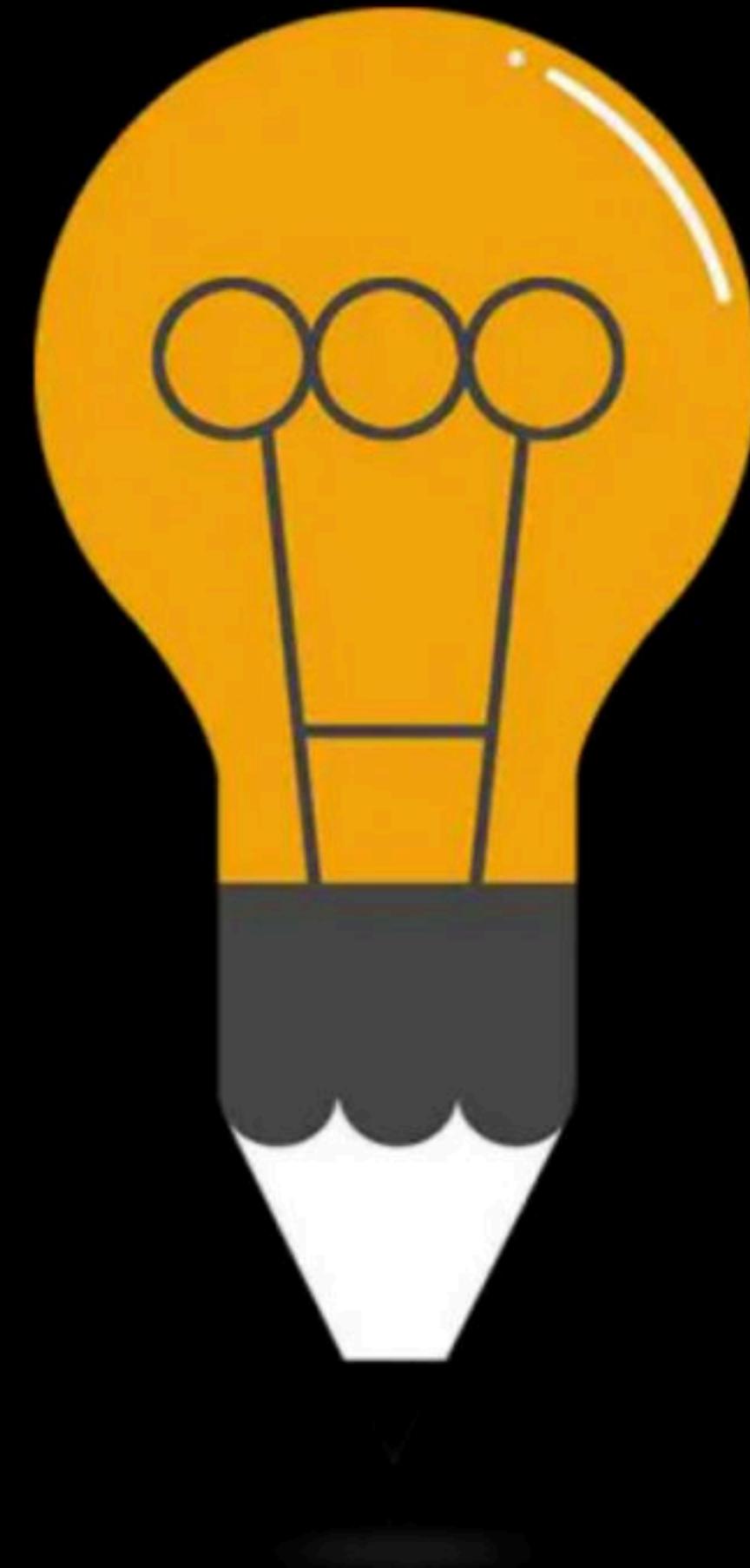






Doubt Clearing Session

Comprehensive Course on Operating System for GATE - 2024/25



Operating System **Doubts & Scheduling**

By: **Vishvadeep Gothi**

▲ 1 • Asked by Rohit

Sir, non- preemptive is practical system because preemption not allowed?

▲ 1 • Asked by Samiksha

Sir i completed ds last year now i want to revise should i consider only pyqs or go with lectures again ?

