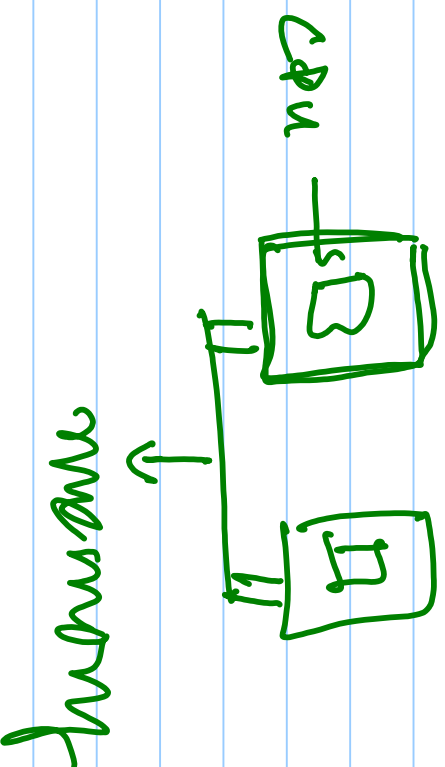
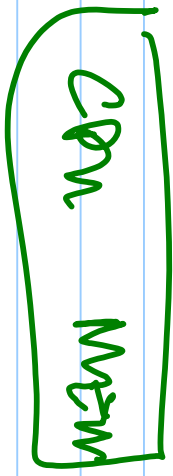
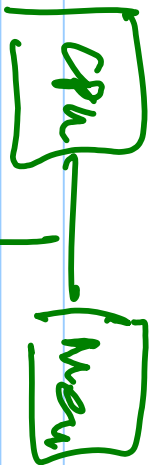


