

Ready Bit

Ints enabled

Note Title

11/19/2008

Display

[1]

output (c)

if rbit on move c data register
return

Disks -

- 1) addressing
- 2) RAID

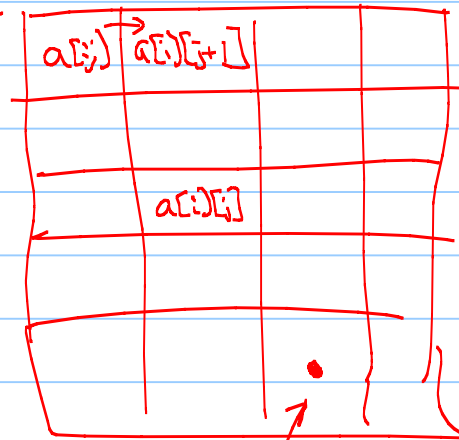
Disks have cylinders, tracks, sectors

What is a disk address: Cyl, Head, Sector

How do we turn convenient addresses 0... size of disk
into CHS addresses?

To begin, let's talk about arrays.

$a \leftarrow \# \text{ of cols, ncols} \rightarrow a[i][j]$



$$(i \times \text{ncols} + j) + a$$

$$(b-a) = i \times \text{ncols} + j$$

$$i = (b-a) / \text{ncols}$$

$$j = (b-a) \bmod \text{ncols}$$

cyls , # heads , # sectors

For disk , given CHS what is the LBA ?

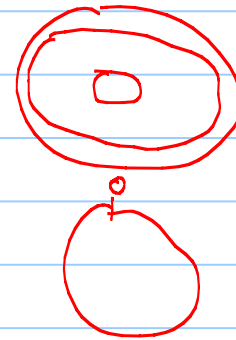
$$LBA = C * (\#heads * \#sectors) + H (\#sectors) + S$$

from LBA to CHS:

$$C = LBA / (\#heads * \#sectors)$$

$$H = (LBA \bmod (\#heads * \#sectors)) / (\#sectors)$$

$$S = LBA \bmod (\#sectors)$$



These days, disks have more sectors at the outside than at the inside.

RAID

1987

Redundant Arrays of Inexpensive Disks
Reliable

MTBF = 10,000 hrs / disk

array of 100 = MTBF = 100 hrs.

RAID - use some of the capacity for storing
info. redundantly.

RAID 0 - ① ② ③ ④ ⑤ = 5x the capacity of 1 disk

RAID 1 - ① ② ③ ④ = 4 disks
2x capacity of 1 disk

RAID 3 - ① ② ~~③~~ ④ ⑤ = 5 disks
0 → 1
4x capacity of 1

Count the number of 1 bits in a number - and
decide if even or odd

1110

1010

