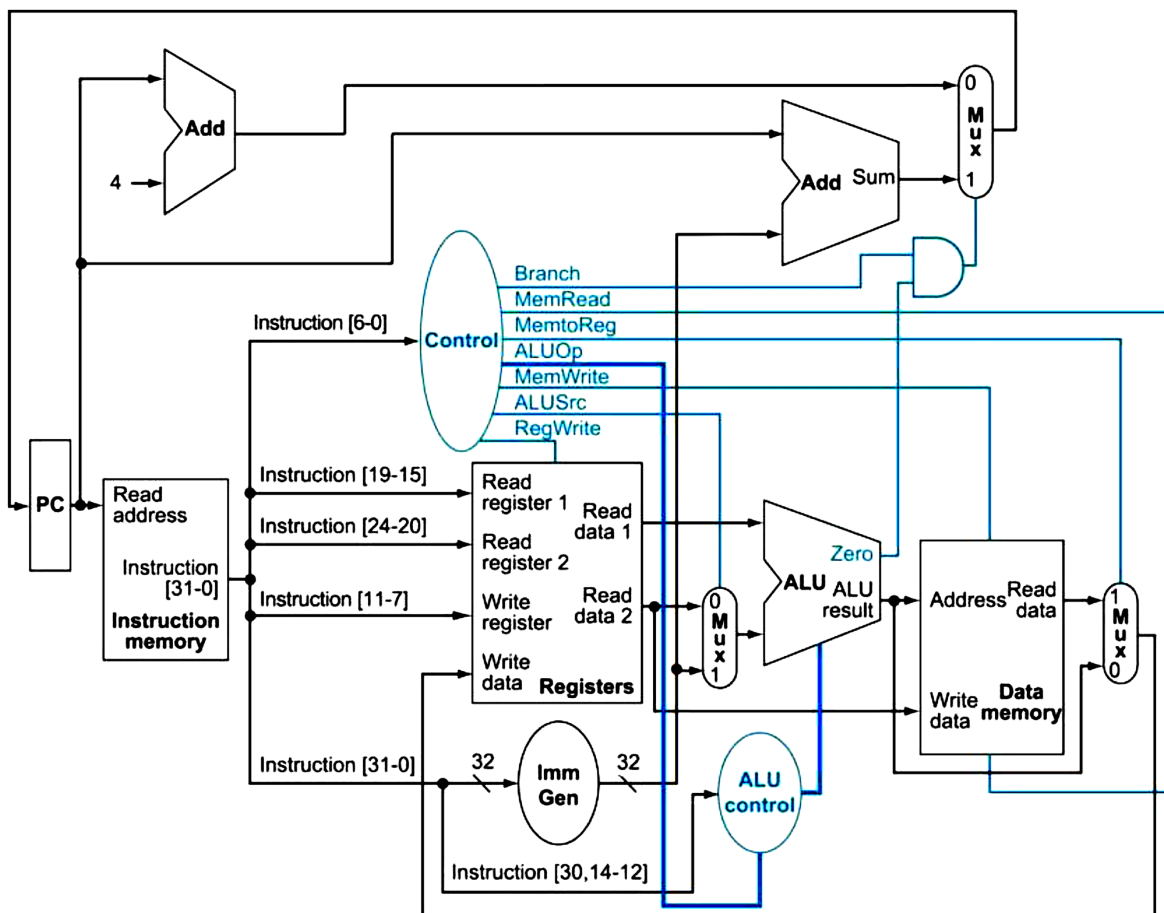# Assignment #5

coen210
2022 spring

Problem

Following is the simple implementation of RISC-V instruction subset (R-type, lw, sw, beq). Modify this diagram for the implementation to be able to also execute the following two instructions:

- jal
- addi

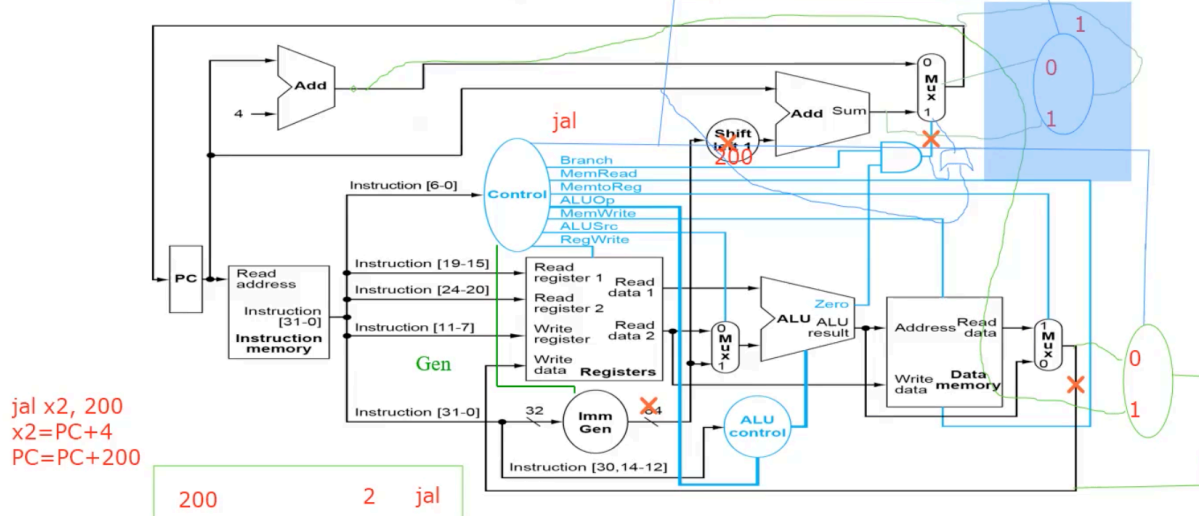Fill the truth table for these two instructions

	I_6 I_5 I_4 I_3 I_2 I_1 I_0 input (opcode)							ALUSrc	memtoreg	RegWrite	MemRead	memwrite	Branch	ALUOP1	ALUOP0
R	0	1	1	0	0	1	1	0	0	1	0	0	0	1	0
lw	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0
sw	0	1	0	0	0	1	1	1	X	0	0	1	0	0	0
beq	1	1	0	0	0	1	1	0	X	0	0	0	1	0	1
jal															
addi															

answer

Add jal to Datapath

R, lw, sw, beq
how about jal?

jal x2, 200
x2=PC+4
PC=PC+200

Instruction	RegWrt	Memto-Reg	Brch	Mem Read	Mem Write	ALUSrc	ALUOp1	ALUp0	Gen	jal
R-format										0
ld lw										0
sd sw										0
beq										x
jal	1	x	x	0	0	x	x	x	UJ	1

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(note: the order of this table is different from the above table.)

BEQ Instruction

addi x2, x4, 8   //x2=x4+8

no datpath modification