

# Operating System: Bounded-Buffer Problem

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,

**VDEEP10**

**Get 10% Off  
on Unacademy  
Plus Subscription**



# 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

Special

→ 11:00 am

VDEEP10

Follow Me on  unacademy

[http://www.unacademy.com/@vd\\_gothi](http://www.unacademy.com/@vd_gothi)

<http://tiny.cc/VDEEP10>



### Study Planner

Customized study plan and track your performance.

doubt



### Study Booster Sessions

Receive Essential Guidelines via Regular workshops



### Personal Coach

One on one guidance on preparation strategy.



### Live Classes



### Crash Courses



### Personalised Test Analysis

Get in-depth analysis of tests by section & question type.



**ICONIC**



**PLUS**



RIB



### Weekly Tests



### Doubt Solving



English & Hindi



### Preparatory Study Material

Specialised notes & practice sets.

**GATE & ESE**

**PLUS**  **ICONIC**

**Most Popular** ✓

6 MONTHS	12 MONTHS	18 MONTH
SAVE 25%	SAVE 54%	SAVE 61%
₹3,713/mo	₹2,269/mo	₹1,925/mo

No cost EMI available on 6 months ... >

**VDEEP10**

**₹27,225**  
for 12 months

**Proceed to payment**

**GATE & ESE**

**PLUS**  **ICONIC**

**Most Popular** ✓

12 MONTHS	18 MONTHS	24 MONTH
SAVE 54%	SAVE 61%	SAVE 67%
₹2,269/mo	₹1,925/mo	₹1,650/mo

No cost EMI available on 6 months ... >

**VDEEP10**

**₹34,650**  
for 18 months

**Proceed to payment**

**GATE & ESE**

**PLUS**  **ICONIC**

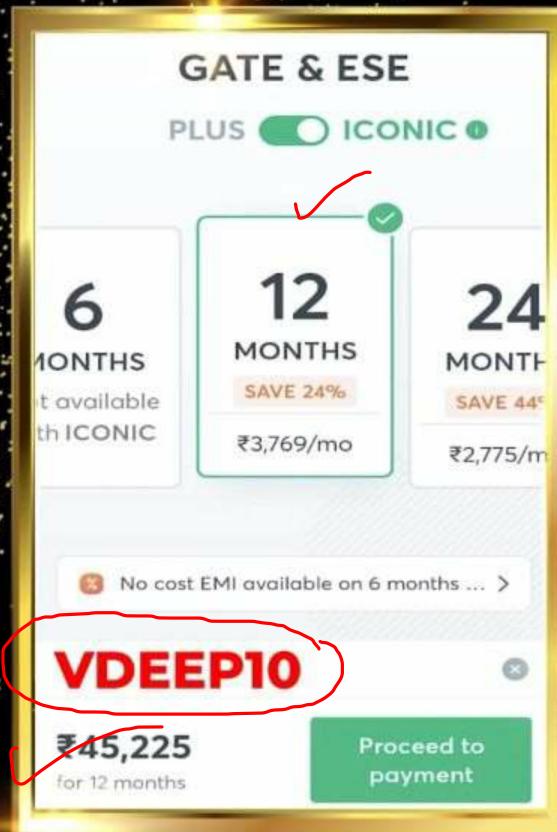
18 MONTHS	24 MONTHS
SAVE 61%	SAVE 67%
₹1,925/mo	₹1,650/mo

