CS315-01 Processor Branches RAM 2025-11-06

Lab10

part1 : addi (li), add, unimp

part2 : jal (call, j), jalr (ret)

Submit:

lab10-part1.dig → inst-decode-part1.dig
lab10-part2.dig → inst-decode-part2.dig

PDF of your spreadsheet

Delete most unused rows
select Workbook and all sheet
Download → PDF

Remaining Concepts and instructions

Branches
Data Memory
Program / Code initialization

Remaining Instructions

Data Processing		Control	Memory	
addi	sll	jal jalr	lb	sb
add	srl		lw	sw
sub	slli	beq	ld	sd
mul	srai	bne		
		blt		

Branching

beq t0, t1, label

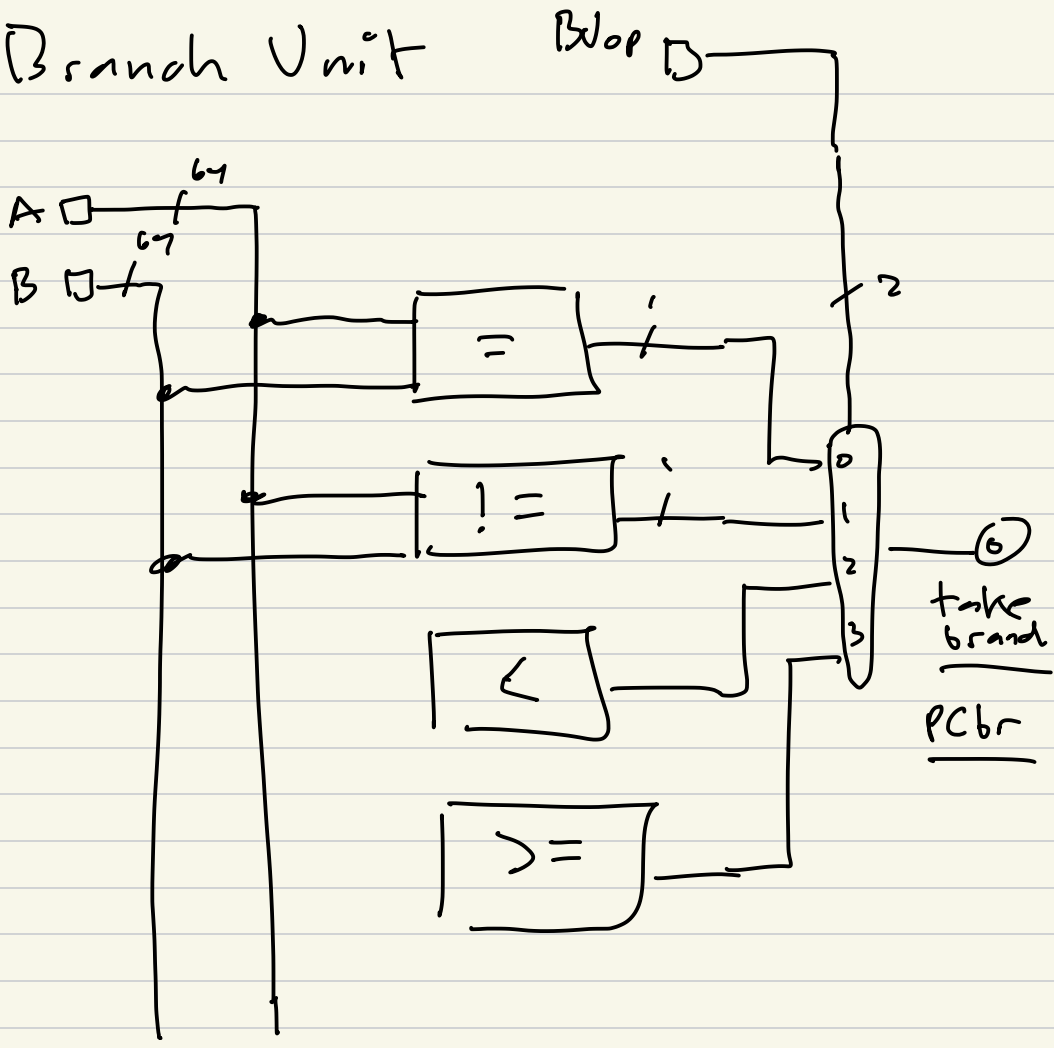
1) Compute the branch target address (BTA)

BTA = PC + imm-b

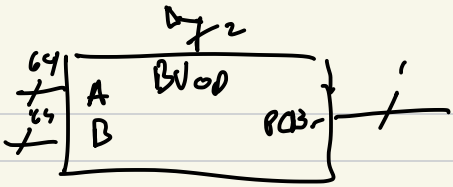
2) Determine if we take the the branch. Compare rs1 and rs2