✓
 \downarrow
notes $\hookrightarrow 2x$

▲ 2 • Asked by Aditya

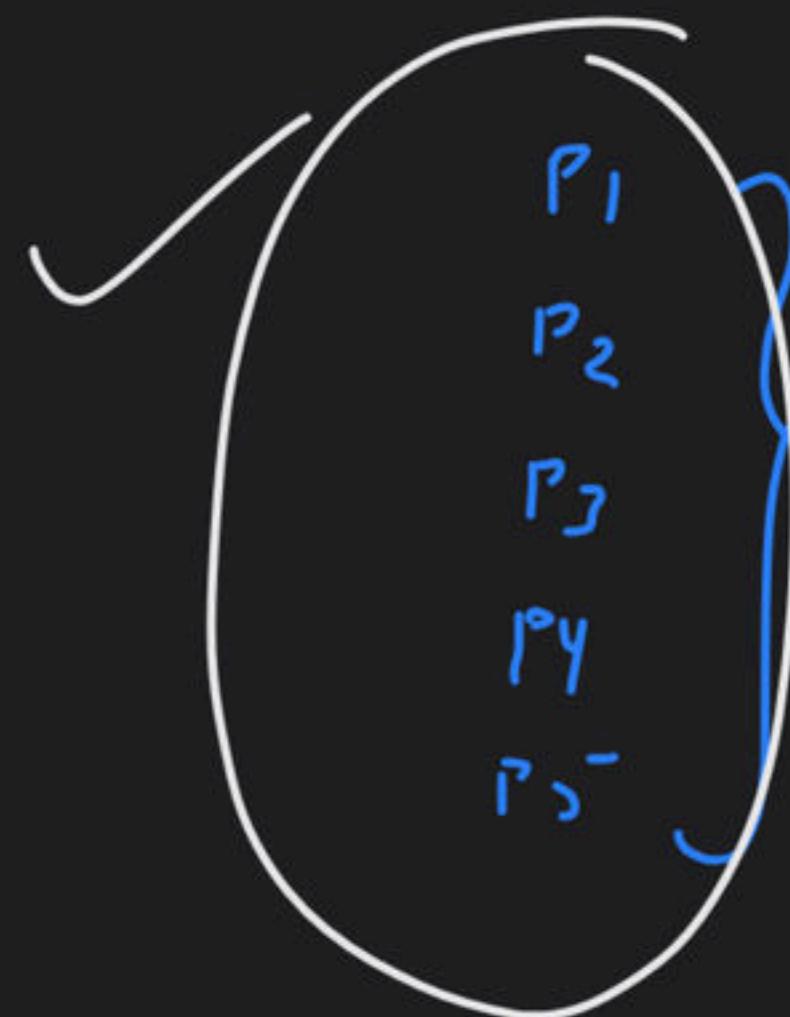
sir maths abhi kRNA chahiye yaa fr oct me kru abhi dbms
and os kr rha hu

1
2
3

c - OS, COA, OS, DBMS,
COA - kind

▲ 1 • Asked by Anil

sir , why process scheduling is needed ??



S.T.S.



▲ 3 • Asked by Aman Kumar...

sir u said mts doesnt control degree of multiprogramming
.But u also said it increases and decreases the degree of
multiprogramming.so its effecting degree of
multiprogramming na??

▲ 3 • Asked by Puspita

how many hours should i study a day for top 1 rank ?

1 - 7 hours

▲ 1 • Asked by Divya

sir , unable to understand diff b/w suspend ready and
suspend blocked states?

