RAID (REDUNDANT ARRAY OF INDEPENDENT DISK)

@@@@@@ Redundant array of independent disk(RAID)
   Collection of individual physical disks in a functionality they work as one disk, called as metadisk.
   Mainly we implement the raid inorder to increase to increase the storage capacity along with data security.

@@@@@@ type 0f RAID :
    1)   hardware Raid :
    2)   software Raid :

1) Raid 0 (Stripping with out parity)
2) Raid 1 (Mirroring)
3) Raid 4 (Parity)
4) Raid 5 (Striping with Parity)

@@@@@@ RAID 0 :-
=>   Minimum 2 HardDisks, Max 32 Hard Disks
—>   Data is written alternatively
=>   Read and write speed is fast
—>   No fault tolerance.

@@@@@@ RAID 1 :-
—>   Minimum 2 HardDisks, Max 32 Hard Disks
=>   Data is written simultaneously
—>   Read speed is fast and write speed is slow.
—>   Fault tolerance is available

@@@@@@ RAID 4 :-
=> Minimum 3 HardDisks, Max 32 Hard Disks
=> Data is written alternatively
=> Parity is written on one disk
=> Read & write is fast
=> Fault tolerance available

@@@@@@ RAID 5 :-
=> Minimum 3 HardDisks, Max 32 Hard Disks
=> Data is written alternatively
=> Parity is written on all disks
=> Read & write is fast
=> Fault tolerance available

In this raid level we can maintain spare disk. whenever Raid disk fails then we can replace spare disk.
If tries to generate the lost data from the remaining active disk. the process is called convergency.

@@@@@@ Configuration of RAID 5 :
@@Create the partitions :
fdisk /dev/hda
n, t to change the label/tag
partprobe /dev/hda

@@Create the meta device :
mdadm -C /dev/md0 -n 3 /dev/hda{6,7,8} -l5

@@To see the metadevice (md0) in formation :
mdadm -D /dev/md0

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@@Format the metadevice (md0) :
# mkfs.ext3 /dev/md0

@@Create the mount point :
#mkdir /raid

@@mount the meta device :
#motmt /dev/md0 /raid
#cd /raid
#touch 1 2 3 4

@@Manage the Raid :
#mdadm -a /dev/md0 /dev/hda9
#mdadm -D /dev/md0

@@Faulty Partition :
#mdadm -f /dev/md0 /dev/hda7

@@To remove the fault- partition :
#mdadm -r /dev/md0 /dev/hda7

@@To add the partition to the meta device
#mdadm -a /dev/md0 /dev/hda7

Note : Before stopping the RAID we must note the RAID partitions list.
Because while activation we must mention the partition list.

@@To stop the Raid :
#mdadm -S /dev/md0

@@To activate the meta device/Raid
#mdadm -A /dev/md0 /dev/hda{6,7,8,9}

@@To see the RAID config file :
#cat /proc/mdstat
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