

**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*

**VDEEP10**

Follow Me on  unacademy

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

<http://tiny.cc/VDEEP10>

# Upcoming Special Class

ENGLISH PROGRAMMING & DATA STRUCTURE

## Learn How Recursion Works? ✓

In this session Vishvadeep Gothi will discuss the in depth working of function calling, its execution and recursion. The session will decode the details of Recursion for students.



**8<sup>th</sup> Sep**  
**8:15PM** ✓

Use Code:  
**VDEEP10** ✓



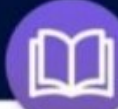


# SPECIAL CLASS FEATURES



## INTERACTIVE LIVE CLASSES

Attend Live classes,  
Participate in  
Live chat and Get  
your doubts cleared



## POLLS FOR THE LEARNERS

Respond to  
Polls for a Better  
Understanding  
of a Topic



## NEVER MISS A CLASS

Get notified for  
Upcoming  
Classes and  
Recommendations  
Curated Just for you



## LECTURE NOTES

Download Lecture  
Notes & Get Access  
to Recorded Session  
of Live Classes



## ANYTIME ANYWHERE

Watch our Classes,  
Live or Recorded,  
Anytime from  
Any of Your Devices.



### Study Planner

Customized study plan and track your performance.



### Study Booster Sessions

Receive Essential Guidelines via Regular workshops



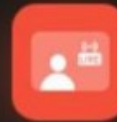
### Personal Coach

One on one guidance on preparation strategy.



### Personalised Test Analysis

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



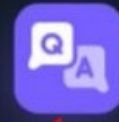
Live Classes



Crash Courses



Weekly Tests



Doubt Solving



RIB



English & Hindi



### Preparatory Study Material

Specialised notes & practice sets.

ICONIC



PLUS

↓ pp



PLUS

**12**  
MONTHS

₹2,434/MO  
+ 10% OFF

**₹ 29,205**

NO COST EMI

PLUS

**18**  
MONTHS

₹2,065/MO  
+ 10% OFF

**₹ 37,170**

NO COST EMI

PLUS

**24**  
MONTHS

₹1,770/MO  
+ 10% OFF

**₹ 42,480**

NO COST EMI

USE CODE

**VDEEP10**





ICONIC

12

MONTHS

₹3,769/MO  
+ 10% OFF

**₹ 45,225**

NO COST EMI

ICONIC

18

MONTHS

₹3,225/MO  
+ 10% OFF

**₹ 58,050**

NO COST EMI

ICONIC

24

MONTHS

₹2,775/MO  
+ 10% OFF

**₹ 66,600**

NO COST EMI

USE CODE

**VDEEP10**



# Unacademy Ask a Doubt

Ask unlimited doubts ✓

Ask doubts at  
any time

Get high-quality video  
solutions in English  
& Hindi

Receive exact matches for  
questions

Obtain instant and accurate  
solutions to lakhs of  
questions

Get assistance with  
homework





# LIVE Mentoring Product

1:1 Live Mentoring with  
the all new **Iconic Subscription**

- ☒ Experience the personalized learning like never before with our Expert mentors
- ☒ Discuss your doubts, clarify your concepts and enhance your exam strategy with just a click

Get 10% off | Use Code

**VDEEP10**





# ACCELERATE

FOR GATE 2022

Bilingual

CS & IT

New Batch



SANCHIT JAIN



RAVINDRABABU RAVULA



SUBBA RAO



VENKATA RAO M



VISHVADEEP GOTHİ



SWETA KUMARI



UMAMAHESWARA RAO

WE START WITH

Programming  
& Data Structures

Sanchit Jain

6:00 PM

START DATE

25 AUG 21

GET 10% OFF

USE CODE  
**VDEEP10**



# Are You Ready?

Let's Begin the Unlimited Learning



# CPU (Central Processing Unit)

It is the brain of a computer, containing all the circuitry needed to process input, store data, and output results.