▲ 1 • Asked by Learner

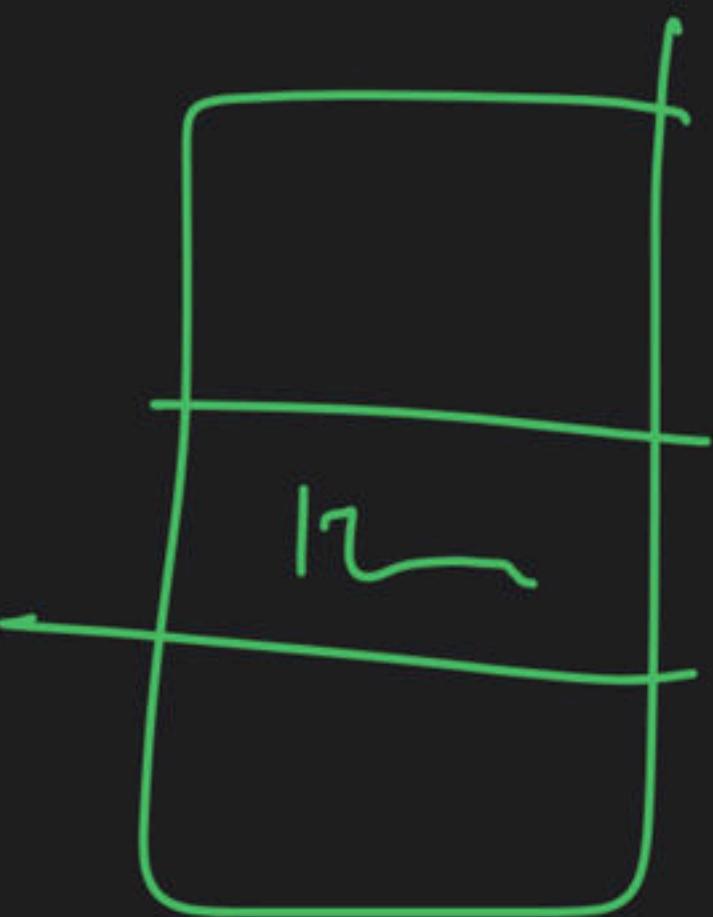
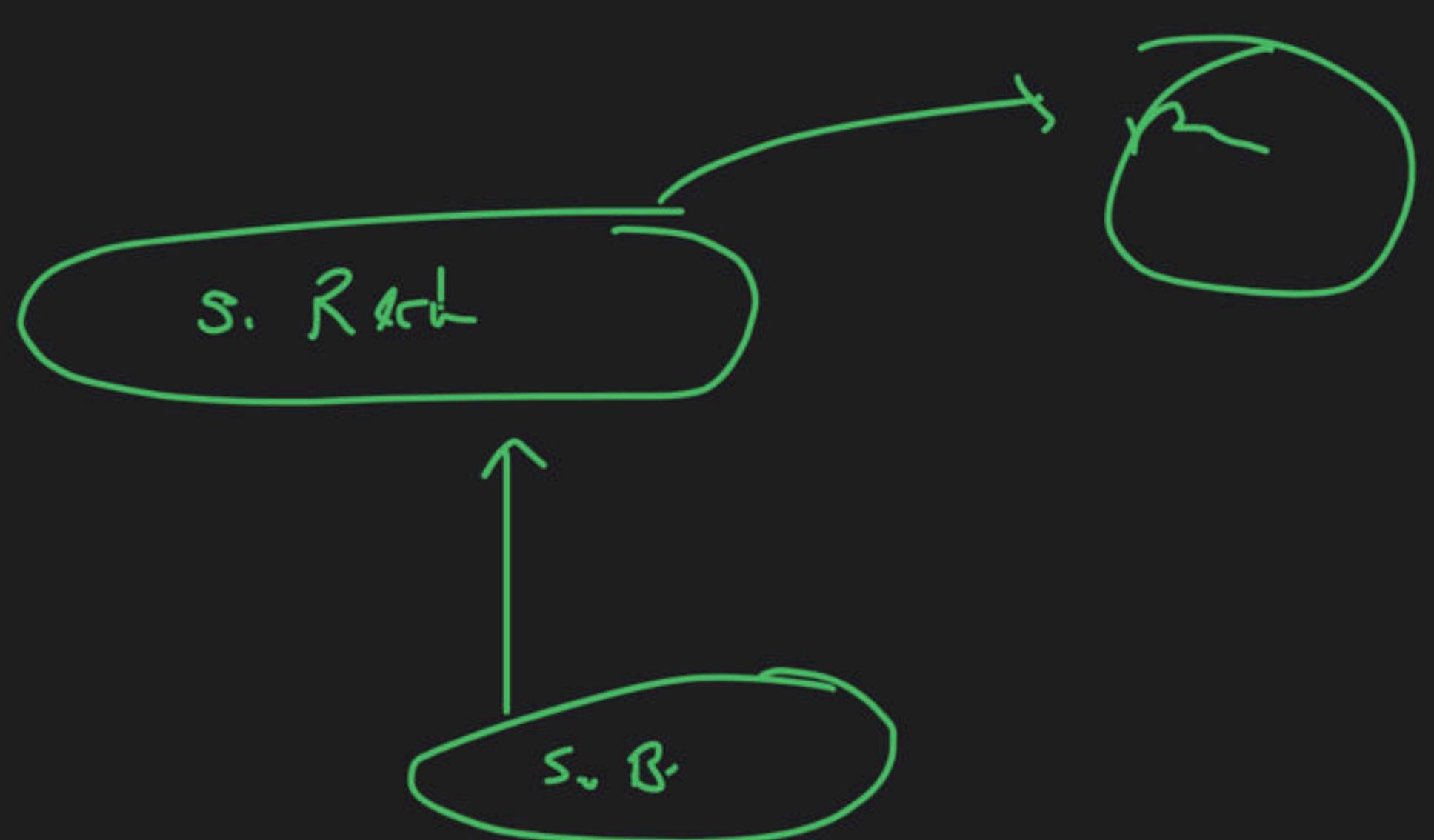
All system call are interrupt but all interrupt are not system call

▲ 1 • Asked by Hempushpa

Sir, suspended blocked se resume k baad waiting state me jata hai then vo vahan se direct Ready state me ja sakta hai?

