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Assignment # 8

(5.16, 5.17, 5.21, 5.23, 5.42)

5.16) Which LC-3 addressing mode makes the most sense under the following conditions?

a) You want to load one value from an address which is less than 28 locations away.

PC-Relative

b) Load one value from an address which is more than 28 locations away.

Indirect Addressing

c) Load an array of sequential addresses.

Base offset

5.17) How many times does the LC-3 make a read or write request to memory during the processing of the LD instruction? the LDI instruction? LEA?

LD - Two Read requests, once to get the instruction, once to get the data

LDI -Three Read requests, once to get the instruction, once to get the address, once to get the data

LEA - Once, only to fetch the instruction

5.21) What is the maximum number of TRAP service routines that the LC-3 ISA can support? The LC-3 ISA can support 6 different TRAP service routines. The ISA only has 6 TRAP service routines listed for the LC-3.

5.23) x30FF 1110 0010 0000 0001 LEA R1, #1 R1 , 🡨 PC + 1

x3100 0110 0100 0100 0010 LDR R2, R2 , 🡨 [R2+ #2]

x3101 1111 0000 0010 0101 TRAP x25 , HALT R2 🡨 x3103

----------------------------------------------------------------------------------- won’t be evaluated

x3102 0001 0100 0100 0001

x3103 0001 0100 1000 0010

What is the value in R2 at the end of the execution? R2 = address x3103

5.42) Instruction d is the most useful because the other 3 instructions can already be made using other instructions.