History

- multiprocessors \approx 1980





→ → [CPU Mem] → →
memory

Current Ex. P. ~~is~~ multiprocessors



— VMA



uniform
memory access

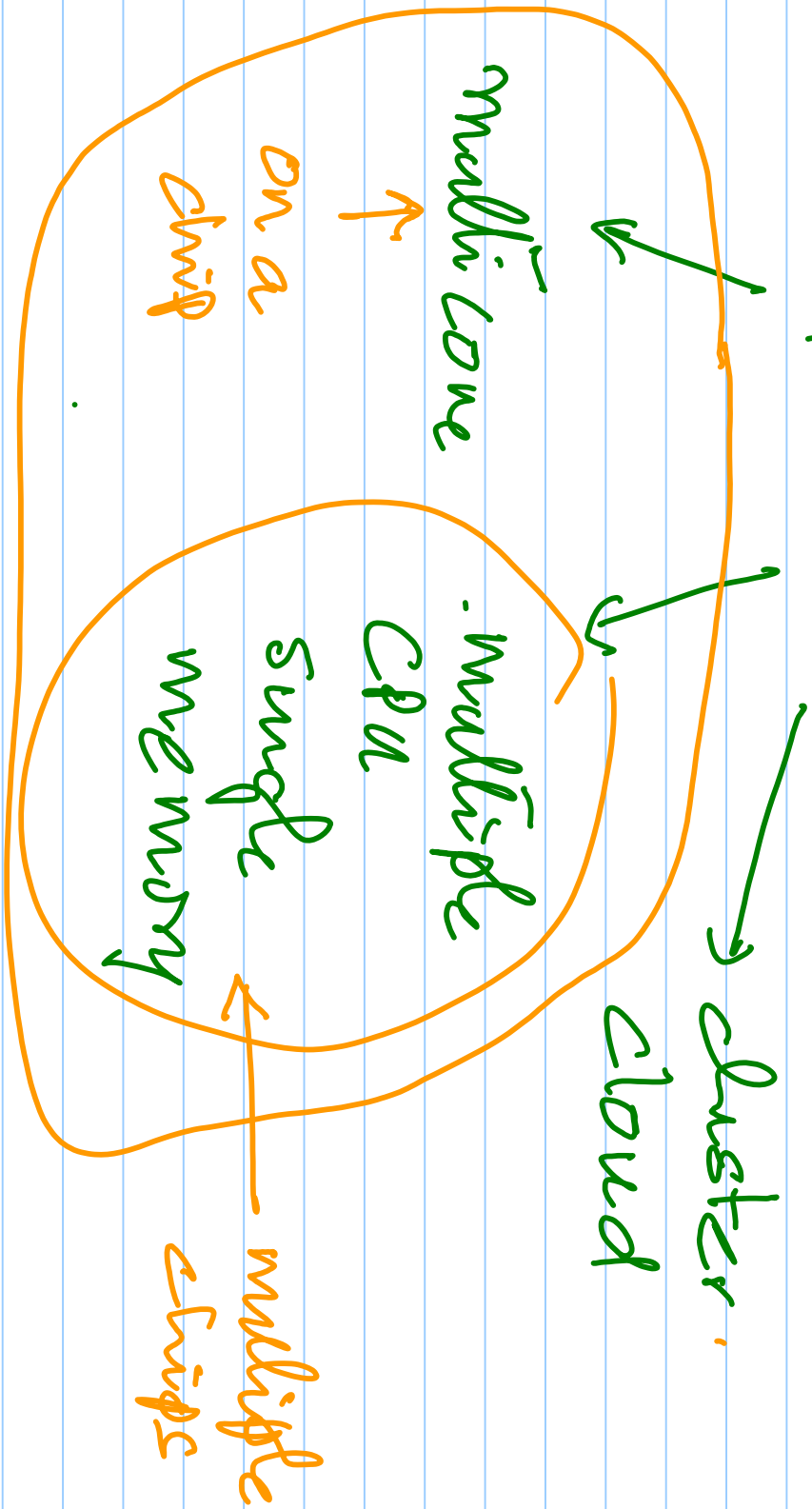
Same thing —

Shared Mem m-processor

— Symmetric m-processor

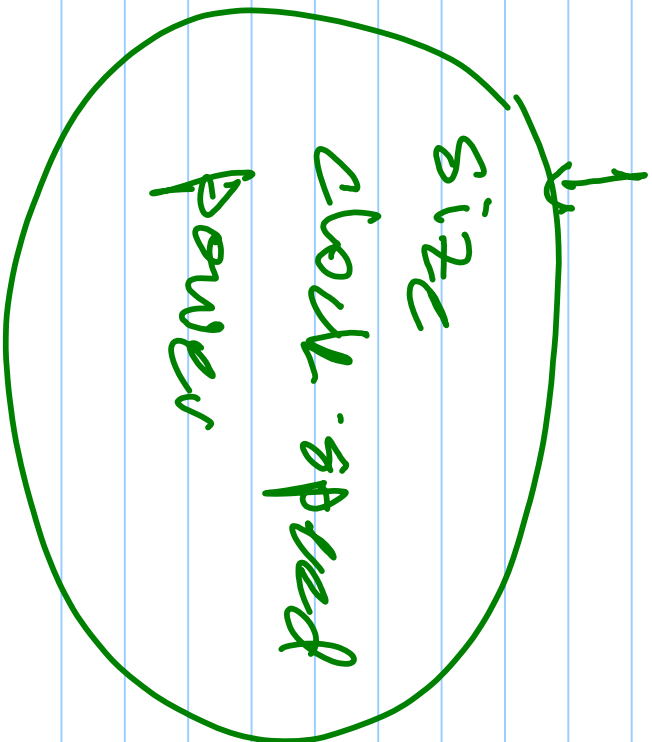
—

Multi processor



multicore hardware

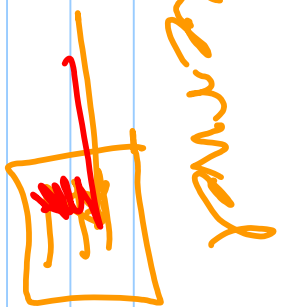
- Moore's law



low
→
→

→ reduce clock speed / increase area.

