☑ 1. Last time

☑ 2. Midterm logistics

☑ 3. Class overview

☑ 4. Your questions

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2. Logistics

- 75-minute exam
  - closed book
  - turn in your exam at minute x, $x < 65 \vee 75 \leq x < 78$
- One two-sided sheet of notes, with the specifications on the class web page

3. Class overview (not comprehensive, not guaranteed to be necessary or sufficient for exam)

Material

- readings
- labs
- HWs
- lectures/classes

- Lectures/classes

Lectures/classes:

- OSes: what are they?
  - goals, purpose
- Processes:
  - process's view of memory, registers
  - stack frames
  - OS's view of processes
- System calls
- Process/OS control transfers
- Process birth: fork()/exec()
- Shell
- File descriptors
- Redirection, pipelines
- threads
- concurrency
  - hard to deal with! abstractions help (but not fully)

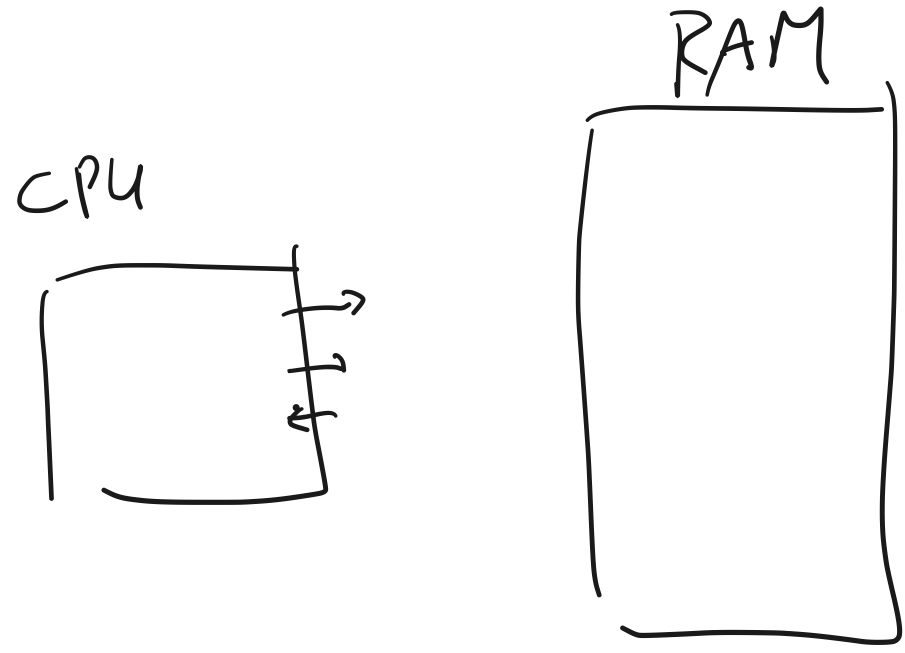
- critical sections
- mutexes
- spinlocks
- condition variables
- monitors

