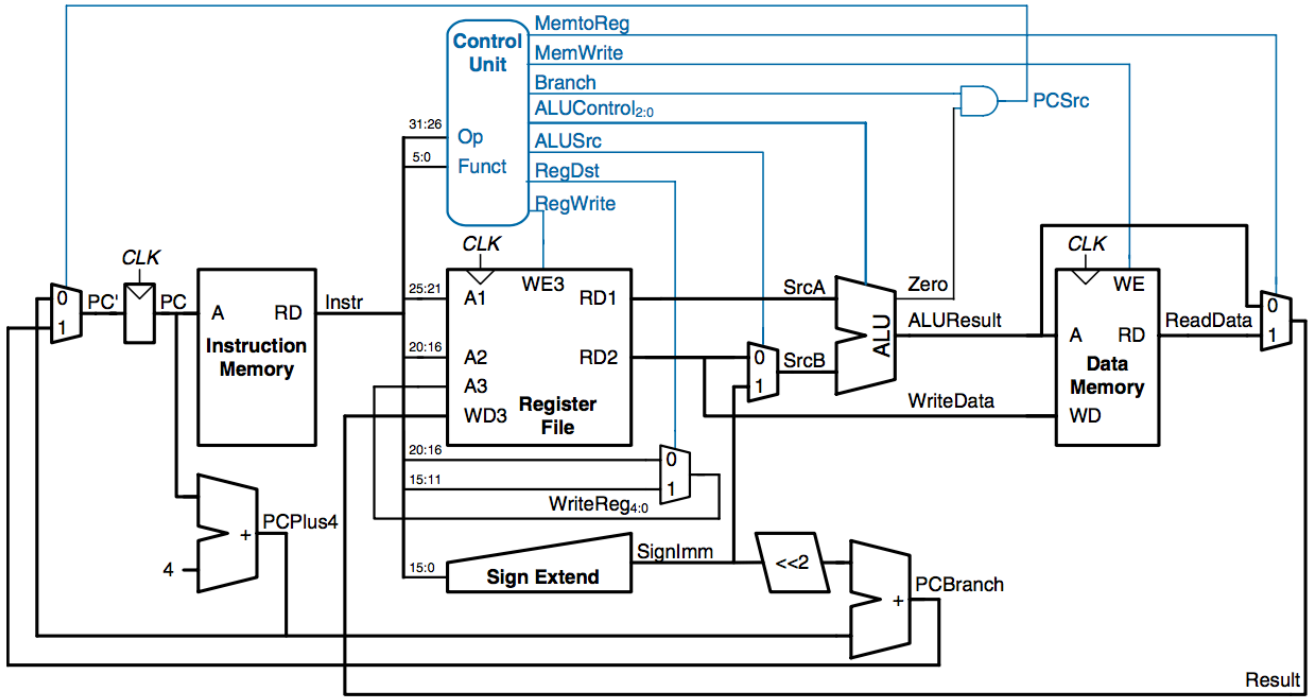
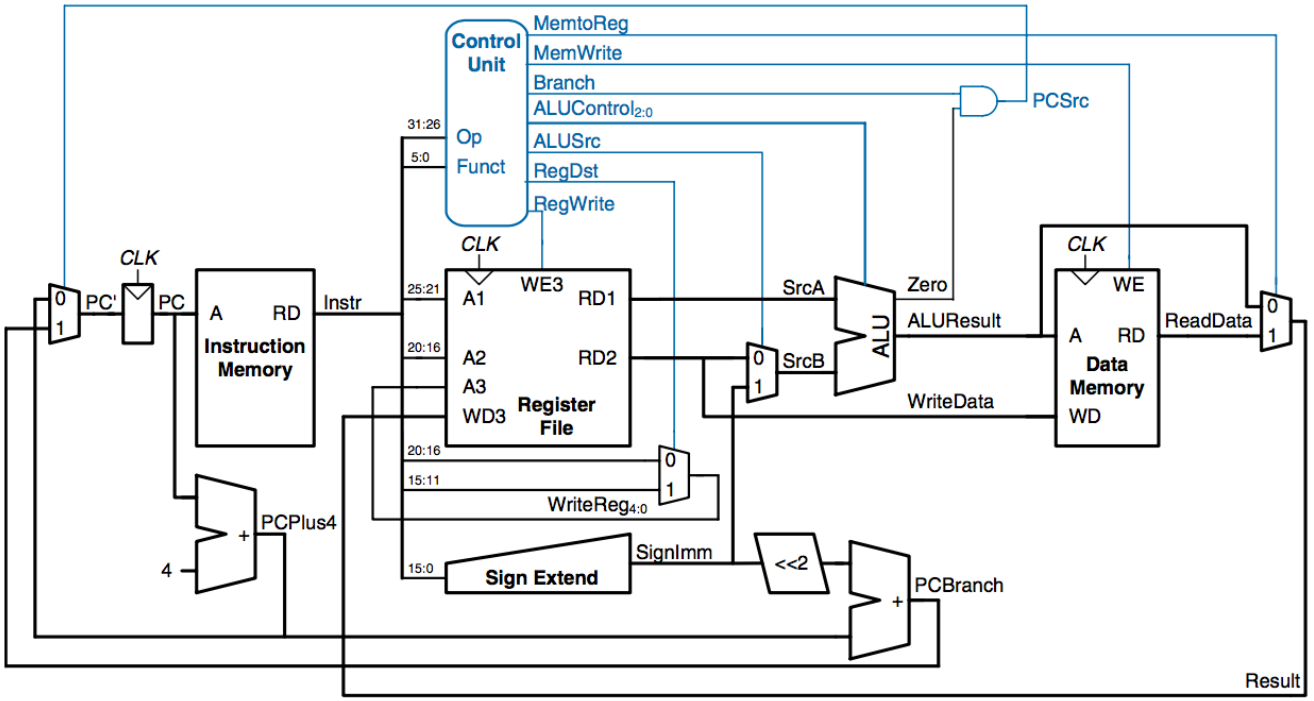
Quiz 1: Ten minutes

