



The ALU
and You!

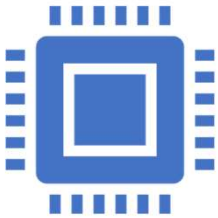
The real brains of the
operation



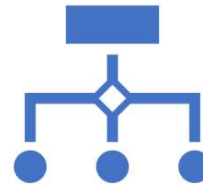
What do you do, ALU?

- The ALU (Arithmetic Logic Unit) handles all arithmetic functions in a single-cycle processor
- It can:
 - Add
 - Subtract
 - Compare
 - Contrast
 - And more!

Where are you, ALU?



The ALU sits between the Control Rom, Register File, and Data Memory modules.



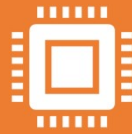
It takes Input from:

The Register File

A MUX between the Register File and the right-most half of the Instruction code

The Control ROM

How do you do, ALU?



The Control ROM tells the ALU what to do by controlling the input MUX and sending a control signal to the ALU.



The ALU then does what the Control ROM says, doing all the real thinking of the processor!




The output of the ALU is one of the inputs for the Data Memory Module.



Et Tu, ALU?

- Despite its simple input and output structure, The ALU remains one of the hardest components to design.
- The ALU needs to do many different things based on its input.
- If any one thing doesn't work, it can break the entire ALU.

A close-up photograph of two elderly hands clasped together. The hand on the left is wearing a silver bracelet. The background is a bright, out-of-focus outdoor setting. The text "Adieu, ALU!" is overlaid in white on the hands.

Adieu, ALU!