

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

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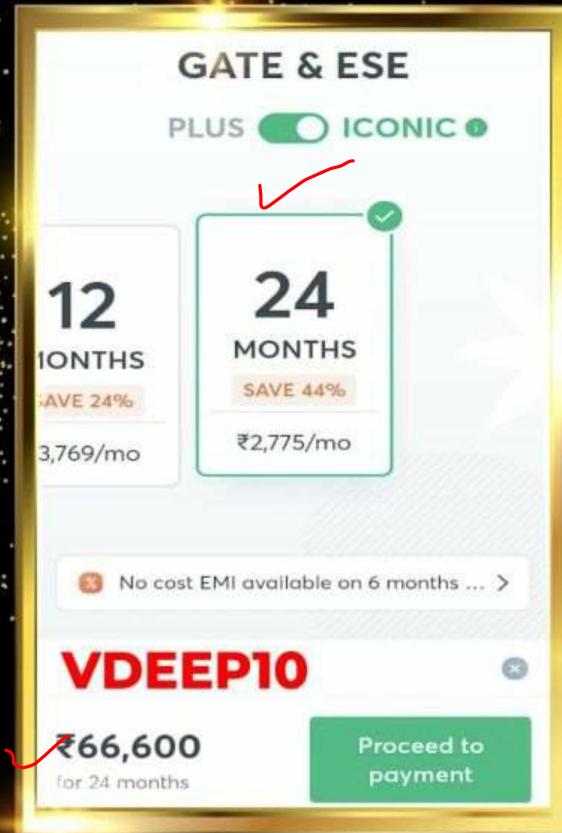
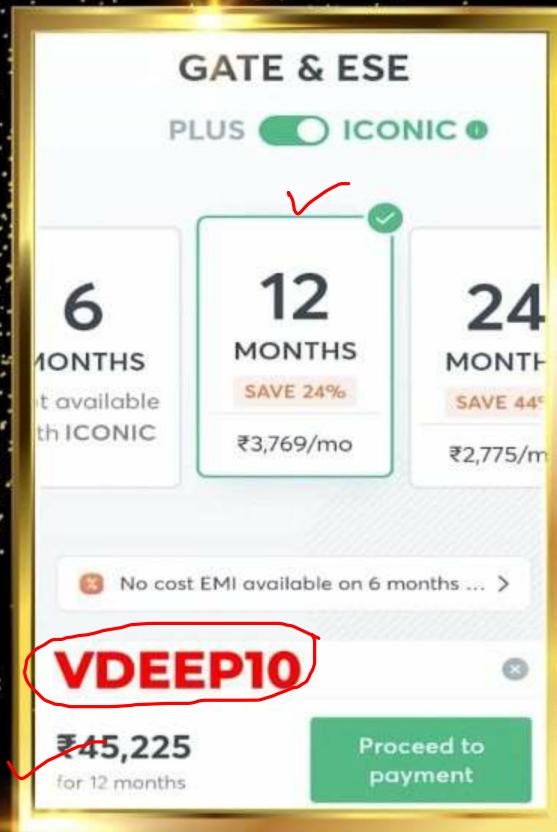
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Paging

segmentatⁿ

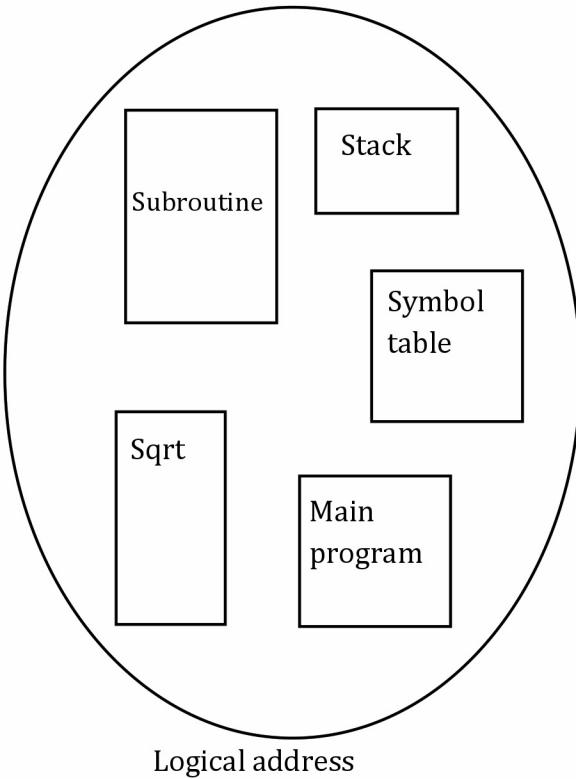
Are You Ready??

