

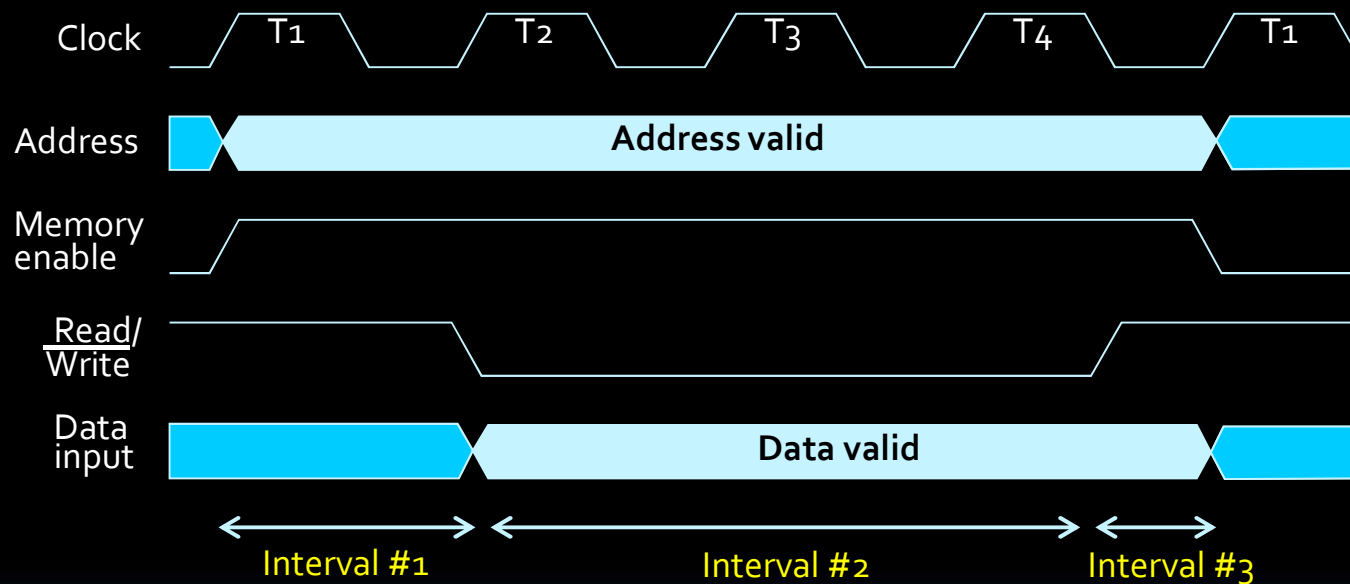


# Week 8 Review

# Question #1

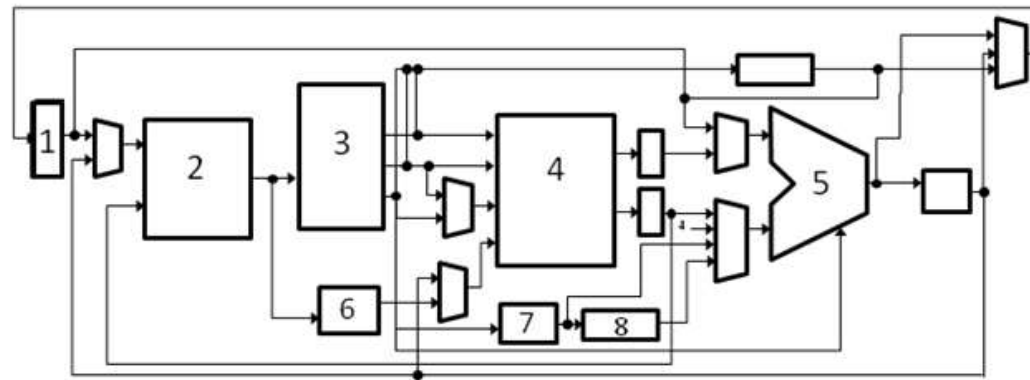
- Your RAM unit has 6 address bits going into it. Given a 32-bit architecture, how many integers is your RAM unit able to store?
- Be careful here!
  - 6 address bits  $\rightarrow 2^6$  memory slots = 64 bytes.
  - 32-bit architecture  $\rightarrow$  4 bytes per integer.
  - RAM capacity =  $64 / 4 = 16$  integers in memory.

