July 26, 2020

EAST WEST UNIVERSITY
Department of Computer Science and Engineering
B.Sc. in Computer Science and Engineering Program
Mid Term I Examination, Summer 2020, Section 3

Course: CSE360 – Computer Architecture
Instructor: Md. Nawab Yousuf Ali, PhD, Associate Professor, CSE Department
Full Marks: 20
Time: 1 Hour

Note: There are THREE questions, answer ALL of them. Course outcomes (CO), cognitive levels and marks of each question are mentioned at the right margin.

1.. When a CPU operates at a clock frequency of 100000 KHz, requires an average of 10 CPI for executing one instruction, what is the performance of the CPU? [CO1, C2, Mark: 3]

2. A program is run on a 90000 KHz processor. The object code consists of 1000000 instructions, with the following instruction mix and clock cycle count. [CO1, C3, Mark: 3+3+3]

Instruction type	Instruction count	Clock cycle count
Integer arithmetic	65000	2
Data transfer	52000	3
Floating point	18000	4
Control transfer	12000	5

a) Determine the effective CPI.
b) What is the MIPS of the CPU?
c) What is the total execution of the program?

3. The hypothetical machine has two I/O instructions: [CO1, C2, Mark: 8]

0011 = Load AC from I/O
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 1) for the following program:

a) Load AC from device 5
b) Add content of memory location 940
c) 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

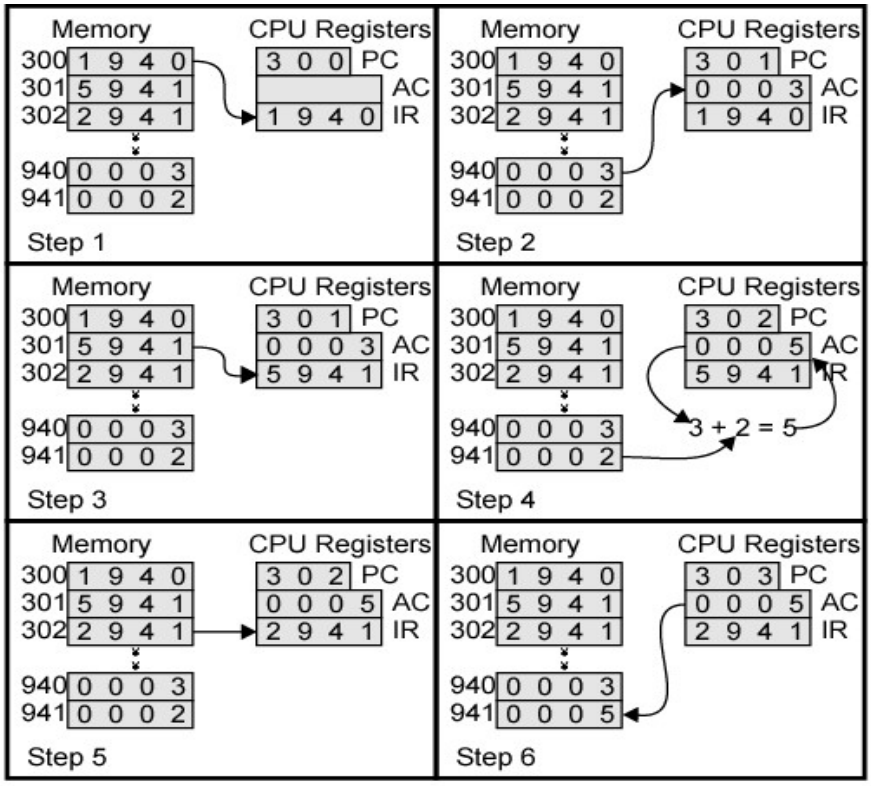

Figure 1. Example of Program Execution