

[Q.] how to deal w/ the complexity of the computing stack?

⇒ ABSTRACTIONS.

|| Key to all computing

|| Key to world peace!

└ specification of functionality

└ interface to access/interact w/ functionality

└ decouple usage from implementation of functionality.

⑧ (other) design principles.

- abstraction

- modularity

- layering.

- parallelism / concurrency

- indirection

+ stateful vs stateless

+ checkpointing

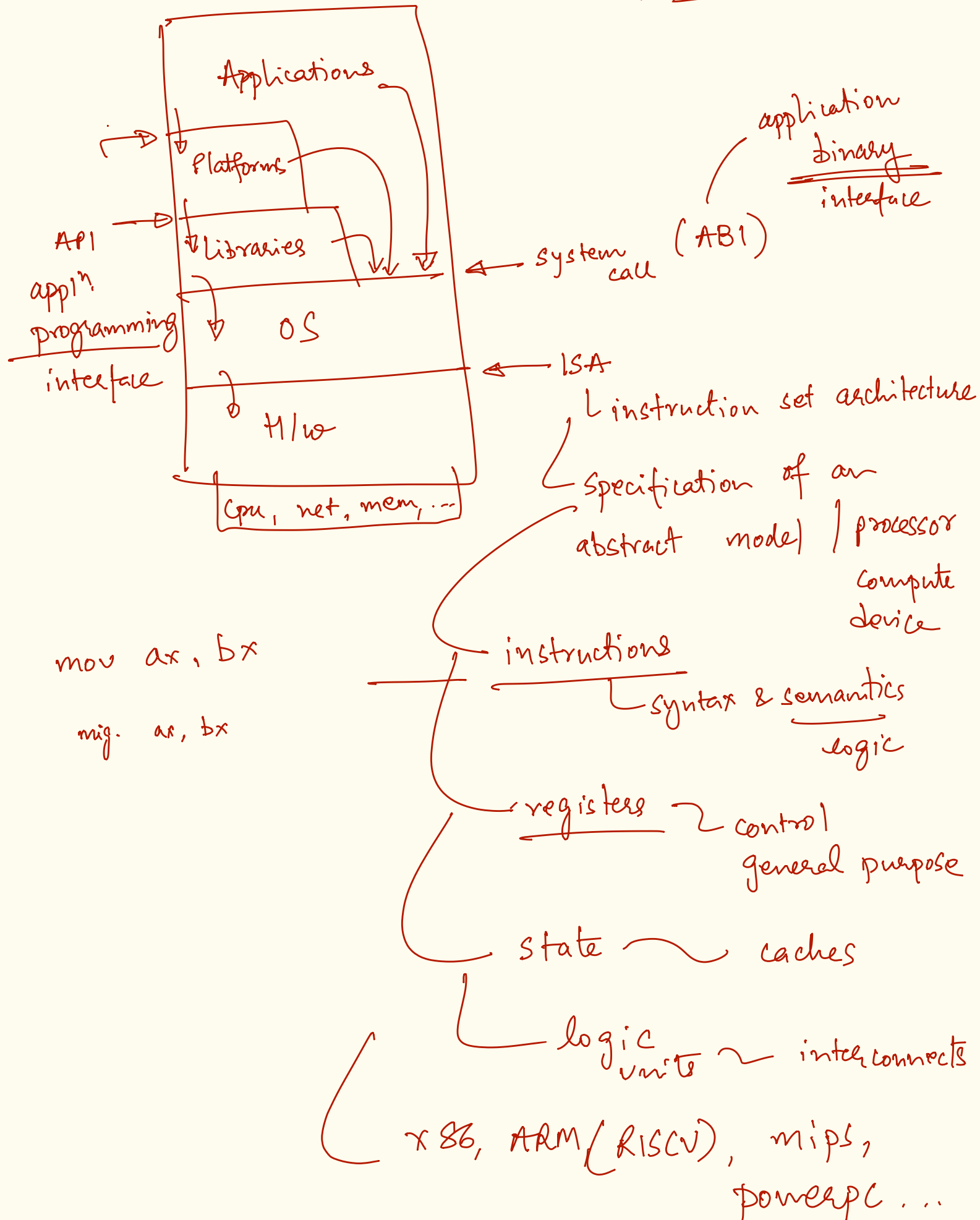
+ virtualization

⋮

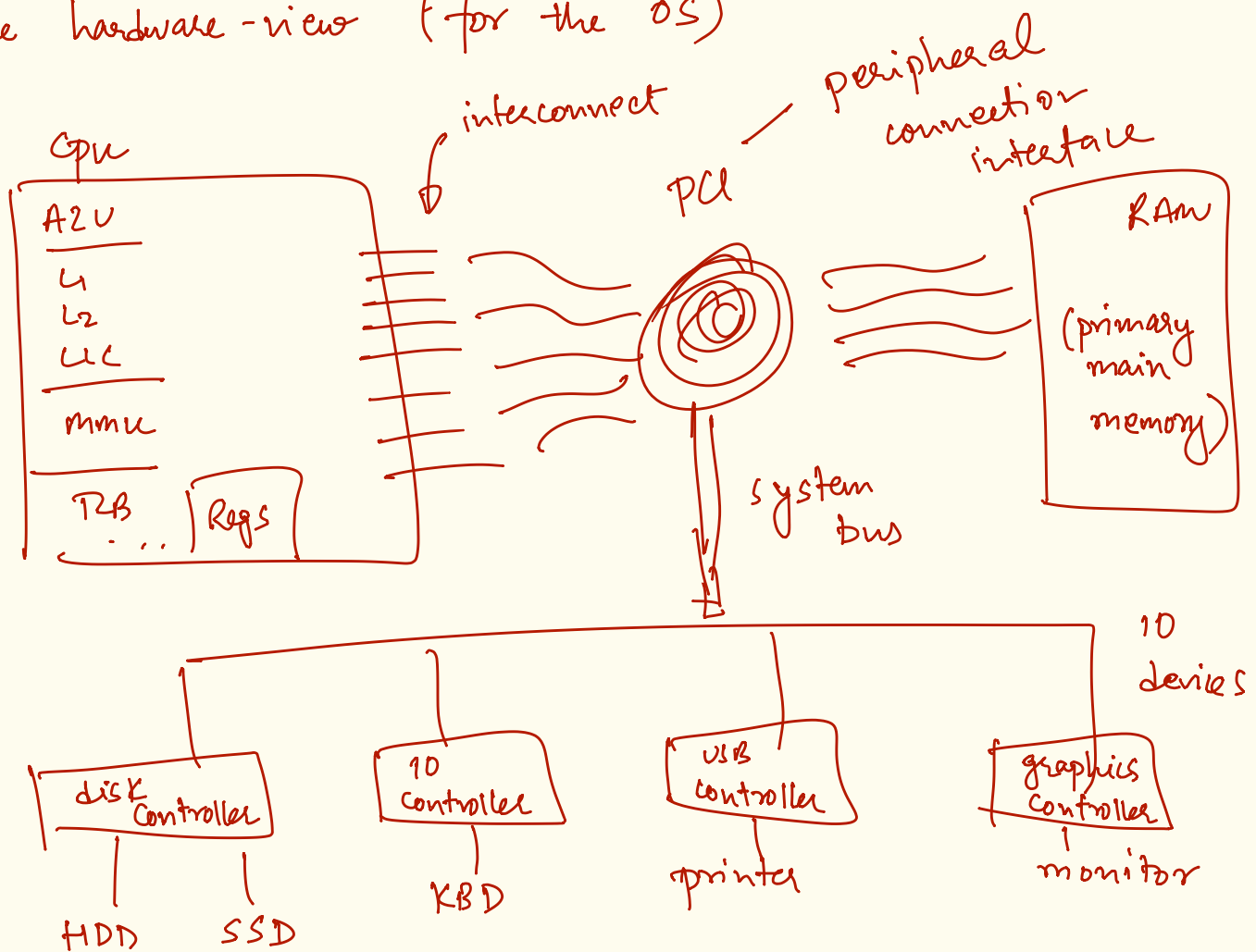
the OS story

H.W

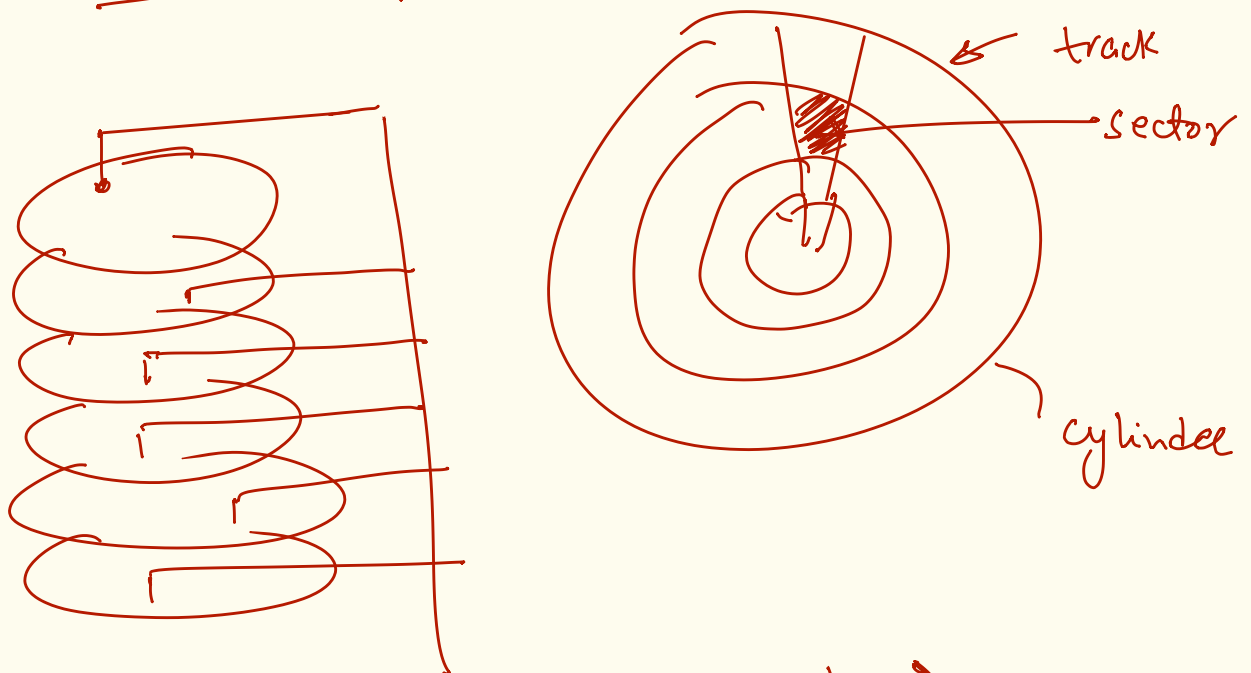
~ API vs ABI — ??



the hardware-view (for the OS)



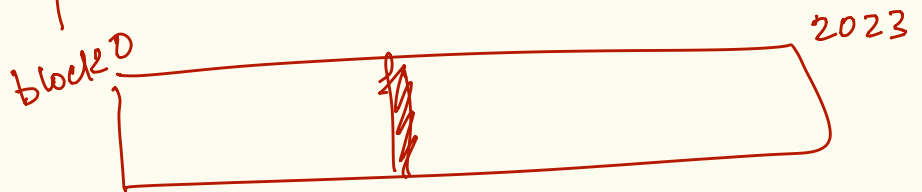
disk : HDD ~ magnetic disk



< cylinder, track, sector, r/w, $\frac{\text{loc}^h}{\text{data/into}}$ >

enter the
disk controller

all disk capacity
is a set of fixed size
blocks



$\langle \text{block \#}, r/w, \text{---} \rangle$

disk controller

$\langle \text{cylinder, track, sector, ...} \rangle$

memory

H.W2 :

von Neumann model.