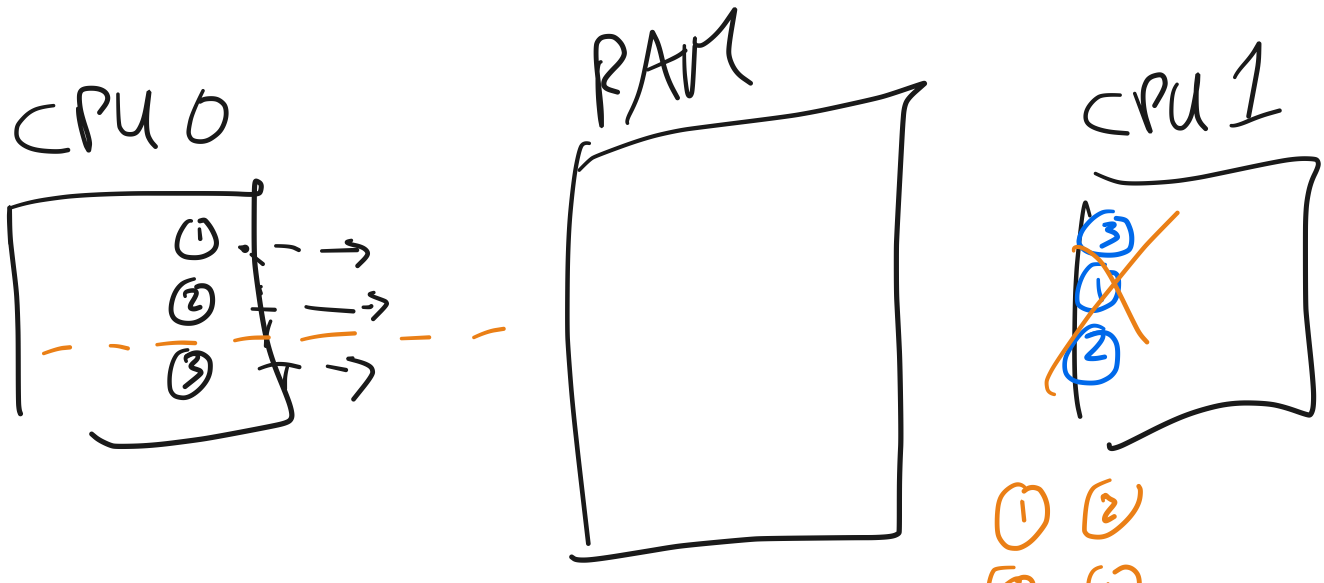
- lots of things can go wrong: safety problems, liveness problems, etc.
  - lack of sequential consistency makes the problem worse
- safety: build primitives that get help from H/W (xchg)
- liveness: various problems, including deadlock
- tradeoffs
  - for example, performance vs. complexity
- "advice"

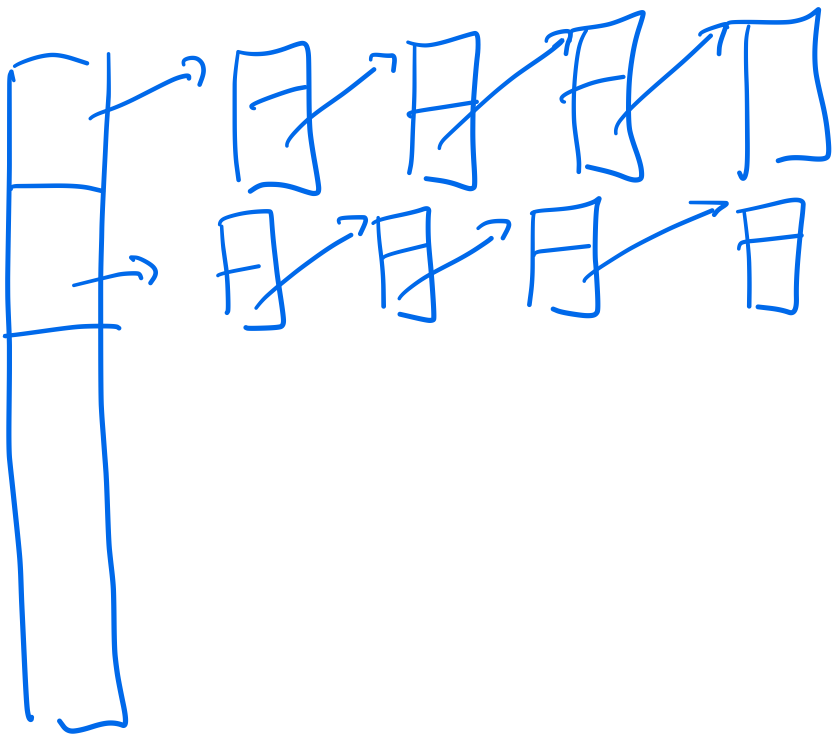
- software safety (Therac-25)
- scheduling
  - when scheduling happens, which metrics, what costs

