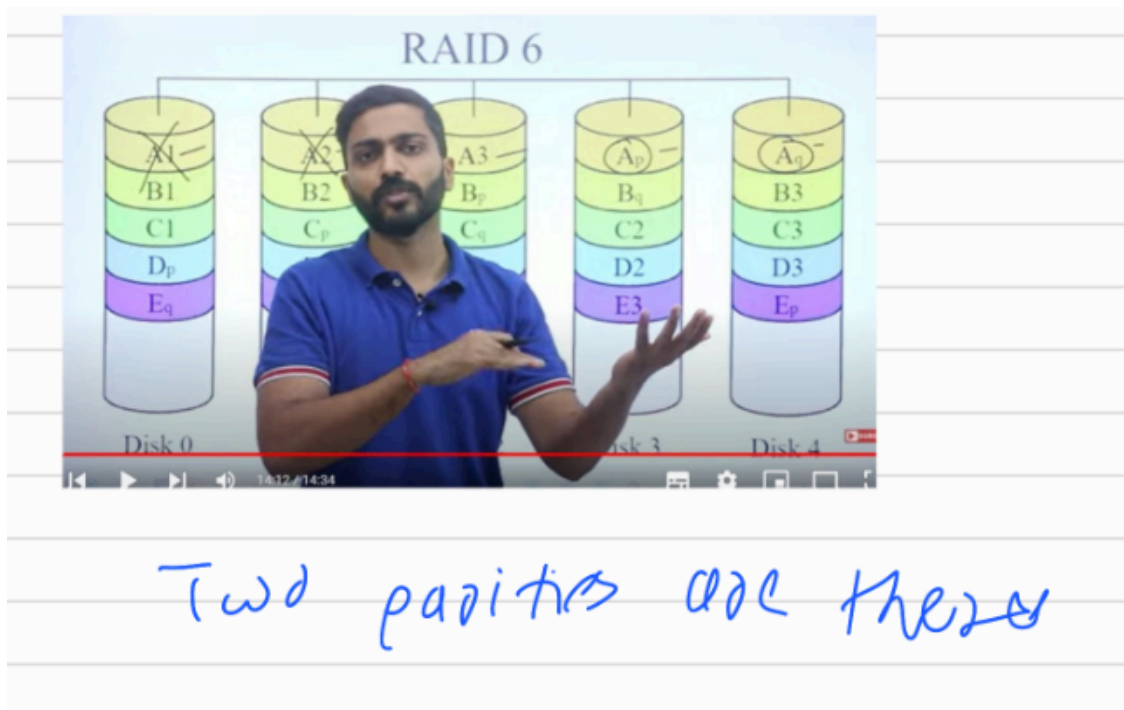


# raid

September 9, 2025

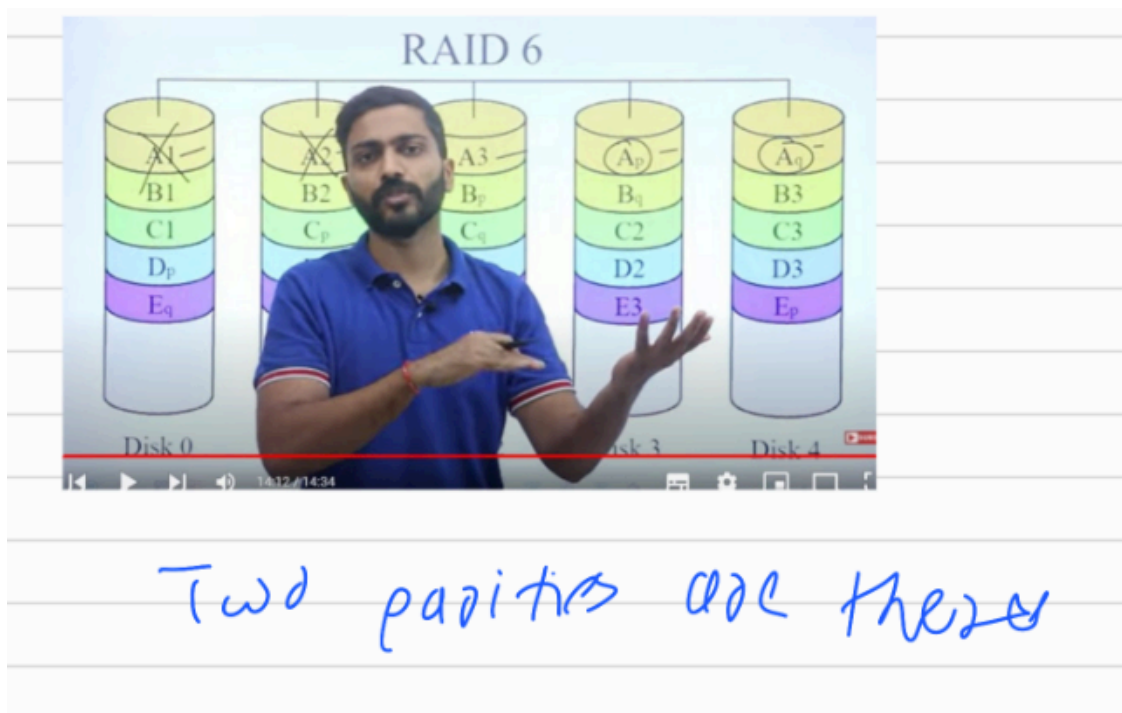
