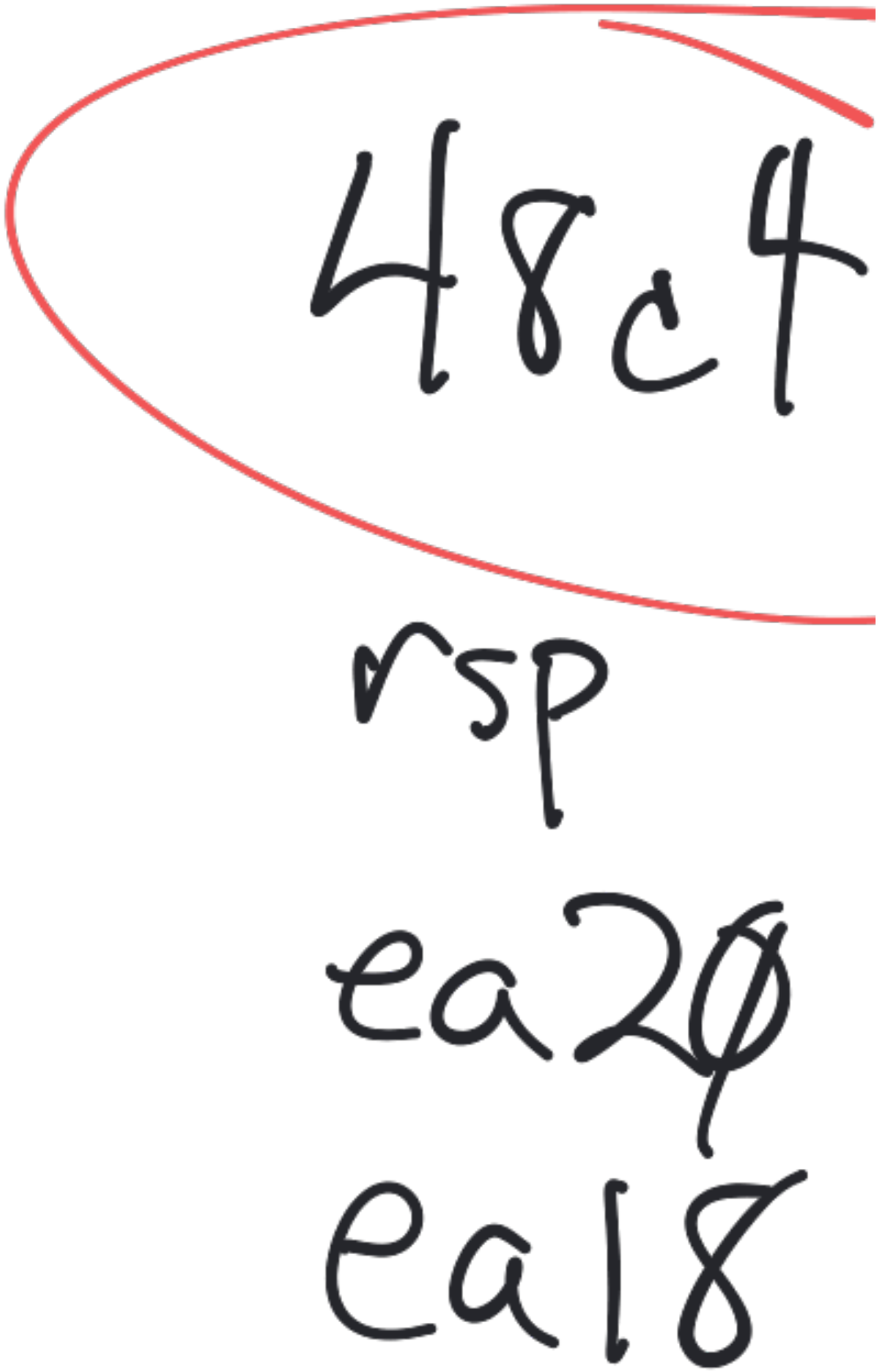