# CPU

X CPU Cycle ✓

X CPI ✓

X Execution Time ✓

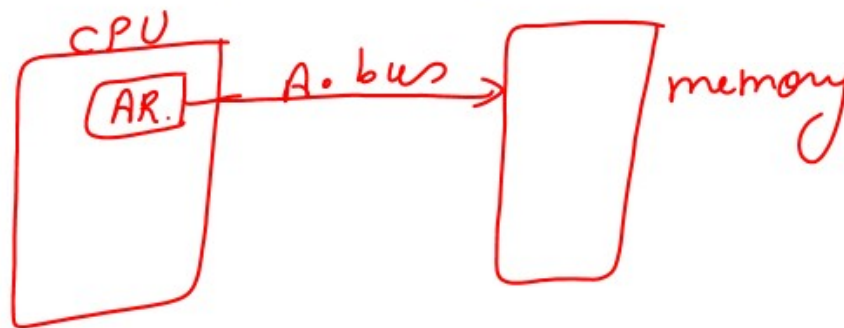
X MIPS ✓



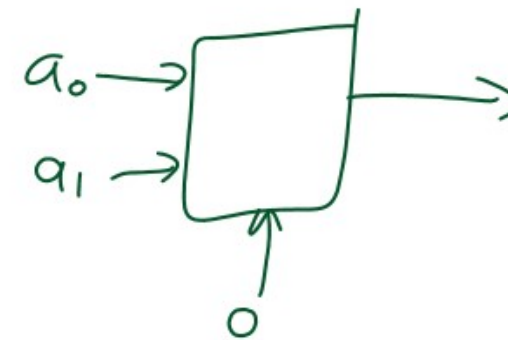
# Datapath

Collection of functional units such as arithmetic logic units or ~~multipliers~~ *multiplexers*.

