

{ APPEND-ONLY } STORAGE
{ WRITE-ONCE }

"THE LOG IS THE DATA"

PAPER FILE SYSTEMS: ROBUST



NEVER ERASE
ANYTHING

COMPUTER FILE SYSTEMS: FRAGILE



OVERWRITE
DATA IN
PLACE

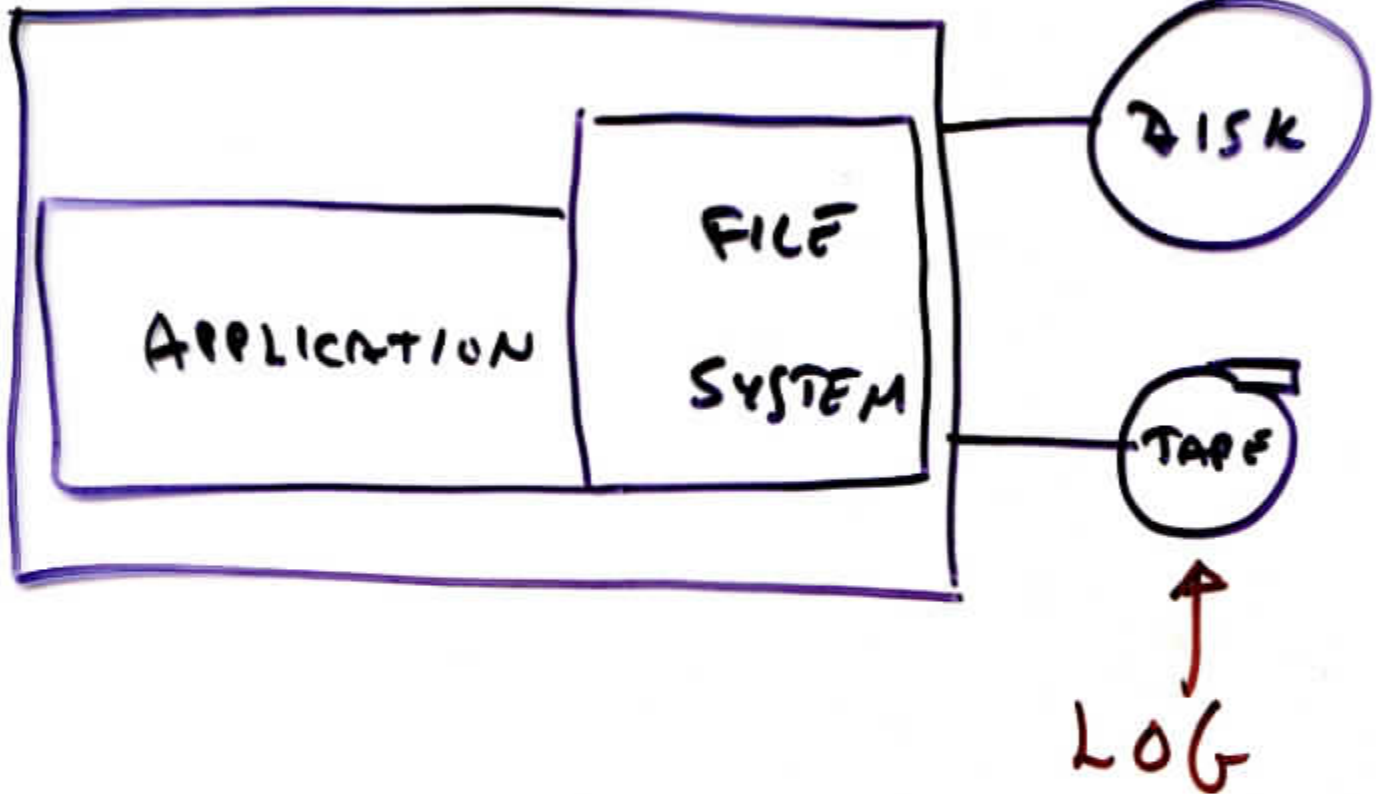
REASON: 30 YEARS OF STORAGE

"TOO EXPENSIVE TO WASTE"

