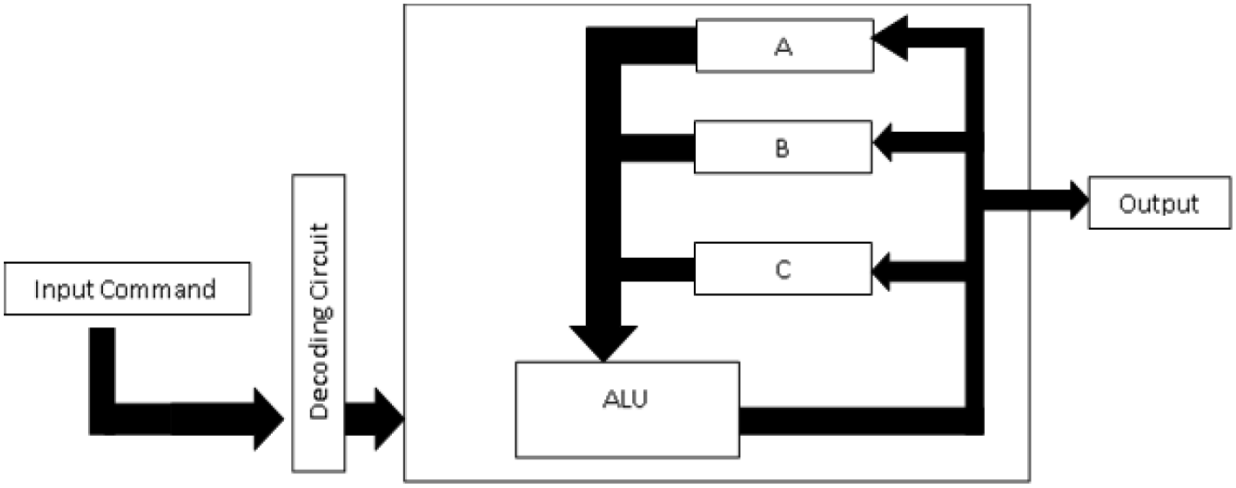


Figure 1: EU Block Diagram

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 (Result will be in Register)
- Move Register1 to Register2 (Result will be in Register2)
- Add Value to Register (Result will be in Register)
- Add Register1 to Register2 (Result will be in Register2)
- AND Value to Register (Result will be in Register)
- AND Register1 to Register2 (Result will be in Register2)

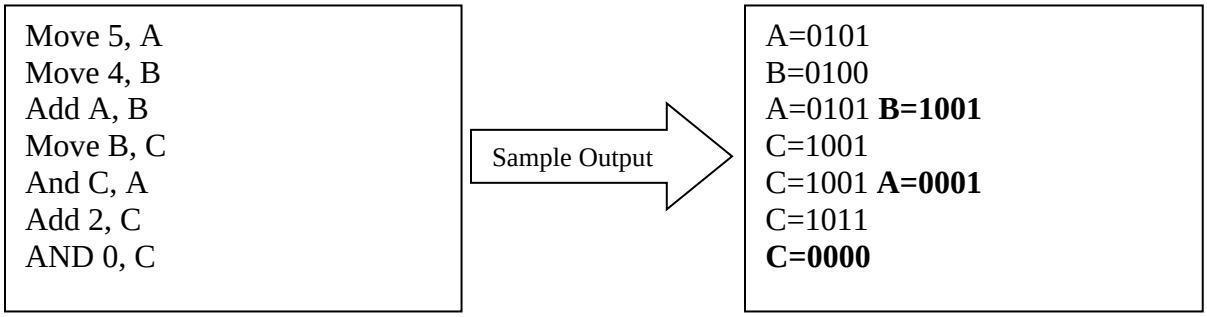
Assume that:

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
        ii. 01: Pass the second operand
    b. Add two operands
        i. 10: Add the two operands
    c. AND two operands
        i. 11: AND the operand
3. Make any extra assumptions you need.

1. **How many commands does the execution unit have?** 6
2. **How many bits are required for the user input command?** 3 for op-code
3. **How many forbidden input commands do execution unit have? Give an example.** 2

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 as in the following figure:



4- Compile and simulate your design

Deadline and submission rules:

- Save screenshots for the waveform test results.
- Add a file "answers.txt" containing answers to the above 3 questions.
- Compress all project files , "answers.txt" and the screenshots into a single file with name: "student name.zip"
- Send this compressed file to sandrawahid@hotmail.com
- Use the following email subject: "[Micro][SEM] Assign1#Student Names".
- Due is 14 Oct. 2019 at 9:00 a.m.
- Discussion will be held at section time.