Perform data processing operations

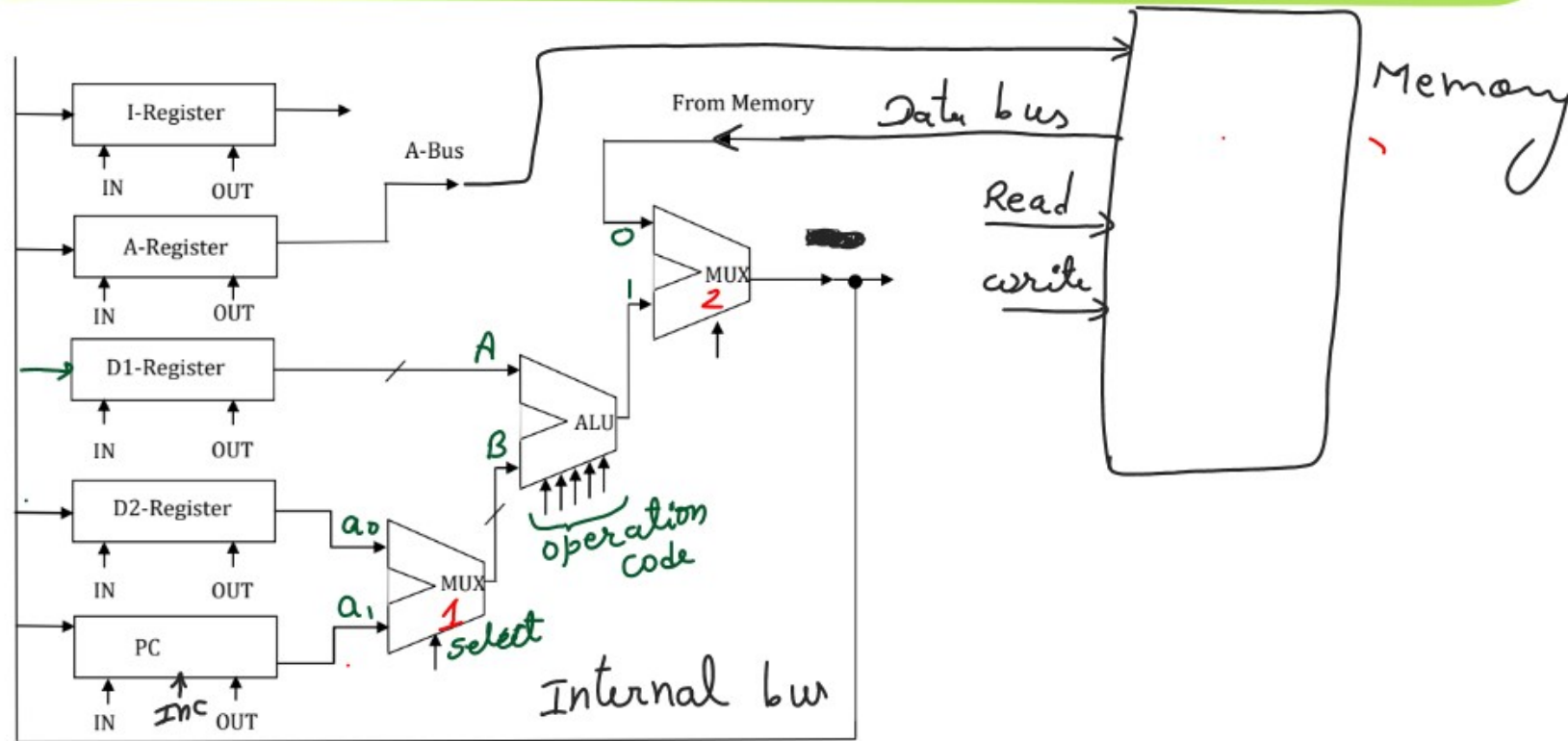


$R2 \leftarrow R1$





# Datapath



# Datapath

Instruction Fetch:-

$IR \leftarrow$  Instruction from memory

$IR \leftarrow M[PC] \Rightarrow$

1.  $AR \leftarrow PC$