Simple case DS



- big lock
- non preemptible kernels
- interrupt disabling

X

Multicore OS

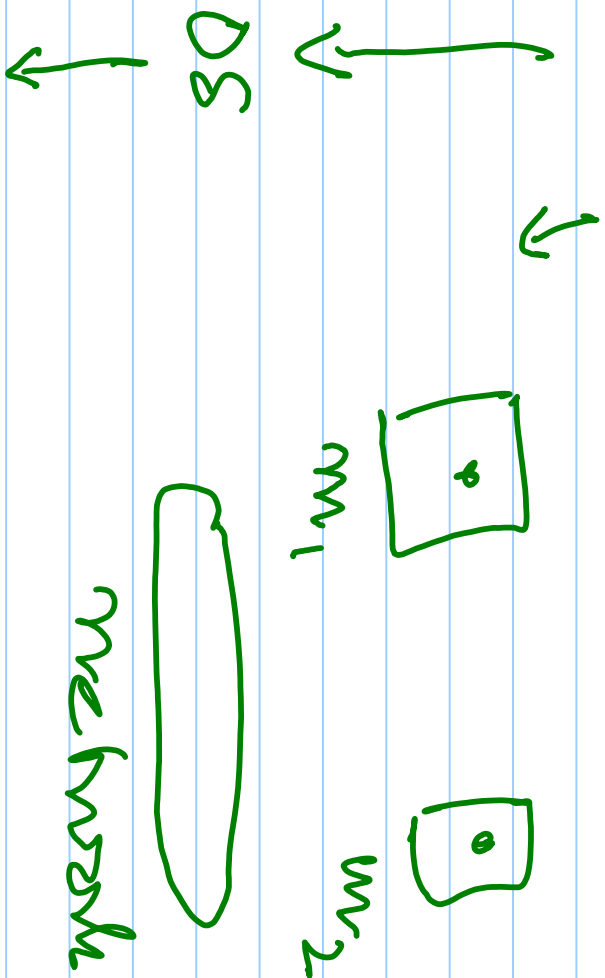
→ allow concurrent
or parallel kernel

→ executions

→ spin locks

