CSE 330: Operating Systems

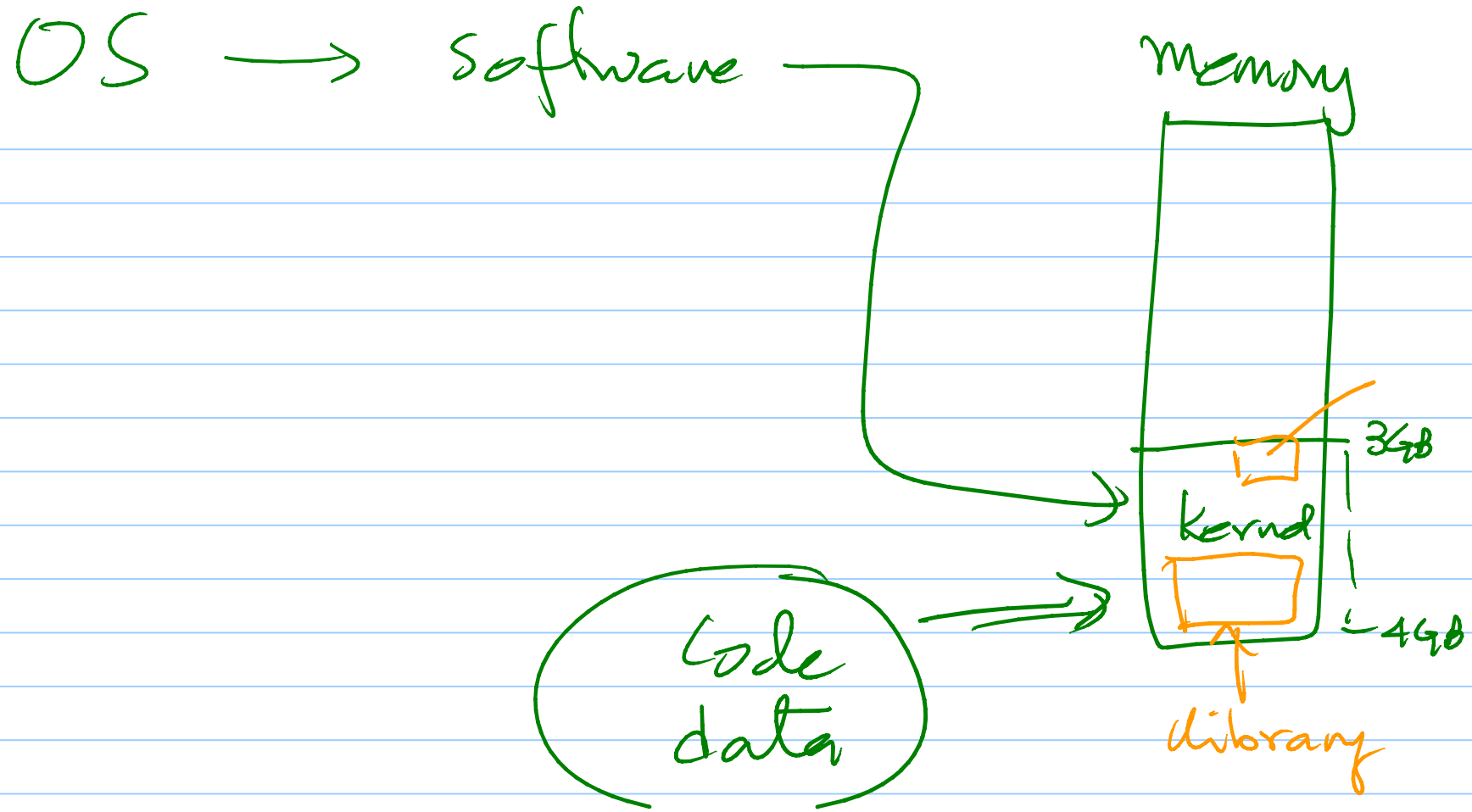
Class: 03 **Date:** 1/16

Spring 2018

Note Title

Operating Systems

- CPU management → run multiple processes efficiently
- memory → allocate memory to processes
- devices