RELIABLE COMPUTER FILE SYSTEM

- TIME-SHARING FILE SYSTEM
- DATABASE MGT SYSTEM

DATABASE



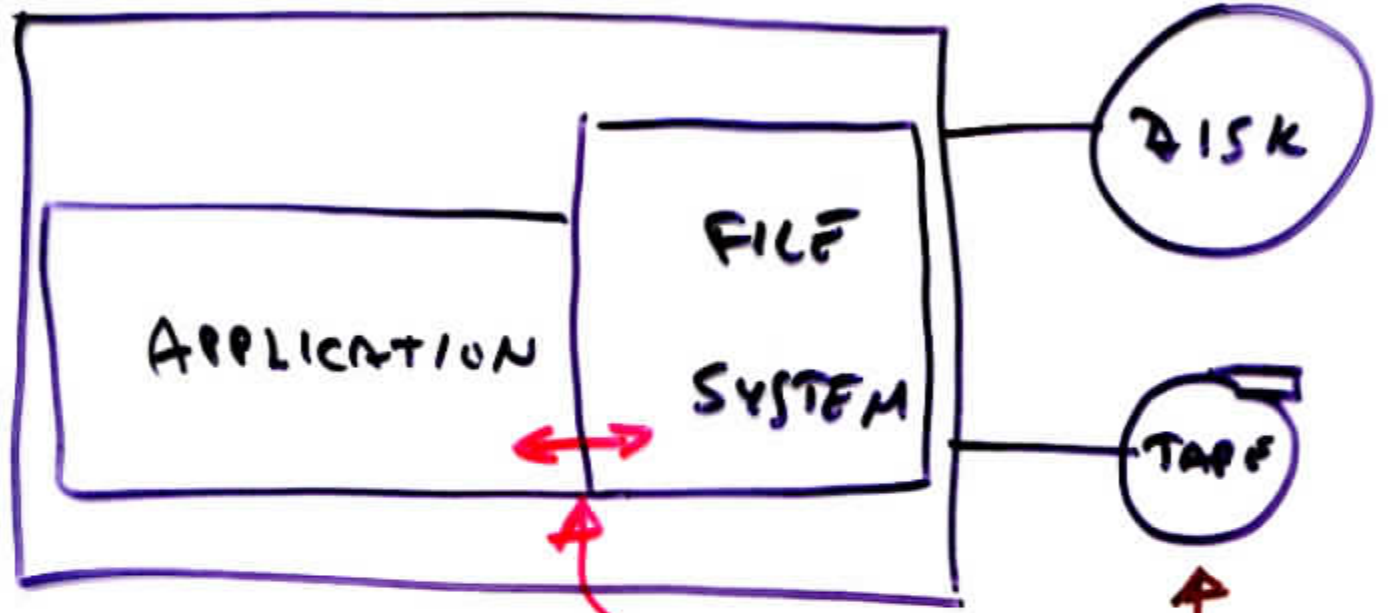
RELIABLE COMPUTER FILE SYSTEM

- TIME-SHARING FILE SYSTEM
- DATA BASE MGT SYSTEM

①

CACHE

~~DATABASE~~



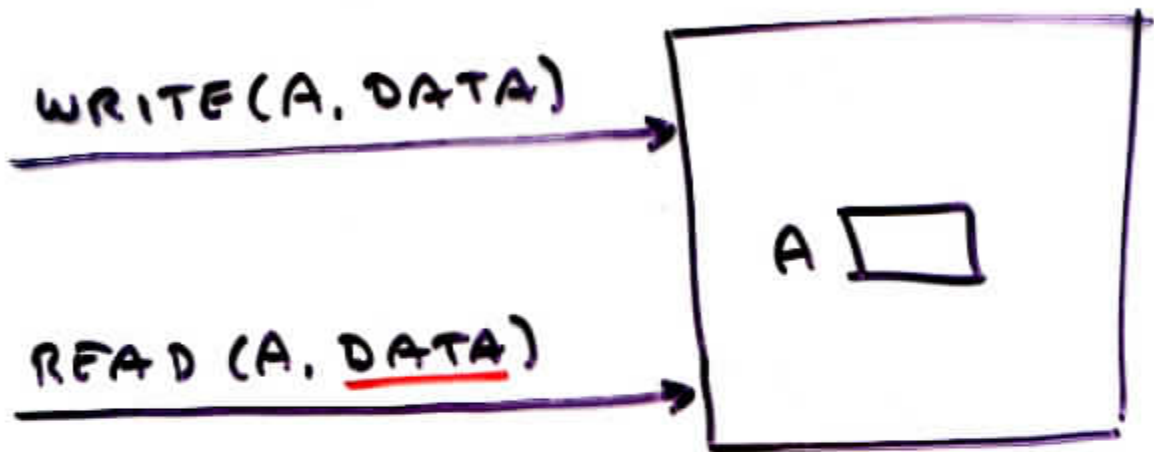
