

Lecture #2

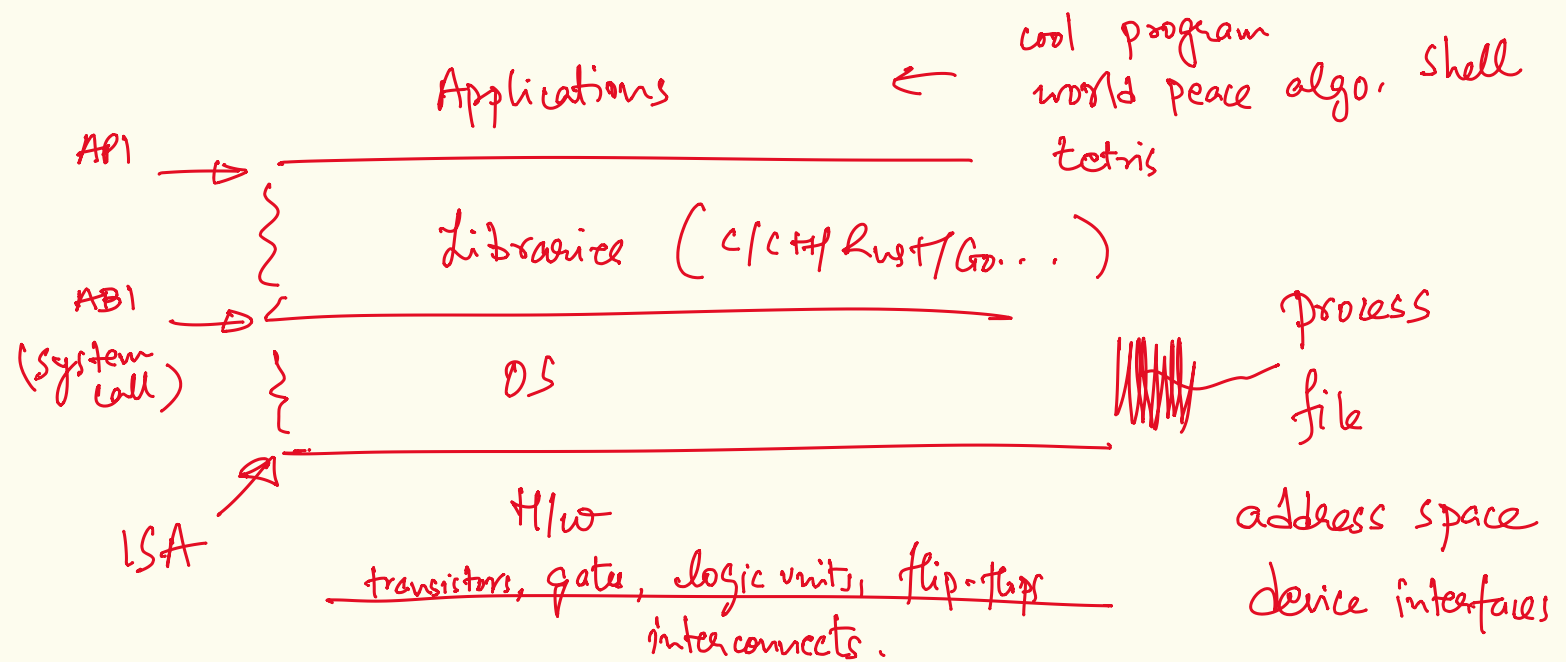
CS 695

(*) What is the secret sauce for all of computing?
developing programs
embedding logic
do work.

- ABSTRACTIONS

- specification of functionality
- accessed via an interface / API
- interface has a backend for implementation

(*) computing world stack



- process

logic + execution
program process

* process context

OS mechanisms/objects for the process abstraction.

①

state of the CPU due to process execution related

CPU reg. ~ eax/ebx/ecx — general purpose

esp/ss/ebp — stack ptr. reg.

pc/eip — inst. ptr.

flags — flags reg.

- context save & restore

- context switch — saves p1 & restores p2

② PCB — process control block

pid, status, ...

stack info.

context

page table info.

files

signal

③ schedulers

④ signals

* virtualization

multiplexing sharing

VMs

process-view

- zero-starting address space

- CPU-ownership

- files

- sockets

- device endpoints

OS/system-view

- # CPUs, cpu types

⇒ ISA

⇒ all CPU char.

- # io bins

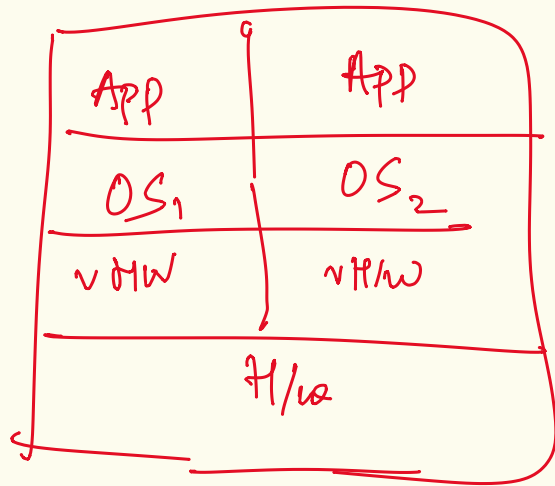
- address bus width

- physical memory available

- external devices (types)

virtualization / VMs.

⇒ provide the OS-view as an abstraction
system-view s/w defined.
machine



hypervisor
virtual machine
monitor