

CS 347

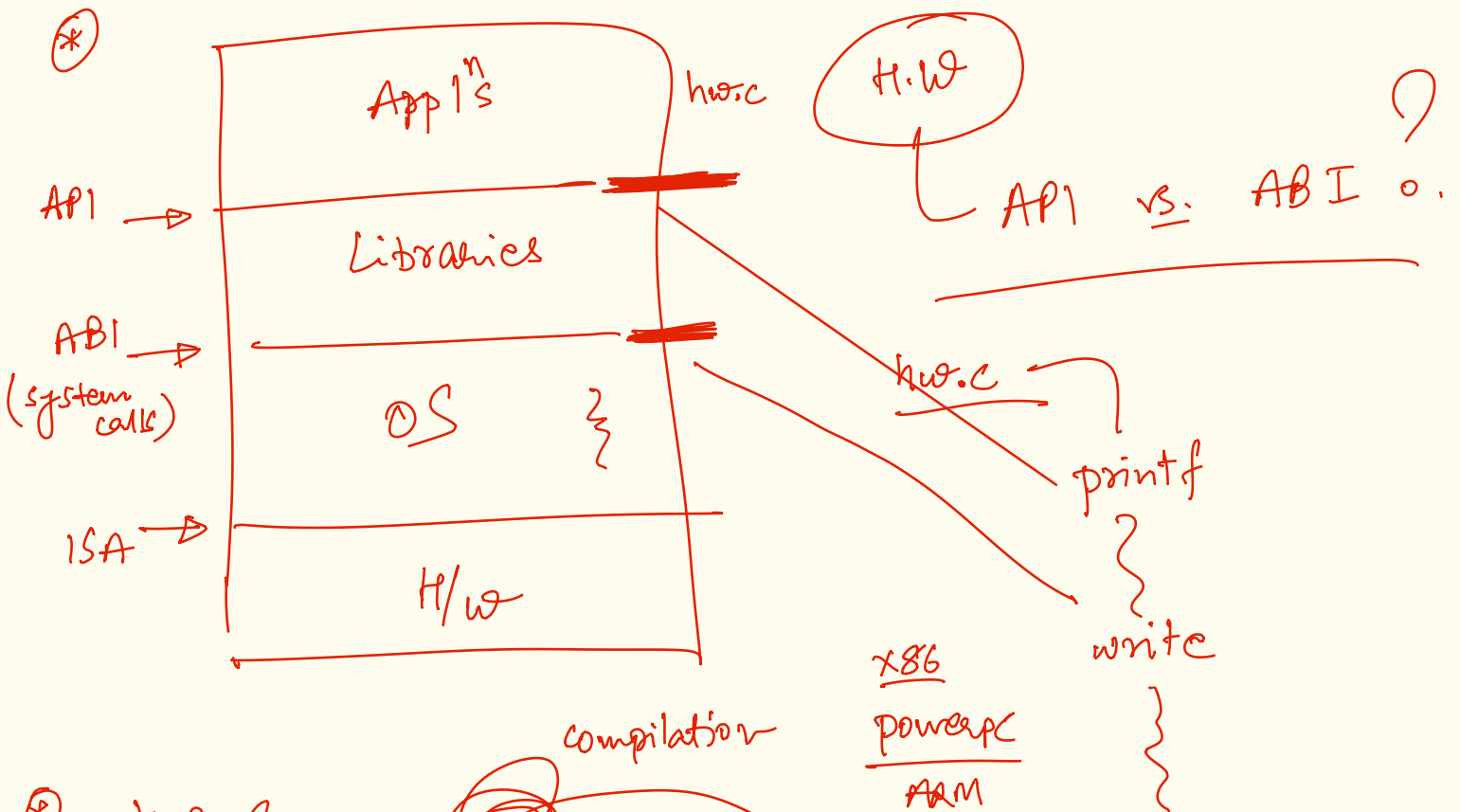
Lecture #2

⊛ Lab 1 is available on the course page.

⊛ abstractions are key for world peace!

└ OS is key for world peace.

└ OS is key for all generalized computing.



