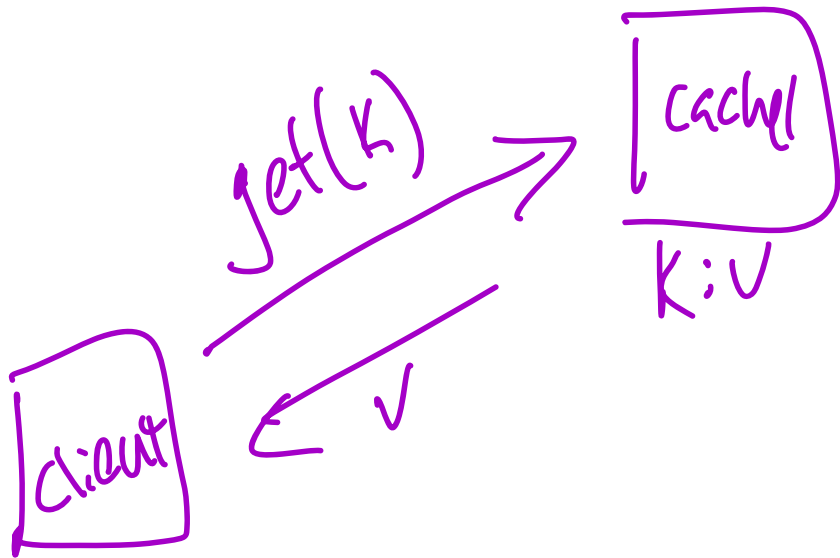


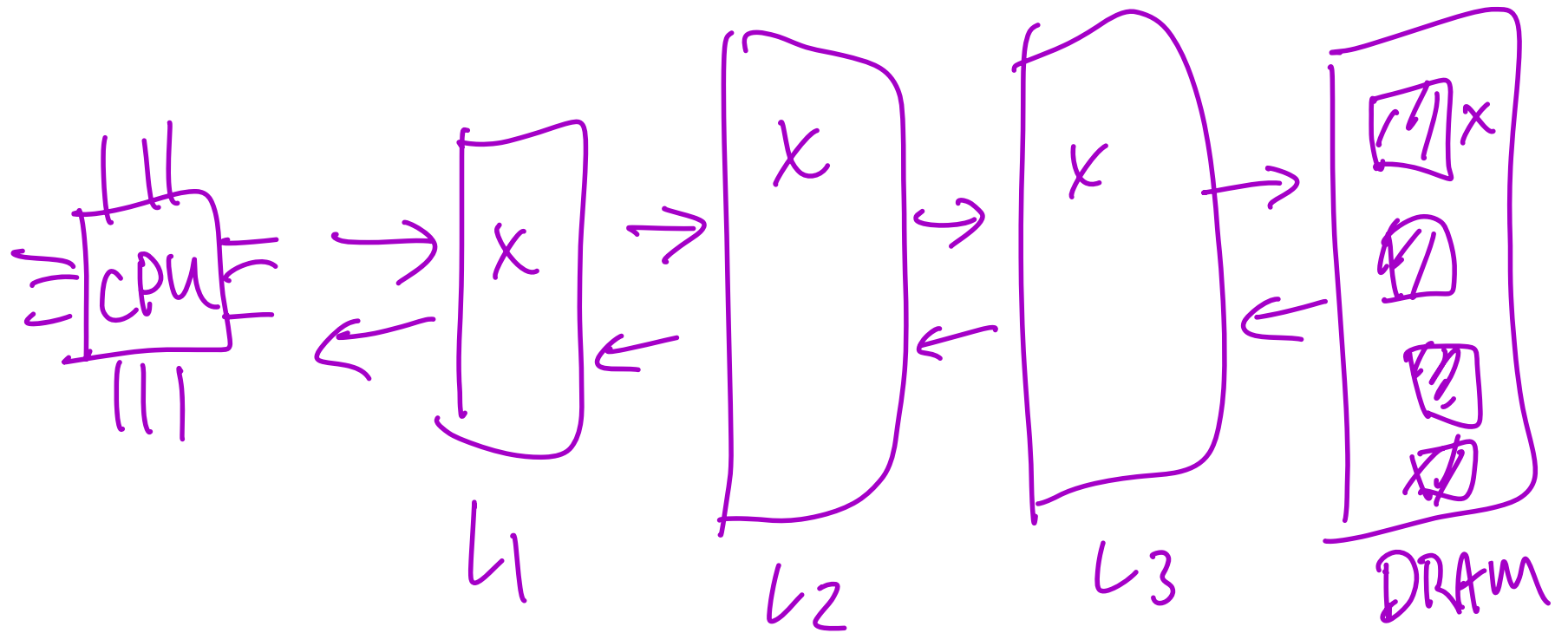
CSE 452

Distributed Systems