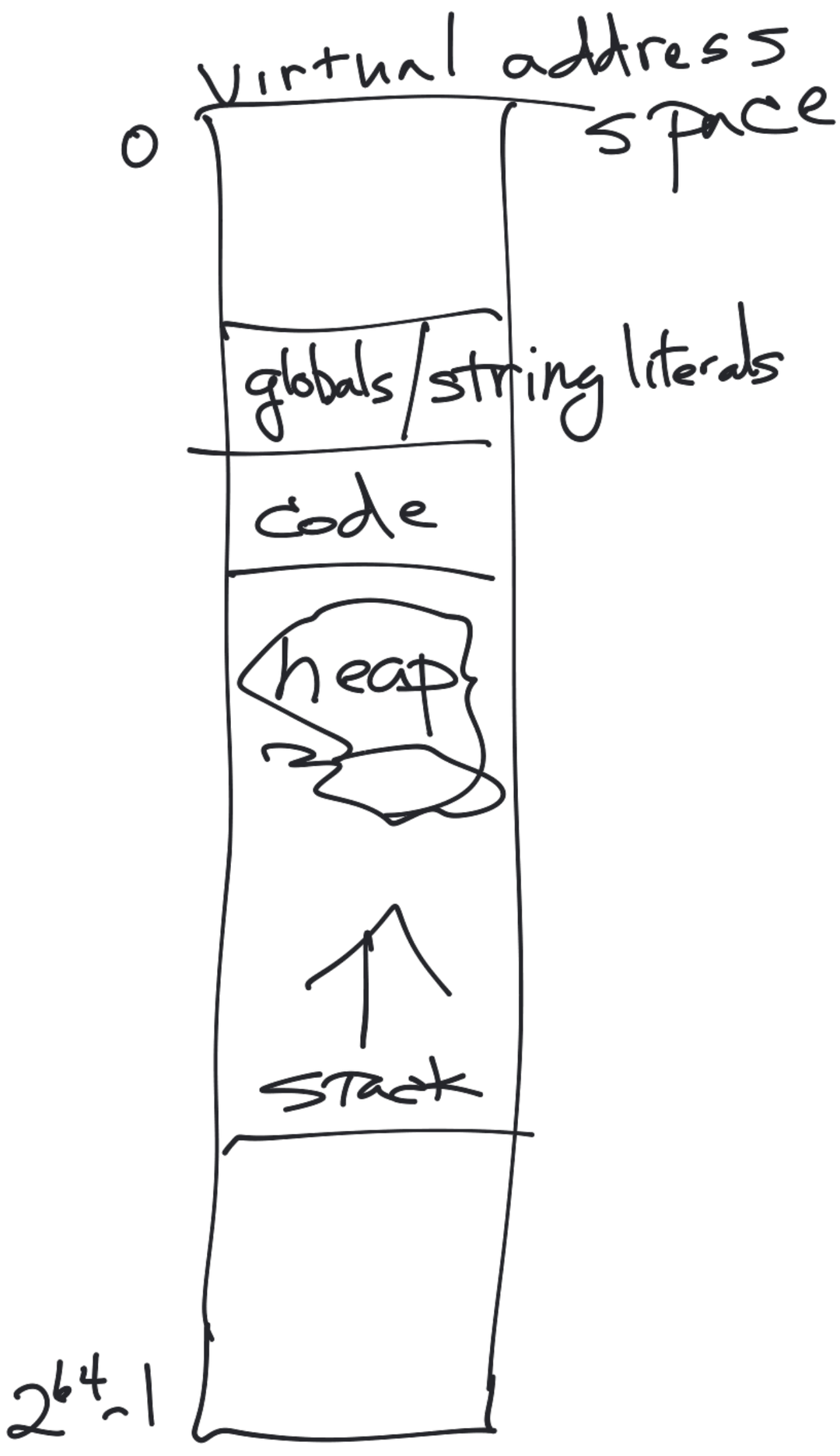
CS 208

