

# Operating System: Disk Partitioning & Blocks

By: Vishvadeep Gothi



# VISHVADEEP GOTHI SIR

**AIR- 19, 119, 440, 682  
in GATE**



**ME from IISc Bangalore  
Mtech BITS Pilani in Data  
Science**



**14+ Years of Teaching Experience,  
10+ Years in GATE/IES**



**Subjects Taken:**  
Computer Organization & Architecture,  
data structure, operating system,  
C-Programming, Data science,  
Machine Learning, Python,  
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# Vishvadeep Gothi

#1 Educator in CS & IT · GATE & ESE

- GATE AIR-19, 119, 440, 682 - ME from IISc, - MTech BITS Pilani (Data Science) - 14 years experience

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# File

A file is a named collection of related information that is recorded on secondary storage.

# Disk Partitioning

Low - level  
(physical)

creating the tracks & sectors

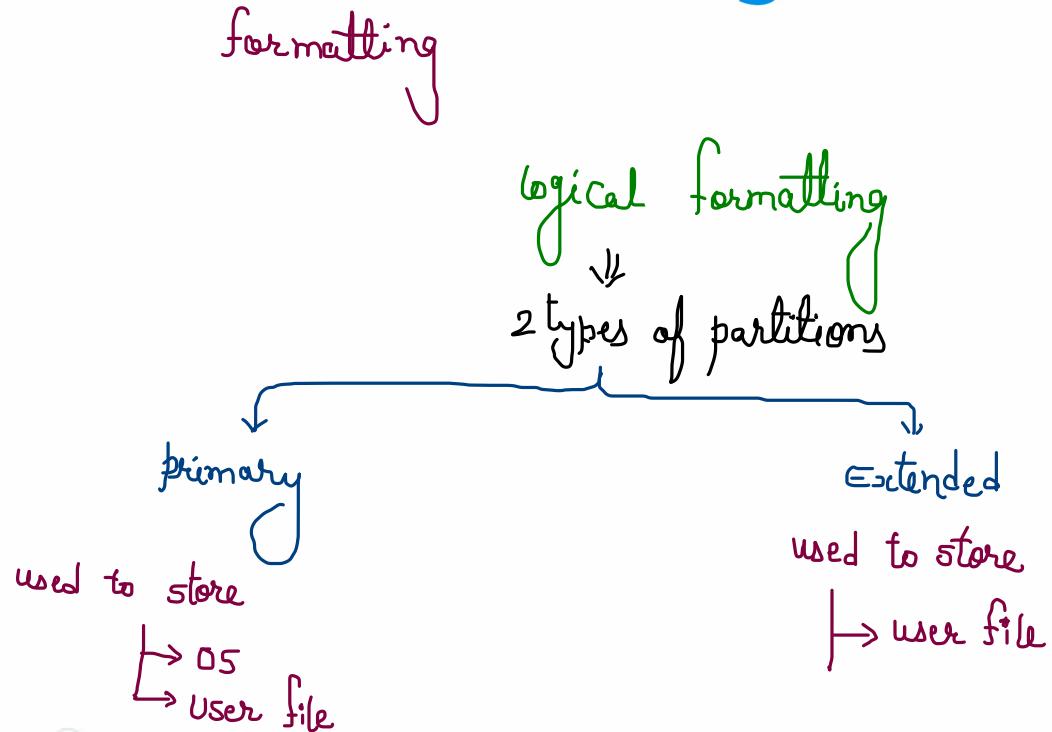
done by manufacturers

High level  
(logical)

creating C: , E: , .... drives

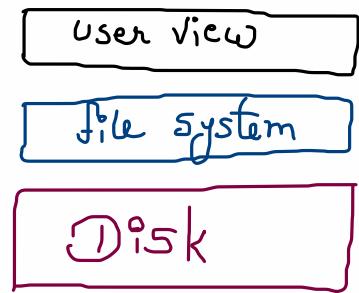
user does this  
using OS

# Disk Partitioning

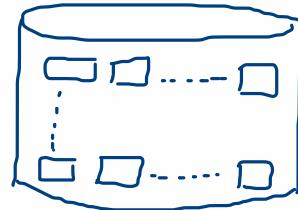


# Disk Blocks

↳ disk block is a logical representation of smallest unit of disk.



1 block  $\Rightarrow$  1 to 2 disk sectors



A file smaller than a block should occupy entire block.  
Hence there will be internal fragmentation



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# Question

Number of disk blocks =  $2^{16}$

Size of each block = 1KB

Total Size of disk?

$$= 2^{16} * 1 \text{ KB}$$

$$= 64 \text{ MB}$$

# Free Space Management

1. Free List → linked-list of all free blocks.
2. Bitmap Method



$n$ -blocks  
in disk,  $\Rightarrow$   $n$ -bit info  $\Rightarrow$  if bit  $\begin{cases} 0 & \text{block is free} \\ 1 & \text{occupied} \end{cases}$

# Free Space Management

- ◎ No searching in free list, but in bitmap we search for first zero
- ◎ Free list is faster in allocating a free block
- ◎ Free list size is variable, whereas bitmap size is constant

# Next Class

File Allocation Method ✓

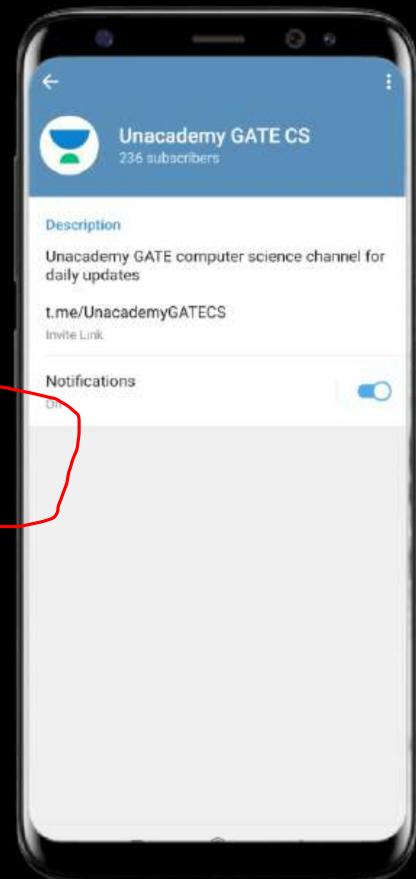


✓ Disk Scheduling





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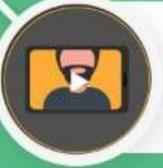
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