Distributed Caching
+ Leases

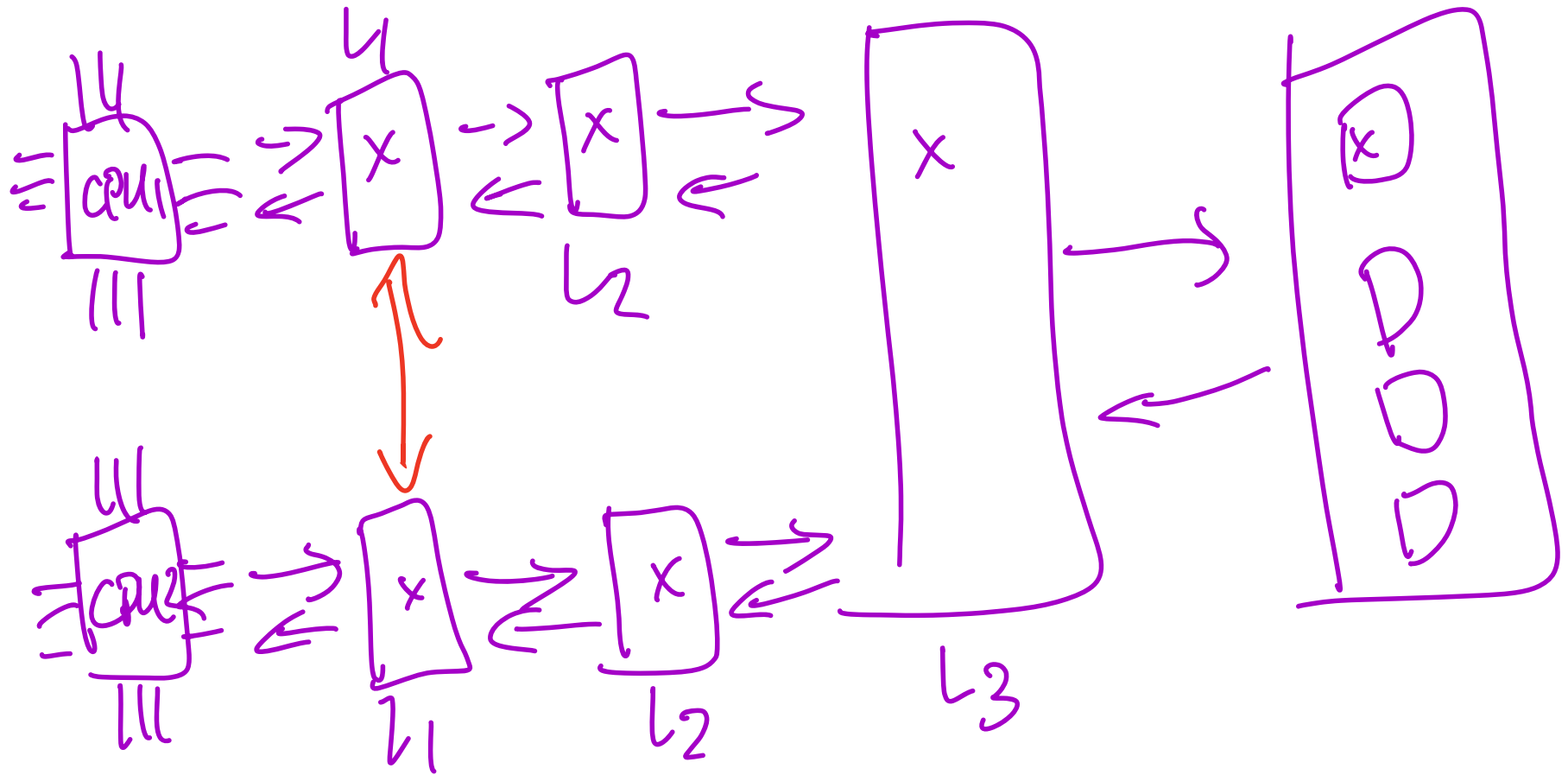


Single core (single machine)