atomic instructions

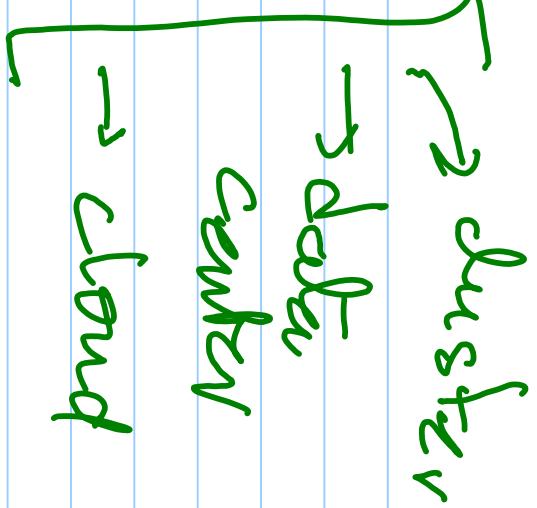
Distributed



Unified OS across machines

Distributed Computing

Distributed OS

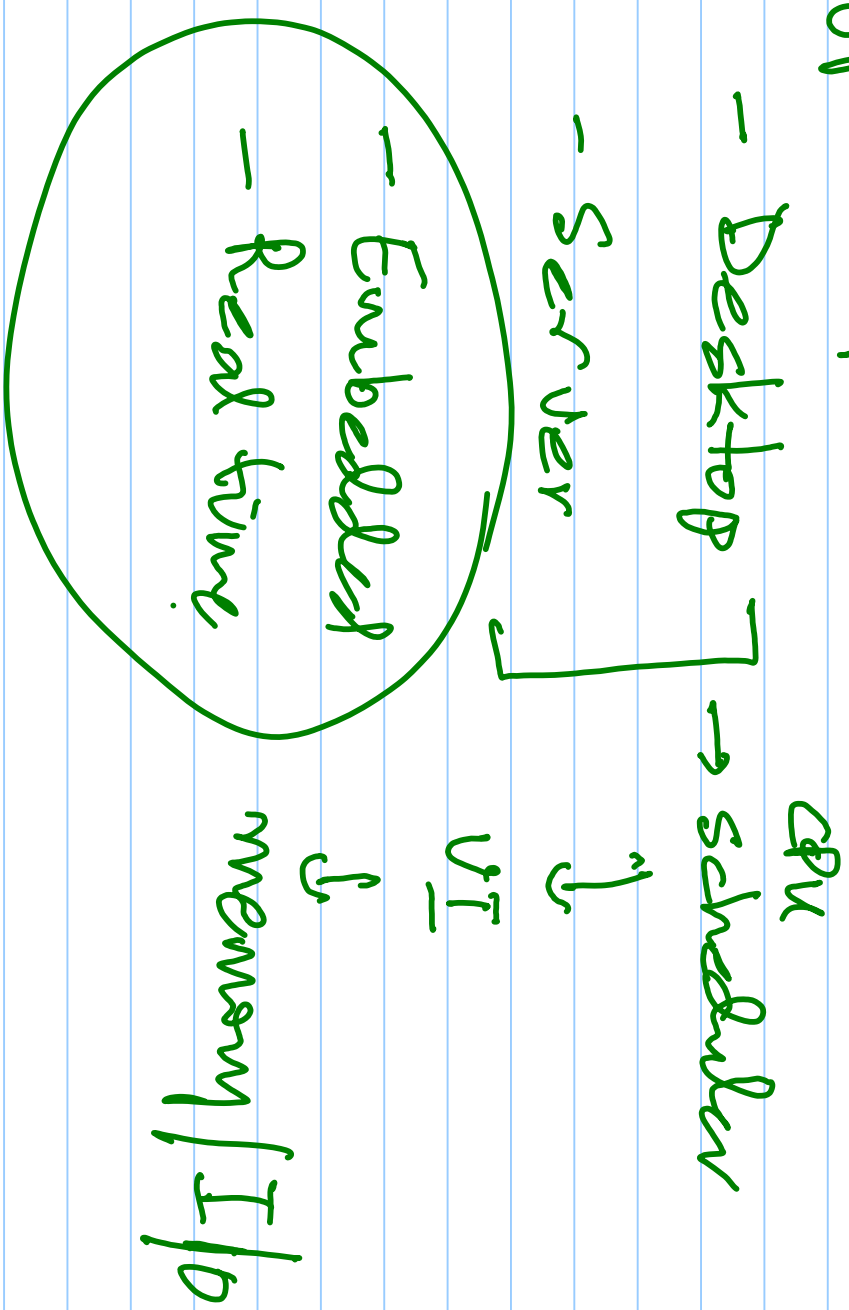


Internet

NO!

