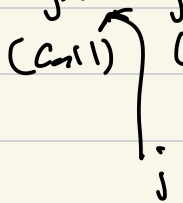


CS315-02 Processor Design Branches Data Memory

Lab 06

part 1 add: add unimp

part 2 jal jalr
 (call) (ret)



Remaining concepts and instructions

Branches

Data Memory

Setting up programs to run on our processors

Remaining instructions

Data processing

addi sll andi
add srl ori
sub slli
mul srli

⋮

Control

jal jalr
j
bge
bne
blt

⋮

Memory

lb sb
lw sw
ld sd

Branching

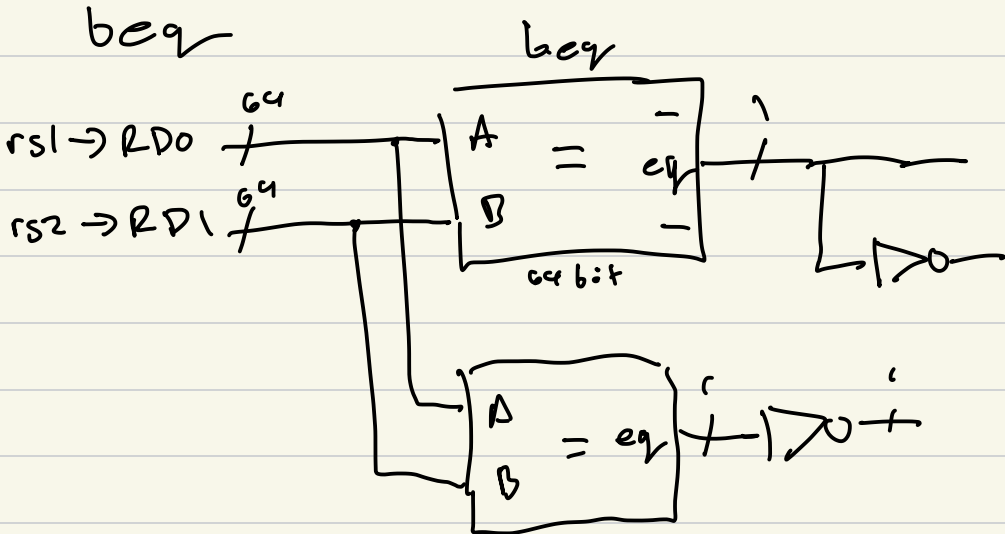
beq to, r1, label

1) Compute the branch target address (BTA)

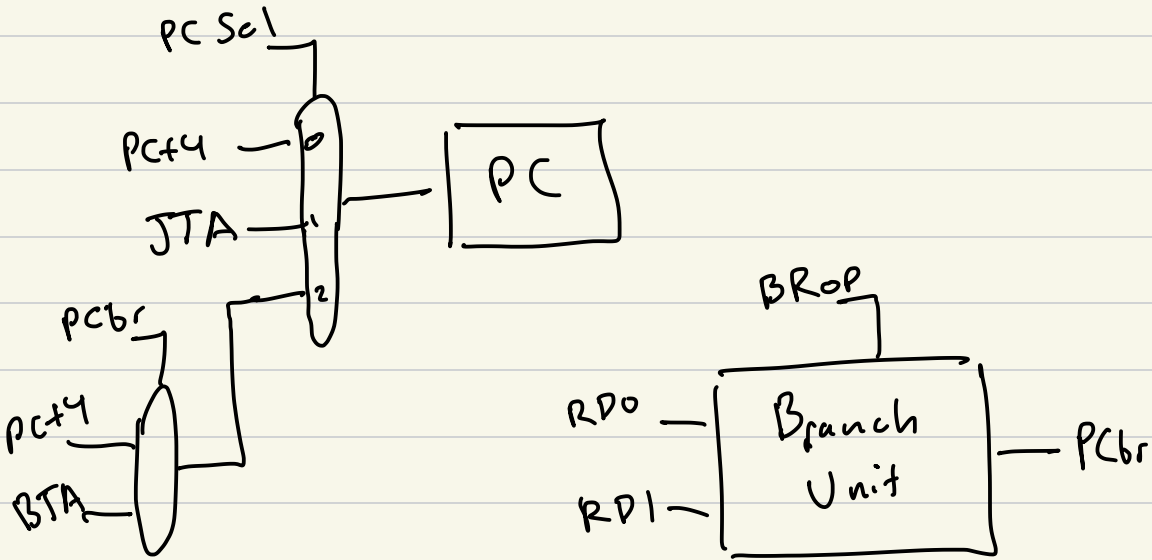
$$BTA = PC + imm - b$$

2) Determine if we take the branch. Need to compare rs1 and rs2.