▲ 3 • Asked by Adarsh

Sir, suspended block me se suspended ready my kaise jata
hai, pls repeat

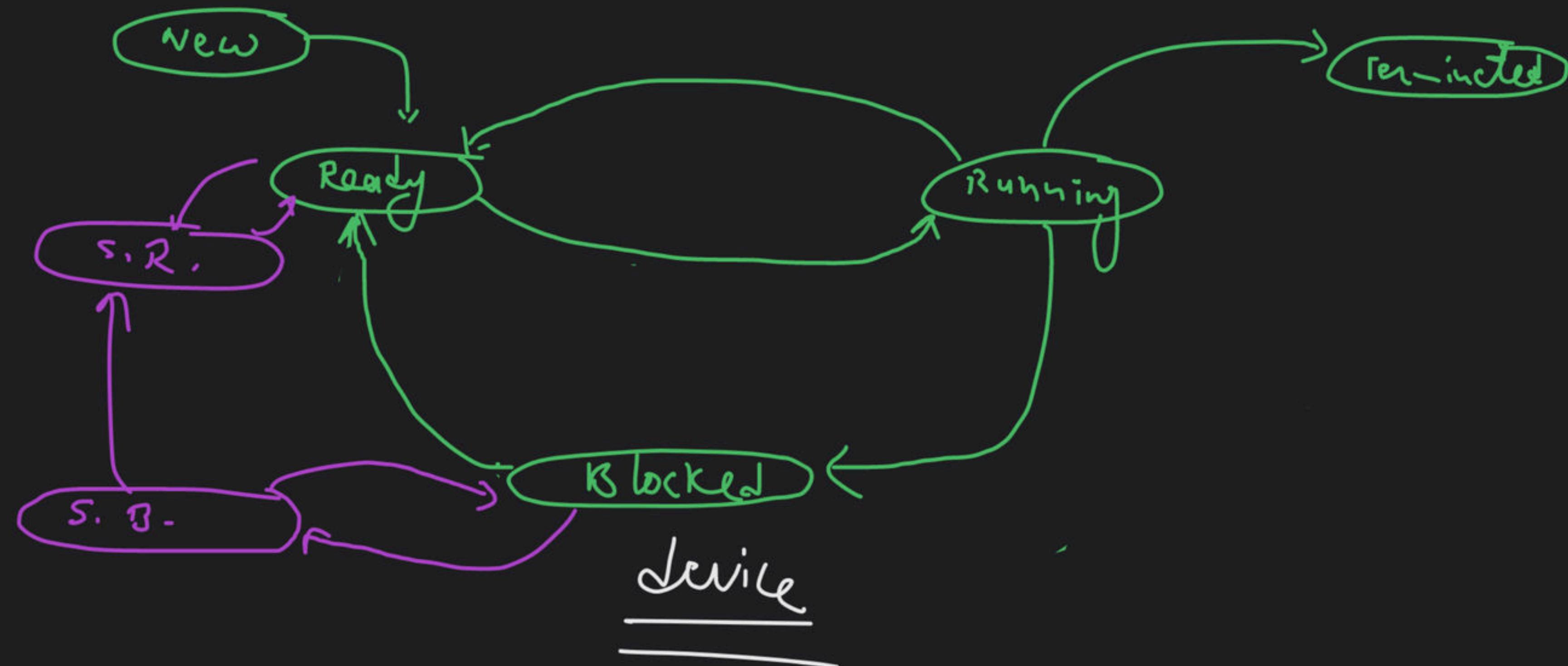


▲ 2 • Asked by Shreyas

Sir an uniprocessor system wont take interrupt because it cant preempt so are all uniprocessor system cant take use input i.e. no user interaction?

▲ 2 • Asked by Jai

Suspended wala diagram ka quick summary plss de dete



▲ 1 • Asked by Harsh

If process is suspended , what happens to it's PCB?

▲ 1 • Asked by Ajay

will some times a process is suspended from ready state
even we have some other processes in blocked state? isn't it
better to suspend only blocked process ?

▲ 1 • Asked by Jethalal

sir , dual mode of operation may konsi operations pe user se
kernel pe jayega ?

▲ 1 • Asked by Ck

sir long term scheduler kis type ki process add krta hai to increase degree of multiprogramming koi example?