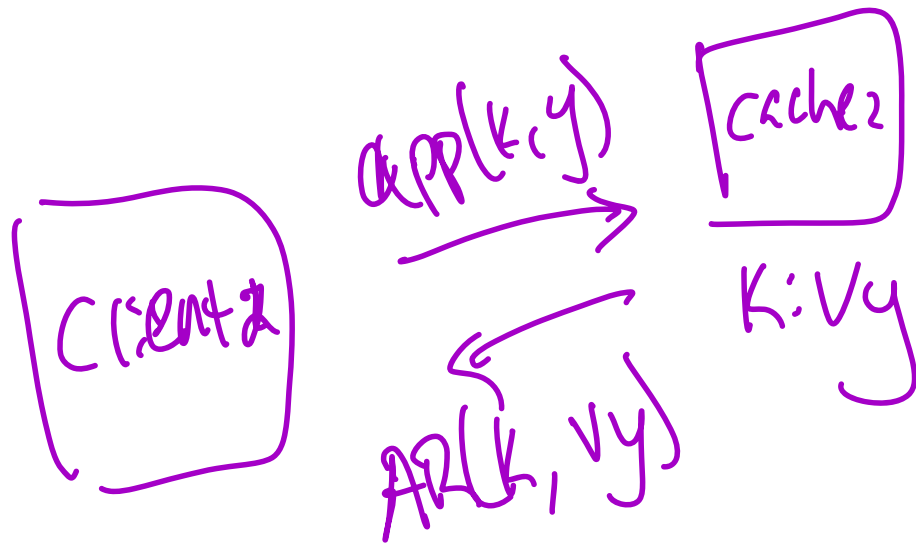
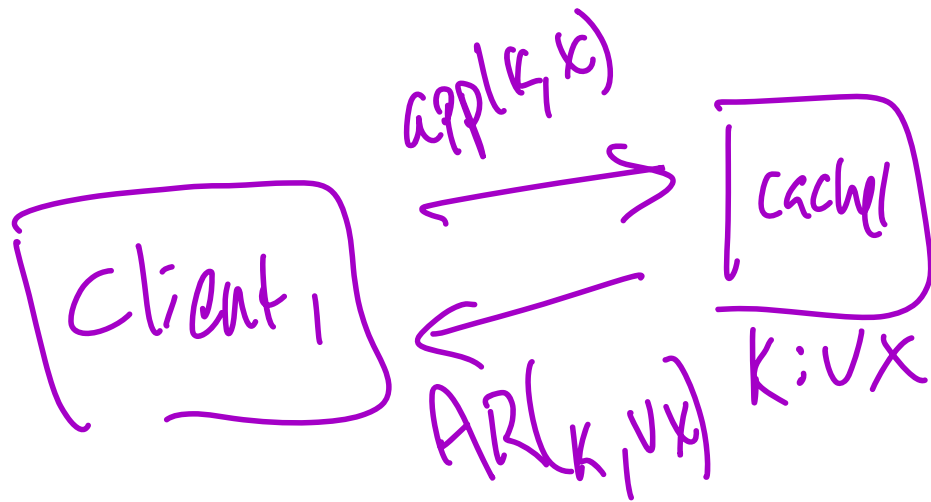
"equivalent to not having a cache"

Multicore (single node)



Cache coherence:

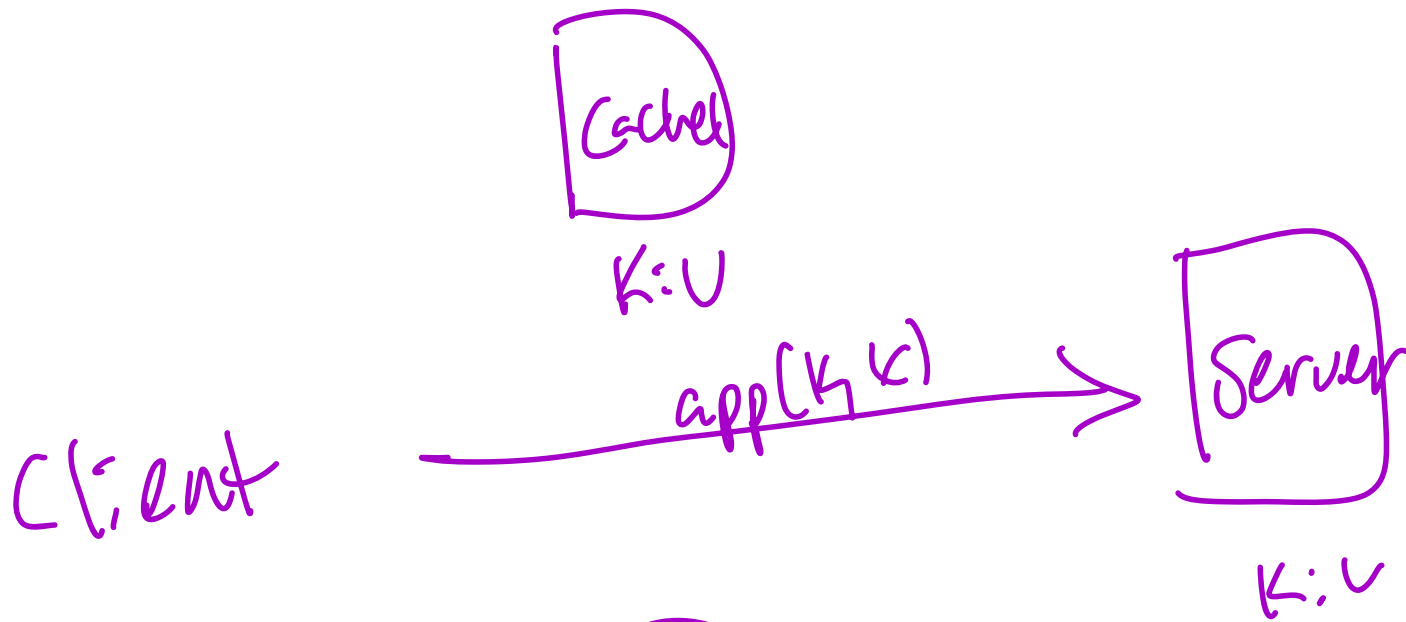
Keep multiple copies in sync



How to fix

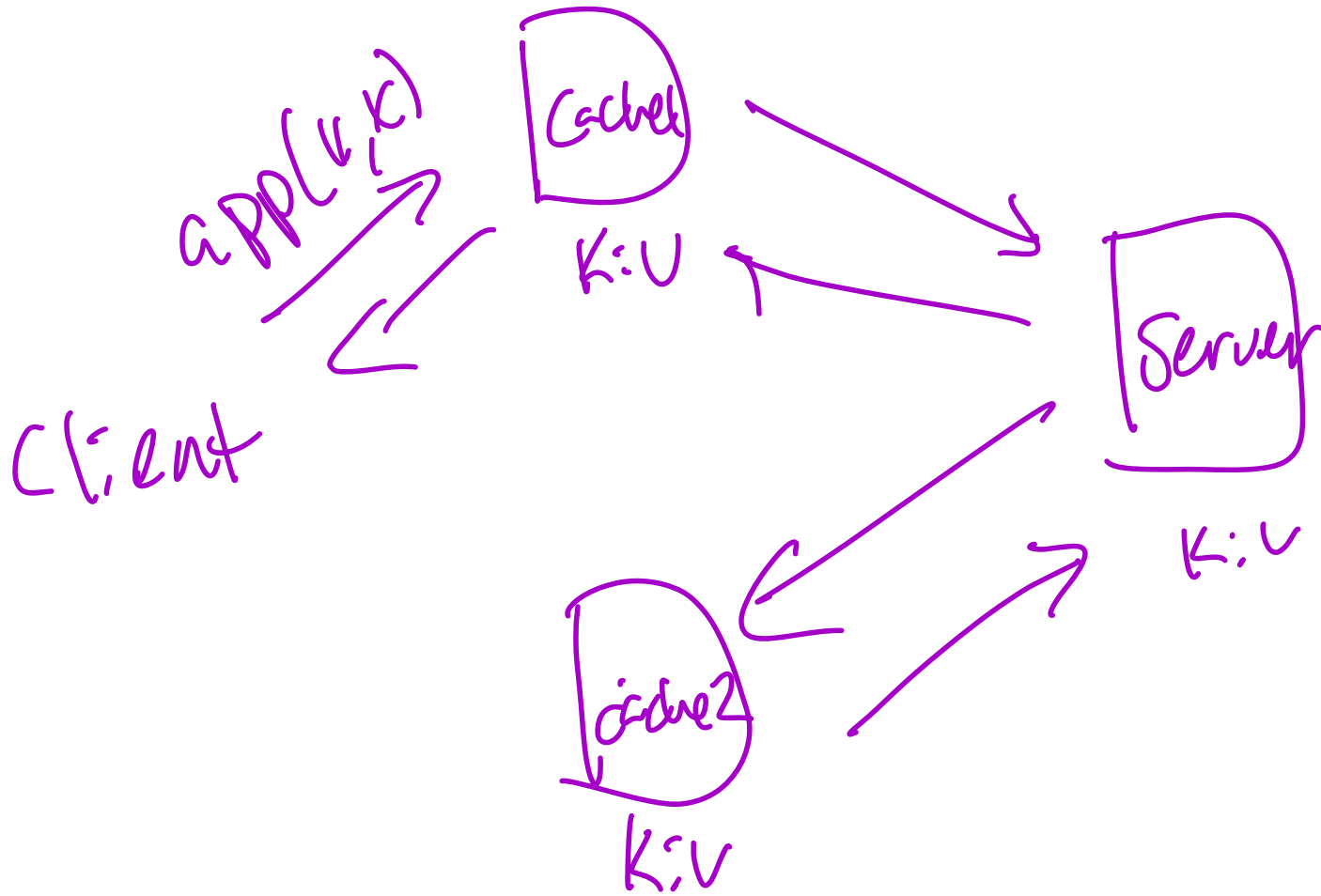
- writes require coord b/w copies
- paxos
- don't write to caches but only to server
- evict all cached copies
- write-through