- specific disciplines
- lessons + conclusions

- virtual memory
  - intro
  - paging



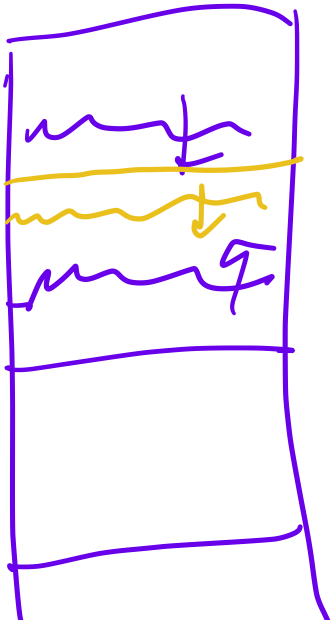


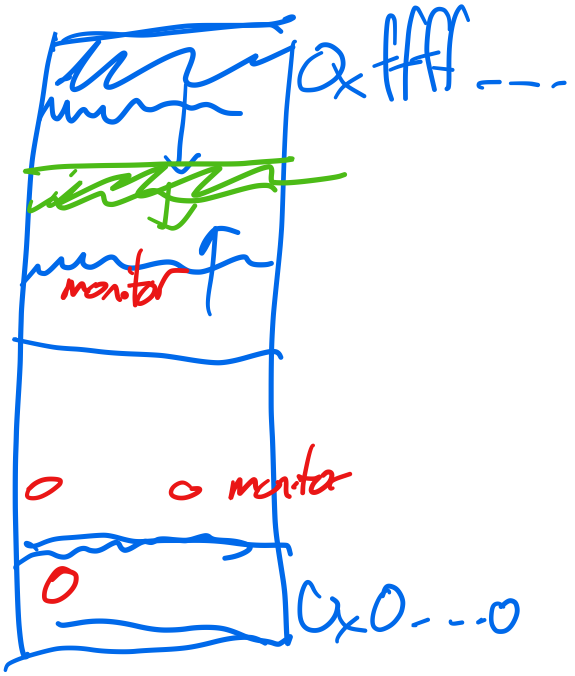


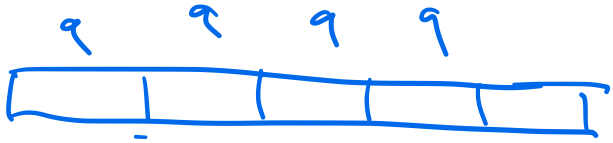
stide

P1

P2