2.  $IR \leftarrow M[AR],$   
 $PC \leftarrow PC + 1$

because both do not  
require any common  
component.



# Datapath

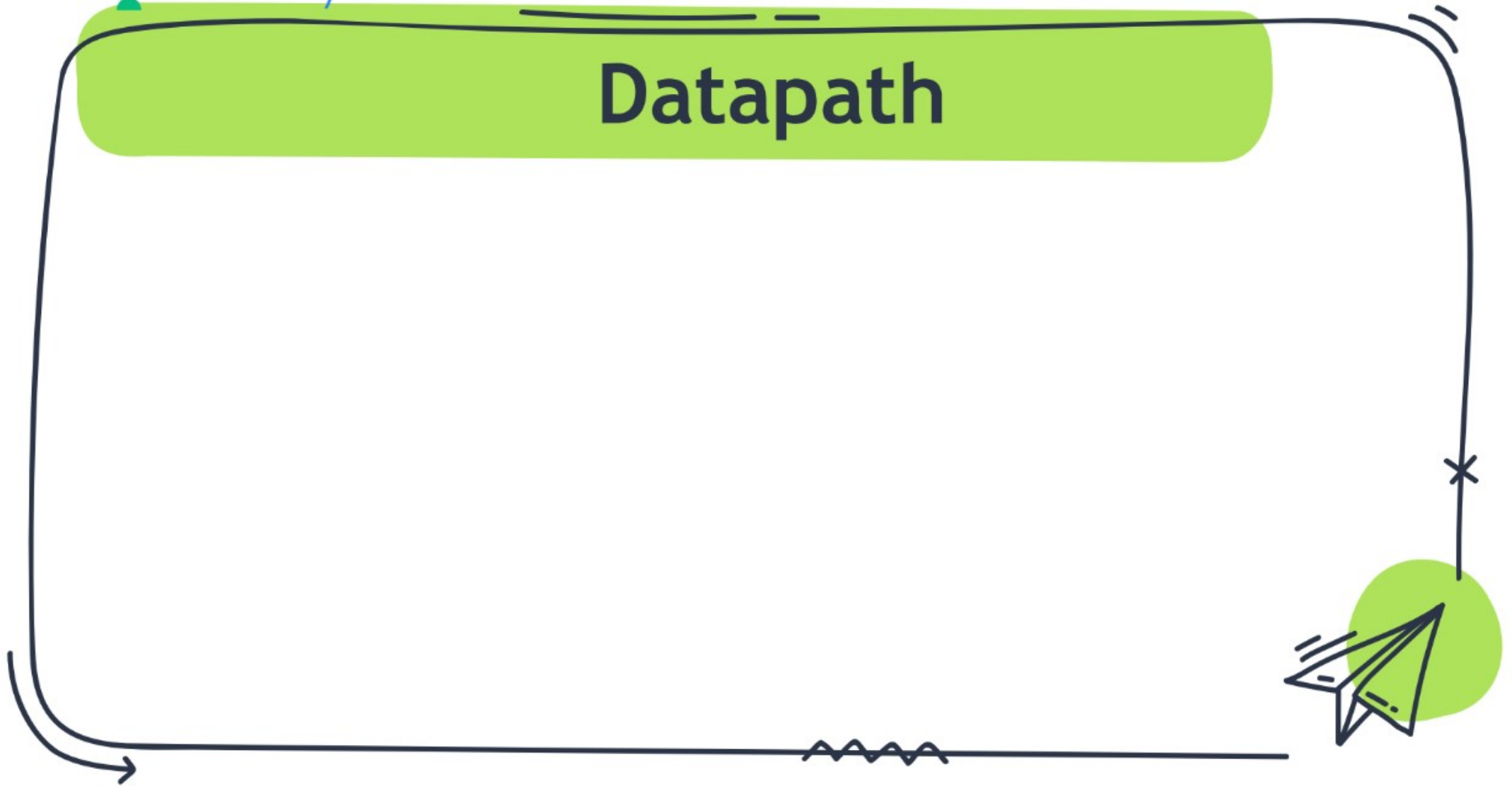
For eg., to transfer the contents of PC to AR, in that clock cycle