Write to Server



(must invalidate existing cache)

Write through



Linearizable Caching

- requires coordinating all nodes that may have a cached copy
-

Performance impacts

- trade staleness for better latency
- lease: timed ownership

Split the data?

Partitioning
Sharding

Client₁

Cache₁

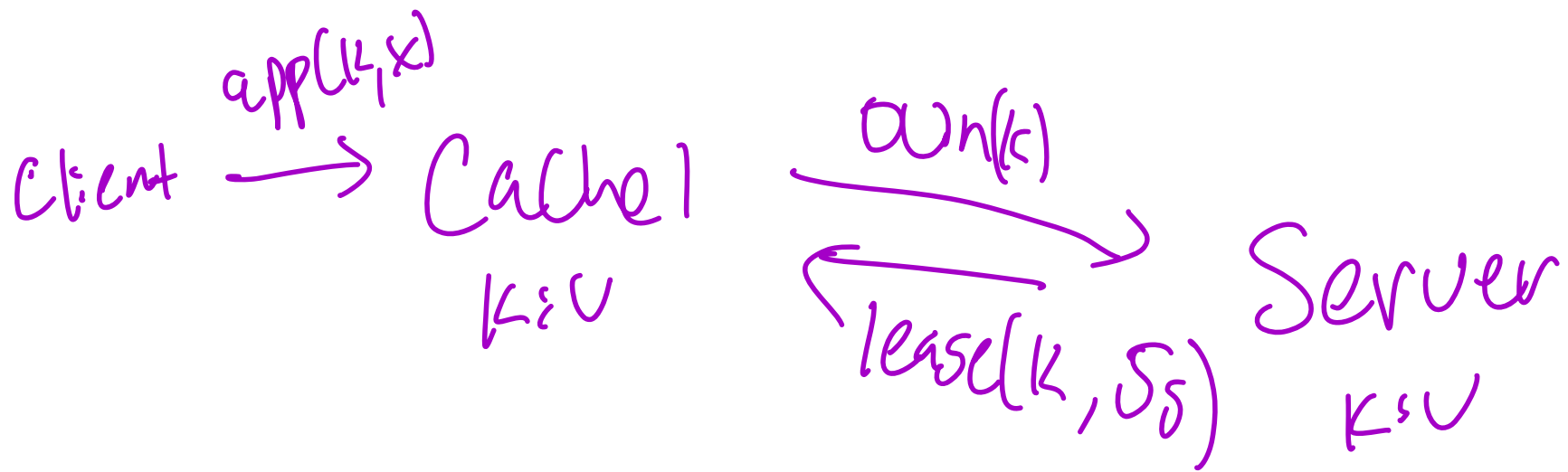
K:V

Server

Client₂

Cache₂

M:V



Cache 2
 $k:v$