## Question #2



- Why are the intervals shown above necessary when performing a memory write operation?

## Question #3



1: \_\_\_\_\_ 5: \_\_\_\_\_  
2: \_\_\_\_\_ 6: \_\_\_\_\_  
3: \_\_\_\_\_ 7: \_\_\_\_\_  
4: \_\_\_\_\_ 8: \_\_\_\_\_

- Can you identify the components in the datapath above?

## Question #4

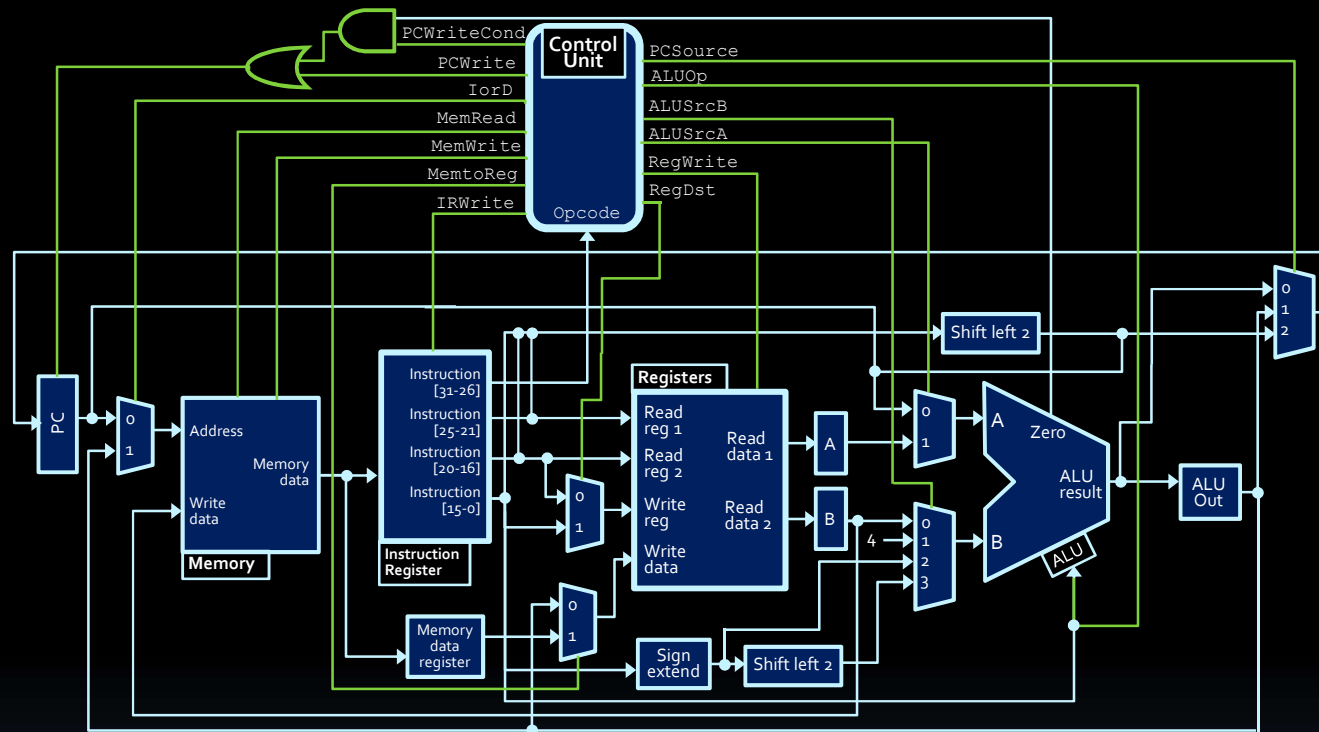
- Where are instructions stored?
  - In memory, along with the data values
- How long is a single instruction?
  - 4 bytes (32 bits)
- What is the role of the Program Counter (PC)?
  - Store the location of the current instruction.
- What do we mean by instruction fetch?
  - Retrieve an instruction from memory.
- Where does the processor keep the instruction that is currently being executed?
  - In the Instruction Register.

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# Question #6



- Given the datapath above, what signals would the control unit turn on and off in order to add 100 to the program counter?