

# Operating System: Segmentation

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,  
coding interview problems,





# 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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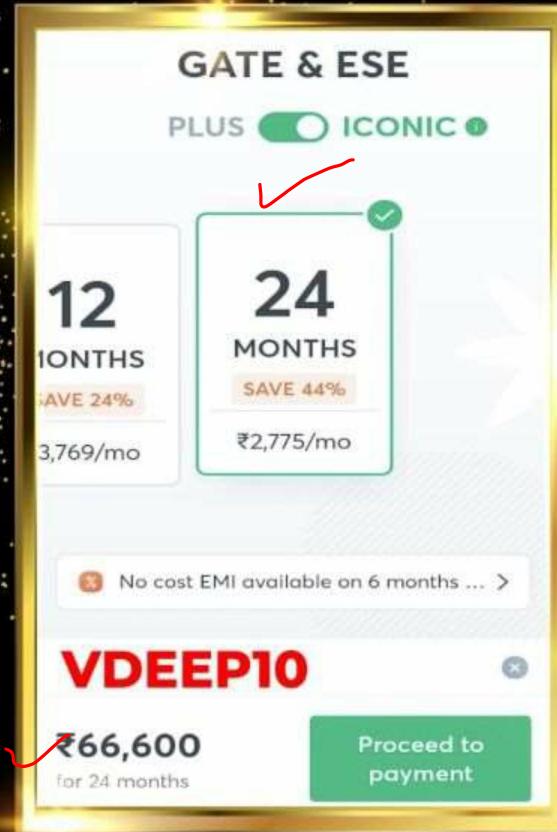
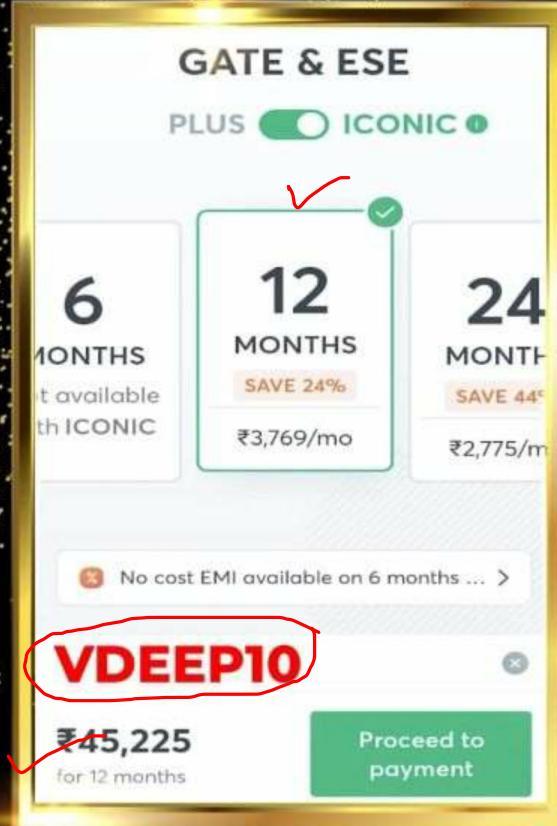
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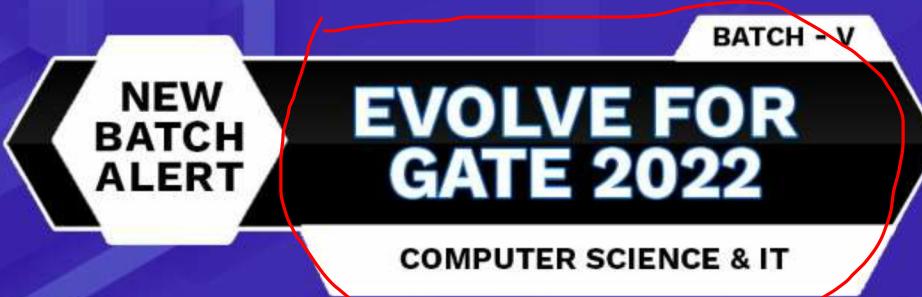
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Paging

