

Homework4

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4.3

The program counter's value is the address of the next instruction, not the count of the sort. So the name 'Instruction Pointer' is more appropriate for it.

4.8

- (a) Since $2^8 = 256$, it needs 8 bits to represent the OPCODE.
- (b) Since $2^7 = 128$, it needs 7 bits to represent the DR.
- (c) The maximum number of UNUSED bits is 3 bits.

4.9

The another is that making the MAR loaded with the contents of the PC, and incrementing the PC.

4.19

- (a) MAR:010 MDR:01010000
- (b) MAR:001 MDR:00111001

5.1

- (a) ADD: operate; register addressing for destination and register or immediate addressing.
- (b) JMP: control; register addressing.
- (c) LEA: data movement; immediate addressing.
- (d) NOT: operate; register addressing.

5.4

- (a) 8bits.
- (b) since the range of offset is 40, so the bits needed is 6.
- (c) PC counter is incremented to 4, so the offset is 6.

5.9

(a)it's not the same as NOP since it can sets the CC's.

(b)since the PC is incremented by 2 after the instruction(1 by uncondition), so the instruction is not the same as NOP.

(c)it's the same as NOP.