**Computer Organization 2023 Lab 4**

**Finished part:**

**I used the template from TA so I only modify the four file.**

* **Decoder.v:**
* **the input is instr[31:26], and distinguishes it is R type, jump, lw, sw,etc.and output the regwrite, ALUOP, ALUsrc, etc.**
* **ALU\_Ctrl.v:**

**From the ALUop we got from decoder,set the ALU\_operation and Furslt, if ALUop is R type, from function code we can know it is add, sub, or, etc.**

* **ALU.v:**

**From the input ALU\_operation to know what operation to do and from ALUsrc1, ALUsrc2 to get the result.**

* **Simple\_Single\_CPU.v:**

**Combine the module with the wires and MUX to finish the simple single cpu.**

**Problems you met and solutions:**

**When I finish my code, I meet an error is, so I go to check my code about jump. However, I didn’t find any mistake. Therefore, in my ALU.v I print out the alusrc1, alusrc2, and result to check every testcase where is wrong.**

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自動產生的描述**

**Then I found that after jump the instruction is “slt r15,r5,r3”**

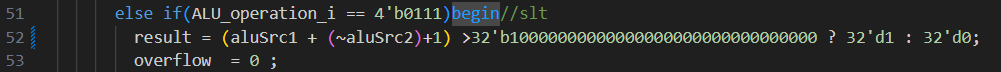
**R5 is -2 R3 is 2, and expect that r15 = 1.but my output is r15 = 0.**

**After display it I found it my original code will seen the number as unsigned. So the code seen R5 = 2^32-2 not -2. So the result is 0 not 1.**

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自動產生的描述**

**So I change my code, use the form we learn before and check the leftmost bit is 1 or not.**

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**And I got the correct answer.**

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自動產生的描述**