1. Define the role of the *datapath* in the processor.
2. Provide the values of the control lines MemToReg, MemWrite, Branch, ALUSrc, and RegWrite (please label them in your answer!) for the register instruction *add* (adds two register values).



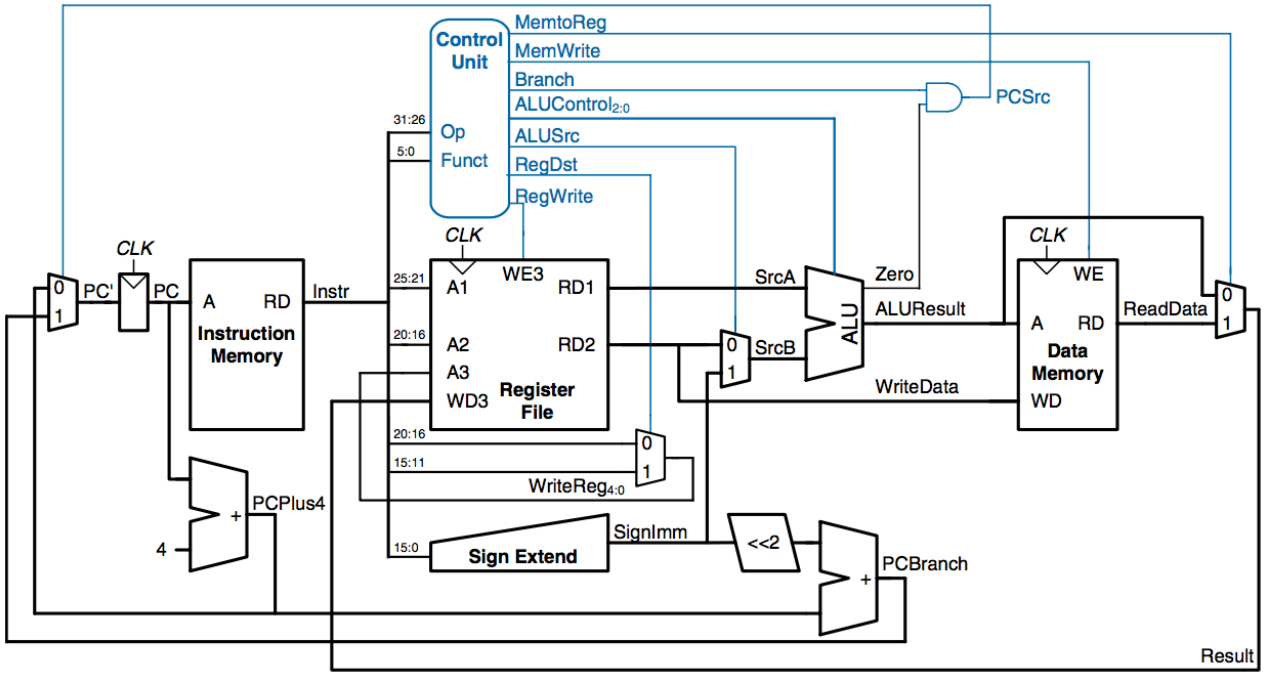
Quiz 1: Ten minutes

1. Define the role of the *control path* in the processor.
2. Provide the values of the control lines MemToReg, MemWrite, Branch, ALUSrc, and RegWrite (please label them in your answer!) for the immediate instruction *lw* (load word: places a value from memory into a register).



