\$D000. The 1-bit condition code registers have the following contents: N=1, Z=1, V=0, and C=1. The relevant contents of memory are as follows:

Memory Location	Contents	Memory Location	Contents	Memory Location	Contents	Memory Location	Contents
0100	0000	0110	1000	01F0	F000	01F8	F000
0101	0100	0111	1100	01F1	F100	01F9	F100
0102	0200	0112	1200	01F2	F200	01FA	F200
0103	0300	0113	1300	01F3	F300	01FB	F300
0104	0400	0114	1400	01F4	F400	01FC	F400
0105	0500	0115	1500	01F5	F500	01FD	F500
0106	0600	0116	1600	01F6	F600	01FE	F600
0107	0700	0117	1700	01F7	F700	01FF	F700

Fill in the table on the next page by giving the contents of each of the registers and/or memory location whose contents change after execution of the individual instruction. (Note: start with the initial values each time.) Also, give the machine code for the instruction.

Note that the instruction is fetched from location \$D000. For the machine code, if some of the bits are not specified in the opcode word, make them 0.

Instruction	AC	X	SP	PC	NZVC	Memory Location (Address/Contents)	Machine Code (HEX)
<i>initial values:</i>	F000	01FC	0104	D000	1101		
ADD (X),AC							
AND #\$0114,AC							
MOVE 3(SP),AC							
OR -(X),AC							
SUB #\$FFFF,X							
CLR (X)+							
SUBQ #1,X							
ADDQ #1,(X)+							
JMP -1(SP)							
JSR \$0115							
NEG AC							
NOT \$FFFF(X)							
TST (X)							
BEQ 20							
BPL -3							
RTS							
DBRA 2(SP),5							
HALT							
EXG X,SP							