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

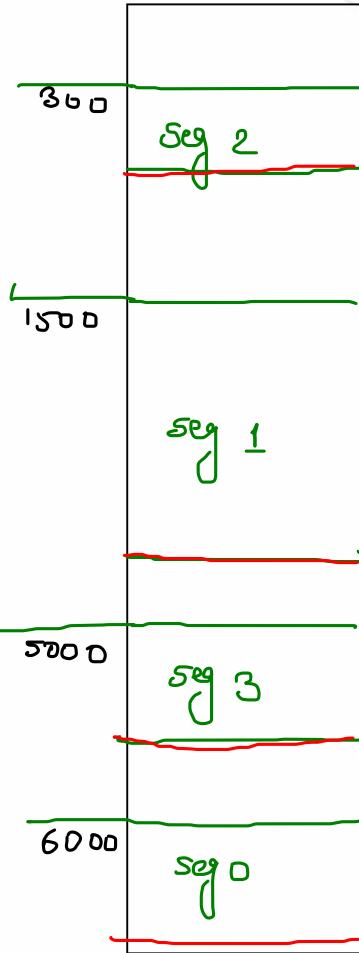
Process



Segment Table

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

Hexadecimal in questions



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

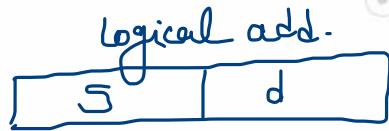
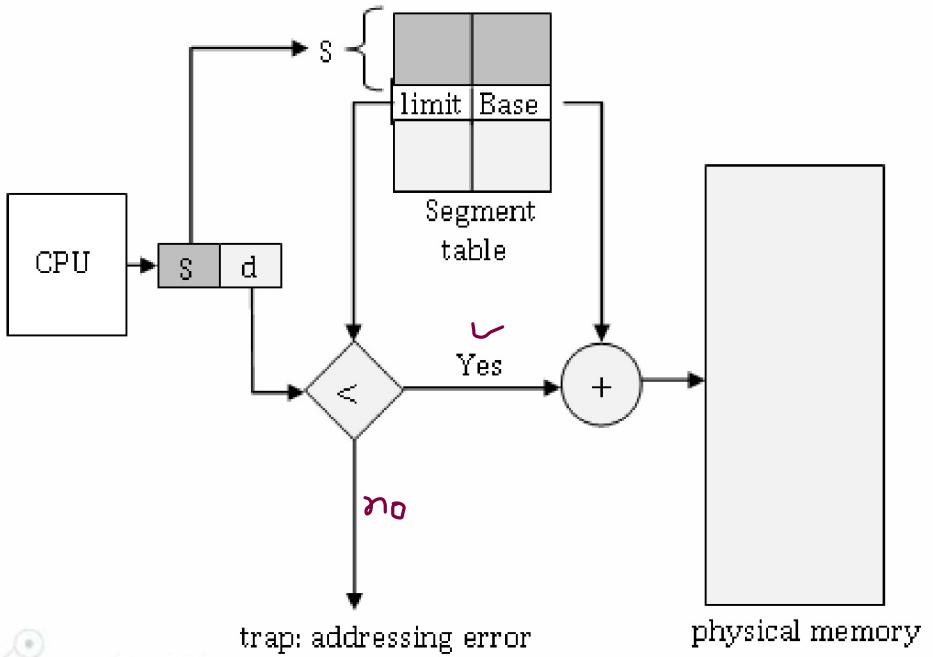
→ used to provide ^{memory} protection

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

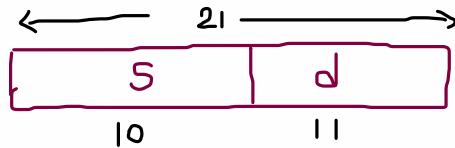


base + d \Rightarrow physical add.

