16.482 / 16.561: Computer Architecture and Design
Fall 2013

Lecture 4: Key Questions
September 30, 2013

1. What are the steps required to execute an instruction?

2. Generally speaking, what are processor datapath elements? What are control signals?

3. What steps do all instructions have in common?

4. What logic is required for instruction fetch?

5. Describe generally how instruction decoding logic functions.
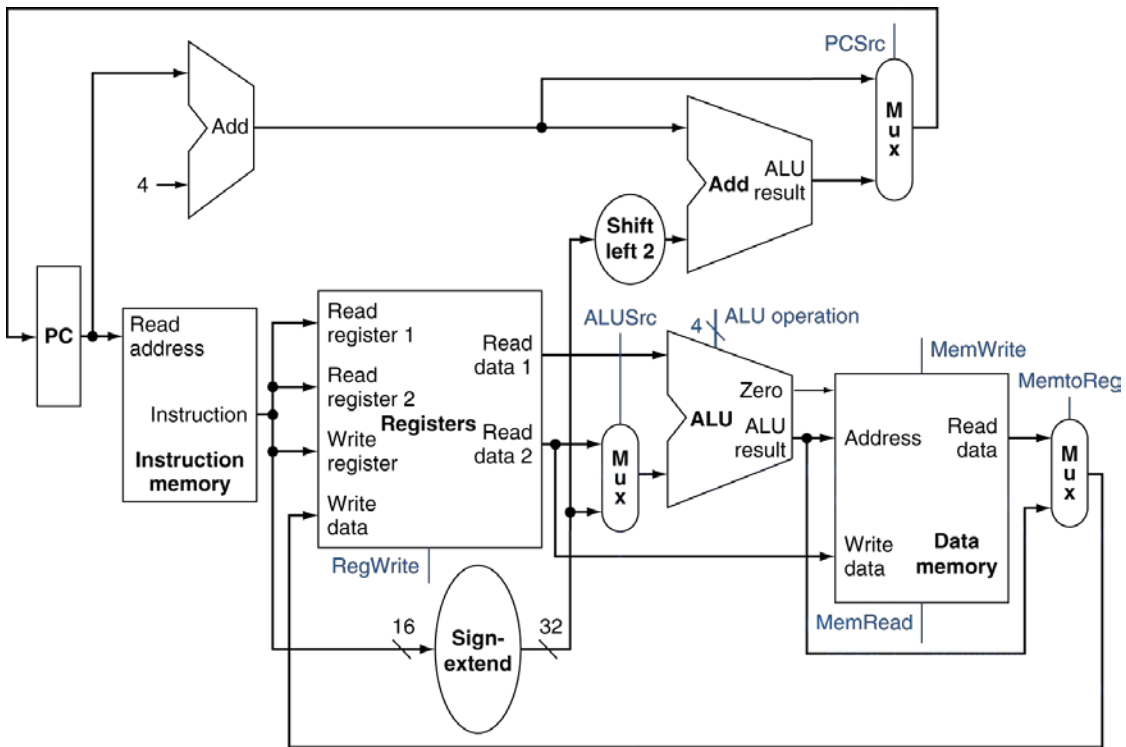
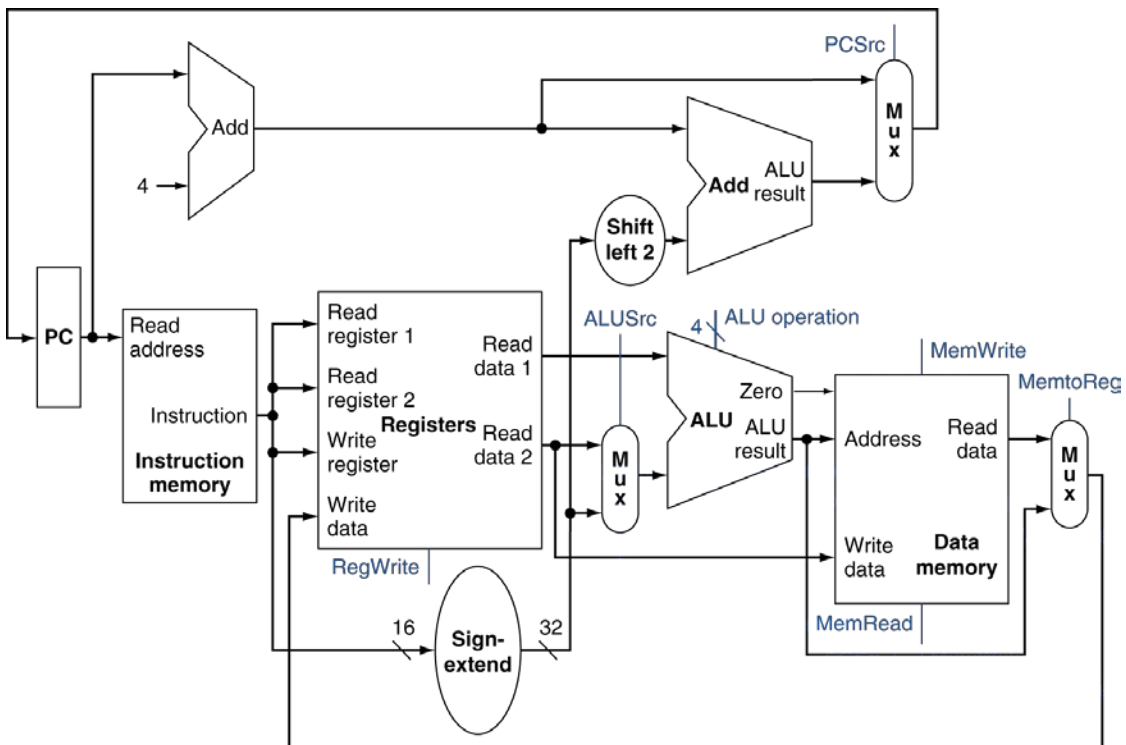6. What logic is necessary for the execution of R-type instructions?

