

Final Exam:

Friday at 10am in the usual
Classroom.

- in person, closed book/note
- 75% will be on the material
since the mid term
- 25% from before the mid term
 - no floating point questions,

Datapath for register operations

addq %rax, %rcx

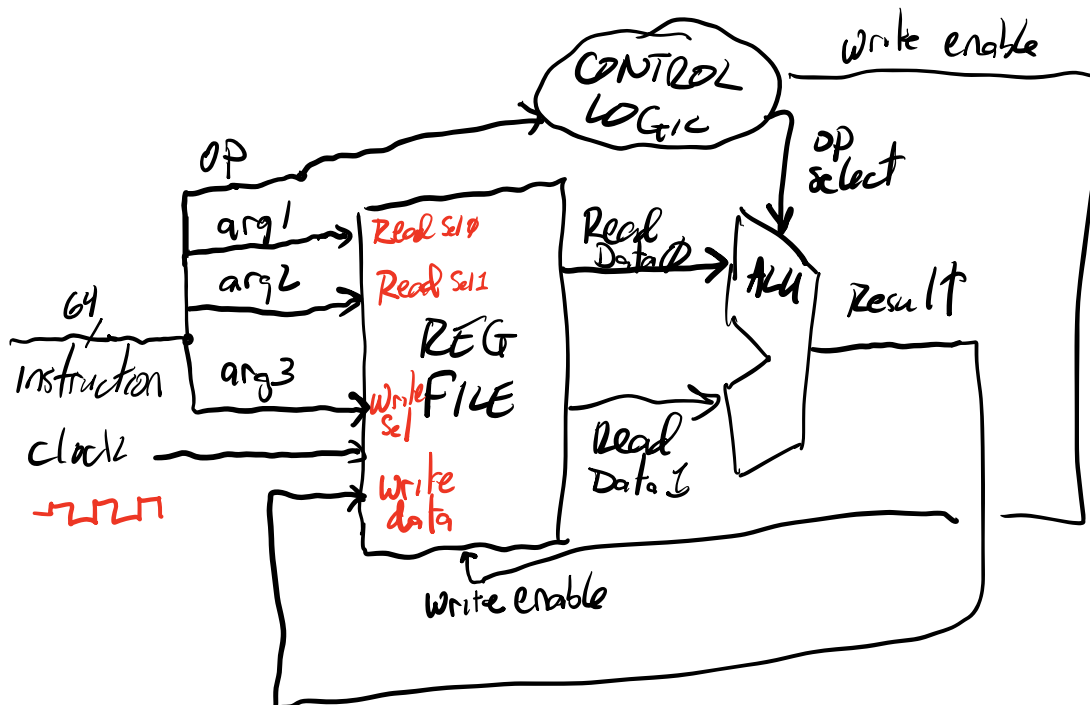
- read from %rax and %rcx
- perform addition
- writes the result to %rcx

Assume the instruction contains:

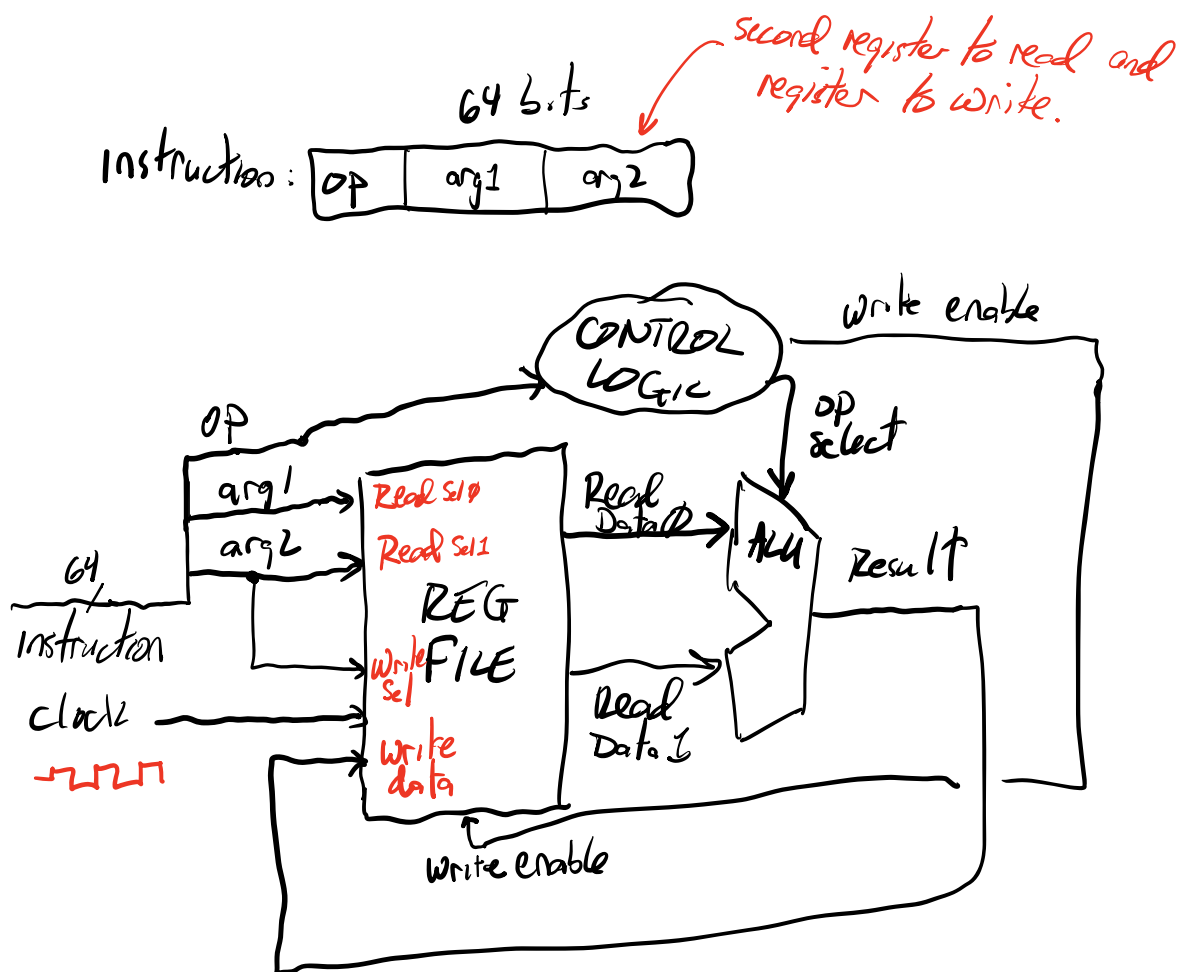
- op code for addition
- arg1 and arg2 specify registers to read from
- arg3 specifying the register to write to. 64 bits