[ ]: look for raid formulae



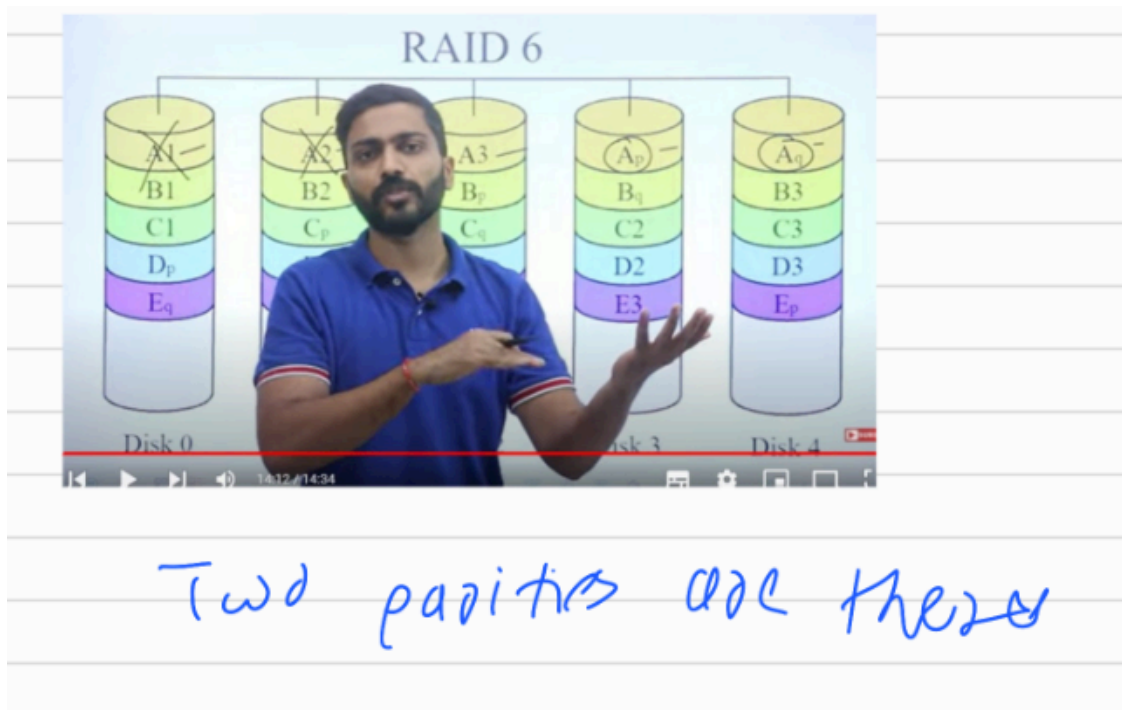
Doubt, what is data stripping?