OS
Software
Memory
3GB
Kernel
4GB
Code
data
library

Software (OS) sees

CPU — single cycle

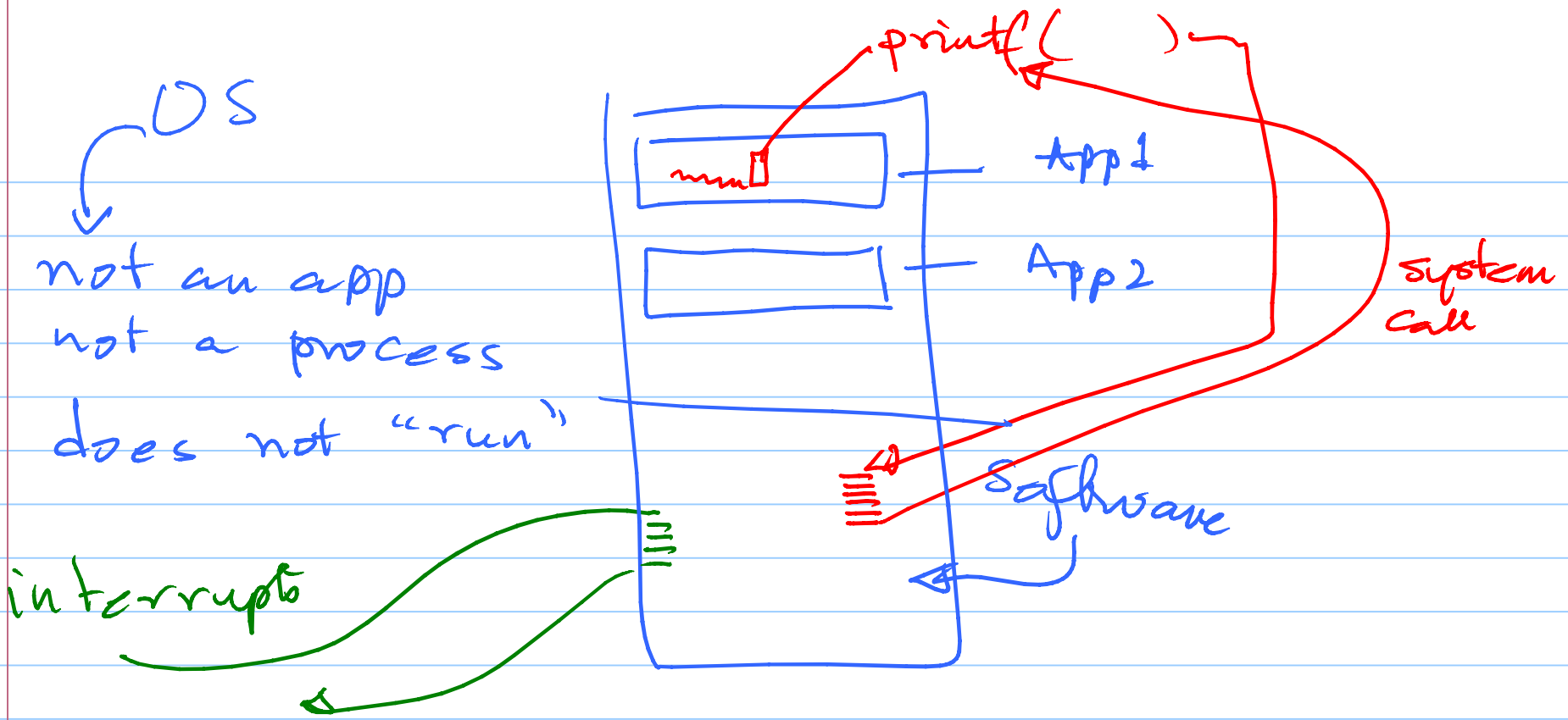
Caches — none

memory — RAM or virtual

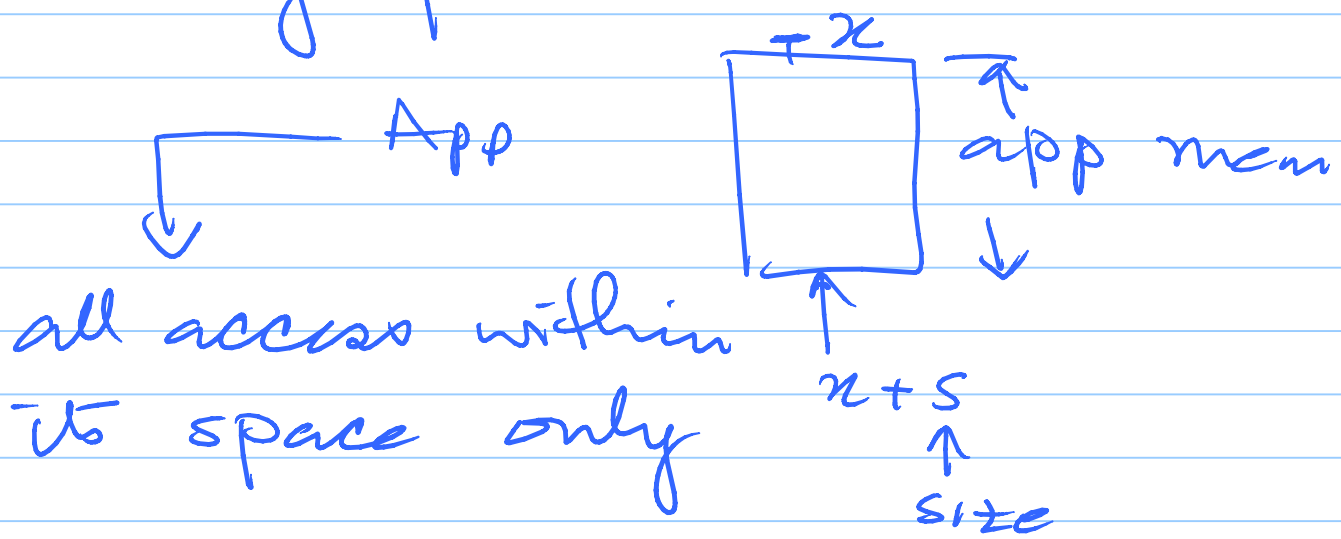
devices — ?!?