segmentat<sup>n</sup>

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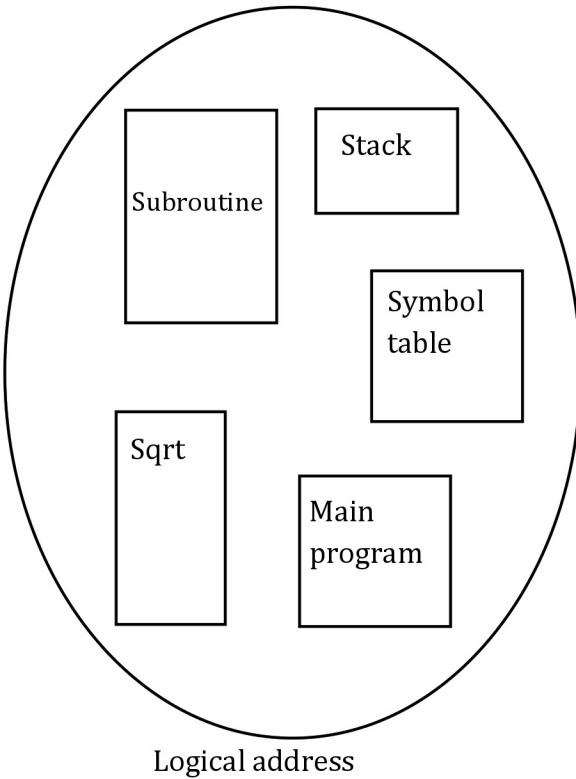
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# Segmentation

- ➊ Divide Process in logically related partitions (Segments)
- ➋ Segments are scattered in physical memory
- ➌ Segments can be of variable sizes



# Segmentation



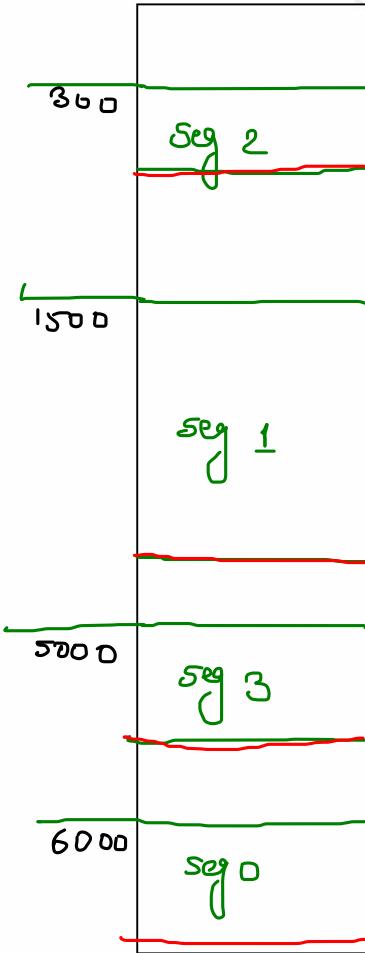
# Segmentation

Process



Segment Table

	Base	Limit
0	6000	600
1	1500	1000
2	300	300
3	5000	450



Physical memory

Base  $\Rightarrow$  starting add.

of segment in  
memory

Limit  $\Rightarrow$  size of segment

# Segmentation

- Size of segment can vary, so along with base, keep limit information also
- Limit defines max number of words within the segment

or bytes

→ used to provide <sup>memory</sup> protection

# Question

- ◎ Find physical address for the following requests?

S	d	Physical Address
0	430	$6000 + 430 = 6430$
1	962	$1500 + 962 = 2462$
2	321	Addressing Error $321 > 300$
3	441	$5000 + 441 = 5441$

# Segmentation

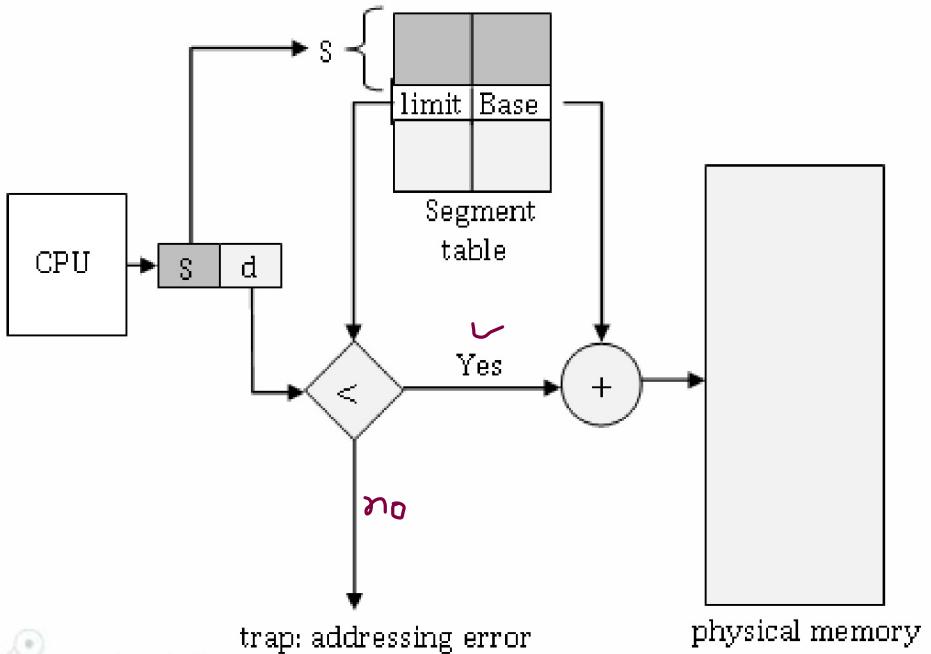


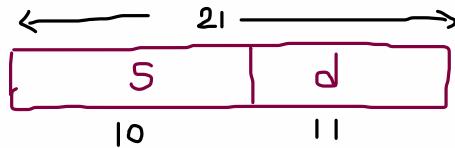
Fig. Segmentation hardware



base + d  $\Rightarrow$  physical add.