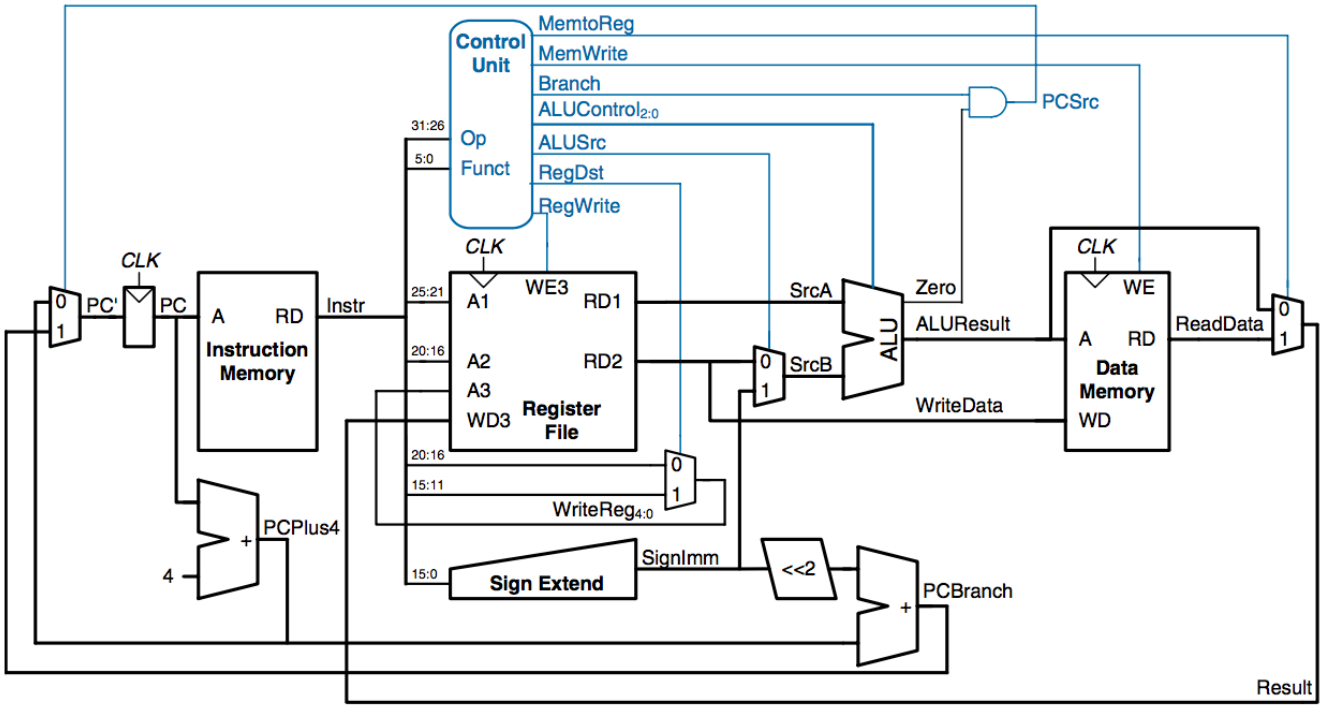
Quiz 1: Ten minutes

1. Define the term *microarchitecture*.
2. Provide the values of the control lines MemToReg, MemWrite, Branch, ALUSrc, and RegWrite (please label them in your answer!) for the immediate instruction *li* (load immediate: places the sign-extended immediate into a register).



