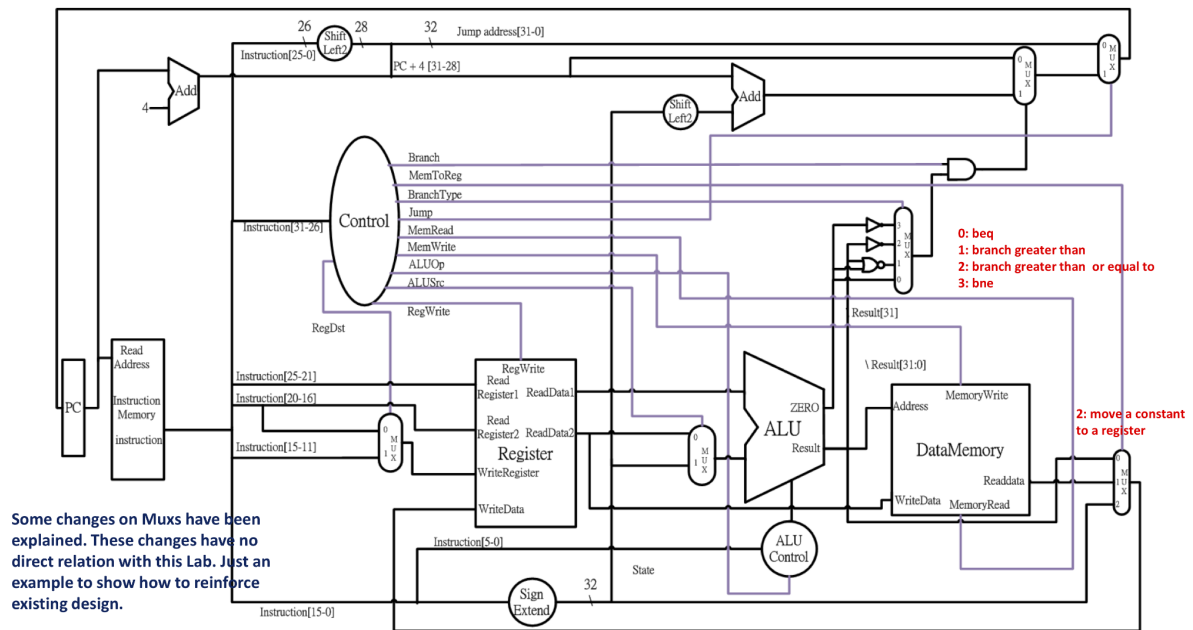


Computer Organization COLab3 report

Architecture diagrams:



Hardware module analysis:

基本上是沿用上一次Lab2去做更改, 而

Adder.v/Shift_Left_Two_32.v/Sign_Extend.v/MUX_2to1.c維持不變。

(1) Simple_Single_CPU.v: 設計沿用上次電路圖, 把該接的線接一接, Architecture diagrams的部分使用作業所提供的, 在PC後面新增加一個mux來決定是否為jr。

(2) ALU_Ctrl.v: 處理ALUResult和zero這兩個output, 沿用上次並新增加lw.sw.jal/jr等指令。

(3) PC_instr.v: 決定jump的起始位置。

(4) MUX_3to1.v: 與MUX_2to1.v結構類似, 都是multiplexer。

(5) decoder.v: 參照講義(ch4 p32)對新增的指令進行control signal setting。

Result:

CO_P3_test_data1.txt

Tcl Console	Messages	Log
<div> <div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> <div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> </div>		
<pre> R16 = 0, R17 = 0, R18 = 0, R19 = 0, R20 = 0, R21 = 0, R22 = 0, R23 = 0 R24 = 0, R25 = 0, R26 = 0, R27 = 0, R28 = 0, R29 = 128, R30 = 0, R31 = 0 PC = x Data Memory = 1, 2, 0, 0, 0, 0, 0, 0 Data Memory = 0, 0, 0, 0, 0, 0, 0, 0 Data Memory = 0, 0, 0, 0, 0, 0, 0, 0 Data Memory = 0, 0, 0, 0, 0, 0, 0, 0 Registers R0 = 0, R1 = 1, R2 = 2, R3 = 3, R4 = 4, R5 = 5, R6 = 1, R7 = 2 R8 = 4, R9 = 2, R10 = 0, R11 = 0, R12 = 0, R13 = 0, R14 = 0, R15 = 0 R16 = 0, R17 = 0, R18 = 0, R19 = 0, R20 = 0, R21 = 0, R22 = 0, R23 = 0 R24 = 0, R25 = 0, R26 = 0, R27 = 0, R28 = 0, R29 = 128, R30 = 0, R31 = 0 \$stop called at time : 705 ns : File "C:/Users/GameToGo/Desktop/myLab3/CAhw3/CO_Lab3_final/testbench.v" Line 36 </pre>		

CO_P3_test_data2.txt

Tcl Console x Messages Log

R16 = 0, R17 = 0, R18 = 0, R19 = 0, R20 = 0, R21 = 0, R22 = 0, R23 = 0

R24 = 0, R25 = 0, R26 = 0, R27 = 0, R28 = 0, R29 = 128, R30 = 0, R31 = 16

PC = x

Data Memory = 0, 0, 0, 0, 0, 0, 0, 0

Data Memory = 0, 0, 0, 0, 0, 0, 0, 0

Data Memory = 0, 0, 0, 0, 68, 2, 1, 68

Data Memory = 2, 1, 68, 4, 3, 16, 0, 0

Registers

R0 = 0, R1 = 0, R2 = 5, R3 = 0, R4 = 0, R5 = 0, R6 = 0, R7 = 0

R8 = 0, R9 = 1, R10 = 0, R11 = 0, R12 = 0, R13 = 0, R14 = 0, R15 = 0

R16 = 0, R17 = 0, R18 = 0, R19 = 0, R20 = 0, R21 = 0, R22 = 0, R23 = 0

R24 = 0, R25 = 0, R26 = 0, R27 = 0, R28 = 0, R29 = 128, R30 = 0, R31 = 16

\$stop called at time : 705 ns : File "C:/Users/GameToGo/Desktop/myLab3/CAhw3/CO_Lab3_final/testbench.v" Line 36

INFO: [USF-XSim-96] XSim completed. Design snapshot 'testbench_behav' loaded.

INFO: [USF-XSim-97] XSim simulation ran for 1000ns

Summary:

在做advance比較有碰到問題，此部分有參考其他人的寫法。