Instruction:

op	arg1	arg2	arg3
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Important: Question 20 on Homework 2 assumes that the instructions for register operations have only 2 operands, where the second operand specifies the second register to read from and the destination register to write the result to.

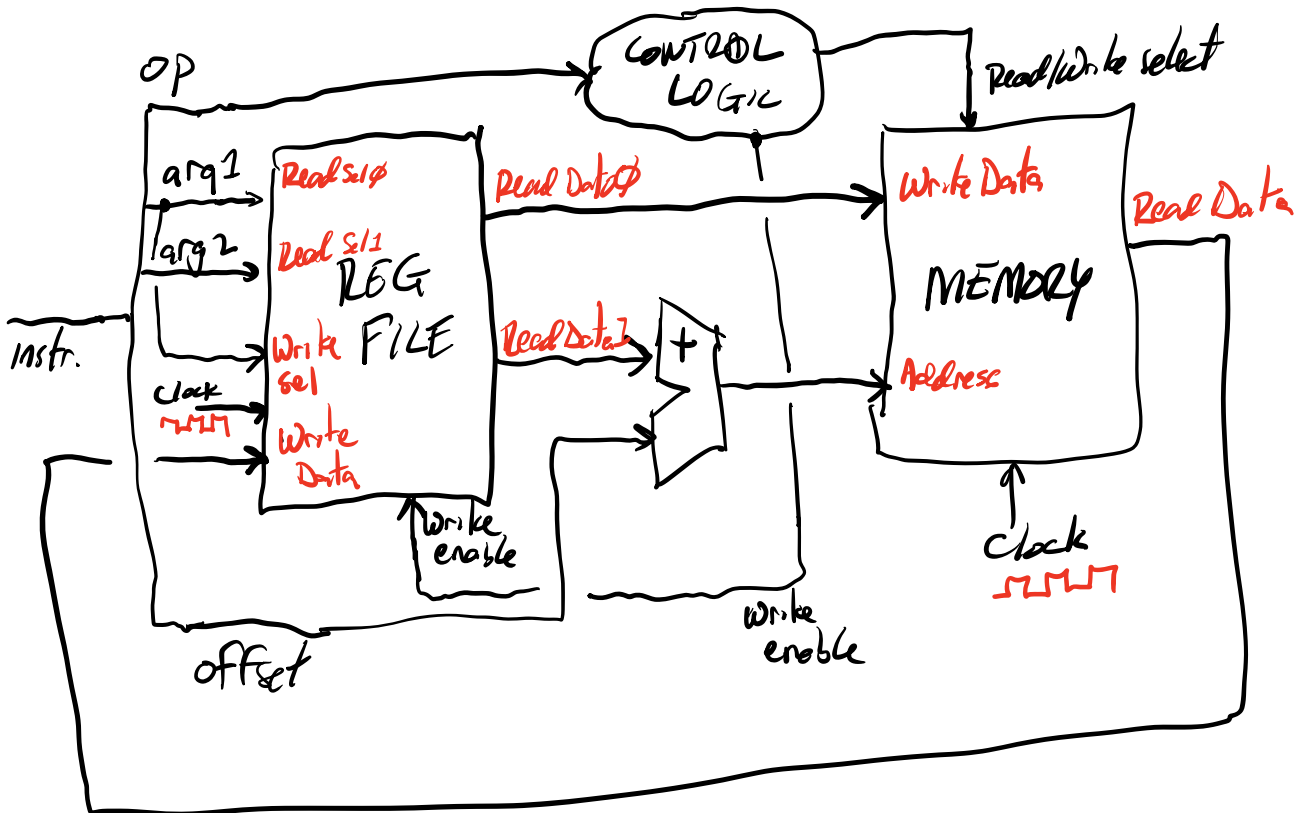
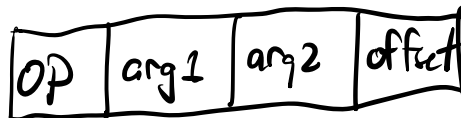


