

Operating System: Synchronization Hardware

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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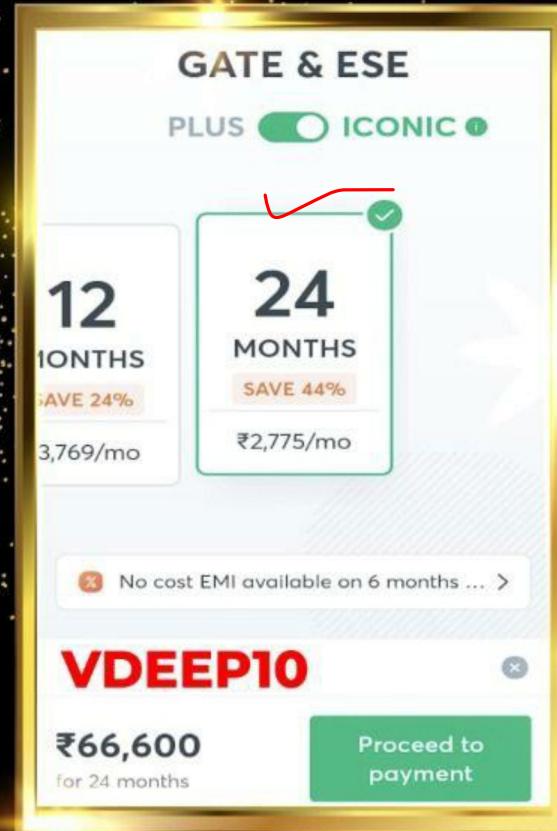
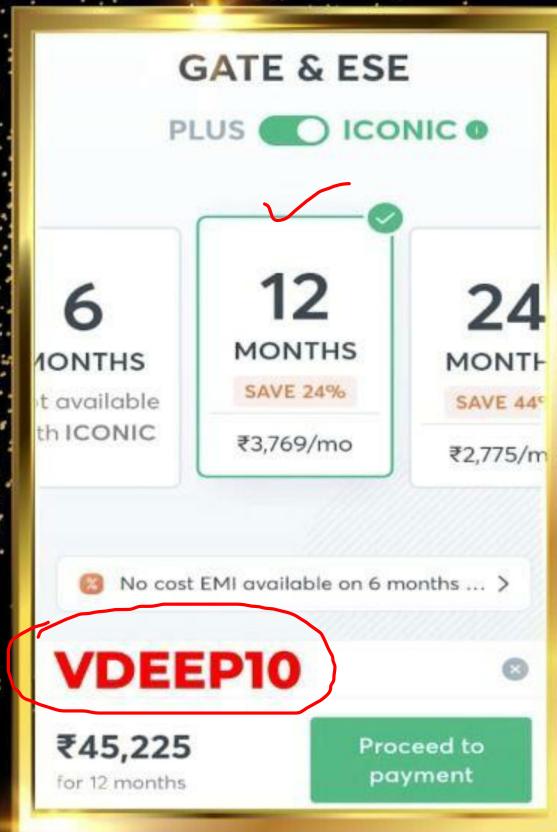
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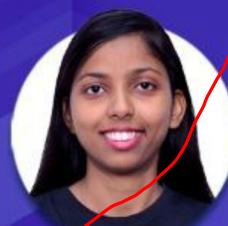
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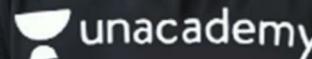
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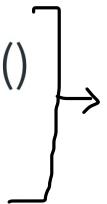
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Synchronization Hardware

1. TestAndSet()
2. Swap()



instruction support by CPU



can be used to
provide synchronization



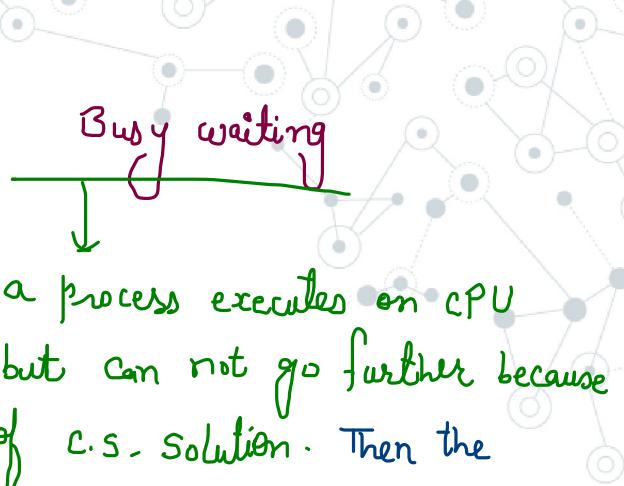
privileged instrns

TestAndSet()

Returns the current value flag and sets it to true

lock =

TestAndSet (lock)



Busy waiting
a process executes on CPU
but can not go further because
of c.s. solution. Then the
process
is known
to be in
busy waiting



TestAndSet()

Boolean Lock=False;

```
boolean TestAndSet(Boolean *trg)
{
    boolean rv = *trg;
    *trg = True;
    Return rv;
}
```

atomic

P_D

```
while(true)
{
    while(TestAndSet(&Lock));
        ↓ CS
    Lock=False;
}
```

P_1

```
while (TestAndSet(&lock));
```



Swap()

Boolean Key, Lock=False;

```
void Swap(Boolean *a, Boolean *b)
{
    boolean temp = *a;
    *a = *b;
    *b = temp;
}
```

No M.E. if preemption

happens in process.

key = ~~True~~ True f
Lock = ~~false~~ T

P₀

```
while(true)
{
    Key = True;
    while (key==True)
        Swap(&Lock, &Key);
}
```

CS

Lock=False;

RS

}

Next Class

{ Synchronization Tools }



← { Semaphore }



Upcoming class

- Friday 4:30 PM How to utilize 7 months
- Saturday 12:00 PM Ask me anything
- Saturday 9:00 AM DS. Revision marathon
- Tomorrow 9:00 PM educator launch

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+
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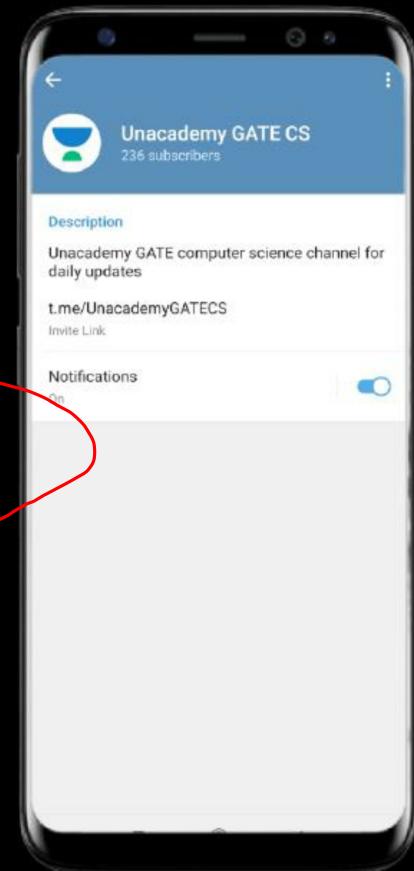
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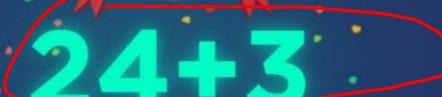
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MONTHS

Not available
with ICONIC

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MONTHS

SAVE 24%

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24
MONTHS

SAVE 44%

₹2,775/mo

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SAVE 24%

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SAVE 44%

₹2,775/mo

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