CS 537

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Today:

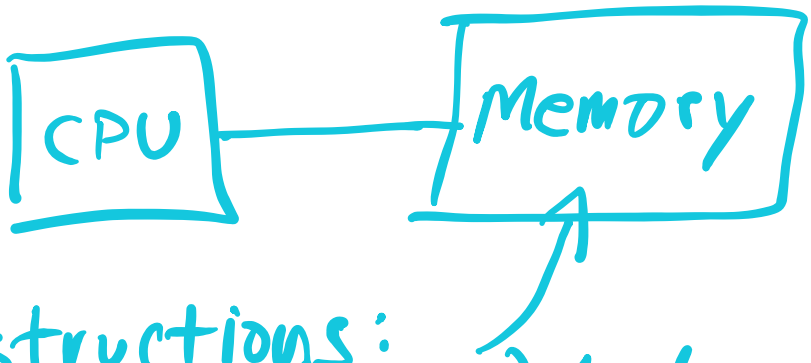
=> How do computers work? (Background)

=> What is an OS?

=> How does this class work?

=> Final words

=> How do computers work?
(Background)



instructions:
execute

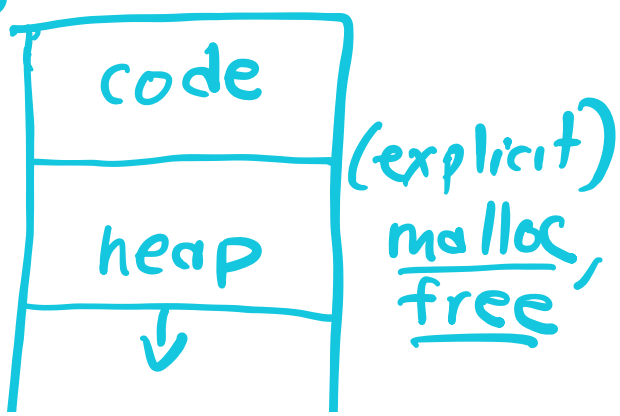
1) data
2) instruction

Von Neumann

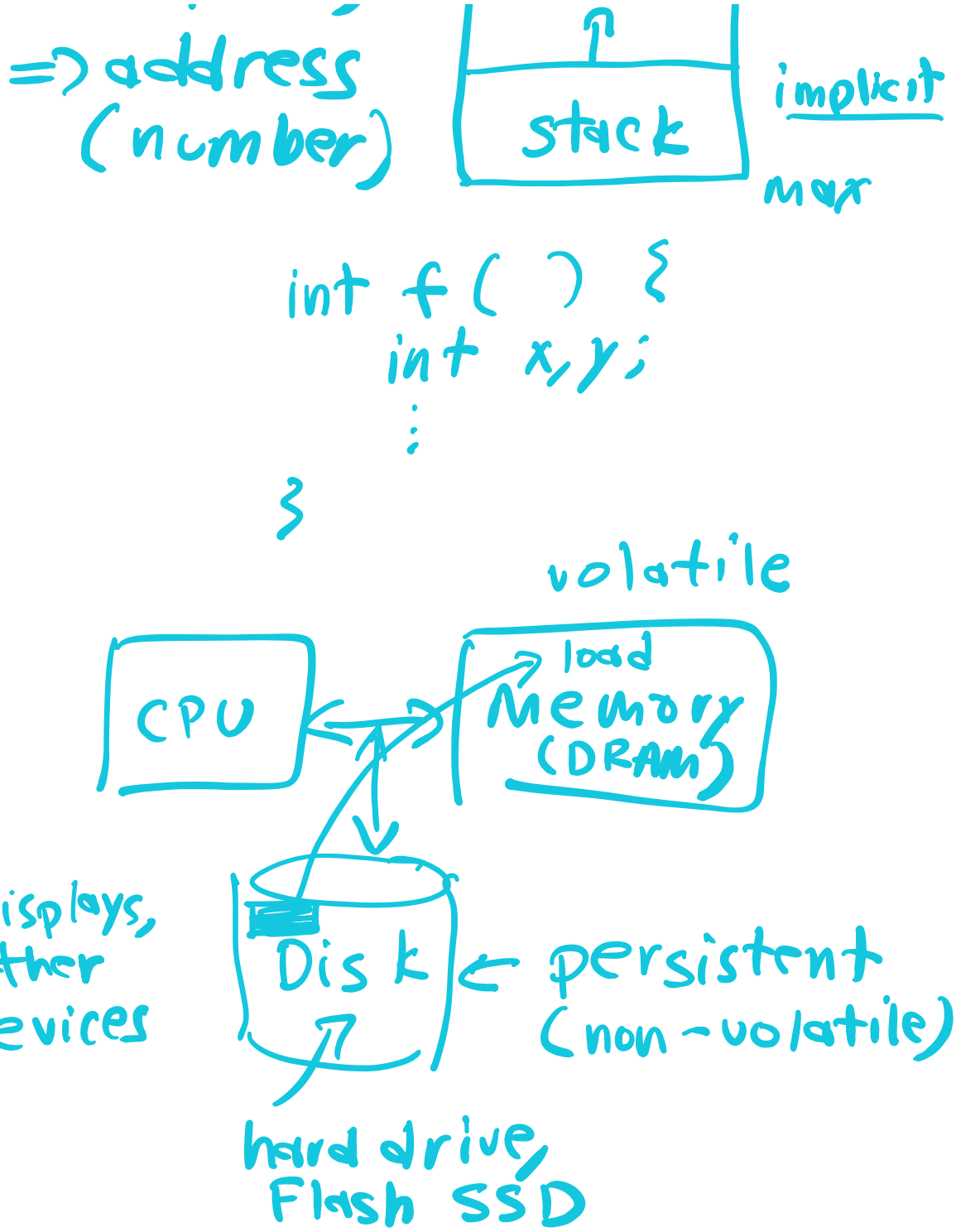
Program:

Address Space (bunch of bytes)

Memory of a program



(explicit) malloc, free


=> address
(number)
stack
implicit
max
int f( ) {
int x, y;
:
}
volatile
CPU
load
Memory
(DRAM)
displays,
other
devices
Disk
persistent
(non-volatile)
hard drive,
Flash SSD

=> what is an OS?

[Virtualization]

Turn one physical "thing" into many virtual ones

[an illusion]

#1 Virtualize:

{ CPU
  Memory }

Each "process" (running program) has illusion of its

own CPU + own memory

#2 Concurrency

T_1 T_2

counter++; counter++;

load => Reg
add => 1, Reg
Store => mem

#3) Persistence

What is an OS?
"virtual machine"
(easy to use)

=> performance
security

=> How does this class work?

=> web page