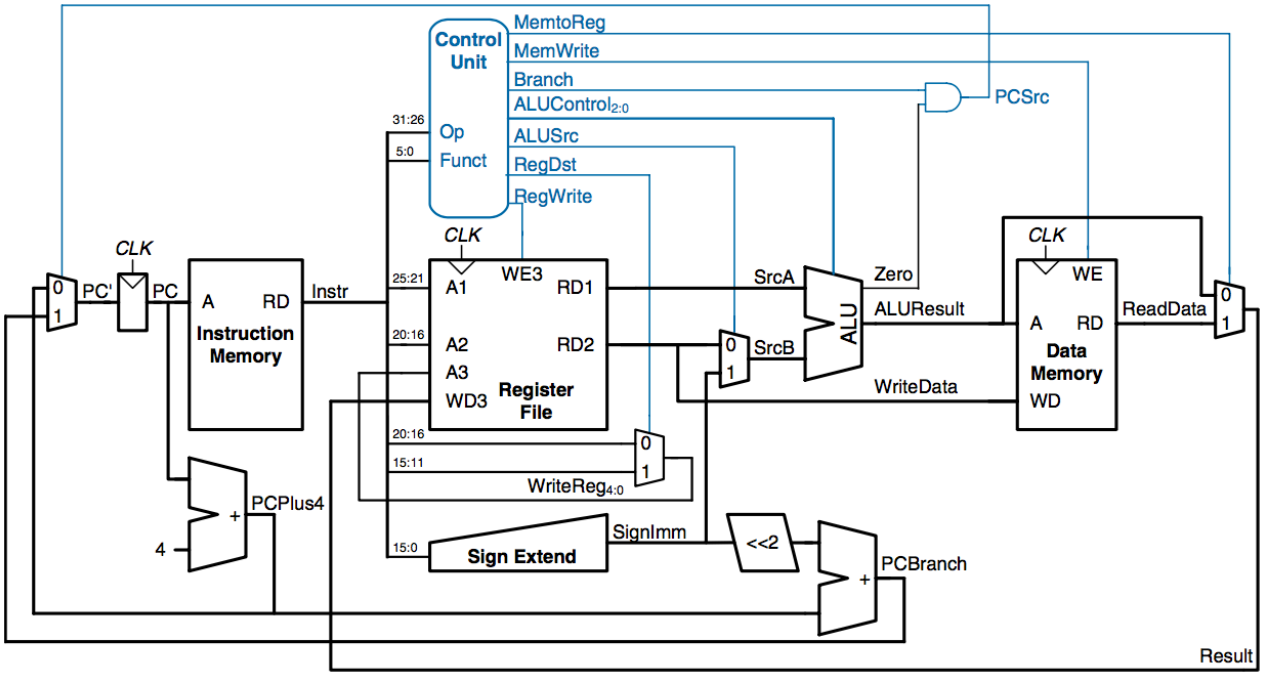
Quiz 1: Ten minutes

1. Define the term *assembly language.*
2. Provide the values of the control lines MemToReg, MemWrite, Branch, ALUSrc, and RegWrite (please label them in your answer!) for the immediate instruction *sw* (store word: stores a value into memory).