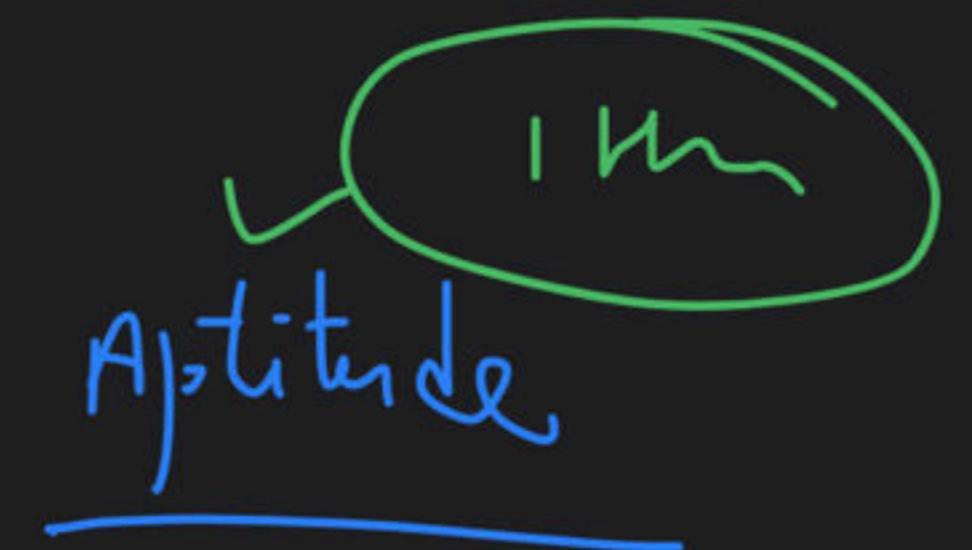
▲ 1 • Asked by Ajit

Real.time.os mai hard aur soft kyakya hai

T ✓ T
deadline

▲ 3 • Asked by Parshva

I have just started the preparation for GATE 2024 and don't know how to prepare for the exam. Currently I'm preparing DBMS and OS should i add more?



▲ 2 • Asked by Parshva

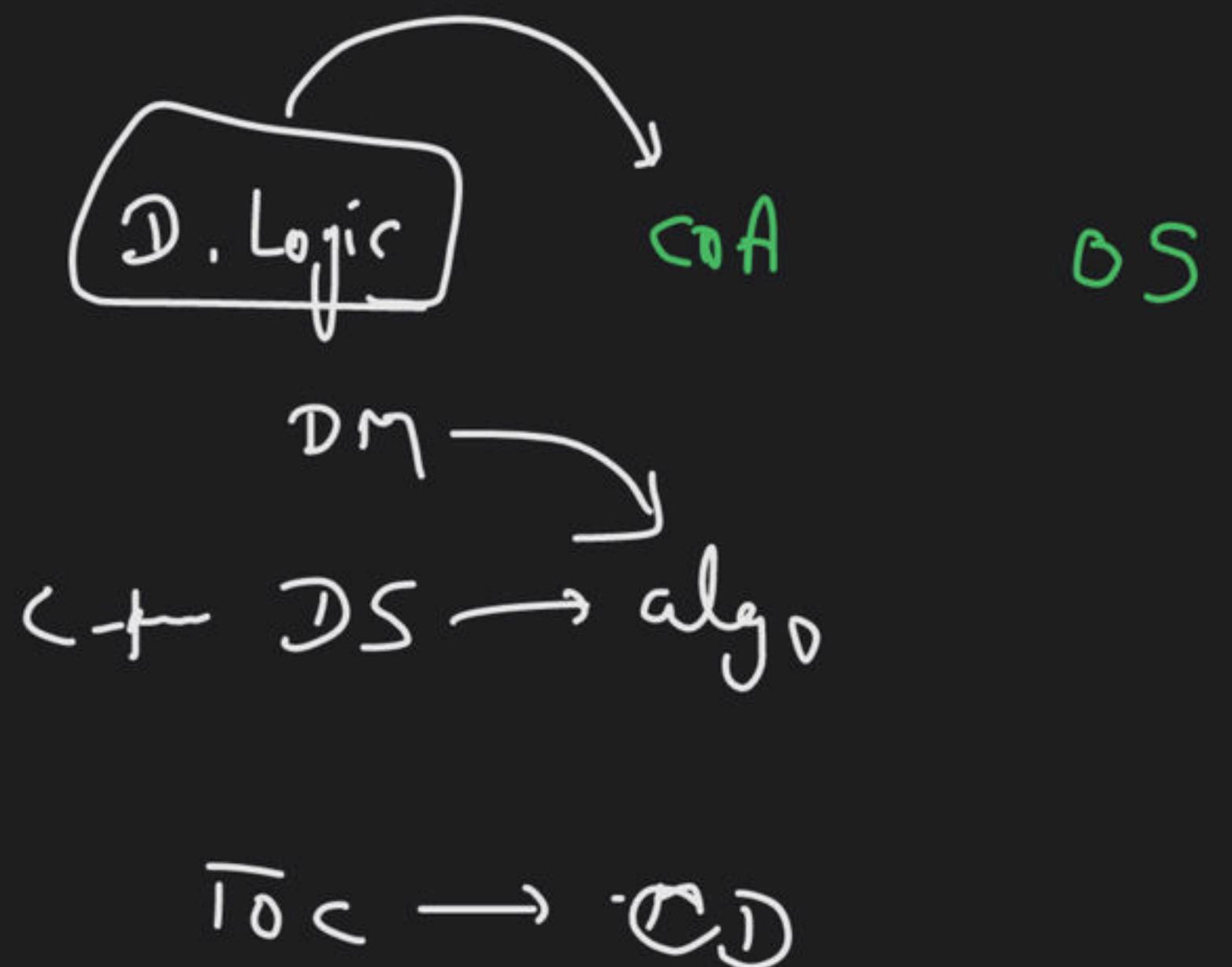
Upto which month should i complete my course?

