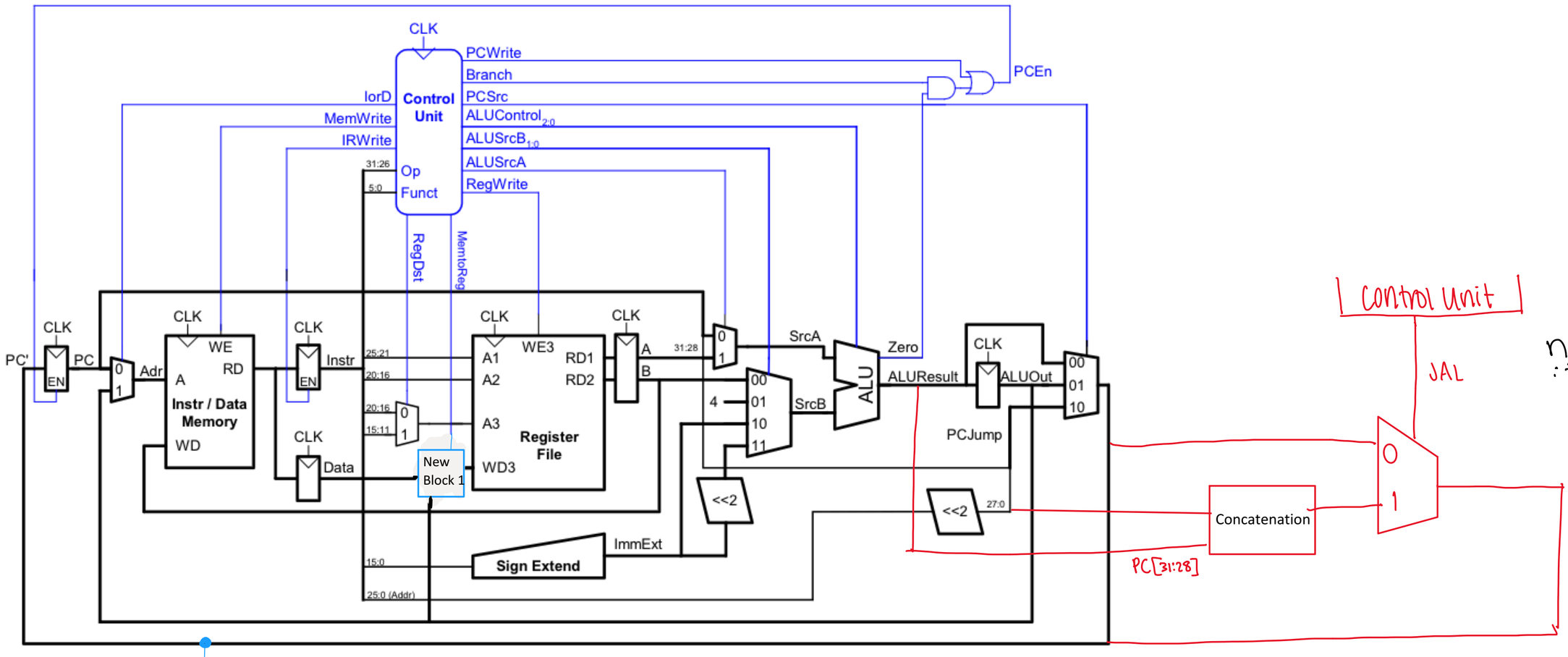
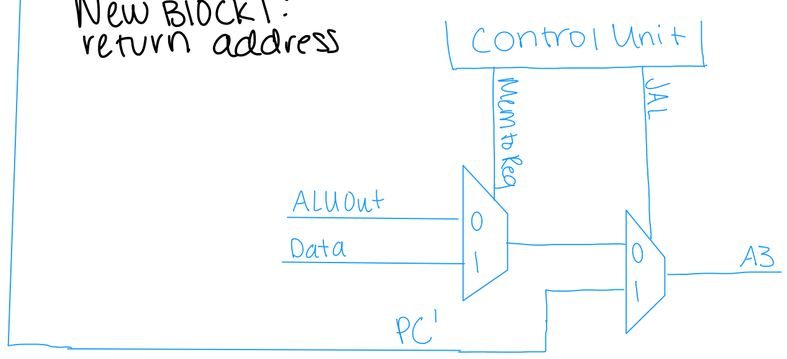
Homework 5

Tuesday, August 16, 2022 3:26 PM



jal target address = {[31:28] PC add, jump target, 2'b00}

New BLOCK 1: return address



The purpose of this block is to store the jal +4 so the PC knows where to return (return address)

Q2

i) 15ns bic it is the time of the longest cycle

ii) 5·15 = 75ns bic lw has 5 cycles and the cycle time is 15

iii) 45ns bic it's the length of the entire lw instruc.

iv) Execution time = #instructions · CPI · T_c

multicycle:

		%	#cycles
CPI	load	0.08	(5)
	store	0.04	(4)
	branch	0.33	(3) +
	jump	0.18	(3)
	R type	0.37	(4)

total CPI = 3.57

instructions: 100

CPI: 3.57

T_c : 15 ns

Execution time = 5355 ns

single cycle:

instructions: 100

CPI: 1

T_c: 45 ns

execution time: 4500 ns