- ① MUX 1's select must be set to 1
- ② ALU's operational code must correspond to an operation in which the B input is as it is transferred to the output.  
i.e.  $A \text{ op } B = B$
- ③ MUX 2's select must be set to 1
- ④ AR's IN must be set to 1.

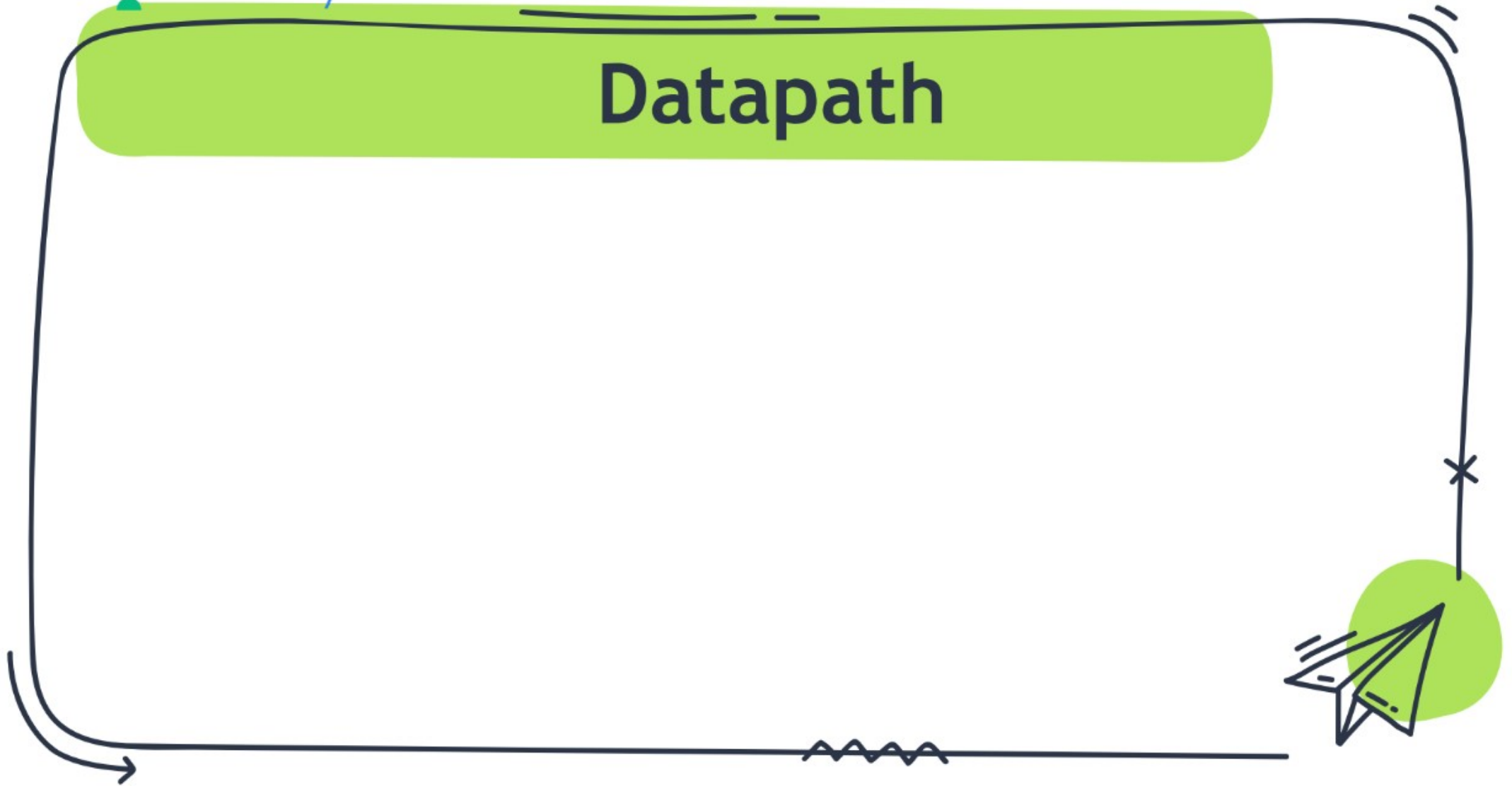




