

Assignment No. 1 (Marks=10; Due Date: 22-12-2023)

Question No. 1:

The hypothetical machine shown in Figure 1 also has two I/O instructions:



(a) Instruction format



(b) Integer format

Program counter (PC) = Address of instruction
Instruction register (IR) = Instruction being executed
Accumulator (AC) = Temporary storage

(c) Internal CPU registers

0001 = Load AC from memory
0010 = Store AC to memory
0101 = Add to AC from memory

(d) Partial list of opcodes

Figure 1: Characteristics of Hypothetical Machine

1. 0011 Load AC from I/O
2. 0111 Store AC to I/O

In these cases, the 12-bit address identifies a particular I/O device. Show the program execution (using the format of Figure 2) for the following program:

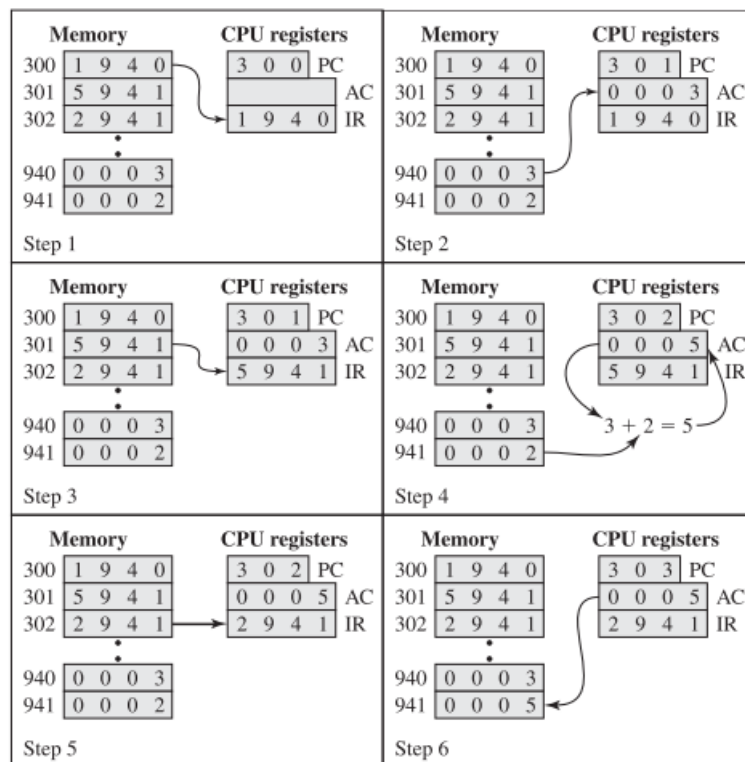


Figure 2: Example of Program Execution

1. Load AC from device 5.
2. Add contents of memory location 940.
3. Store AC to device 6.

Assume that the next value retrieved from device 5 is 3 and that location 940 contains a value of 2.