

CS315-02 Branches and Data Memory

Lab 06

part 1 addi, add, unimp

part 2 jal(call), jalr(ret)

Review remaining instructions to implement

Lab 06

Remaining instructions

Data Processing

Control

Memory

addi

sll

jal(call)

sd/ld

add

sra

jalr(ret)

sw/lw

sub

slli

j

sb/lb

mul

srai

beq

div

sllw

bne

↓

bit

bge

Branching

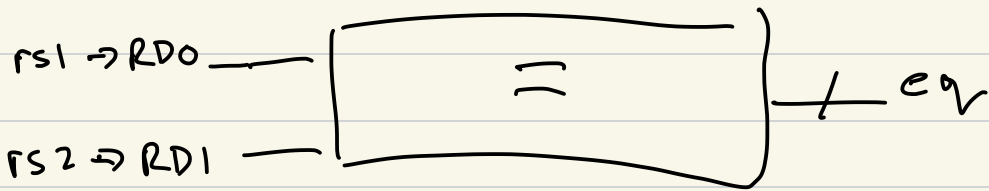
beq t0, t1, label

1) Compute the BTA (Branch Target Address)

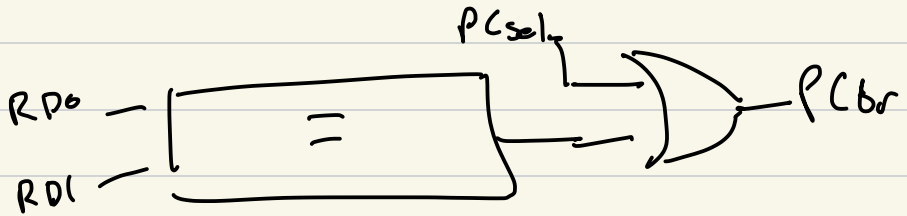
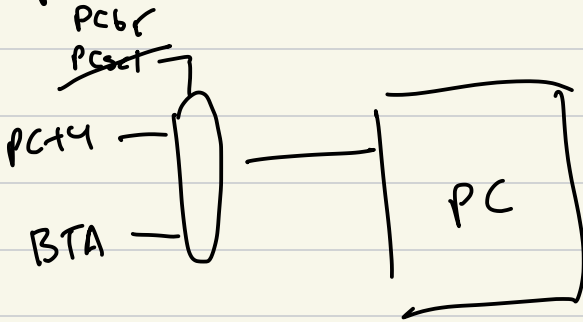
$$\text{BTA} = \text{PC} + \text{imm} \cdot 4$$

2) Determine if we take the branch

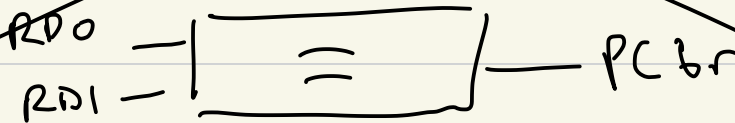
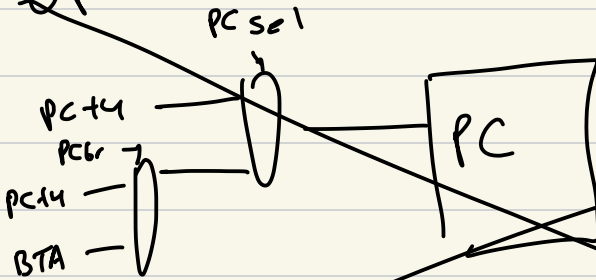
How?