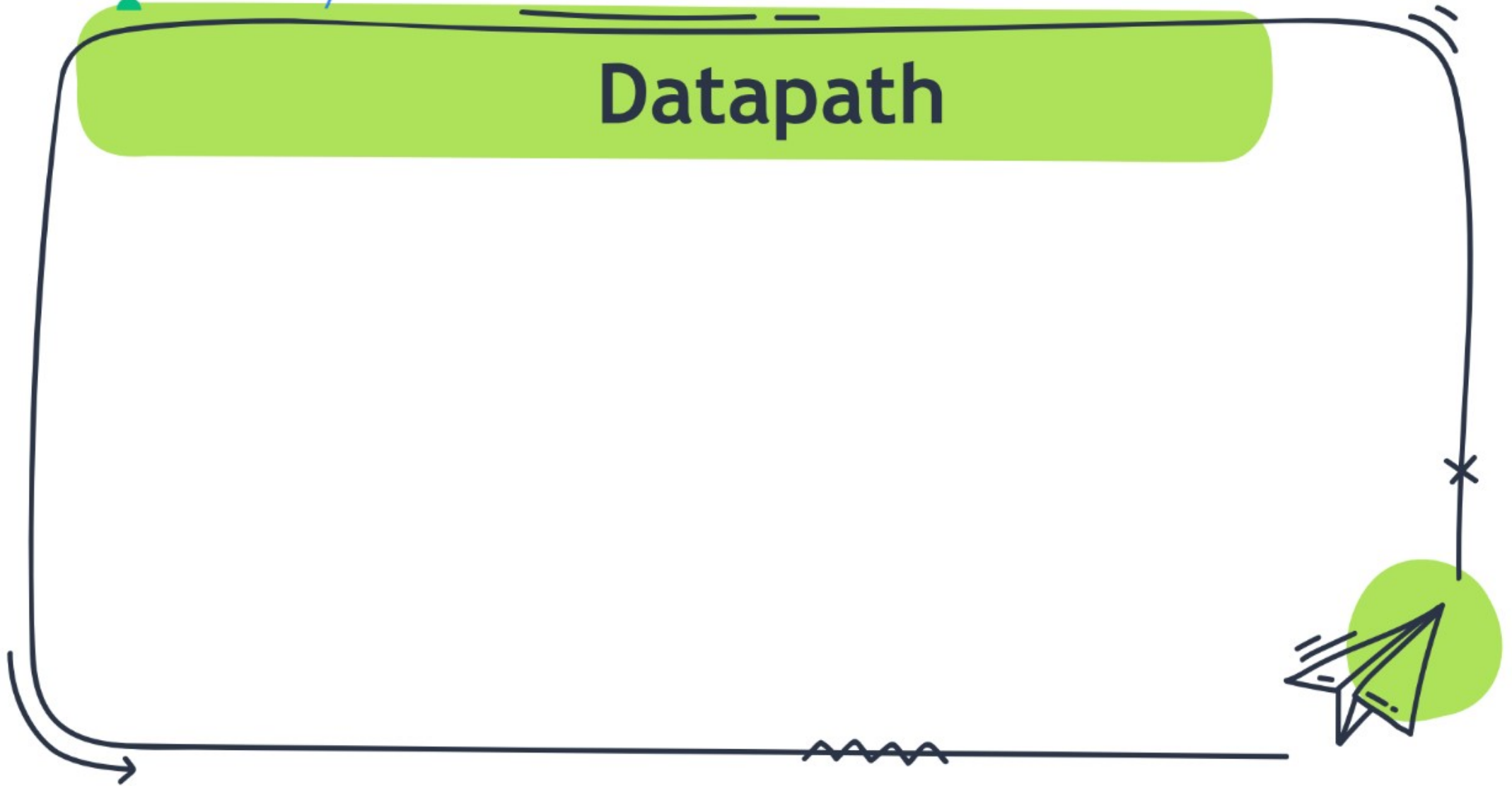
# Datapath



# Datapath



# Datapath





# Control Unit

It generates control signals and sends to various components of computer. All components operate according to these control signals.

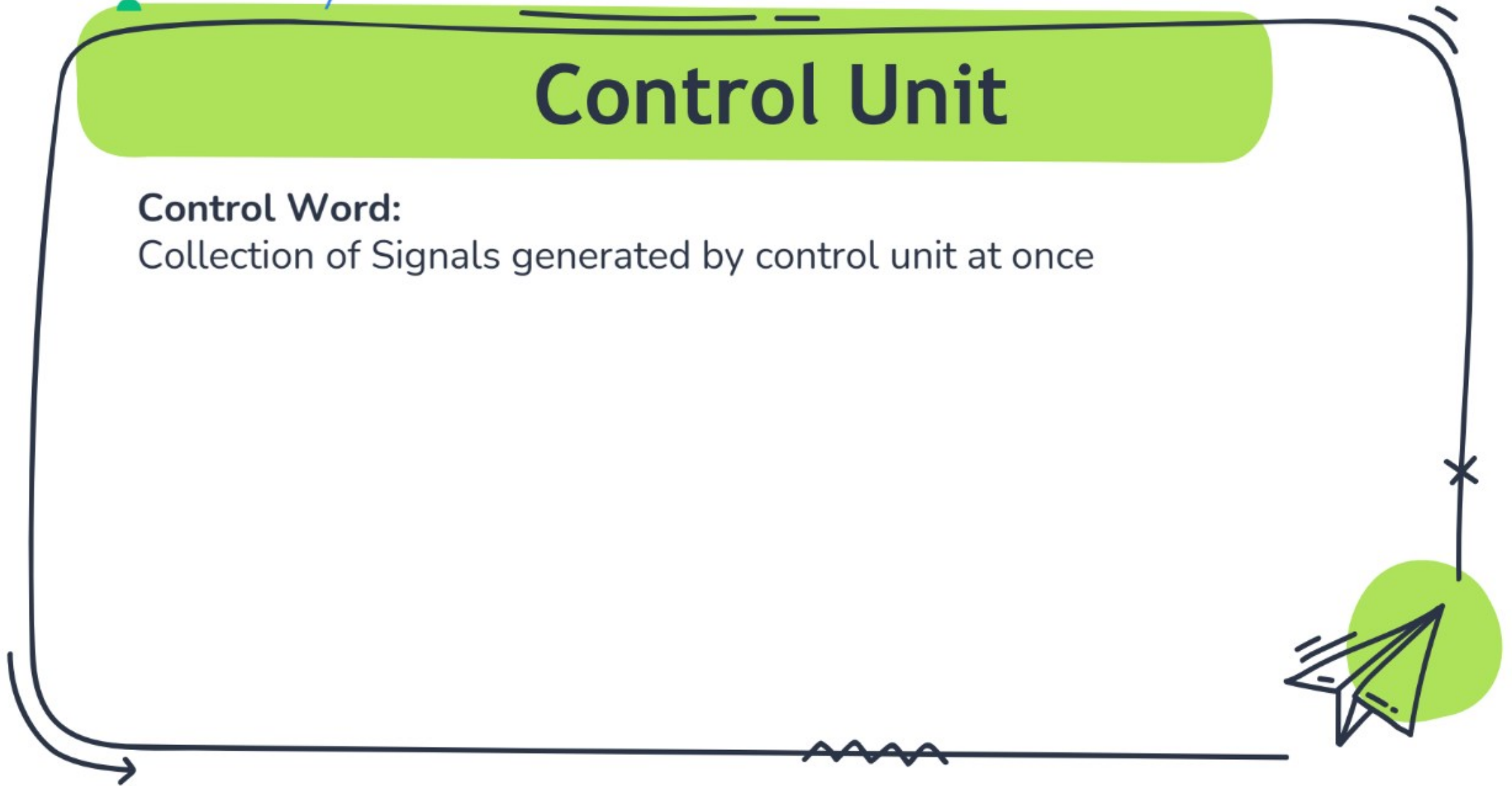
Control variable:- name of a control signal.