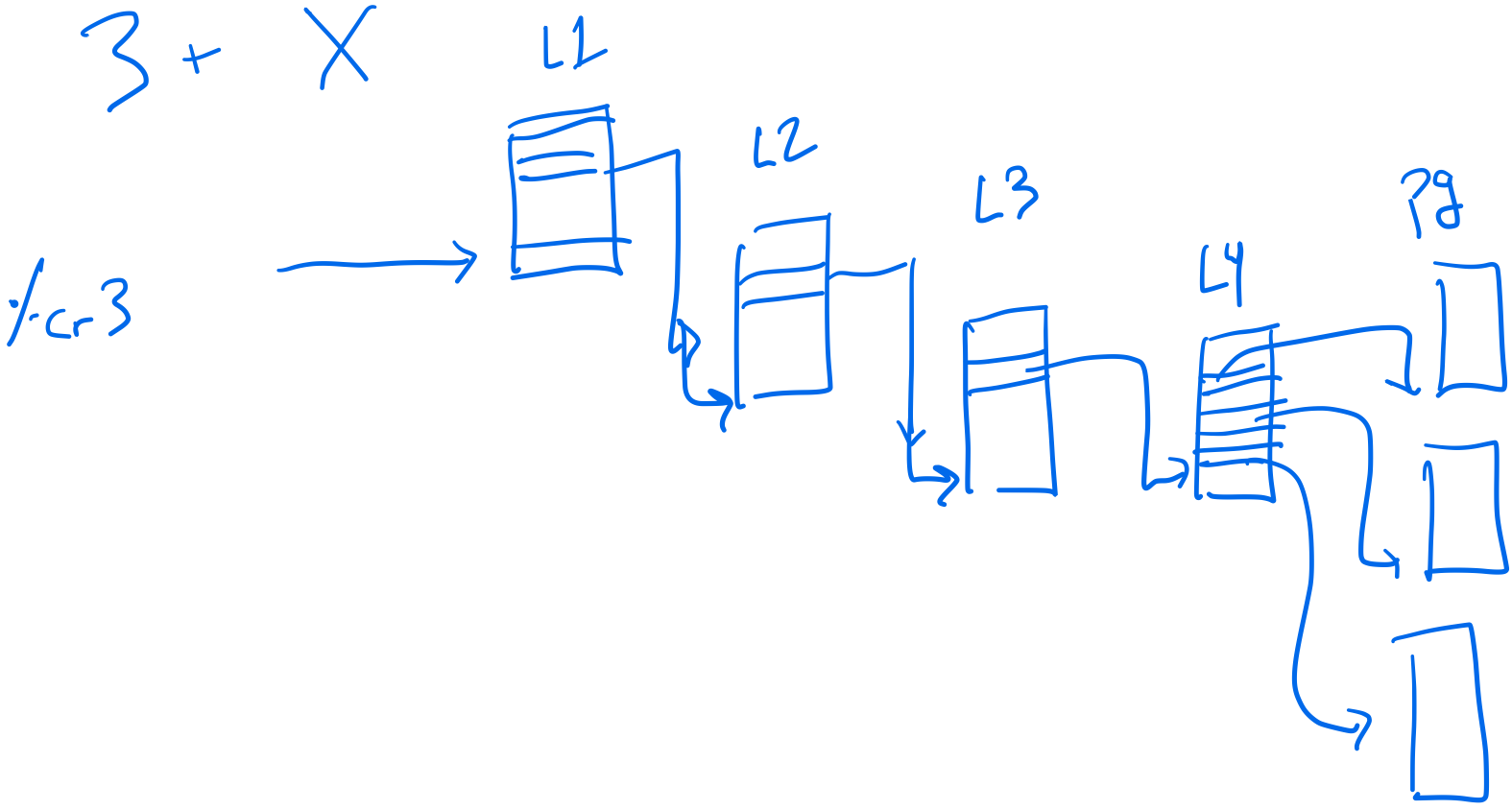




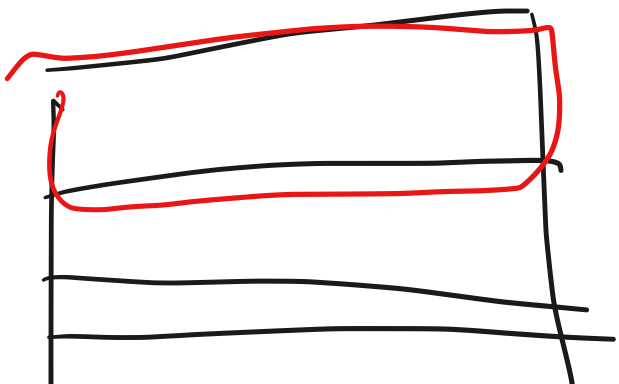
code pg.
data pg.
stack pg.

4

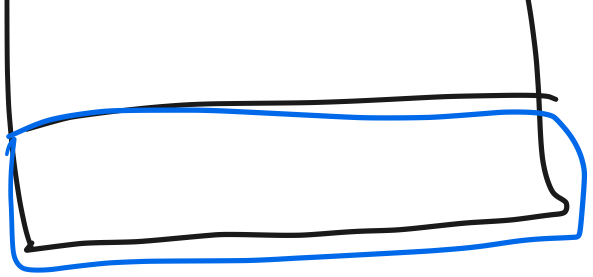
3 + X



red lock



blue lock



A: one week CPU-bound

B: one week CPU-bound

C: 1 ms