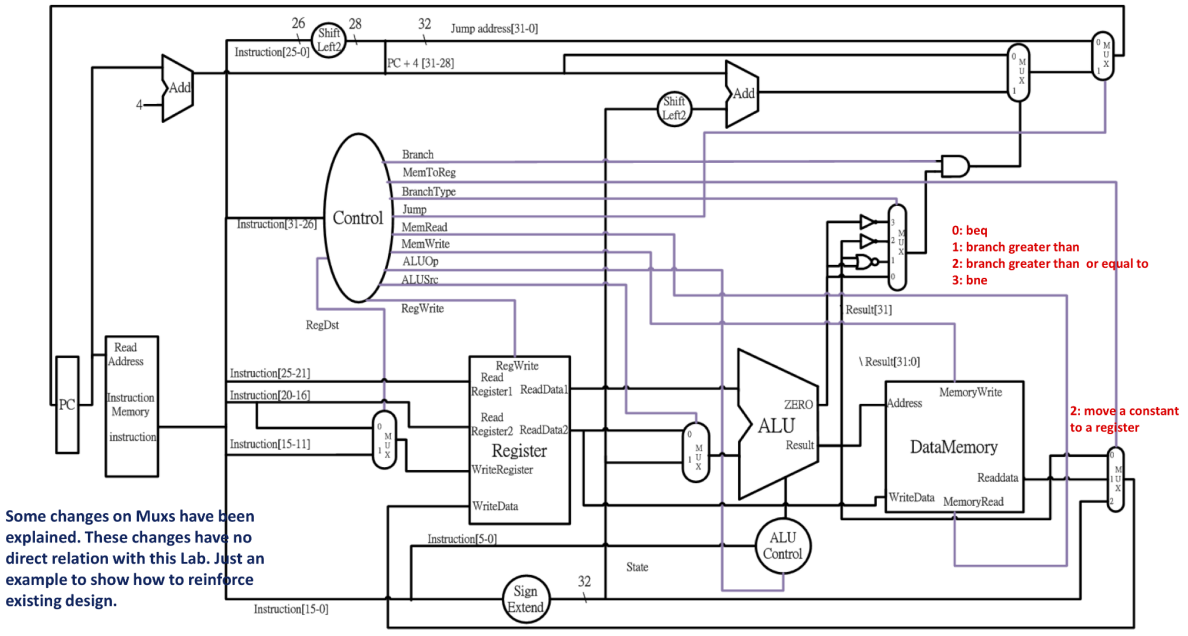
Computer Organization
COLab3 report

Architecture diagrams:



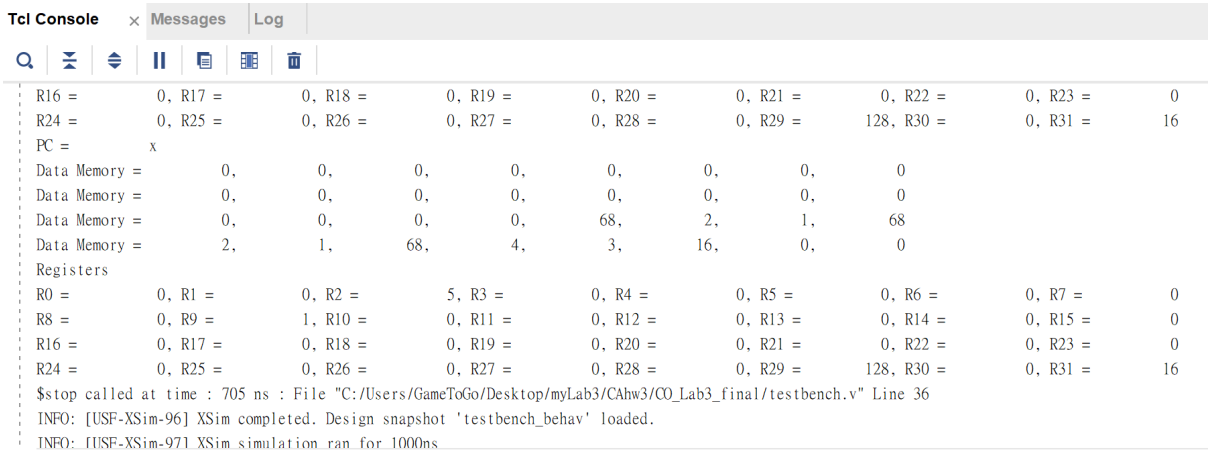
Hardware module analysis:
基本上是沿用上一次Lab2去做更改，而
Adder.v/Shift_Left_Two_32.v/Sign_Extend.v/MUX_2to1.c維持不變。
(1) Simple_Single_CPU.v：設計沿用上次電路圖，把該接的線接一接，Architecture diagrams的部分使用作業所提供的，在PC後面新增加一個mux來決定是否為jr。
(2) ALU_Ctrl.v：處理ALUResult和zero這兩個output，沿用上次並新增加lw.sw.jal/jr等指令。
(3) PC_instr.v：決定jump的起始位置。
(4) 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

```
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 =          0, R30 =        128, 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 =          0, R30 =        128, R31 =          0
$stop called at time : 705 ns : File "C:/Users/GameToGo/Desktop/myLab3/CAhw3/CO_Lab3_final/testbench.v" Line 36
```

CO_P3_test_data2.txt



Summary:

在做advance比較有碰到問題，此部分有參考其他人的寫法。