② APPEND-ONLY SEMANTICS HERE

~~LOG~~

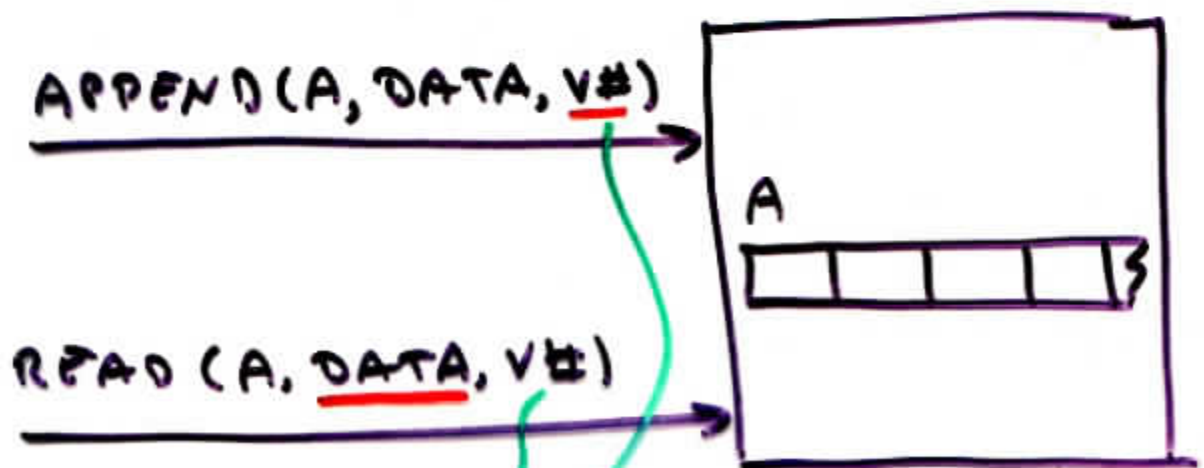
DATABASE

DATA STORAGE SEMANTICS

I. READ/WRITE (CELLS)

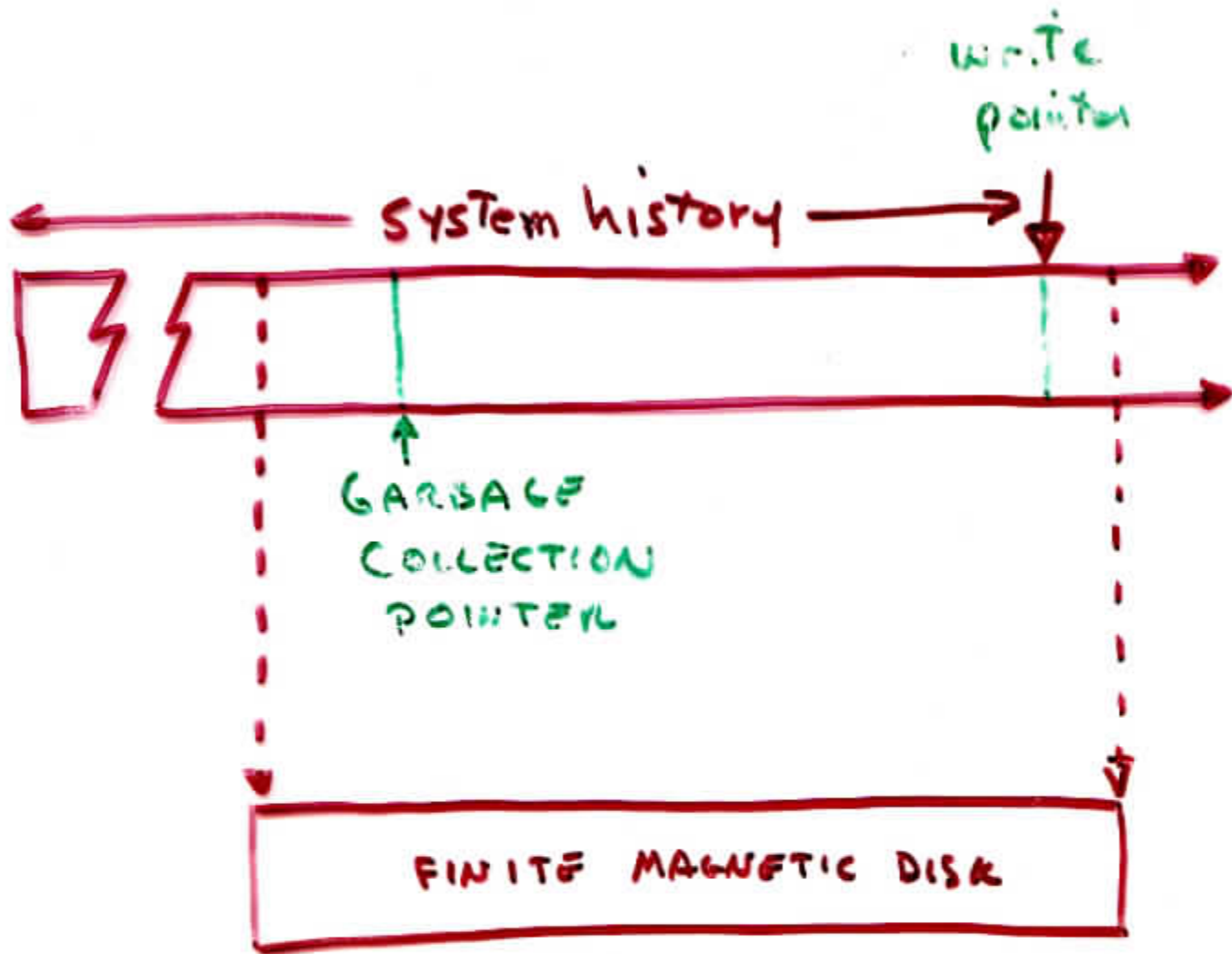


II. APPEND-ONLY (IMMUTABLE OBJECTS)



allows application to participate in recovery

IMPLEMENTATION



IMPLEMENTATION

