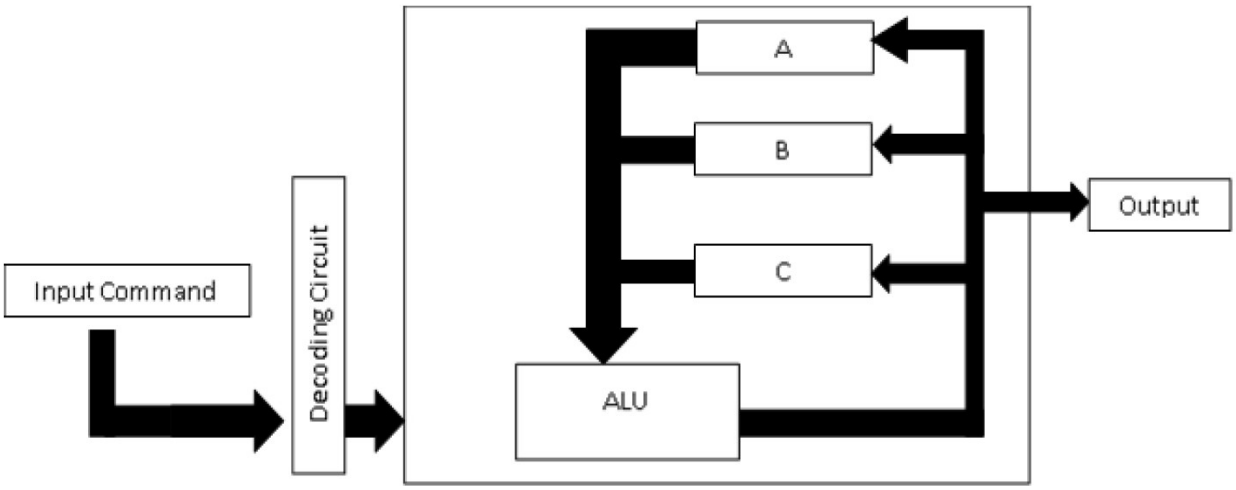

Figure 1: EU Block Diagram

Using the simulation program (*Altera Quartus*), it is required to make an execution unit that able to do the following commands:

- Move Value to Register
- Move Register to Register
- Add Value to Register
- Add Register to Register
- AND Value to Register
- AND Register to Register

Assume that:

1. All registers are 4 bits
2. ALU is able to make three operations
    a. Pass one of operands
        i. 00: Pass the first operand (A)
        ii. 01: Pass the second operand (B)
    b. Add two operands
        i. 10: Add the two operands (A + B)
    c. AND two operands
        i. 11: AND the operand (A AND B)
3. Make any extra assumptions you need.

1. How many commands does the execution unit have?

2. How many bits are required for the user input command?

3. How many forbidden input commands do execution unit have? Give an example.

Execution unit example usage:

For example, to move the value [6] to Register A:

Assume the decoder circuit will activate register [A] using: 01
And the ALU passes the first input using: 00
The user input will be something like: [*Move to A Op. Code* - 0110]
Where [*Move to A Op. Code*] could be like [...00…01]

Requirements:

1- Create a schematic file and implement the ALU operation
2- Create another schematic file for EU and use the ALU as a component
3- Create a waveform editor file and set a test scenario
4- Compile and simulate your design

Deadline:

- Due Date: Week 4