



Assembly Exercise

1) In the box on the right, we have given the Assembly language version of a simple program. Assemble the program into machine code and determine the location addresses

2) What instruction is missing from this program?

3) What is the effect of the program on the registers and RAM concerned?

4) What does the term 'immediate data' mean? What other kinds of data could there be?

5) If BYTE1 in the program is treated as an address, on which page of RAM does it appear?

N.B. The values given in this program are for example only: if you wish to execute it, then you must choose locations and values suitable to your machine

Location Address	Machine Code	Assembly Language
6502		
		START EQU \$A000
		BYTE1 EQU \$45
		BYTE2 EQU \$38
		ORG START
		LDA #BYTE1
		CLC
		ADC #BYTE1
		STA BYTE1
		ADC #BYTE2
		STA BYTE2
Z80		
		START EQU \$A000
		BYTE1 EQU \$45
		BYTE2 EQU \$38
		ORG START
		LD A,BYTE1
		AND A
		ADC A,BYTE1
		LD (BYTE1),A
		ADC A,BYTE2
		LD (BYTE2),A

The Effect Of Machine Code Instructions



Instruction 1: LOAD the accumulator from ADDRESS 1
Z80 instruction: LCA, (ADDR1)
6502 instruction: LDA ADDR1



Instruction 2: ADD the contents of ADDRESS 2
Z80 instruction: ADC A, (ADDR2)
6502 instruction: ADC ADDR2



Instruction 3: STORE the contents of the accumulator at ADDRESS 2
Z80 instruction: LD (ADDR2),A
6502 instruction: STA ADDR2



The effect of data transfer instructions, such as LDA ADDR1 or LD (ADDR2),A, is always to copy the contents of the source location into the destination location. This location's contents are therefore overwritten; the source location is unaffected by the data transfer