⊛ hw.c → compilation

#include <stdio.h>

⋮

binary program / executable

0x23 0x63 0x89 0x83

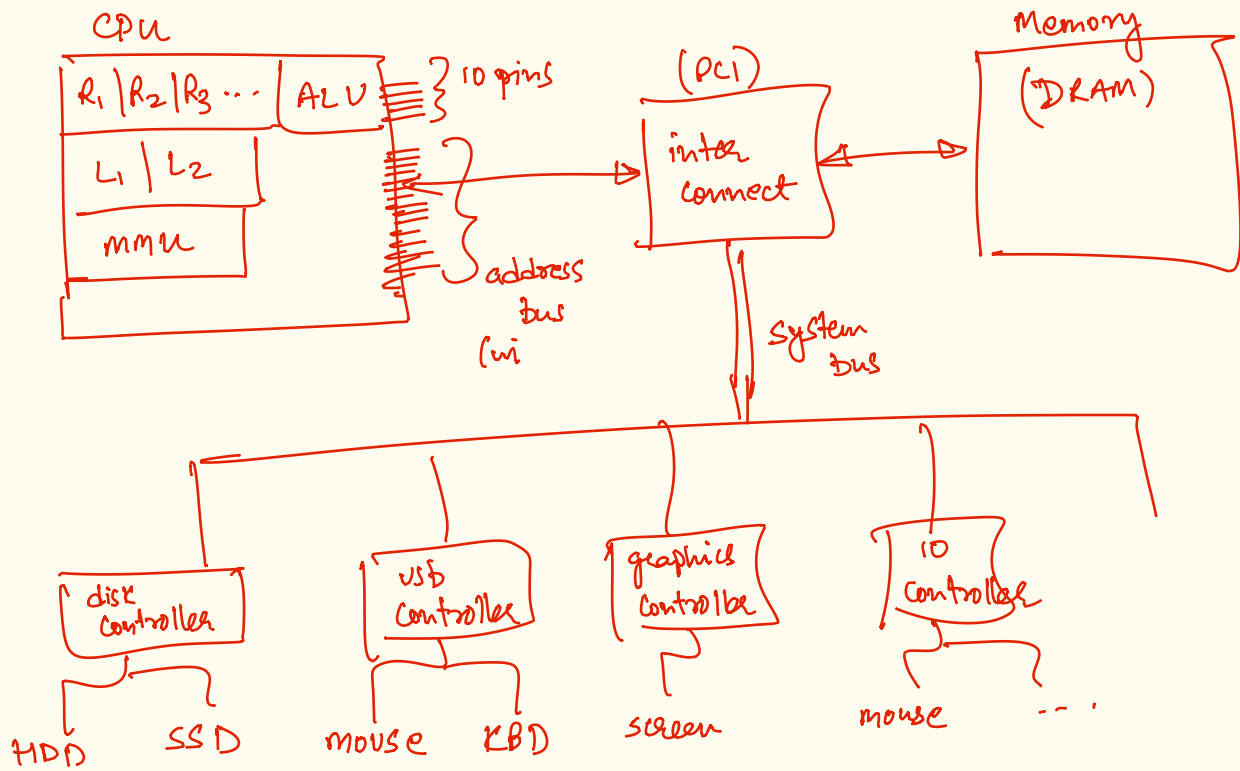
mov a, b

inc a

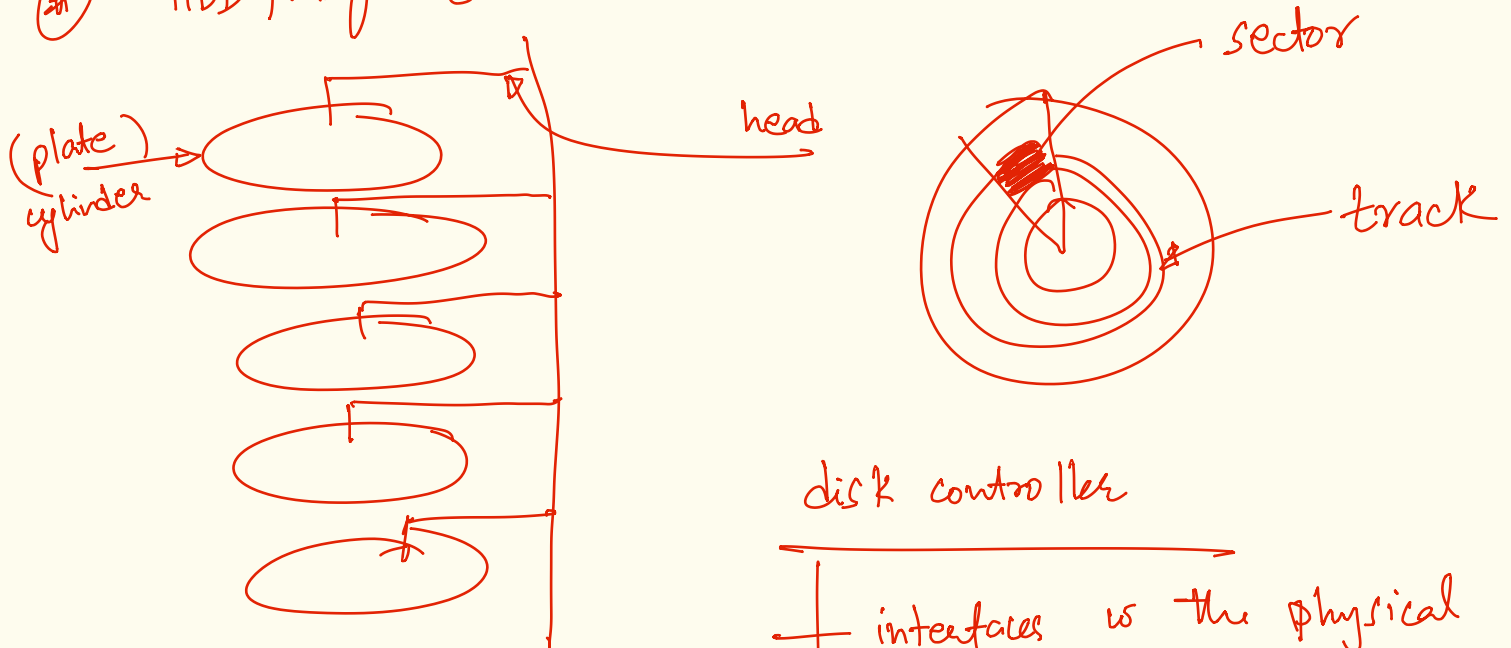
jump —

} ISA-specific instruction sequence.

* Simplified view of the machine (architecture view)



* HDD / magnetic disk drive



disk controller

- interfaces is the physical disk interface
- provides "blocks" interface
 - linearly-ordered fixed size blocks.

⇒ disk ⇒ number of blocks.
 $(0 \text{ ————— } n-1)$

CPU's ISA: ~ describing / specifying capabilities of a CPU

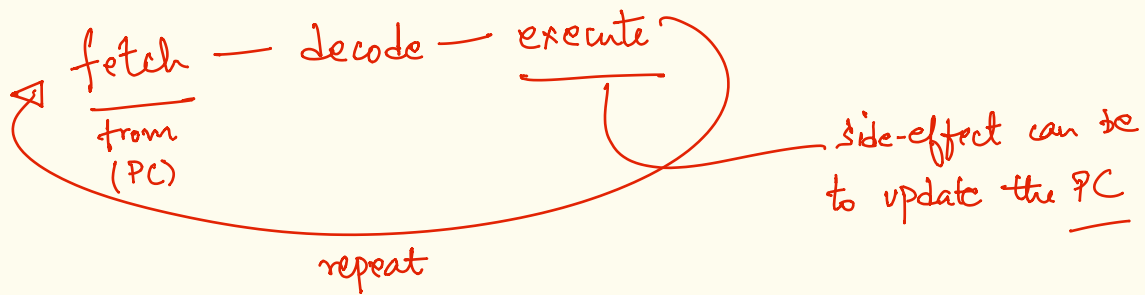
- + instructions
- + registers
- + caches / TLB
- + address-width.
- ⋮

von-neumann architecture model

- ① decoupling of execution from logic
- program / logic and data are stored separately (in memory) ~~(from CPU)~~

& CPU "fetches" these for execution.

② PC / IP ~ program counter
inst. pointer
points to the next location in memory to fetch instruction.



③ instructions (program) & data are stored in the same memory.

OS requirements / LOR ~

~ useful abstractions

— efficient usage of resources.

— robust error / failure handling.

execution interference

~ isolation

~ multi-hardware support.

~ extendable