List the hexadecimal code for the following program (hand assemble it). MARIE's full instruction set is below, I think this is all that is needed.

Hex Address	Label	Instruction
100		Load A
101		Add One
102		Jump S1
103	S2,	Add One
104		Store A
105		Halt
106	S1,	Add A
107		Jump S2
108	A,	HEX 0023
109	One,	HEX 0001

Consider the "Load A" instruction that appears in the previous problem. For this instruction only, state what changes are made to MARIE's registers for each step of the fetch-decode-execute cycle. (Where possible, give the actual binary values that are written to the registers.)

Opcode	Instruction	RTN
0000	JnS *X*	MBR ← PC MAR ← *X* M[MAR] ← MBR MBR ← *X* AC ← 1 AC ← AC + MBR PC ← AC
0001	Load *X*	MAR ← *X* MBR ← M[MAR] AC ← MBR
0010	Store *X*	MAR ← *X*, MBR ← AC M[MAR] ← MBR
0011	Add *X*	MAR ← *X* MBR ← M[MAR] AC ← AC + MBR
0100	Subt *X*	MAR ← *X* MBR ← M[MAR] AC ← AC - MBR
0101	Input	AC ← InREG
0110	Output	OutREG ← AC
0111	Halt	

1000	Skipcond	If IR[11–10] = 00 then
		  If AC < 0 then PC ← PC + 1
		Else If IR[11–10] = 01 then
		  If AC = 0 then PC ← PC + 1
		Else If IR[11–10] = 10 then
		  If AC > 0 then PC ← PC + 1

1001	Jump *X*	PC ← IR[11–0]
1010	Clear	AC ← 0
1011	AddI *X*	MAR ← X MBR ← M[MAR] MAR ← MBR MBR ← M[MAR] AC ← AC + MBR
1100	JumpI *X*	MAR ← *X* MBR ← M[MAR] PC ← MBR

TABLE 4.7 MARIE's Full Instruction Set