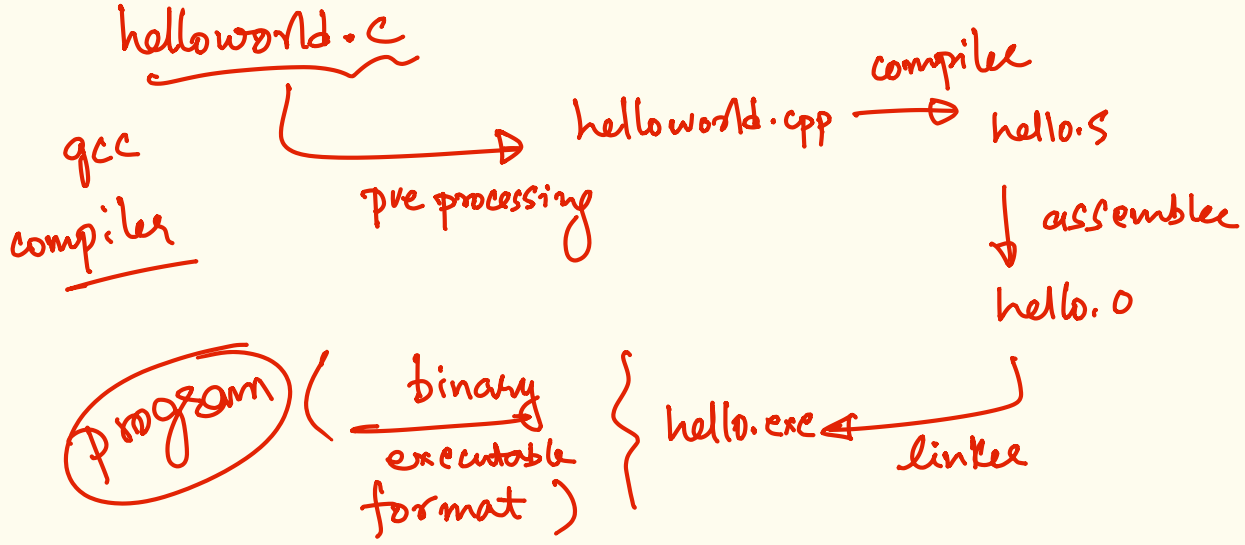
CS 219/CS 236

LECTURE #2

user-view of how we get work done
setup



machine-view of work

physical

appl^n/program
↓
libraries
↓
system software
↓
(m/c) hardware — cpu, net, memory, disk
↓
CPU
↓
chips
↓
gates (boolean logic)
↓
* transistors

ABSTRACTIONS

are critical for all work
& world peace!

~ OS is an abstractions provider for
the computing world!

* process, file, (virtual) cpu, (virtual) memory
...

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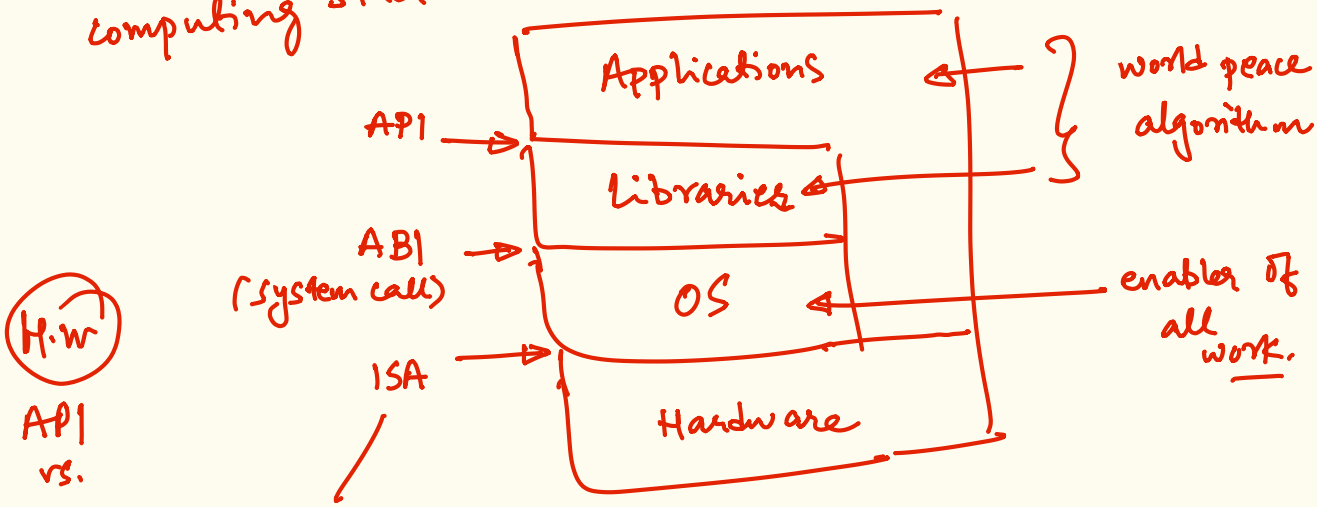
* what is an abstraction?

~ functionality that is specified/provided
by one entity & consumed by
another entity.