raid 0

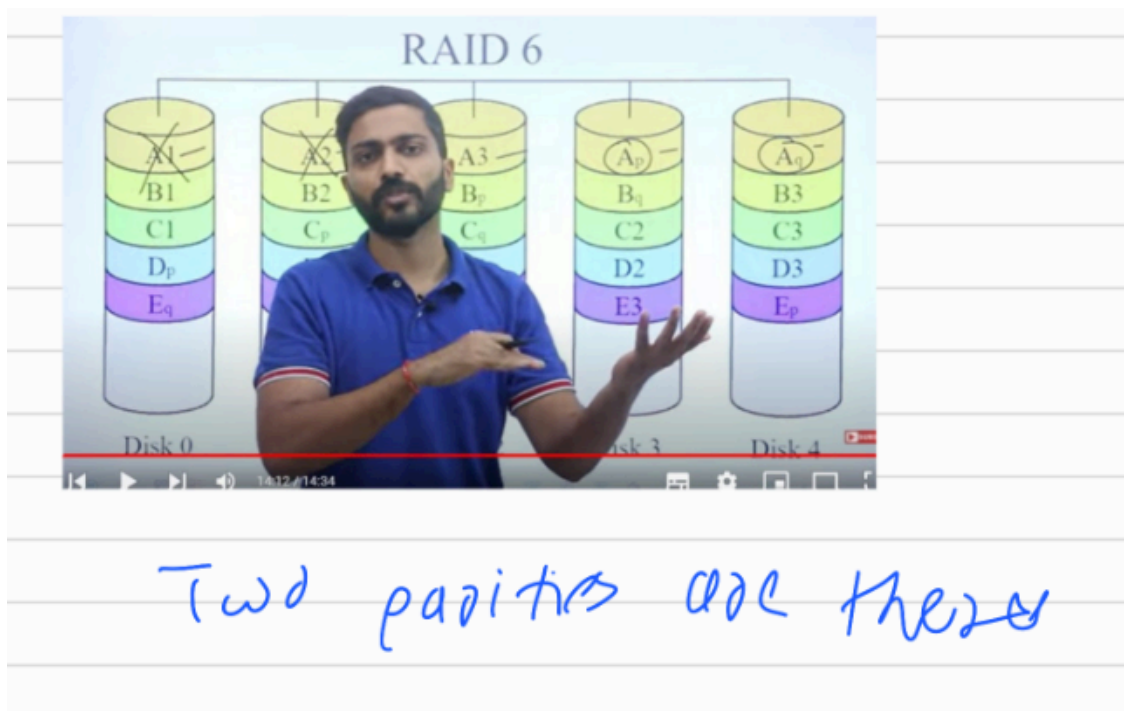
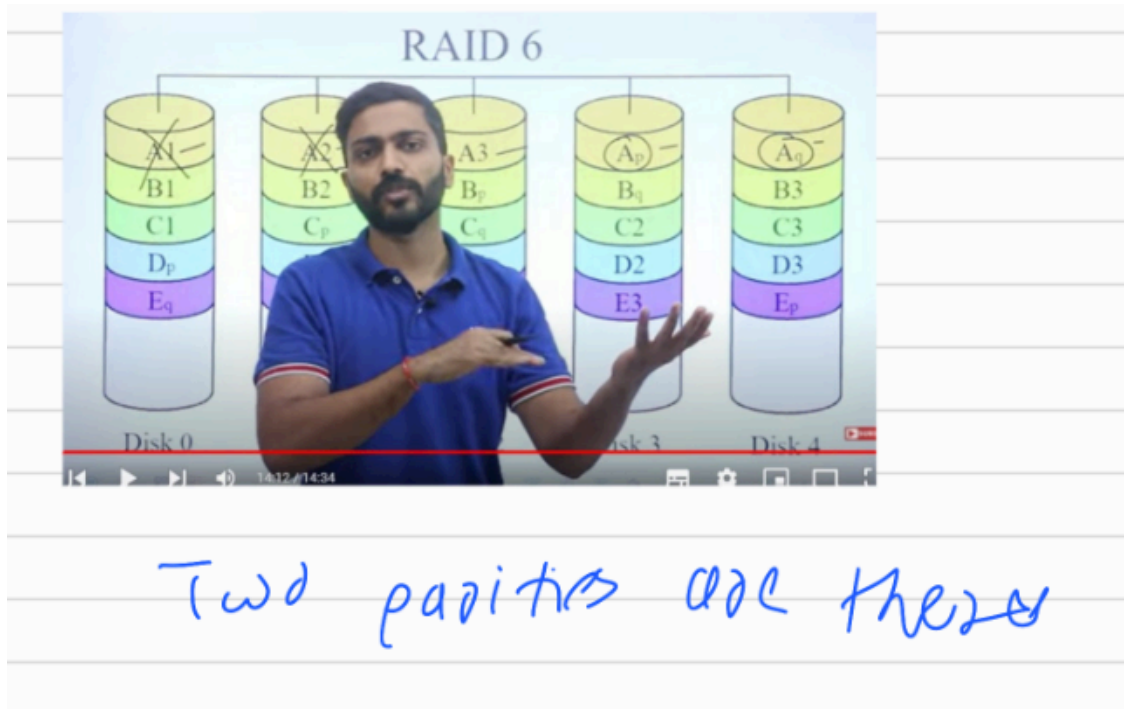
we do data stripping parallel reads will be possible, so performance will be better



Raid 1  
mirroring



Raid 1+ 0 / nested raid



Raid 3:

Parity, helps use to recover if one of the disk fails

bottleneck because all reads and writes have to go through one parity

Two parities are there

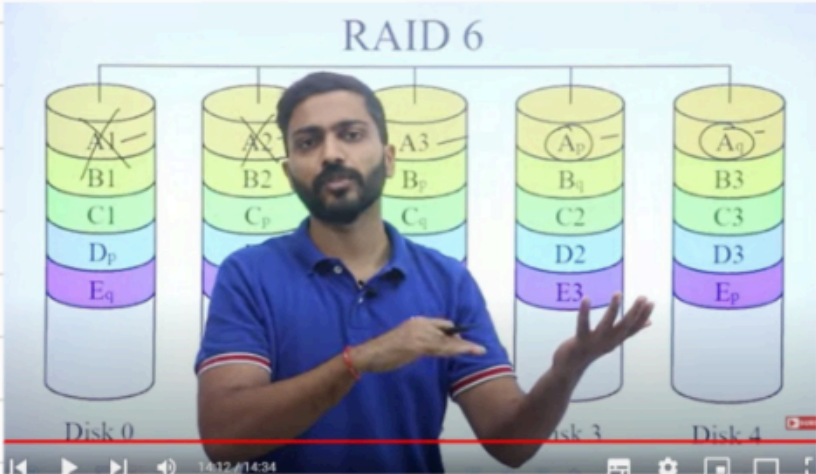
Raid 4:

No difference from raid 3:

(raid 0) ==> dividing data raid 1 == mirror raid 1+0 == raid 2 == extict, at byte level raid 3 == parity raid 4 == same as raid 2 (hence raid 2 and 4 are both useless)

Two parities are there

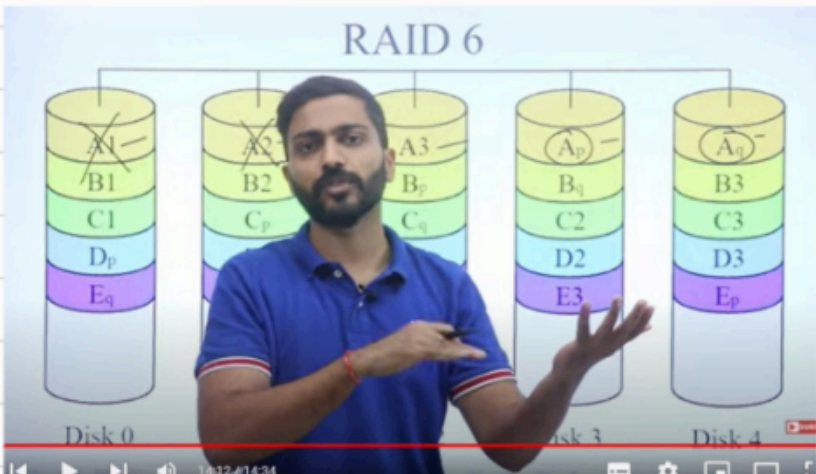
Raid 5:  
Distribute the parities



The diagram illustrates RAID 6 with five disks labeled Disk 0, Disk 3, and Disk 4. Each disk contains data blocks and two parity blocks. The data blocks are labeled A1, B1, C1, D1, E1 on Disk 0; A2, B2, C2, D2, E2 on Disk 3; and A3, B3, C3, D3, E3 on Disk 4. The parity blocks are labeled A<sub>p</sub>, B<sub>p</sub>, C<sub>p</sub>, D<sub>p</sub>, E<sub>p</sub> on Disk 0; A<sub>q</sub>, B<sub>q</sub>, C<sub>q</sub>, D<sub>q</sub>, E<sub>q</sub> on Disk 3; and A<sub>r</sub>, B<sub>r</sub>, C<sub>r</sub>, D<sub>r</sub>, E<sub>r</sub> on Disk 4. A presenter is standing in front of the diagram, gesturing towards the disks.

Two parities are calculated

Raid 6:  
two separate parities are calculated  
we can recover even if 2 disks fail (try to feel it)



The diagram illustrates RAID 6 with five disks labeled Disk 0, Disk 3, and Disk 4. Each disk contains data blocks and two parity blocks. The data blocks are labeled A1, B1, C1, D1, E1 on Disk 0; A2, B2, C2, D2, E2 on Disk 3; and A3, B3, C3, D3, E3 on Disk 4. The parity blocks are labeled A<sub>p</sub>, B<sub>p</sub>, C<sub>p</sub>, D<sub>p</sub>, E<sub>p</sub> on Disk 0; A<sub>q</sub>, B<sub>q</sub>, C<sub>q</sub>, D<sub>q</sub>, E<sub>q</sub> on Disk 3; and A<sub>r</sub>, B<sub>r</sub>, C<sub>r</sub>, D<sub>r</sub>, E<sub>r</sub> on Disk 4. A presenter is standing in front of the diagram, gesturing towards the disks.

Two parities are calculated