# Question

- Maximum segment size = 2KB =  $2^{10} \text{ B}$   $\Rightarrow d = 10 - 1 \text{ bits}$
- Number of segments in process =  $2^{10}$   $\Rightarrow S = 10 - 1 \text{ bits}$
- Logical address = 21 bits ??



# Next Class

✓ Virtual Memory

✓ Demand Paging & Page Faults

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SESSIONS ON:

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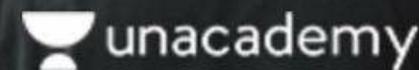
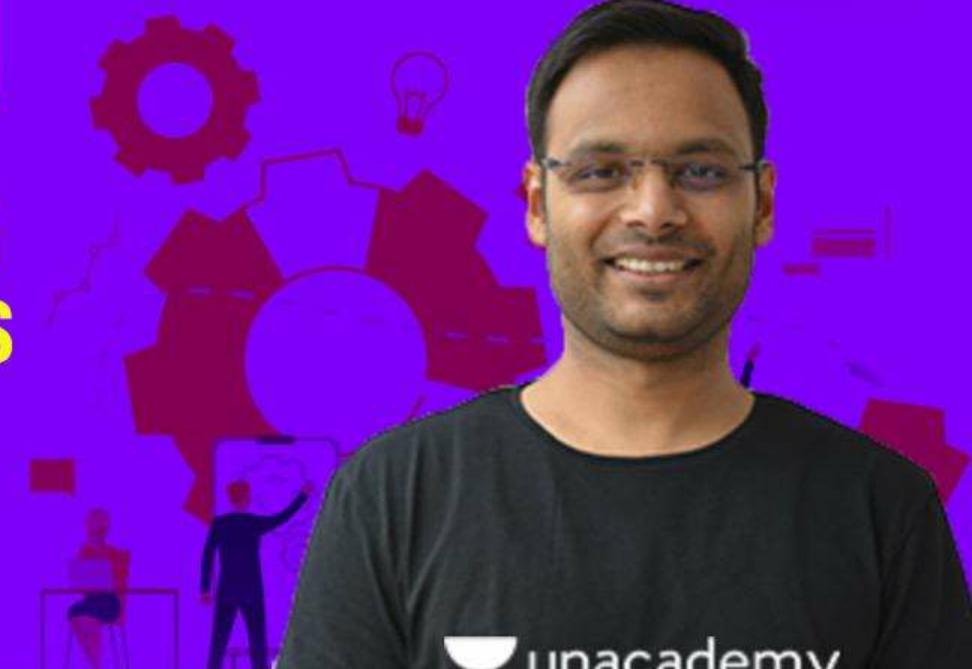
**REVISION STRATEGY**

**HOW TO MAKE NOTES**

**STARTING FROM: 12 JULY**

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TIME:  
**9:00AM**  
**(MON-FRI)**



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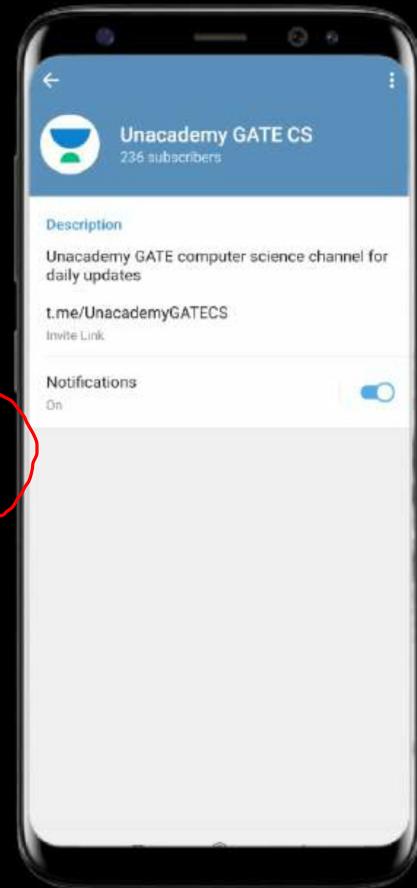
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