Types of Operating Systems

- Desktop
- Server
- Batch
- cluster
- Embedded
- Real Time → X


OS
not an app
not a process
does not "run"
interrupts
printf( )
App 1
App 2
system call
software

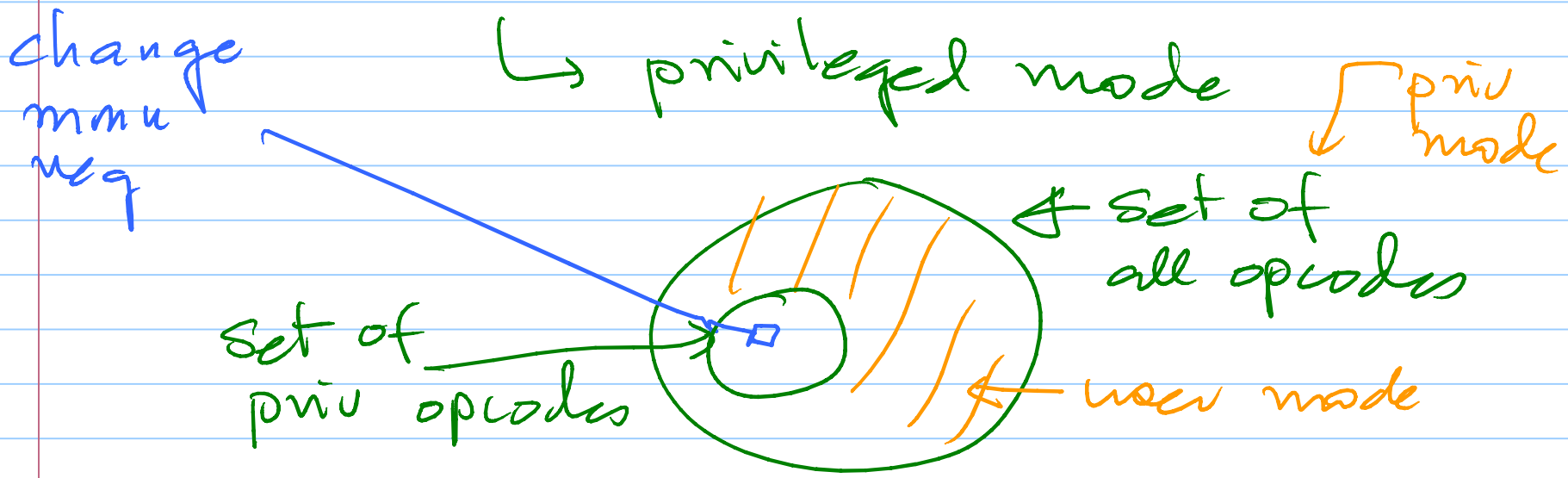
Memory protection



CPU
INT
bus
base
x
bound
s
mmu
bus
s+x
x

CPU modes (or rings)