Update PC to BTA conditionally

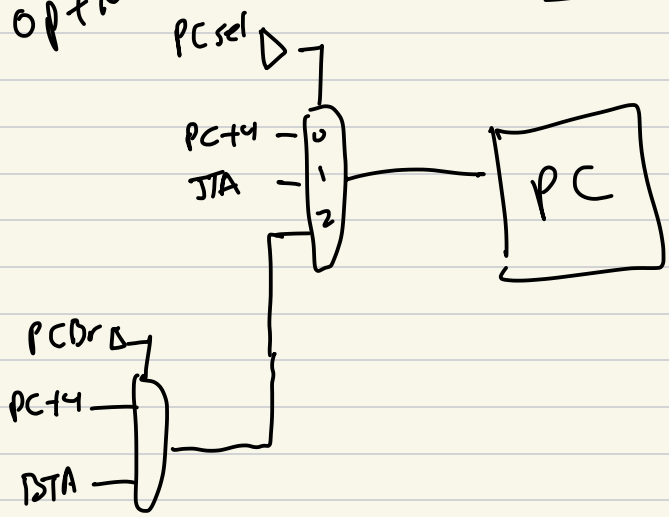
Branch Unit



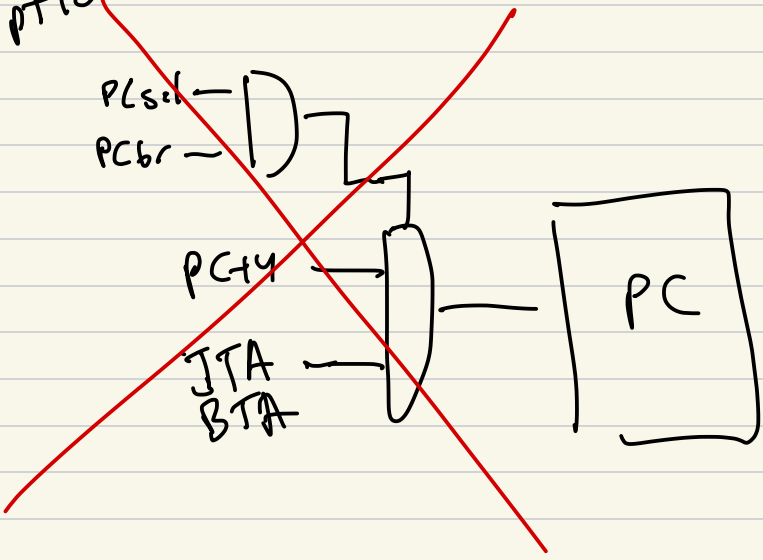
PCBr



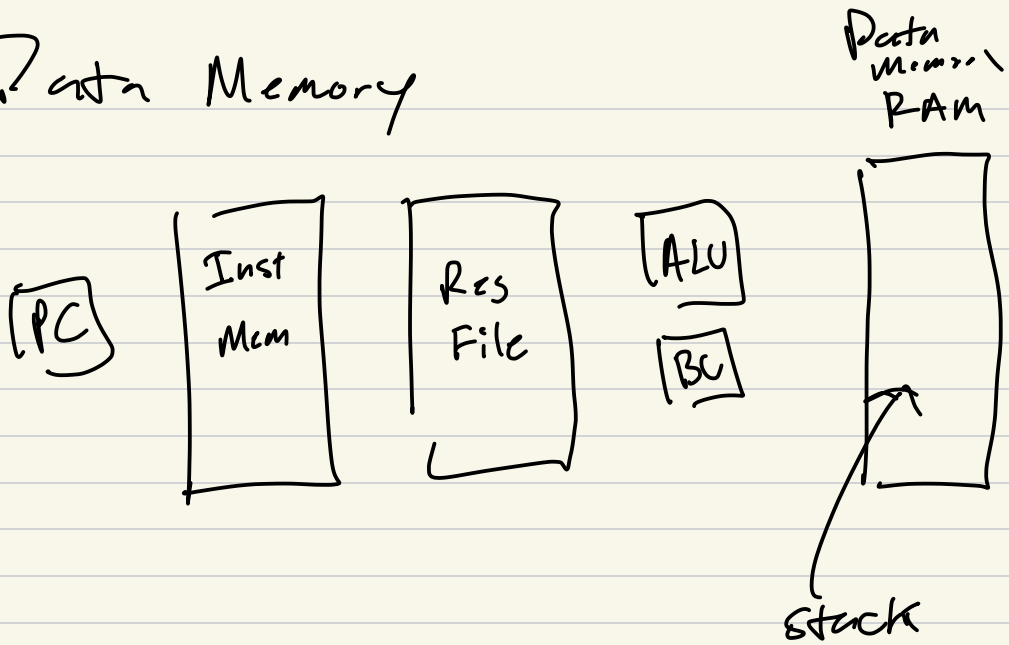
option #1



option #2



Data Memory



$64 = 2^6$

2^3 bytes 8

1024

$2^3 \times n$

$2^3 \times 2^7 = 2^{10} = 1024$

128