Monday

28 Feb 2022


48c4
rsp
ea20
ea18



Typical program

$2^{10} \sim 10^3$
$= 1024$

$2^{60} \sim (10^3)^6 = 10^{18}$

$2^{64} \sim 16 \times 10^{18}$

Virtual addr. space

0

64KB } page 0

64KB } page 1

64KB

code XYZ page 523

code ABC

physical memory

page frame 0

code ABC page 54321

code XYZ page 111523

$2^5 \sim 2^{30}$

2^{35} bytes

326B

VM

Phys. Mem

0x4329

mov
test
je
...

When CPU wants to execute
↳ mov
for the first time

CPU says to the "memory management unit" (MMU)

give me the page containing 0x4329

either yes it's already in phys. mem.

or not

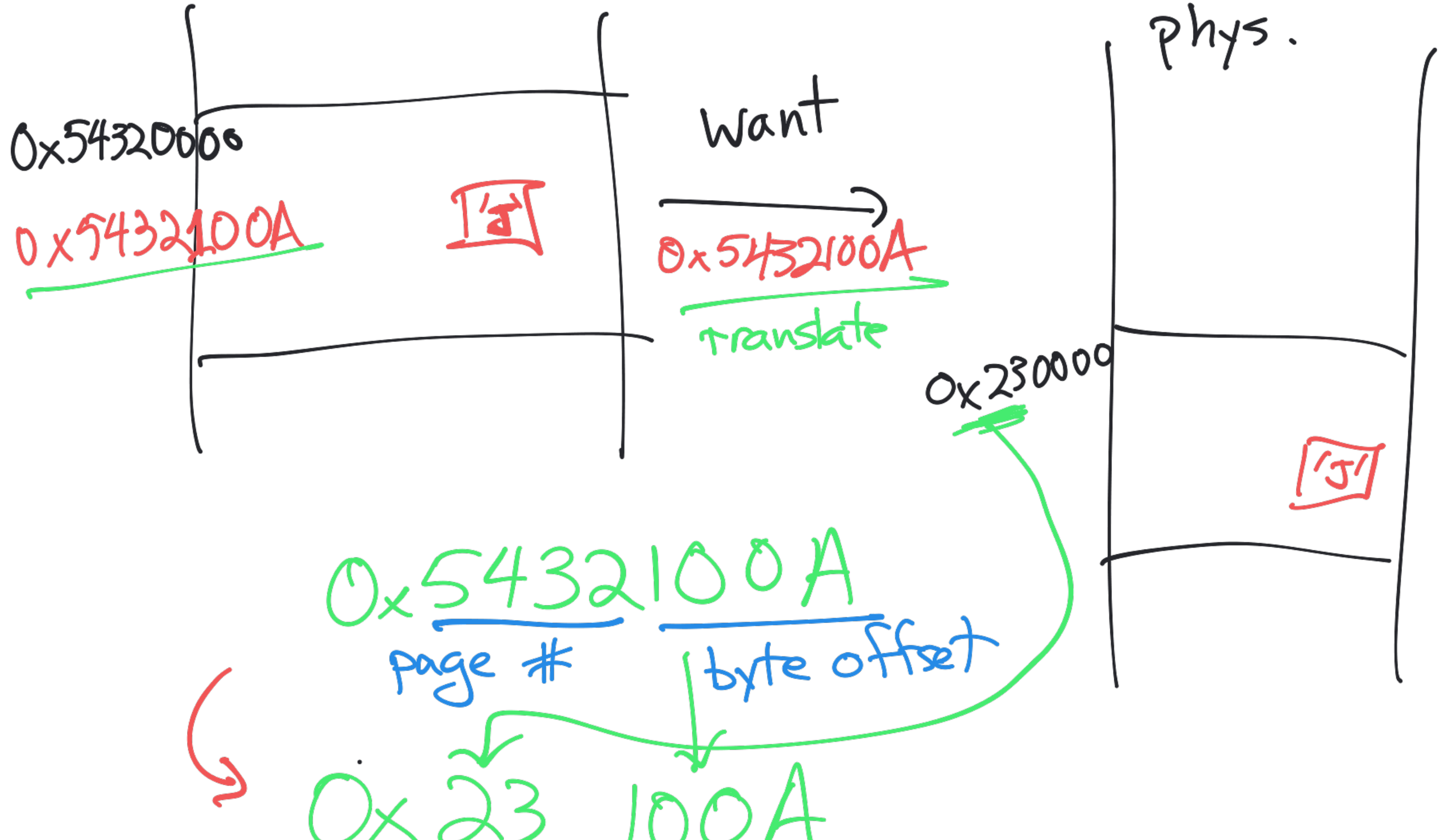
page fault

Need mechanism for translating

V addr → Phys. addr

Page table

64KB pages — $2^6 \times 2^{10} = 2^{16}$ bytes



Page table maps

Virtual page #

→ physical page #

Mega

166

mebi

2^{20}

MHz (10^6)

MB (2^{20})

$4K \sim 2^{12}$ -

page start addr
end w/ 3 hex 0's

page 6

6x 4K

0x6000 — 0x6fff

9th byte is at add 0x6008 (virtual

9th byte on phys. pge 0xabcd3008

page table

virt page #	Phys page #
0	
1	
2	
3	
⋮	
12	0xabcd3
⋮	
$2^{52}-1$	

2

2^{64} / page size

$2^{64} / 2^{12}$

2^{52}

TOO BIG