Fig. Segmentation hardware

Question

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



Next Class

✓ Virtual Memory

✓ Demand Paging & Page Faults

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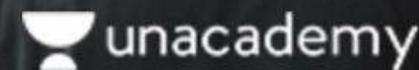
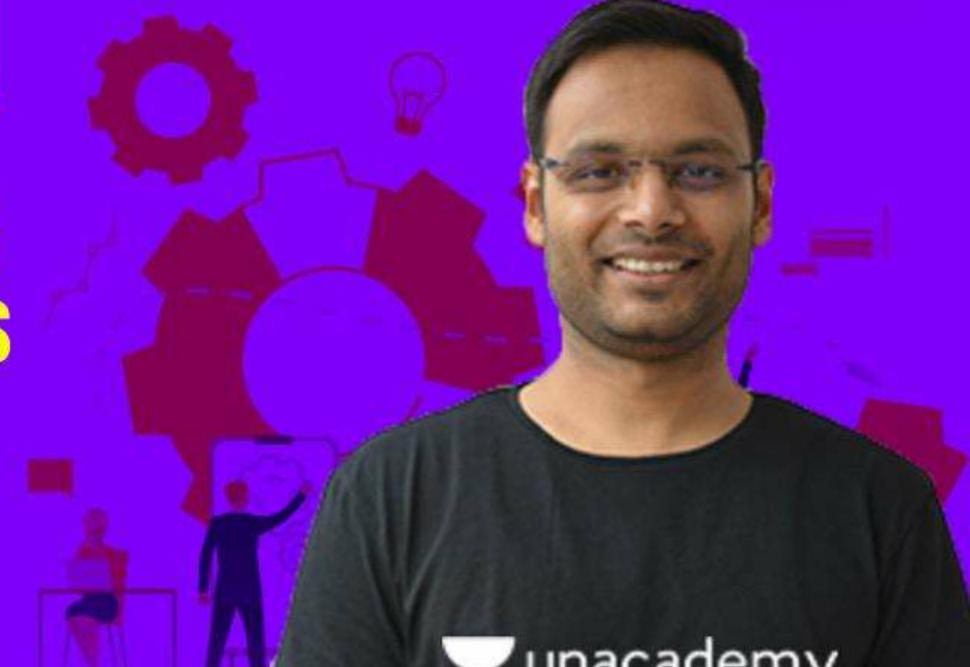
REVISION STRATEGY

HOW TO MAKE NOTES

STARTING FROM: 12 JULY

VISHVADEEP GOTHI SIR

TIME:
9:00AM
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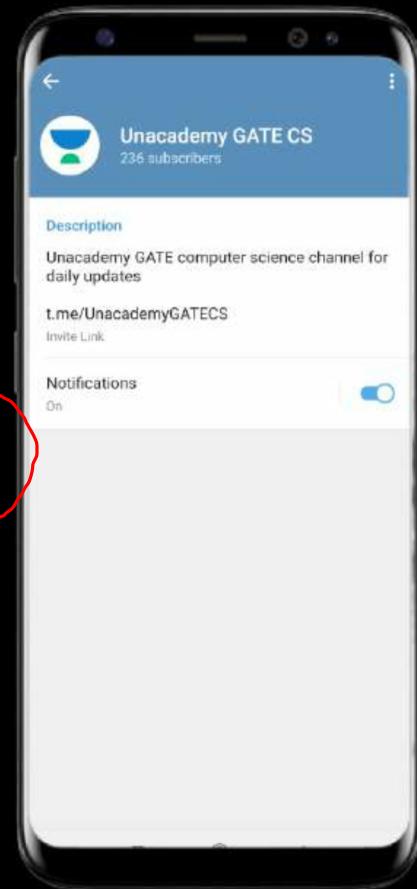
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24
MONTHS

SAVE 44%
₹2,775/mo

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MONTHS

SAVE 24%
₹3,769/mo

24
MONTHS

SAVE 44%
₹2,775/mo

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