Datapath for moving data between registers and memory.

$\text{movq } \%rax, 16(\%rcx)$ #reg to mem
 $\text{movq } -8(\%rbp), \%rsi$ #mem to reg

arg1 offset arg2
offset arg2 arg1

Instruction:



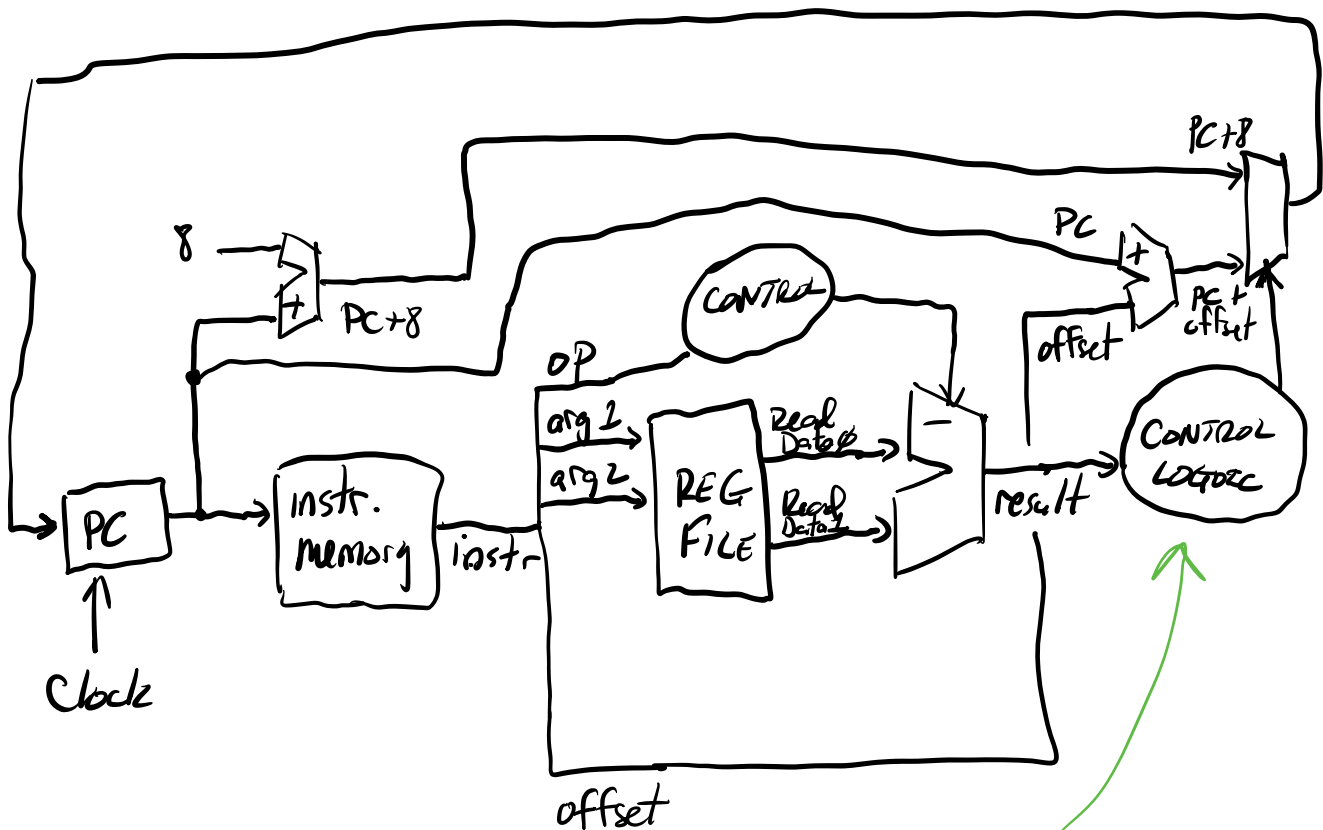
Datapath implementing a conditional jump

- Assume comparison and jump in the same instruction

- unlike the x86-64, which uses two instructions (cmp, je)

je ^{arg1} %rcx, ^{arg2} %rsi, offset
compare these two registers

if comparison is true, jump to offset(%rip)



The control logic chooses $PC + 8$ or $PC + \text{offset}$ using the MUX, based on the result of the subtraction.