✓
Aug 
 sep

▲ 2 • Asked by Harsh

sir subjects ko order mai pdhna jrurui hai

agr hai to kin subjects ko or kya order hona chahiye



▲ 2 • Asked by Vaidehi

sir I am in first year now and started preparing 2 weeks back..what should be my line of action for preparing for GATE 2025??..also will unacademy give courses for maths & aptitude

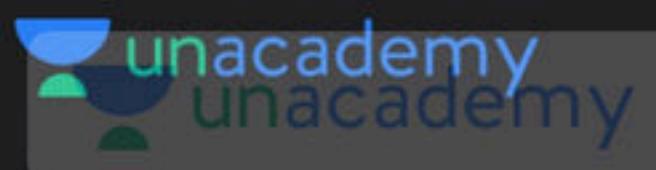


▲ 2 • Asked by Nayan

Sir do we have entrance exams for m.tech ccoming up without gate for 2023

PGECE IIT BHU
IISI Kolkata
BITS Pilani

IIT IIT D



▲ 1 • Asked by Rohith

mein aghar jab pratice karungha questions tabh apitutde
lunghe to chalegha sir



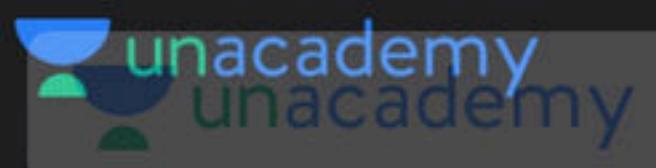
▲ 2 • Asked by Nayan

Slr test series kitne sub complete krne p start krskte hain?



▲ 2 • Asked by Sriyansh

Sir, As I am currently in final year, So I have to prepare for gate only or I can prepare gate with doing job?



▲ 3 • Asked by Harsh

sir revision ke liye kuch techniques batiyee aage pdhta jata
hu or piche ka bhul jata hu

▲ 1 • Asked by Ajay

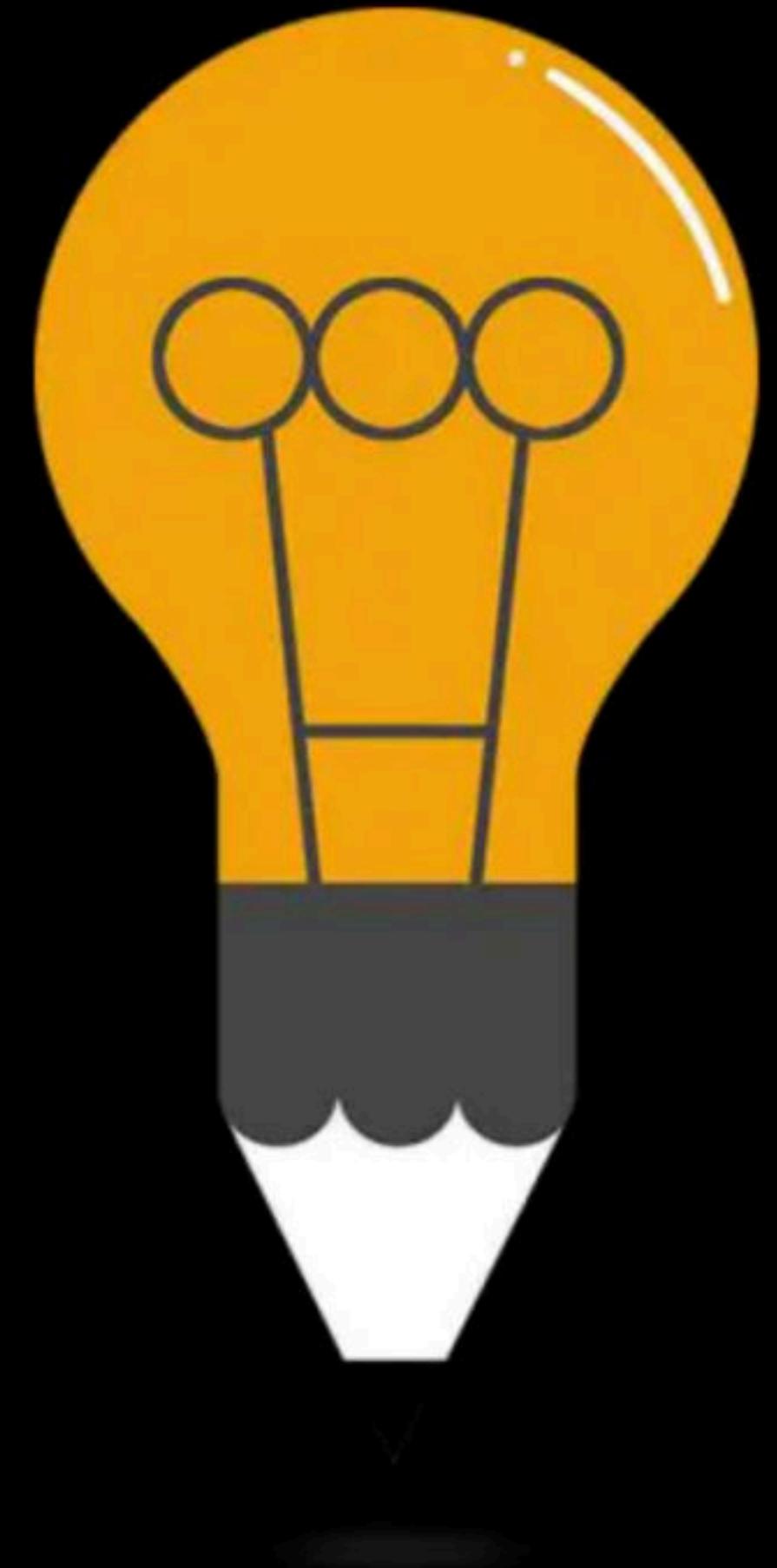
fhir se sorry sir ye gadbad ho gaya first time live doubt i will type it clearly