- user mode
- privileged mode

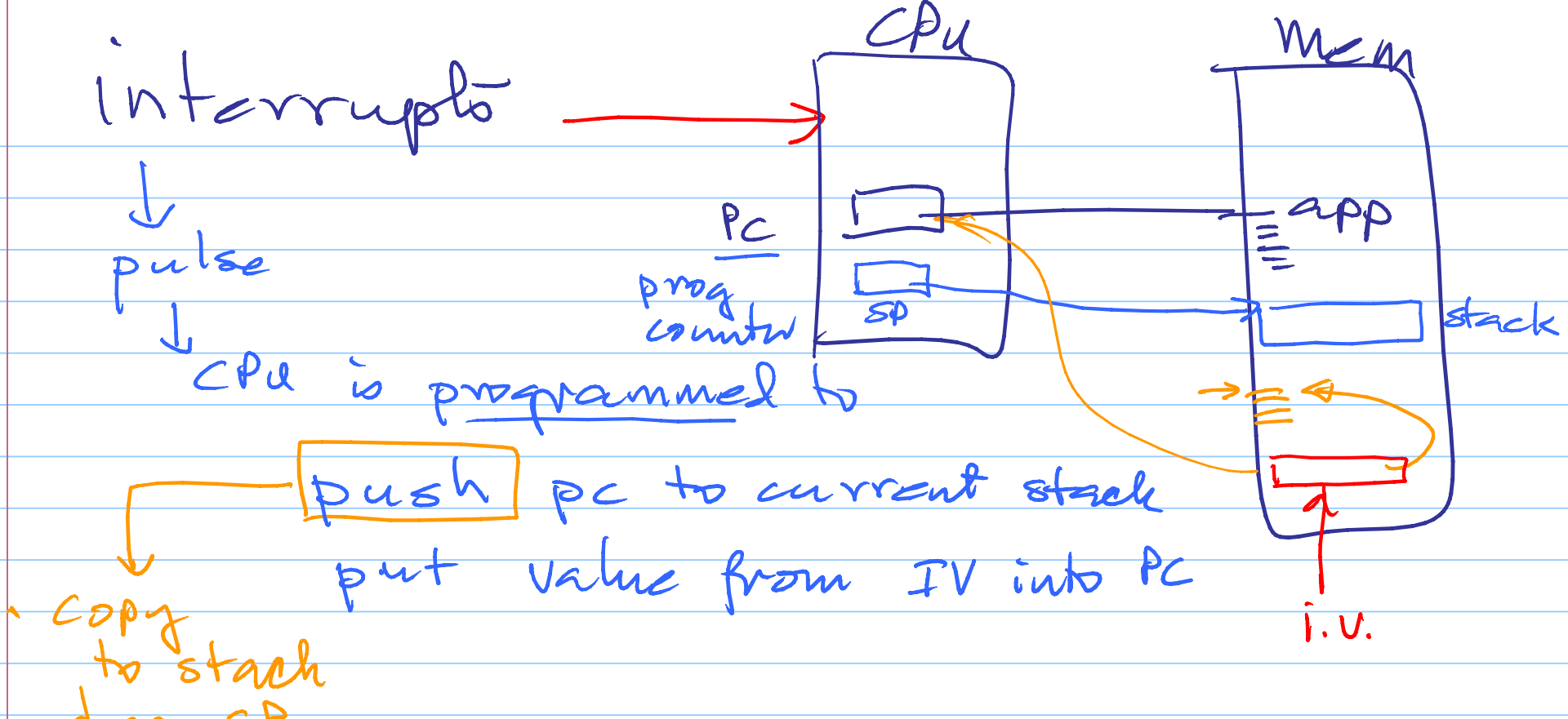


priv mode opcodes

→ to control register in MMU

→ to control data transfers in/out of devices

→ to control CPU thing e.g. timer


interrupts
pulse
CPU is programmed to
push pc to current stack
put value from IV into PC
copy to stack
dec SP
CPU
PC
prog counter
SP
Mem
app
stack
I.V.

