

# Lecture # 27

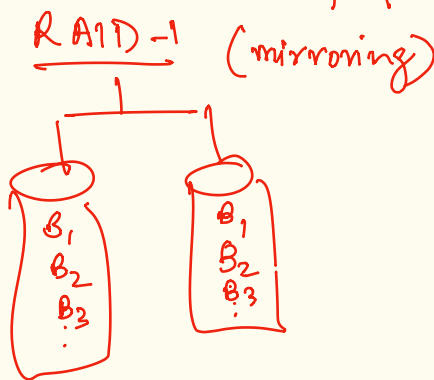
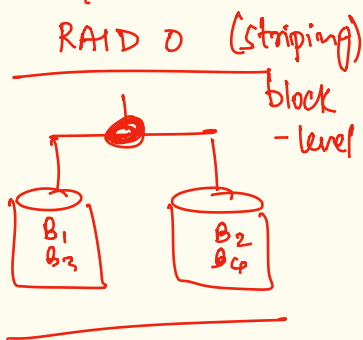
~ reliability / crash consistency.

(i) fsck

(ii) journaling

(iii) RAID ~ redundant array of independent (inexpensive) disks.

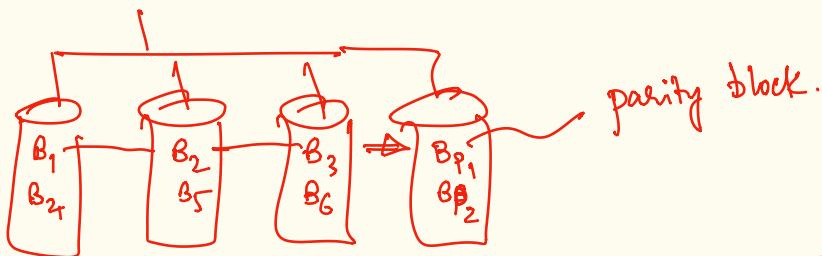
- mirroring } reliability & performance  
 - striping }