~ implementation is hidden/ black-boxed

~ has an interface for invoking functionality.

simplified computing stack



API vs. ABI

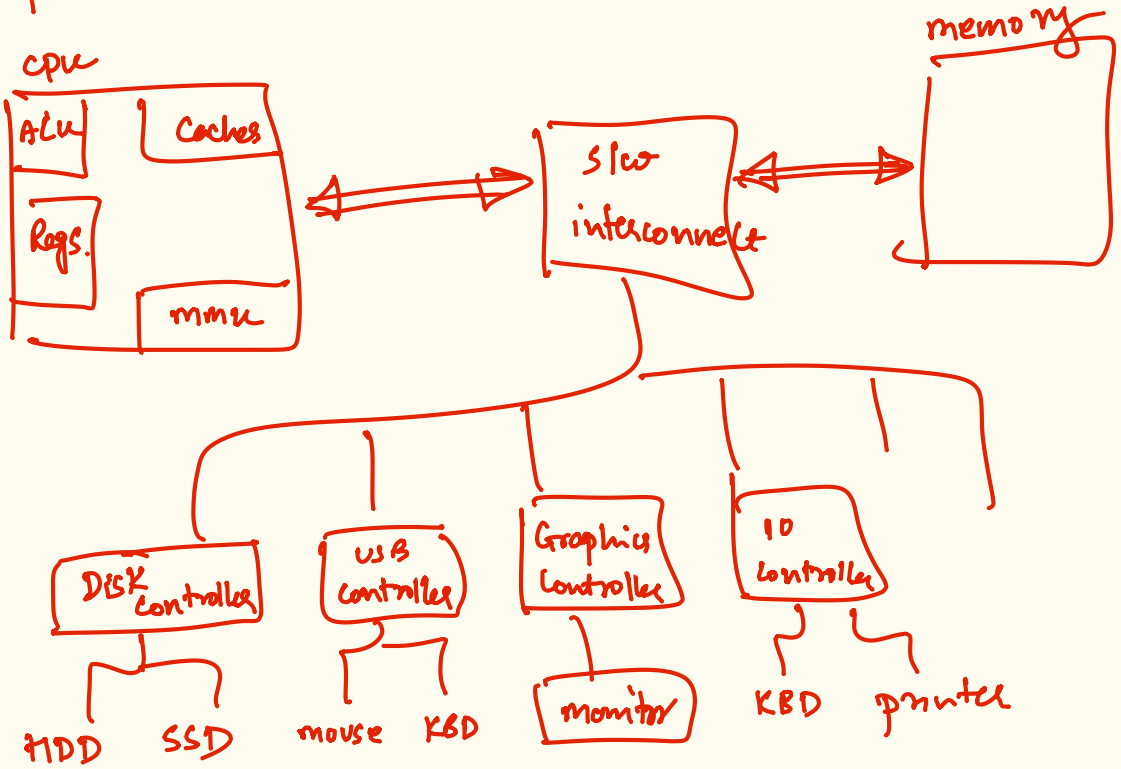
instruction set architecture of the CPU

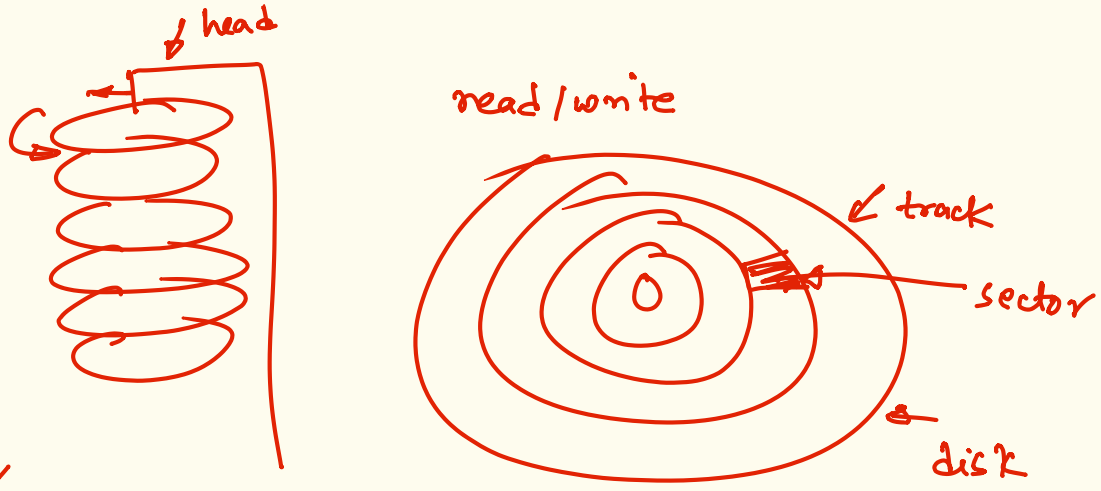
- instruction set
- # registers
- address width
- caches

x86
riscV ~ xv6
powerpc

add a,b
0x63
0x
0x

simplified h/w architecture view





location

R/w → < disk#, track #, sector # >

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disk controller ~ h/w encodes / provides block abstraction

a disk is a set of linearly ordered blocks.

v/w → specified by a block number