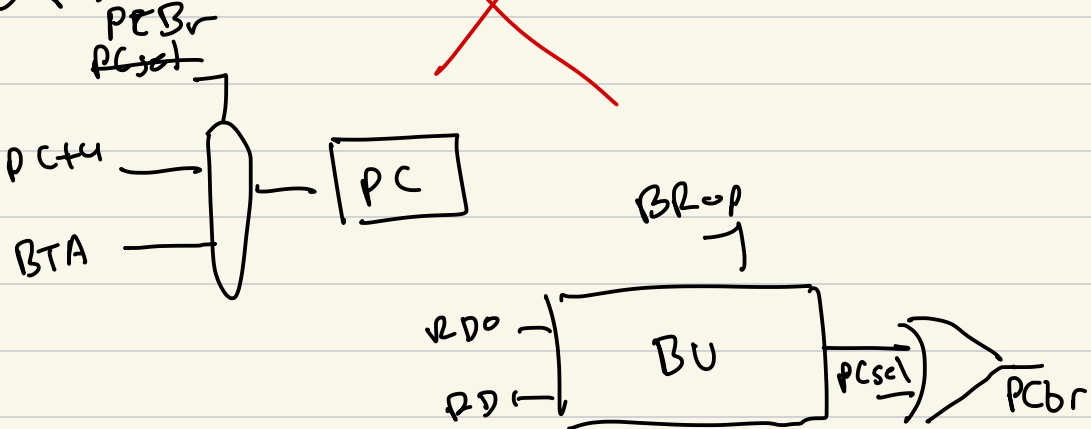
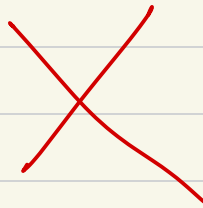
Update the data path



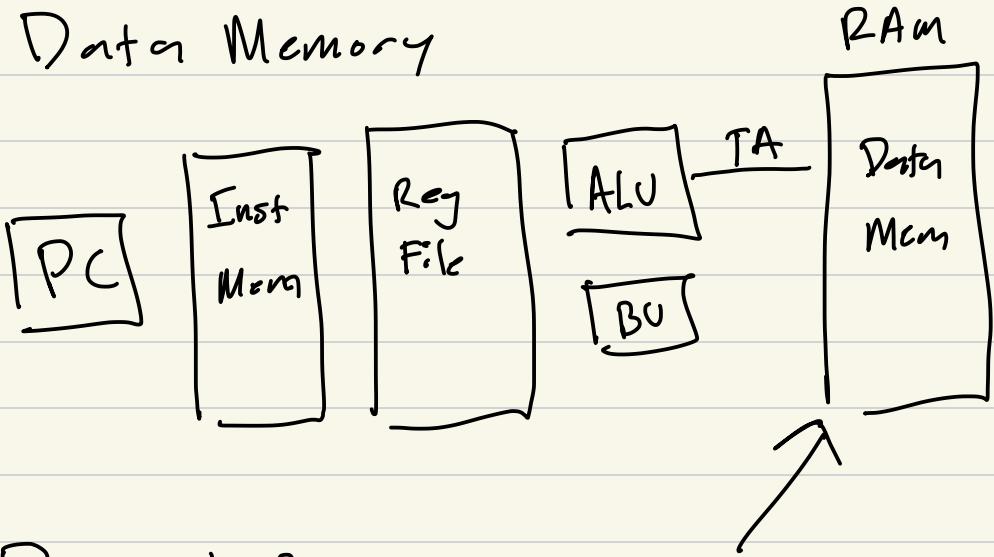
Option #1 for PCbr



Option #2



Data Memory



Digital RAM Component Stack

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

sd to 8(sp)