a[i]={1,2,}; for(i=0;i<n;)b[i++]=a[i]; why it is not working
properly b is {0} initially

for($i = 0; i < n; \{$

$b[i++] = a[i]; \}$

$a[2] = \{1, 2\};$



DPP

By: **Vishvadeep Gothi**

Question 1

In operating system, each process has its own?

- a) Address space and global variables
- b) Open files
- c) Resources to be used
- d) All of the mentioned

Question 2

A process can be terminated due to?

- a) normal exit
- b) fatal error
- c) killed by another process
- d) all of the mentioned

Question 3

Consider a system with n processes and m CPUs. Maximum and Minimum number of processes in each of the following states possible?

1. Ready state

$\max n$
 $\min 0$

2. Running State

m
 0

3. Blocked State

n
 0

$n = 5$ Processes

$m = 2$ CPU

$n > m$

Question 4

A Process Control Block(PCB) does not contain which of the following?

- a) Code
- b) Stack
- c) Bootstrap program
- d) Data

Question 5

The state of a process is defined by _____

- a) the final activity of the process
- b) the activity just executed by the process
- c) the activity to next be executed by the process
- d) the current activity of the process

Question 6

What is the objective of multiprogramming?

- a) Have a process running at all time
- b) Have multiple programs waiting in a queue ready to run
- c) To increase CPU utilization
- d) None of the mentioned

CPU Scheduling

Function:

Make a selection

Goal

Minimize Wait time and Turn-around time

Maximize CPU utilization (Throughput)

Fairness

A process can be scheduled only after it arrives.

CPU Scheduling Types

- ✓ Non-preemptive
- ✓ Preemptive

Scheduling Times

Arrival Time (AT): The time at which a process admitted.

Burst/Service Time (BT): The amount of time a process needs to run on CPU.

Waiting Time (WT): The amount of time a process spends in waiting (in ready state).

Completion Time (CT): The time at which process completes.

Turn-Around Time (TAT): Total amount of time a process spent from arrival to completion.

$$TAT = CT - AT$$

$$WT = TAT - BT$$

Scheduling Times

Response Time (RT): Time from arrival to first response of process.

Scheduling Length (L): $\max(CT_i) - \min(AT_j)$

Throughput:



$$= \frac{n}{L}$$

n = no. of processes executed
in L .

no of processes executed per unit of time

Scheduling Algorithms

- ✓ 1. FCFS
- 2. SJF
- 3. SRTF
- 4. HRRN
- 5. Priority Based
- 6. Round Robin
- 7. Multilevel Queue Scheduling
- 8. Multilevel Feedback Queue Scheduling

⇒ No any I/O requirement of process.

FCFS (First Come First Serve)

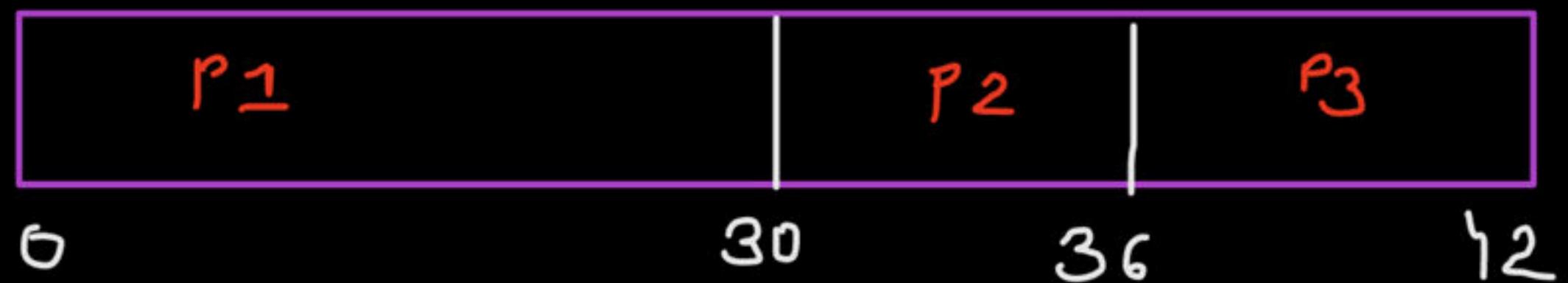
Criteria: smaller AT first | Tie breaker \Rightarrow smaller process-id first

