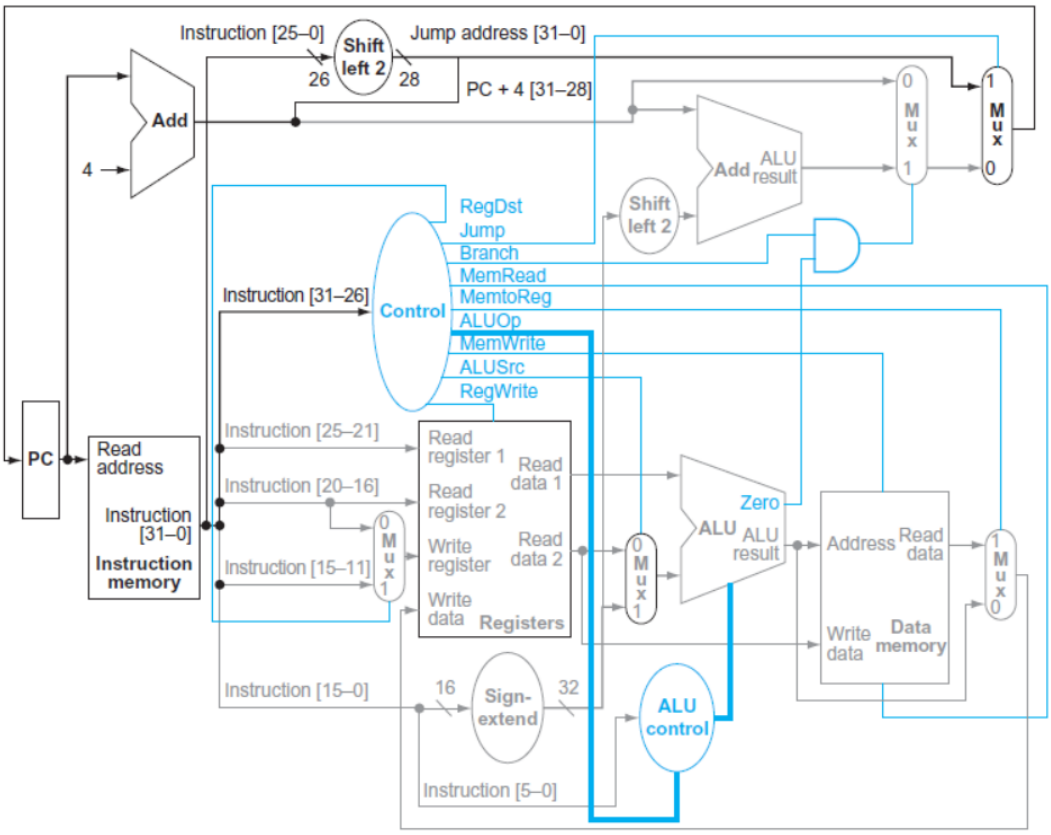
EE116C/CS151B Homework 4

Problem 1

Implement the MIPS instructions on the single cycle datapath. Specify all the control signals.

```
if (R[rs] < R[rt])
   PC = PC + 4 + SE(I)
else
   PC = PC + 4
```

Implement this instruction based on SLT function and I-type jump function.



Problem 2

4.13 This is exercise is intended to help you understand the relationship between forwarding, hazard detection, and ISA design. Problems in this exercise refer to the following sequence of instructions, and assume that it is executed on a 5-stage pipelined data path:

```
add r5,r2,r1
lw r3,4(r5)
lw r2,0(r2)
or r3,r5,r3
sw r3,0(r5)
```

4.13.1 If there is no forwarding or hazard detection, insert nops to ensure correct execution.