# Control Unit

## Control Word:

Collection of Signals generated by control unit at once



# Control Unit

IR		AR		D1		D2		PC			Mux <sub>1</sub>	Mux <sub>2</sub>	ALU	Memory	
In	out	In	out	In	out	In	out	In	out	Inc	sel <sub>1</sub>	sel <sub>2</sub>	operat <sup>n</sup> code 1111	Read	write

1.  $AR \leftarrow PC$

0 0 1 0 0 0 0 0 0 1 0 1 1 10101 0 0

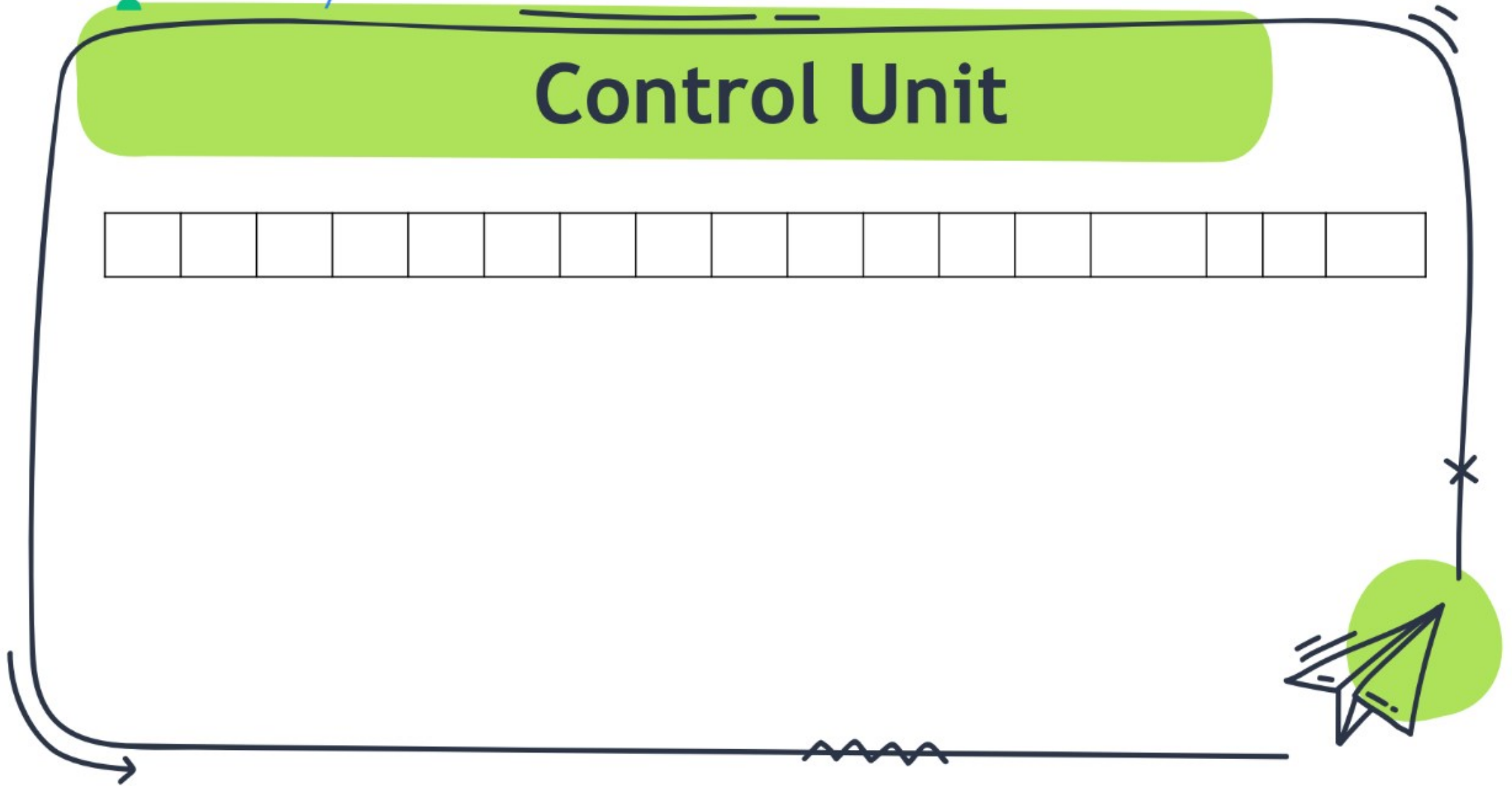
2.  $IR \leftarrow M[AR], PC \leftarrow PC + 1$