No cost EMI available on 6 months ... >

**VDEEP10**

**₹39,600**  
for 24 months

**Proceed to payment**





BATCH - R

NEW  
BATCH  
ALERT

# EVOLVE FOR GATE 2022

COMPUTER SCIENCE & IT

Use Code:  
**VDEEP10**



RAVINDRABABU  
RAVULA



SUBBA RAO



SANCHIT JAIN



VENKAT RAO



VISHVADEEP  
GOTHI



SWETA KUMARI

START DATE  
**16 JUN 2021**

FOR 10% DISCOUNT

USE CODE

Use Code:  
**VDEEP10**

# PRICE HIKE UPCOMING

## GATE & ESE

**BEAT THE PRICE  
HIKE AND  
SUBSCRIBE NOW**



**More Power to your  
Unacademy Plus subscription**



Learn Live from the  
comfort of your home



Unlimited Access to  
all Courses



Top Educators of India  
on one platform



Regular doubt clearing  
sessions



Exhaustive coverage  
of syllabus



Efficient revision via  
Digital Notes



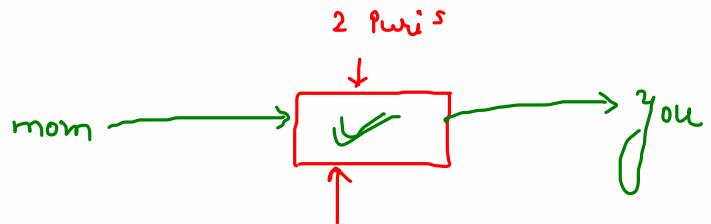
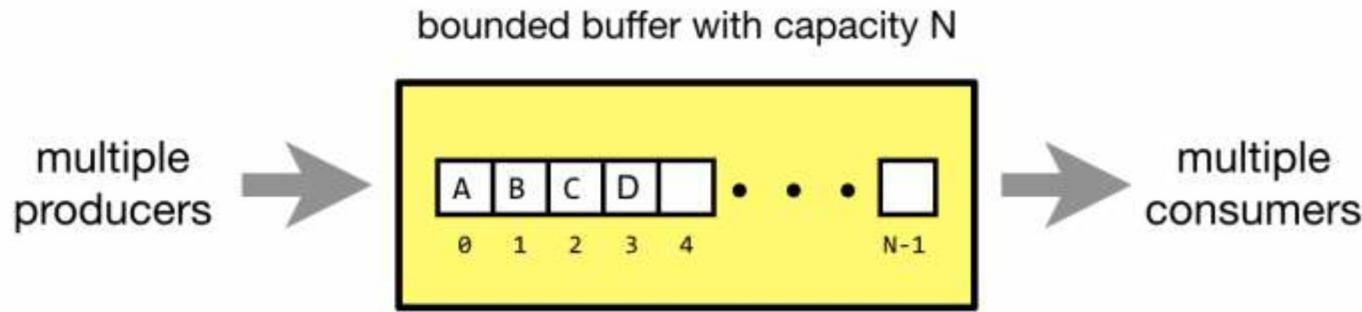
Live Test Series

# Are You Ready??

USE CODE

**VDEEP10**TO GET  
**MAX DISCOUNT ON**

# Bounded Buffer Problem



# Bounded Buffer Problem

- ◎ Known as producer-consumer problem also
- ◎ Buffer is the shared resource between producers and consumers



# Bounded Buffer Problem: Solution

- ◎ Producers must block if the buffer is full
- ◎ Consumers must block if the buffer is empty



# Bounded Buffer Problem: Solution

## Variables:

- **Mutex**: Binary Semaphore to take lock on buffer (Mutual Exclusion)
- **Full**: Counting Semaphore to denote the number of occupied slots in buffer
- **Empty**: Counting Semaphore to denote the number of empty slots in buffer

• Initialization :- (Initially the buffer is empty)

$\text{Mutex} = 1$

$\text{Full} = 0$

$\text{Empty} = n$

# Producer()

```
Producer()
{
    wait(empty)      // to check if empty space available
    // produce an item
    wait(mutex)
    // add item on buffer
    signal(mutex)
    signal(full)
}
```

# Consumer()

```
Consumer()
{
    wait (full)
    wait (mutex)
    // remove an item from buffer
    signal (mutex)
    // consume the item
    signal (empty)
}
```

# Next Class

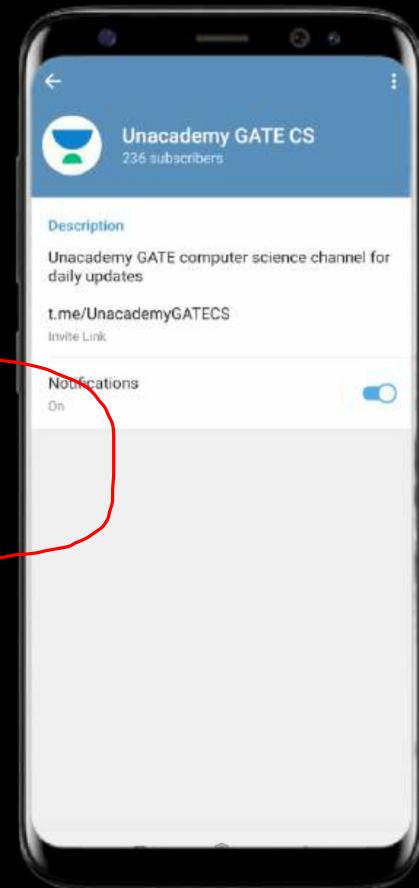
Reader-Writer Problem

Classical Problems on  
Synchronization

Fri . 2 PM  
Sat 2 PM



<https://t.me/UnacademyGATECS>





BATCH - R

NEW  
BATCH  
ALERT

# EVOLVE FOR GATE 2022

COMPUTER SCIENCE & IT

Use Code:  
**VDEEP10**



RAVINDRABABU  
RAVULA



SUBBA RAO



SANCHIT JAIN



VENKAT RAO



VISHVADEEP  
GOTHI



SWETA KUMARI

START DATE

**16  
JUN  
2021**

FOR 10% DISCOUNT

USE CODE

Use Code:  
**VDEEP10**

# PRICE HIKE UPCOMING

---

## GATE & ESE

**BEAT THE PRICE  
HIKE AND  
SUBSCRIBE NOW**



More Power to your  
Unacademy Plus subscription



Learn Live from the  
comfort of your home



Unlimited Access to  
all Courses



Top Educators of India  
on one platform



Regular doubt clearing  
sessions



Exhaustive coverage  
of syllabus



Efficient revision via  
Digital Notes



Live Test Series

**ICONIC**

**+** **PLUS**



**Preparatory Study  
Material**

Specialised notes & practice sets.