INT ⟶ jump to int handler routine

@ end of int handler

RTI ← instruction

return from interrupt

↳ pop value from stack & put into PC

int a happens

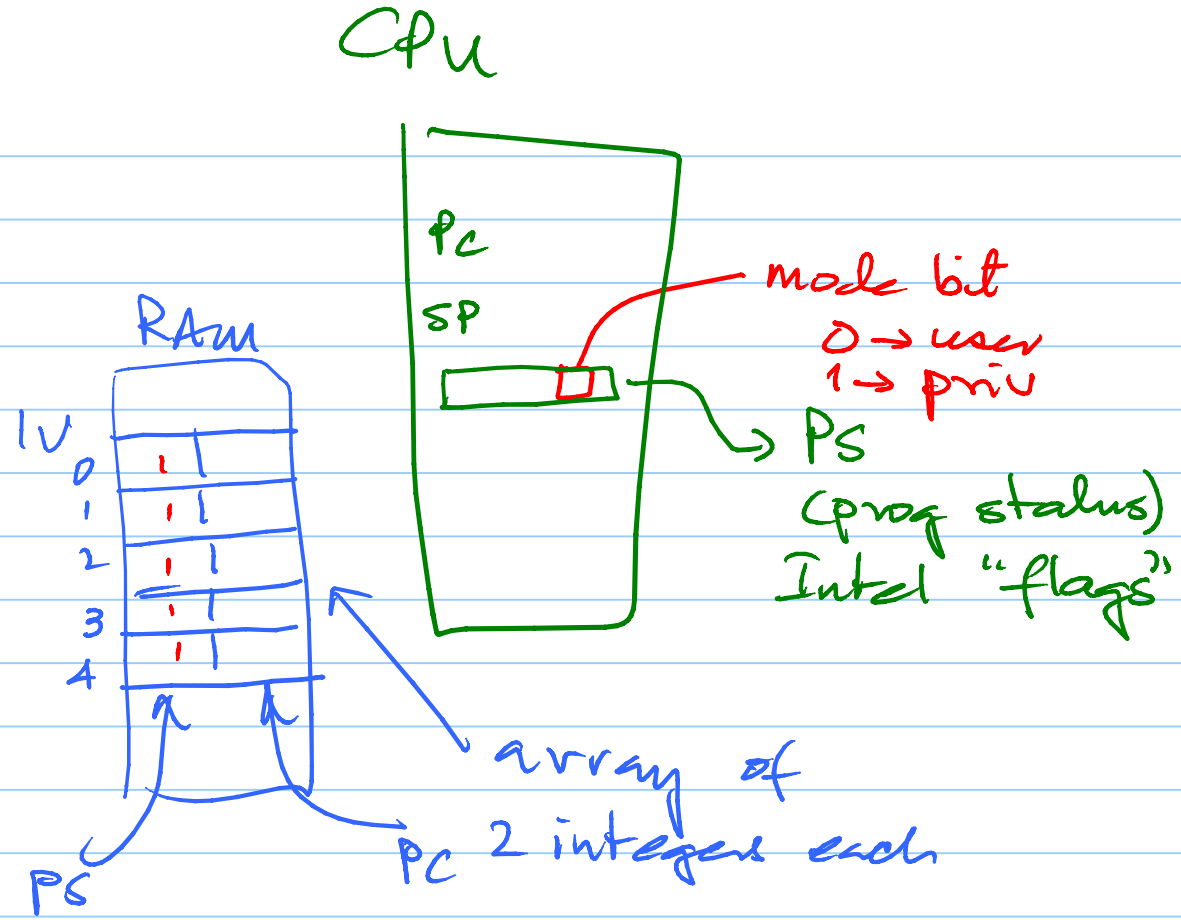
CPU:

push PC to stack

push PS " "

load PC from
IV[x].PC

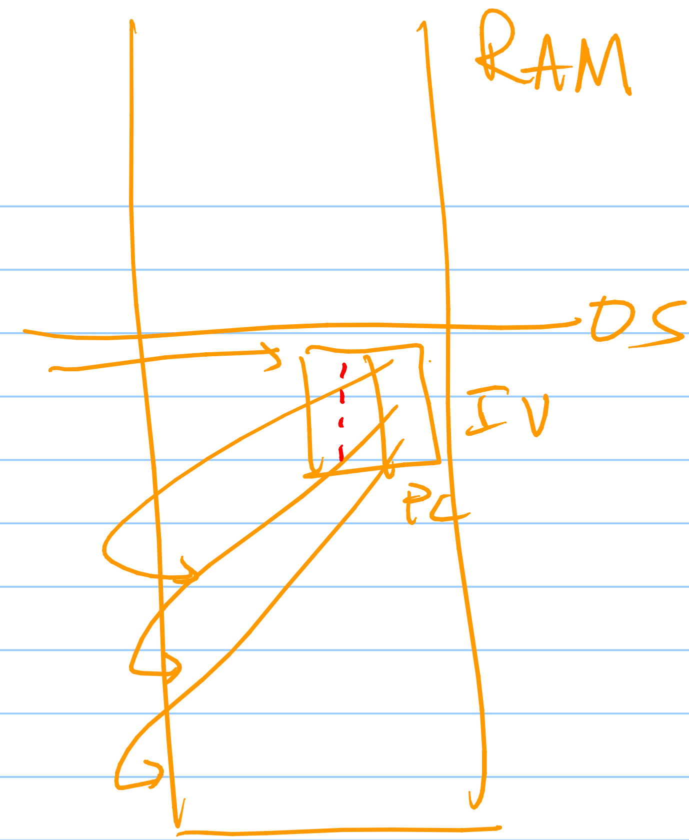
load PS from
IV[x].PS



mode = 0

RTI → pop stack → PS

pop stack → PC


RAM
DS
IV
PC