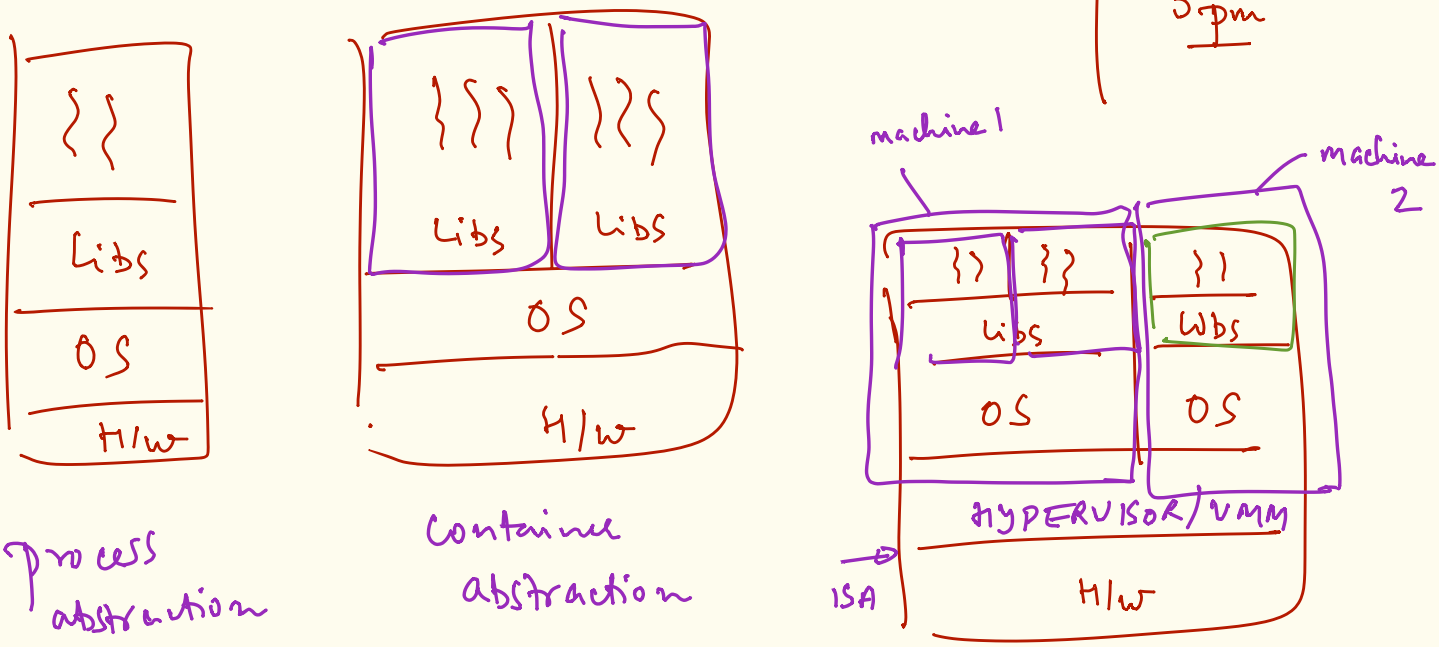
CS744 Lecture 26

LABQUIZ 2

6th Nov.
Fri
5pm

⊛ virtual machines



process abstraction

container abstraction

VM-abstraction

multiple machines running on a single machine

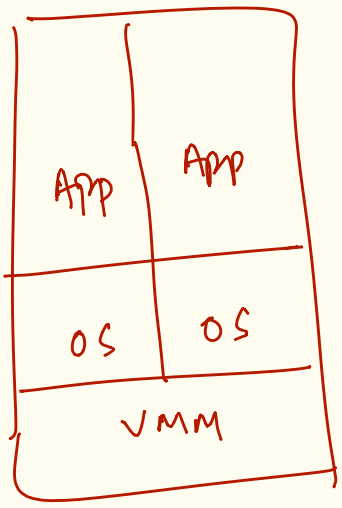
– ISA + all CPU state + devices etc.

– OS per machine & everything above

use-cases.
motivation

1. multiple OS dependencies for applications.
2. testing & debugging
3. OS failures!
4. server consolidation

#



CPU

what is a machine state?

- all CPU regs.
  - general purpose regs.
  - stack ptr
  - :
- interrupt state
- control regs.
  - CR3
  - CR0
  - IDTR

flags, pgtable dir.

x86

Ring 3 — Apps

Ring 0 — OS

update IDTR

sol^n.

Ring 3 Apps

Ring 1 OS — set IDTR → trap

Ring 0 Hypervisor: handled by VMM first.

syscall