7. What logic is necessary for the execution of loads and stores?

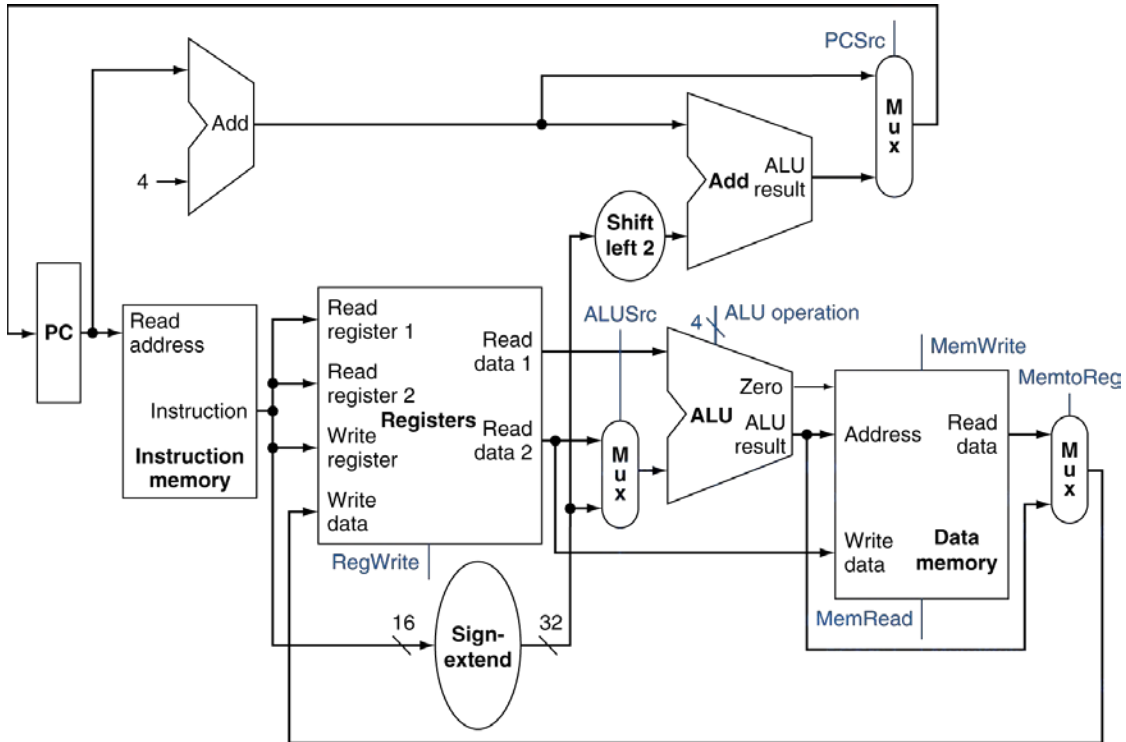8. Describe the logic necessary for conditional branches.