**RIB**

**English & Hindi**



**Doubt Solving**



**Weekly Tests**



**Crash Courses**



**Live Classes**



**Personal Coach**

One on one guidance on preparation strategy.



**Study Planner**

Customized study plan and track your performance.



**Study Booster Sessions**

Receive Essential Guidelines via Regular workshops



**Personalised Test Analysis**

Get in-depth analysis of tests by section & question type.

**GATE & ESE**

**PLUS**  **ICONIC**

<b>6</b> MONTHS <small>SAVE 25%</small> ₹3,713/mo	<b>12</b> MONTHS <small>SAVE 54%</small> ₹2,269/mo	<b>18</b> MONTH <small>SAVE 61%</small> ₹1,925/mo
--	---	--

No cost EMI available on 6 months ... >

**VDEEP10**

~~₹27,225~~ for 12 months

**Proceed to payment**



**GATE & ESE**

**PLUS**  **ICONIC**

<b>6</b> MONTHS <small>SAVE 25%</small> ₹3,713/mo	<b>12</b> MONTHS <small>SAVE 54%</small> ₹2,269/mo	<b>18</b> MONTHS <small>SAVE 61%</small> ₹1,925/mo
<b>12</b> MONTHS <small>SAVE 54%</small> ₹2,269/mo	<b>18</b> MONTHS <small>SAVE 61%</small> ₹1,925/mo	<b>24</b> MONTH <small>SAVE 67%</small> ₹1,650/mo

No cost EMI available on 6 months ... >

**VDEEP10**

~~₹34,650~~ for 18 months

**Proceed to payment**

**GATE & ESE**

**PLUS**  **ICONIC**

<b>12</b> MONTHS <small>SAVE 54%</small> ₹2,269/mo	<b>18</b> MONTHS <small>SAVE 61%</small> ₹1,925/mo	<b>24</b> MONTH <small>SAVE 67%</small> ₹1,650/mo
---	---	--

No cost EMI available on 6 months ... >

**VDEEP10**

~~₹39,600~~ for 24 months

**Proceed to payment**

**GATE & ESE**

PLUS  **ICONIC**

<b>6</b> MONTHS <small>Not available with ICONIC</small>	<b>12</b> MONTHS <small>SAVE 24%</small> ₹3,769/mo	<b>24</b> MONTHS <small>SAVE 44%</small> ₹2,775/mo
--	---	---

No cost EMI available on 6 months ... >

**VDEEP10**

~~₹45,225~~  
for 12 months

**₹45,225**  
for 12 months

**Proceed to payment**

**GATE & ESE**

PLUS  **ICONIC**

<b>12</b> MONTHS <small>SAVE 24%</small> ₹3,769/mo	<b>24</b> MONTHS <small>SAVE 44%</small> ₹2,775/mo
---	---

No cost EMI available on 6 months ... >

**VDEEP10**

~~₹66,600~~  
for 24 months

**₹66,600**  
for 24 months

**Proceed to payment**



UNACADEMY  
COMBAT



unacademy

India's Largest Weekly Competition for GATE



Take it Live to compete with the best

20

Access your GATE preparation in 60 minutes



Super fast and fun with All India Live Leaderboard

Challenging & Original GATE Questions curated by the Best Educators



Identify & improve your weak areas through detailed video solutions

USE CODE

VDEEP10

June 20, 27 | Starts at 11 AM



UNACADEMY  
COMBAT



Unacademy  
Subscription

**RANK 1-3**

Complimentary  
Unacademy Plus  
subscription for One Year



Unacademy  
Subscription

**RANK 4-10**

75% off on Unacademy  
Plus subscription for the  
tenure of your choice.



Unacademy  
Subscription

**RANK 11-50**

50% off on Unacademy  
Plus subscription for the  
tenure of your choice.



Unacademy  
Subscription

**RANK 51-100**

25% off on Unacademy  
Plus subscription for the  
tenure of your choice.

\*Winners can choose from 6 months / 12 months / 18  
months / 24 months GATE & ESE Plus subscription.

Terms & Conditions Apply

# India's No. 1 Study Channels

Kreatryx GATE  
EE,ECE,IN



Unacademy GATE  
ME,PI,XE



Unacademy  
GATE CE



Unacademy  
GATE Telugu



Unacademy  
SSC JE



Unacademy  
Computer Science



Unacademy GATE  
Questions



Electrical  
Junction



Engineering  
Pathshala



GS Terminal -  
RRB, SSC





Happy Learning

Thank You