Option #1

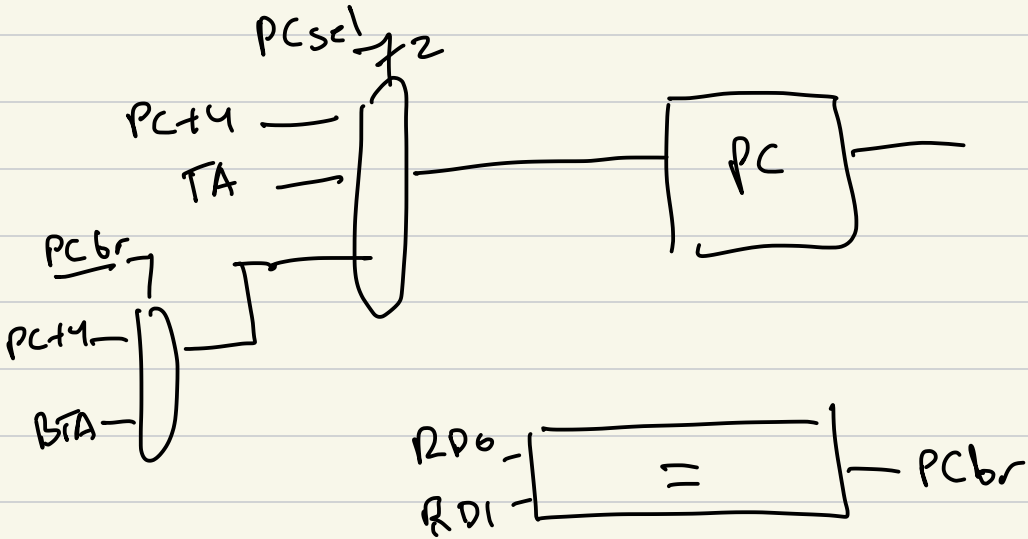


~~Option #2~~

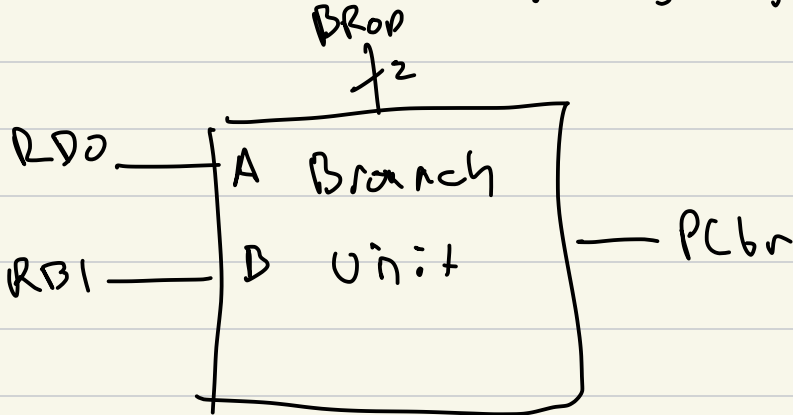


Option #3

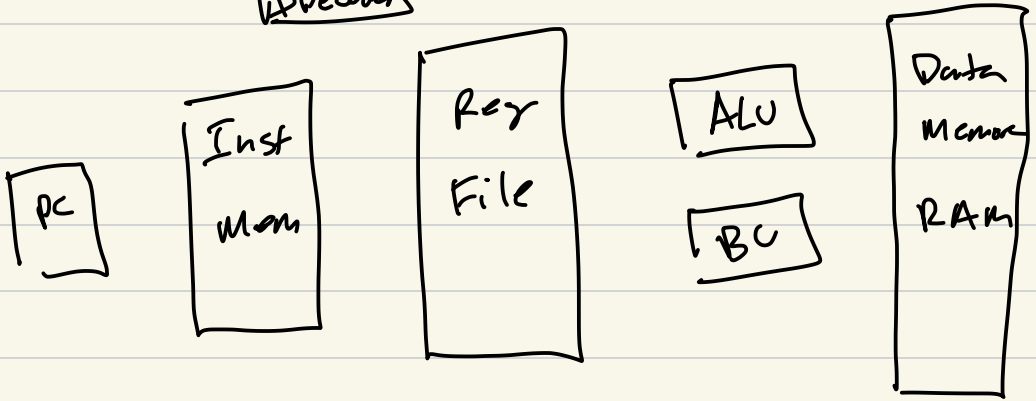
My Favorite



Branch Ops = beq, bne, blt, bge



Data Memory



Digital RAM

Use 64 data bits
7 addr bits } 128 double

sd/ld
sw/lw
sb/lb

How to load / store words and bytes