1 0 0 1 0 0 0 0 0 0 1 x 0 xxxxx 1 0

control word



# Control Unit





# Next Class

Datapath

Control Unit

Types of  
Control Unit





PLUS

**12**  
MONTHS

₹2,434/MO  
+ 10% OFF

**₹ 29,205**

NO COST EMI

PLUS

**18**  
MONTHS

₹2,065/MO  
+ 10% OFF

**₹ 37,170**

NO COST EMI

PLUS

**24**  
MONTHS

₹1,770/MO  
+ 10% OFF

**₹ 42,480**

NO COST EMI

USE CODE

**VDEEP10**



ICONIC

12

MONTHS

₹3,769/MO  
+ 10% OFF

**₹ 45,225**

NO COST EMI

ICONIC

18

MONTHS

₹3,225/MO  
+ 10% OFF

**₹ 58,050**

NO COST EMI

ICONIC

24

MONTHS

₹2,775/MO  
+ 10% OFF

**₹ 66,600**

NO COST EMI

USE CODE

**VDEEP10**



# Unacademy Ask a Doubt

Ask unlimited doubts

Ask doubts at  
any time

Get high-quality video  
solutions in English  
& Hindi

Receive exact matches for  
questions

Obtain instant and accurate  
solutions to lakhs of  
questions

Get assistance with  
homework





# LIVE Mentoring Product

1:1 Live Mentoring with  
the all new **Iconic Subscription**

- ☒ Experience the personalized learning like never before with our Expert mentors
- ☒ Discuss your doubts, clarify your concepts and enhance your exam strategy with just a click

Get 10% off | Use Code

**VDEEP10**





# ACCELERATE

FOR GATE 2022

Use Code  
**VDEEP10**

Bilingual

CS & IT

New Batch



SANCHIT JAIN



RAVINDRABABU RAVULA



SUBBA RAO



VENKATA RAO M

WE START WITH

Programming  
& Data Structures

**Sanchit Jain**

6:00 PM

START DATE

**25 AUG 21**



VISHVADEEP GOTHİ



SWETA KUMARI



UMAMAHESWARA RAO

GET 10% OFF

USE CODE  
**VDEEP10**



UNACADEMY  
COMBAT



ME



CE



EE



ECE



CS & IT

unacademy

India's Largest **Weekly Competition** for GATE



**Take it Live** to compete with the best



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**

SEPTEMBER 5, 12 | Starts at 11 AM





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.



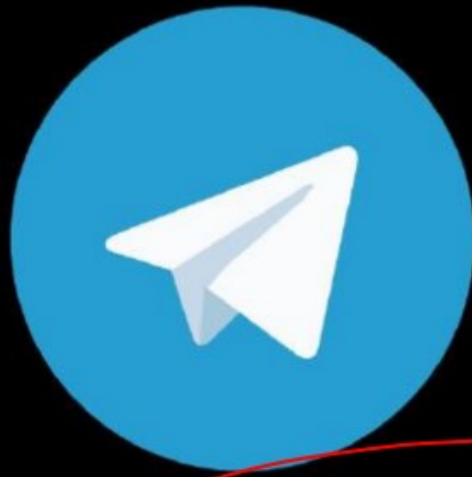
Unacademy  
Subscription

**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



<https://t.me/UnacademyGATECS>





# BUGS BOUNTY



Opportunity for all Learners to report any inappropriate content in the video

Be the first one to report a particular issue to claim your prize

Report any inappropriate content using the form in the description



# 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*