9. Show the overall datapath operation for:
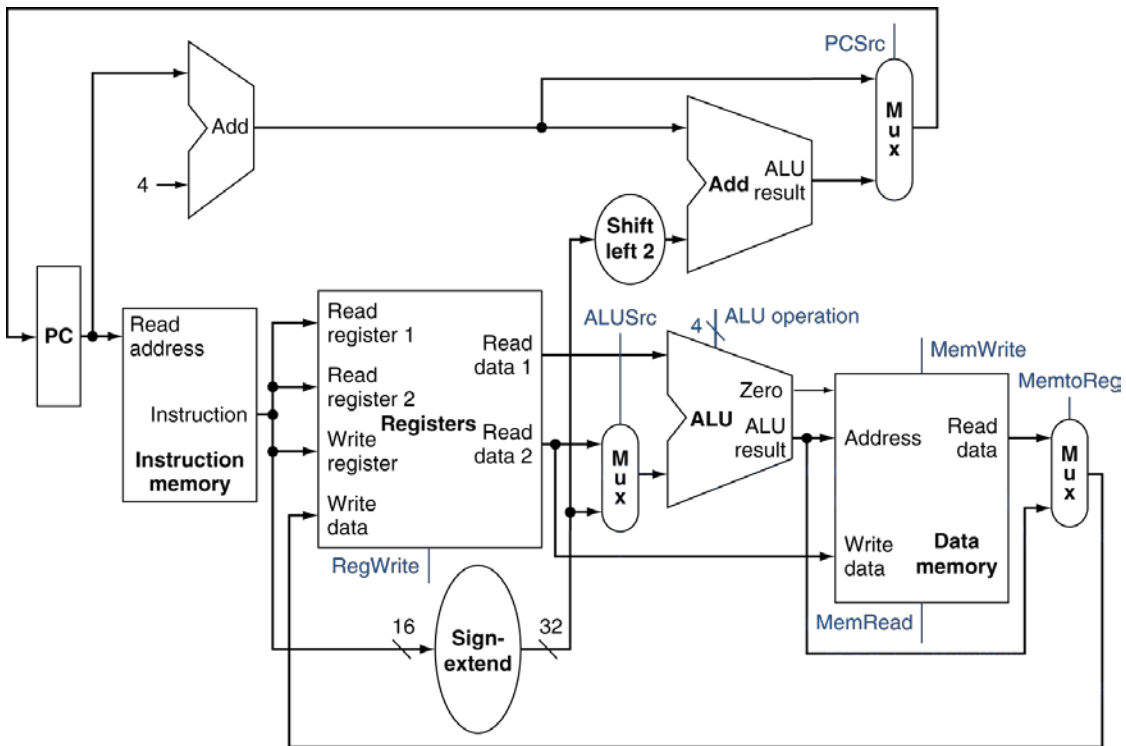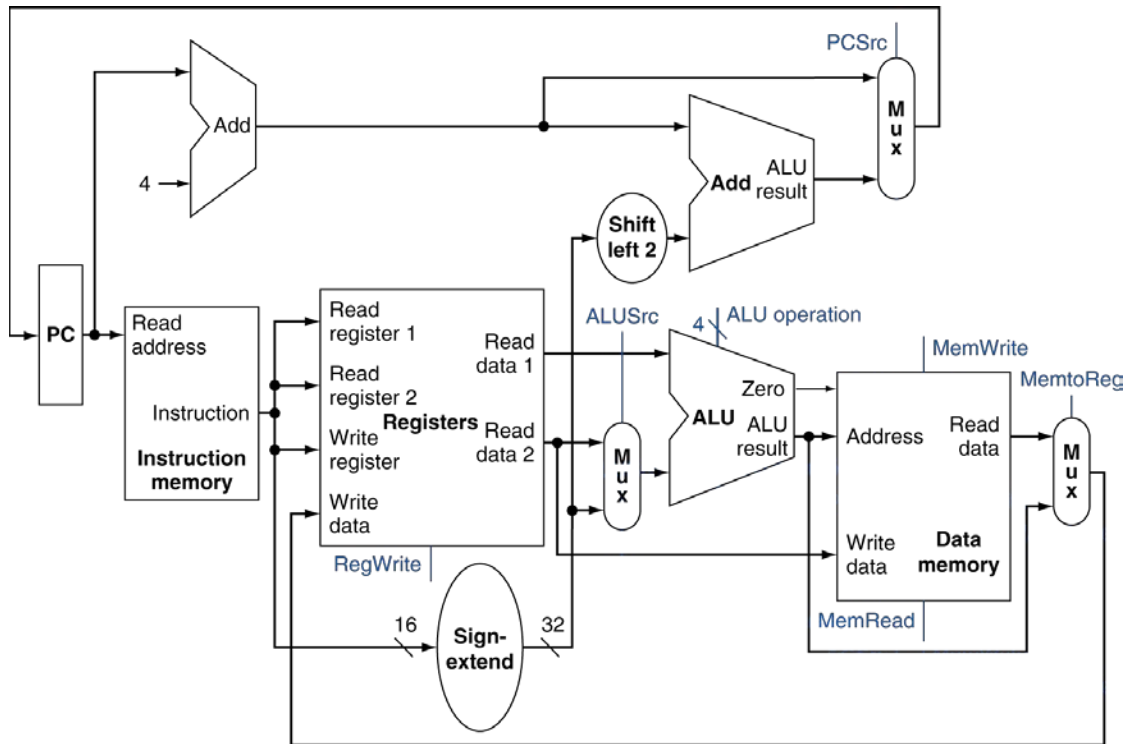a. R-type instructions

b. I-type ALU instructions

c.   beq instructions

d.   Loads

e. Stores

10. Describe the additional logic required to implement jump instructions.