→ migrated to regular OS

Types of OSs



Embedded OS

↳ small / special

↓
purpose

LINUX

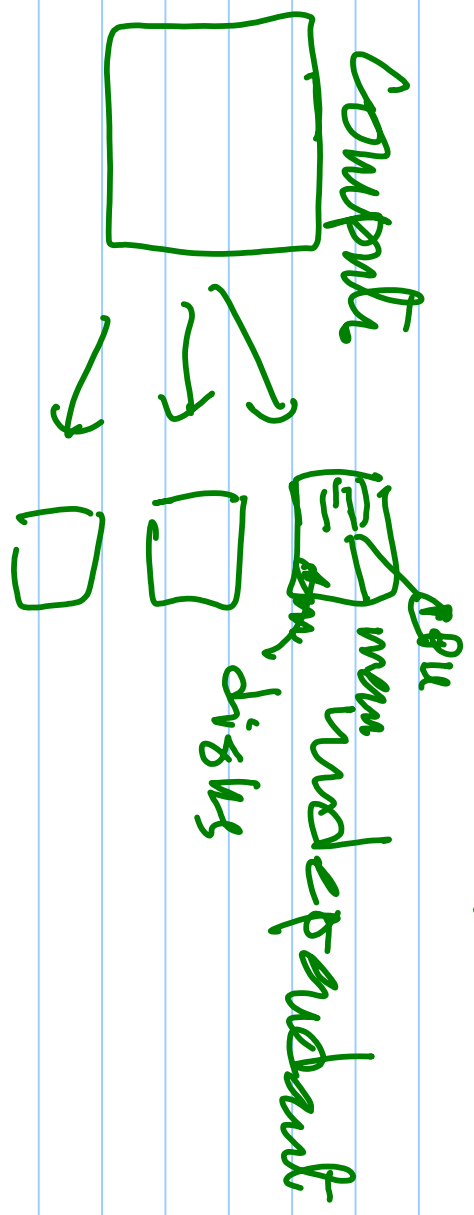
↳ IT

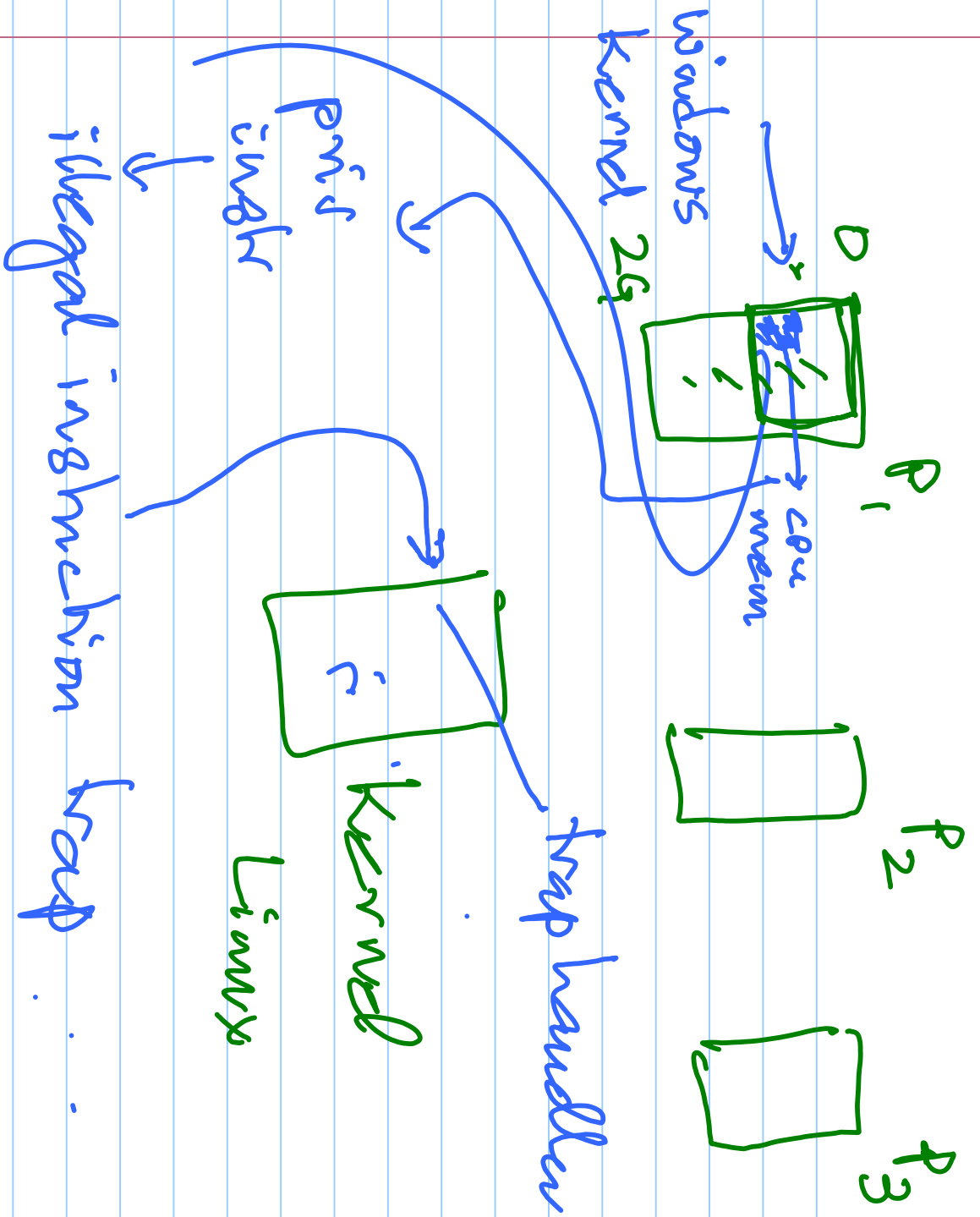
Real time

Virtual Machines