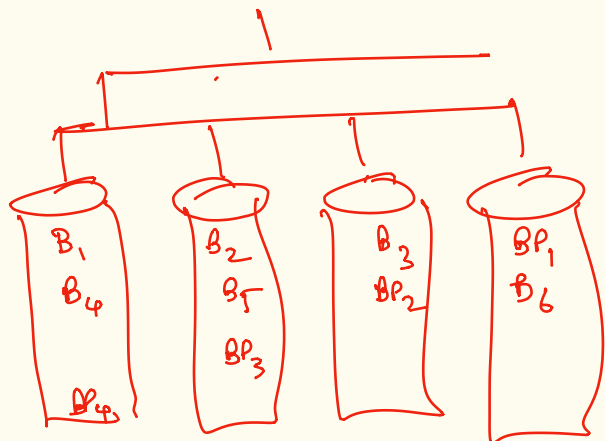
$$1 \oplus 0 = 1$$

$$1 \oplus 1 = 0$$

RAID 4



RAID-5



~~ext~~

→ file systems

- ext 4

- ntfs

- macfs

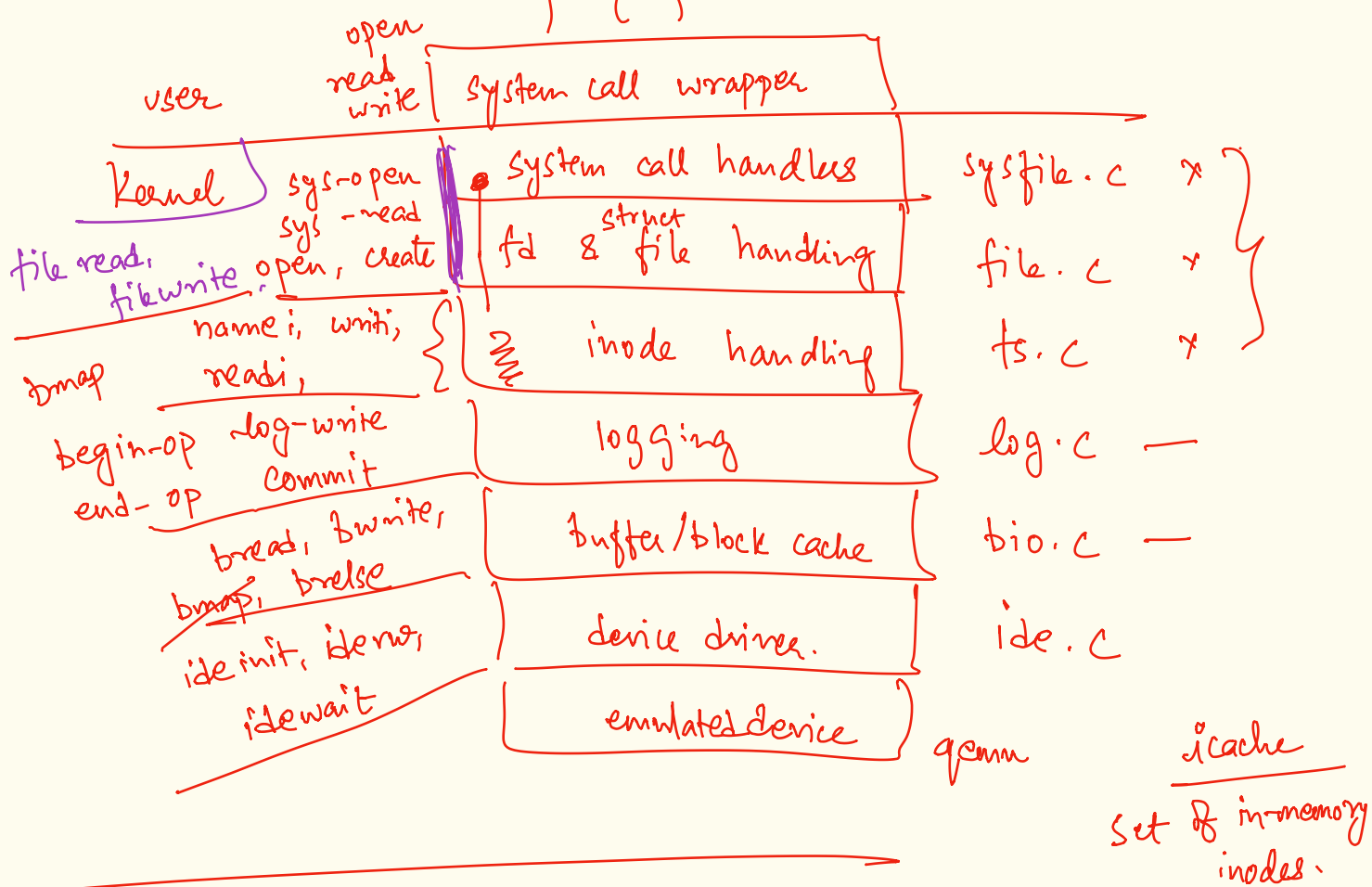
- nfs

apfs  
 homework.

hardware vs software RAID.

(\*) FS x86  
 ← stack

processes



## (\*) booting

(i) reset/power on.

cs: eip → are pre-configured / set some def. values

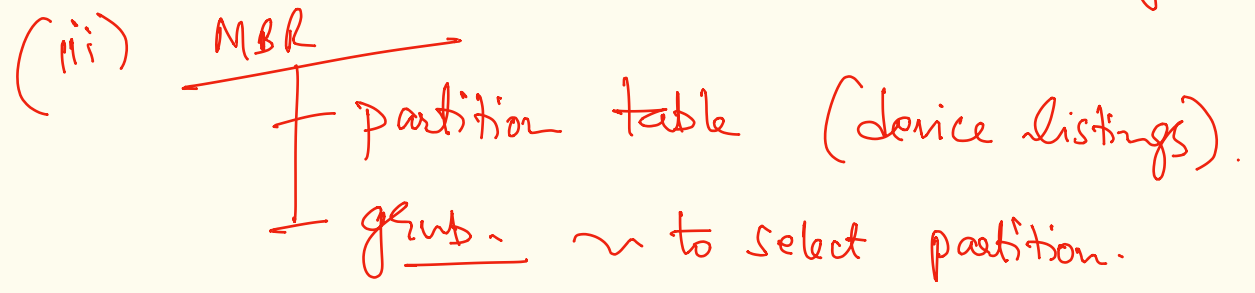
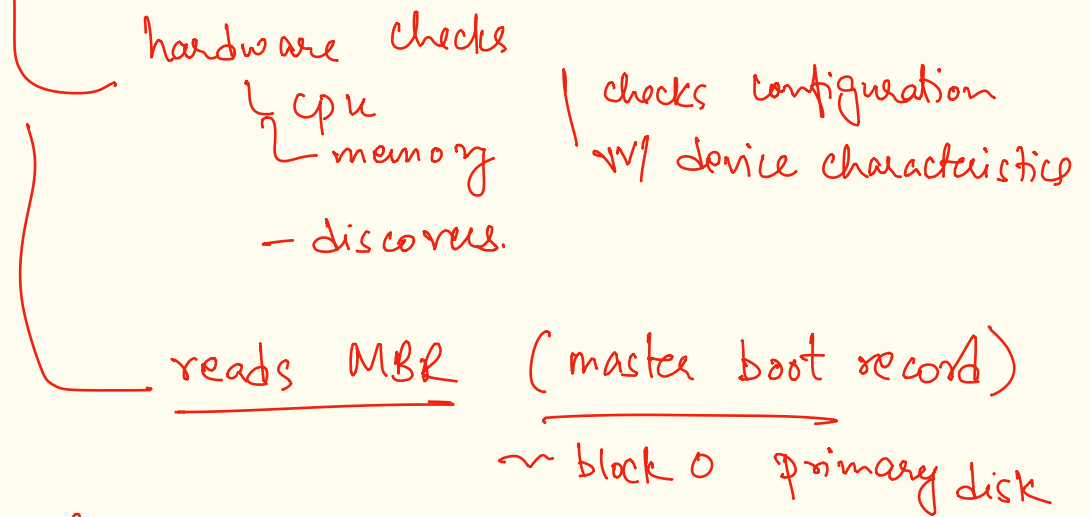
e.g. x86.  $eip = 0xFFFFFFFF$  (32-bit)

— these addresses are mapped to ROM (EEPROM) ~ read-only

↳ BIOS program

↳ basic input output program.

(ii) BIOS



(iv) on OS / kernel select

- find boot block for that OS!
- read contents into memory
- jump to OS code.

- real mode
- init devices / device drivers
- build kernel objects
- setup IDT
- setup kva & paging
- create init processes