Mode: Non-preemptive

FCFS (First Come First Serve)

Process	Arrival Time	Burst Time
P1	0	30 ✓
P2	0	6 ✓
P3	0	6 ✓

Gantt chart:- It always starts from zero



Ready Queue:-

at time 0

at time 30

P1, P2, P3

P2, P3

FCFS (First Come First Serve)

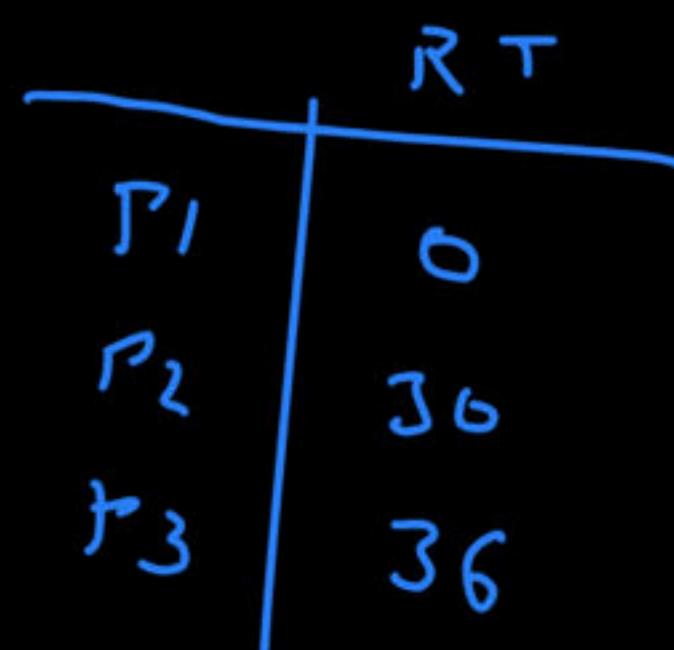
$$C_i - A_i$$

$$TAT - BT$$

Process	Arrival Time	Burst Time	Completion Time	Turnaround Time	Waiting Time
P1	0	30	30	30	0
P2	0	6	36	36	30
P3	0	6	42	42	36

$$\text{avg } TAT = \frac{30 + 36 + 42}{3} = 36$$

$$\text{avg } WT = \frac{0 + 30 + 36}{3} = 22$$

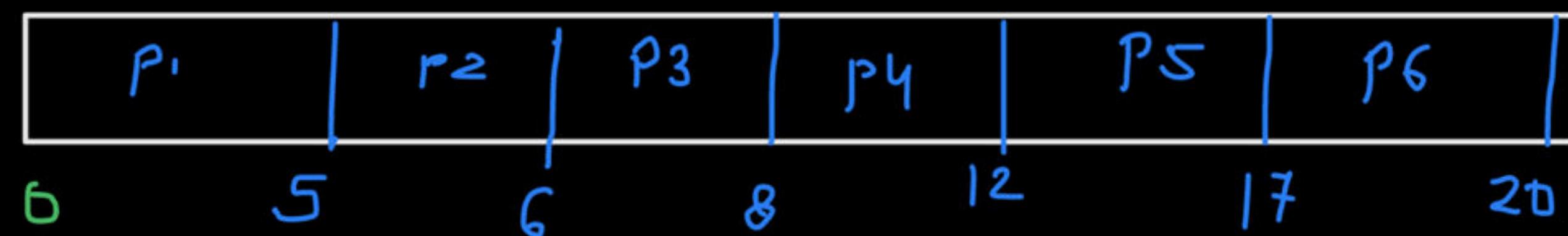


FCFS (First Come First Serve)

Process	Arrival Time	Burst Time	C_F	TAT	WT
P1	0	5	5	5	0
P2	1	1	6	5	4
P3	2	2	8	6	4
P4	3	4	12	9	5
P5	4	5	17	13	8
P6	5	3	20	15	12

$\text{avg } \frac{TAT}{T} = \frac{S_3}{6}$
 $\text{avg } \frac{WT}{T} = \frac{33}{6}$

Gantt chart:-



FCFS (First Come First Serve)

Process	Arrival Time	Burst Time
P1	5	4
P2	8	2
P3	6	3
P4	3	1
P5	2	2
P6	7	7

Convoy Effect

FCFS (First Come First Serve)

Advantages:

1. Easy to implement
2. No complex logic
3. No starvation

Disadvantages:

1. No option of Preemption
2. Convoy effect makes the system slow

Happy Learning.!