→ 1960 IBM 360

→ cloud computing





UMA → uniform mem access

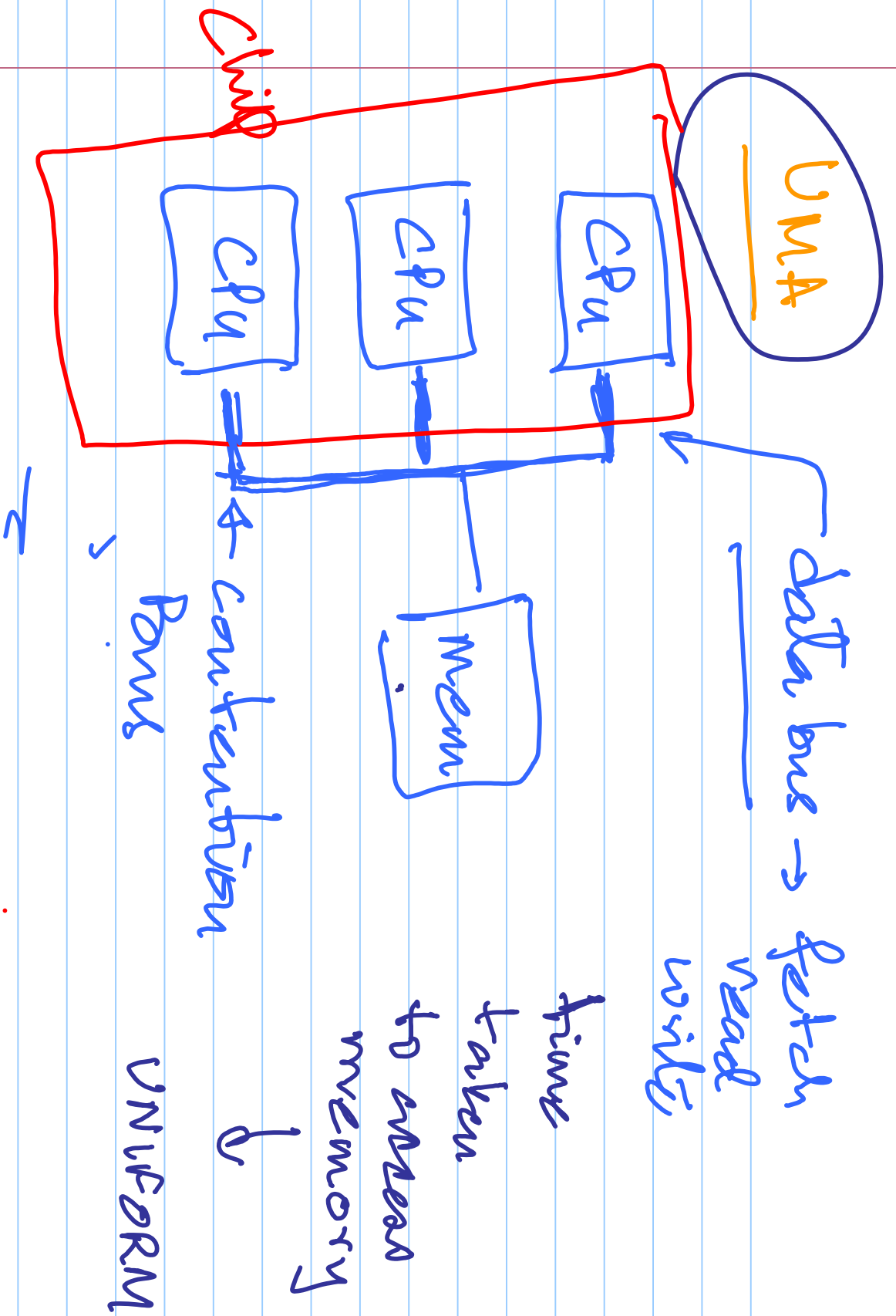
NUMA → non UMA

} remote mem address OK

NDRMA → no remote

} mem address not OK

} RMA not OK



N.UMA