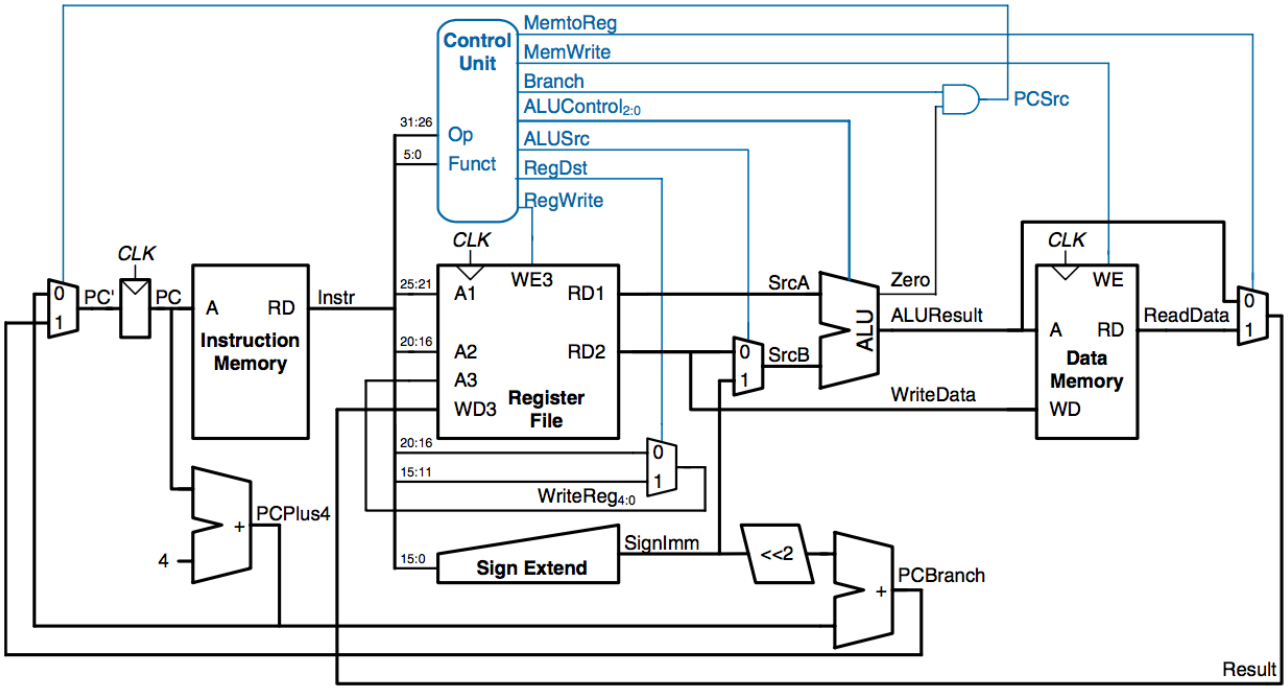
Quiz 1: Ten minutes

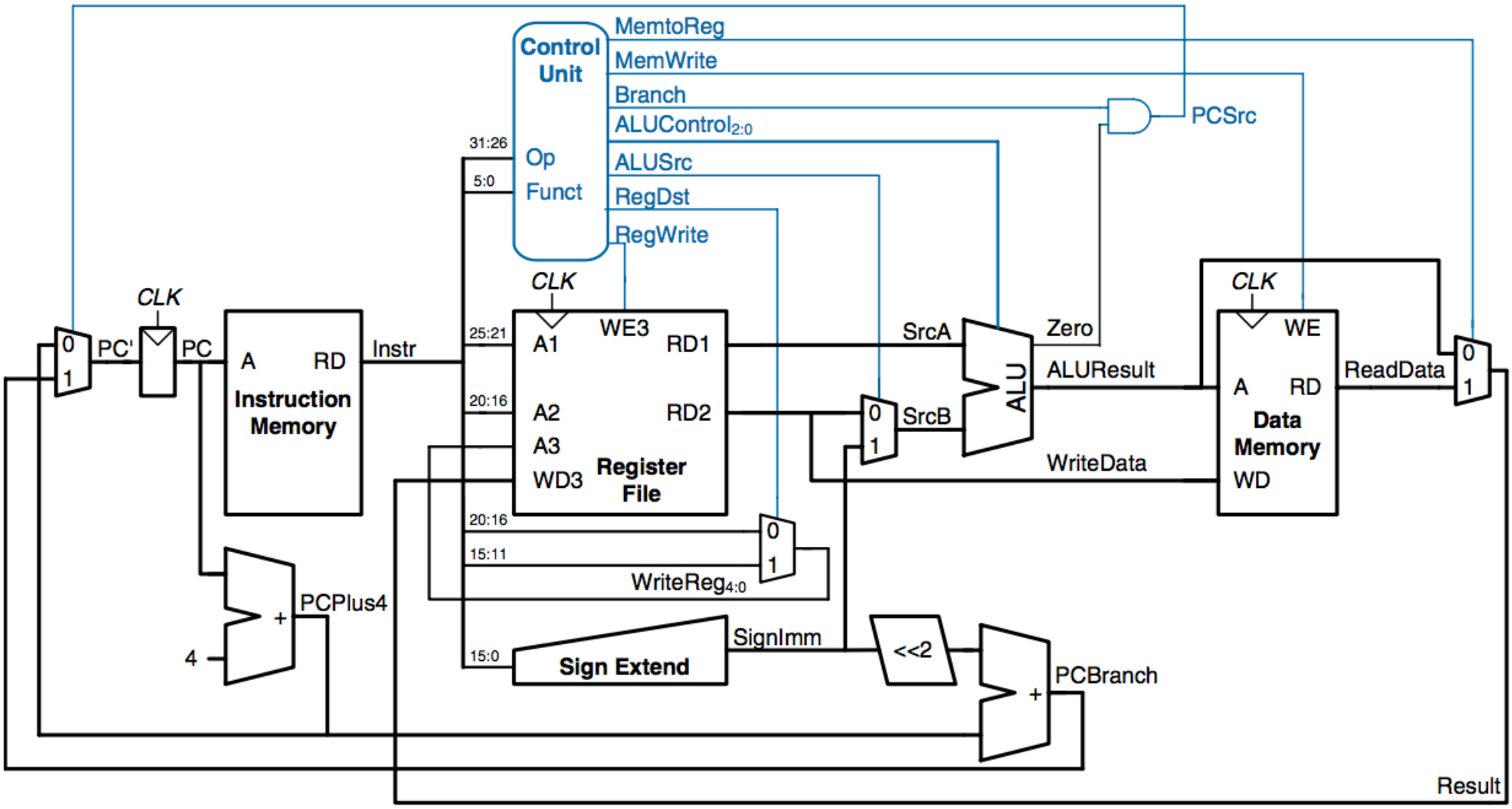
1. Define the term *architecture* (not *micro*architecture).
2. Provide the values of the control lines MemToReg, MemWrite, Branch, ALUSrc, and RegWrite (please label them in your answer!) for the immediate instruction *beq* (branch equal: branch if two register values are equal; this uses the *zero* ALU output).



Quiz 1: Ten minutes

1. Define the term *machine language*.
2. Provide the values of the control lines MemToReg, MemWrite, Branch, ALUSrc, and RegWrite (please label them in your answer!) for the register instruction *or* (performs *or* on two register values).




Control Unit
MemtoReg
MemWrite
Branch
ALUControl2:0
ALUSrc
RegDst
RegWrite
Op
Funct
31:26
5:0
PCSrc
CLK
PC'
PC
A
RD
Instruction Memory
Instr
25:21
20:16
A1
A2
A3
WD3
WE3
RD1
RD2
Register File
SrcA
SrcB
ALU
Zero
ALUResult
WriteData
WE
Data Memory
WD
ReadData
20:16
15:11
WriteReg4:0
PCPlus4
4
+
15:0
Sign Extend
SignImm
<<2
PCBranch
Result
0
1