

CSCI 2321 (Principles of Computer Design), Spring 2004

Quiz 6 Solution

1. (10 points) Suppose that at the beginning of a clock cycle the following is true:

- The program counter (PC) has a value of 8.
- Memory location 8 contains the binary representation of the MIPS assembler instruction `beq $s0, $s1, (PC+4-8)`, namely 0001 0010 0001 0001 1111 1111 1111 1110.
- Register `$s0` contains 6.
- Register `$s1` contains 6.

How many clock cycles are needed to execute this instruction, and what values will be stored into the following at the end of each cycle? You can give values in decimal, or as “the `beq` instruction”, or whatever is clear and convenient. Write “n/c” if no change from the previous cycle. Write “?” if the value is unknown and doesn’t matter. If fewer than five cycles are needed, draw X’s over the unneeded columns.

Solution:

	cycle 1	cycle 2	cycle 3	cycle 4	cycle 5
PC	12	n/c	4	X	X
IR	<code>beq instr.</code>	n/c	n/c	X	X
A	?	6	6	X	X
B	?	6	6	X	X
ALUOut	12	4	0	X	X