

COMPUTER SCIENCE & IT



OPERATING SYSTEM

Process Management

Lecture-02



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Today's Goal

Program v/s Process
Process as ADT
Process State Transition
Diagram

Process Concepts:

Program vs Process

Def'n
of
Process

→ * Program in execution

→ Instance of a program;

→ unit of cpu utilization

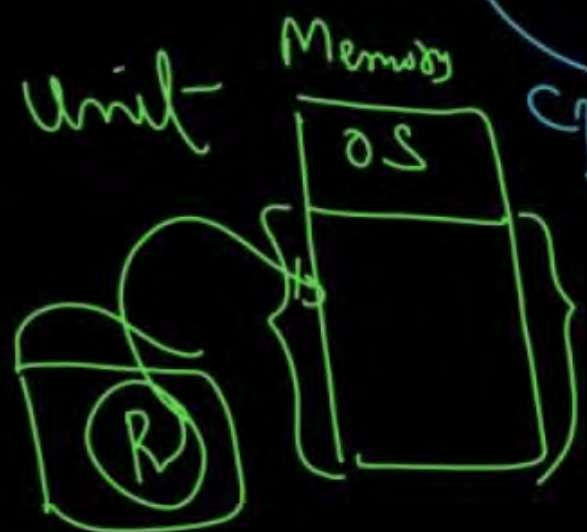
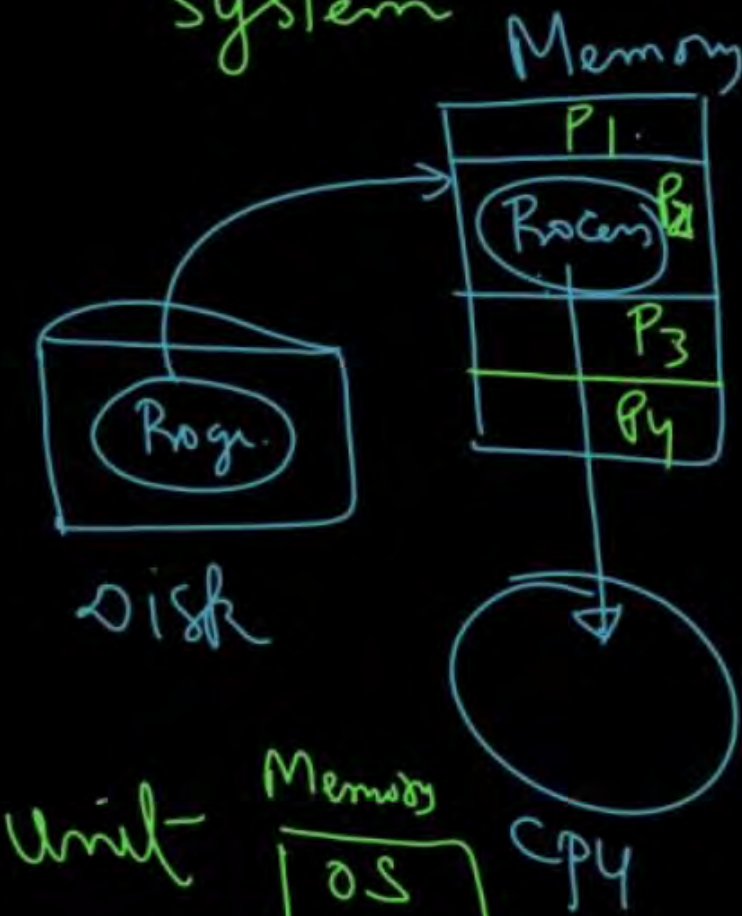
→ Active entity

→ Schedulable / Dispatchable unit

→ Locus of control of OS

→ Animated Spirit

utilizing Resources of a Computer System



Program (.exe)	Process → created from program
<ol style="list-style-type: none"> 1) on disk 2) without resources 3) Passive 	<ol style="list-style-type: none"> 1) In Memory 2) utilizing resources 3) Active (Alive)

user → program(.exe)

Developer's view of Process

STACK

Process is an A.D.T

Developer/Programmer

Abstract data type

< Defn ; Repr / Impl ; operations ;

Attributes

Data Structure

Process Structure in Memory

Creation [Resource Allocation]

Schedule/Dispatch

Running (execution)

Blocking/Wait (IO) in memory

on disk

Suspend

Resume

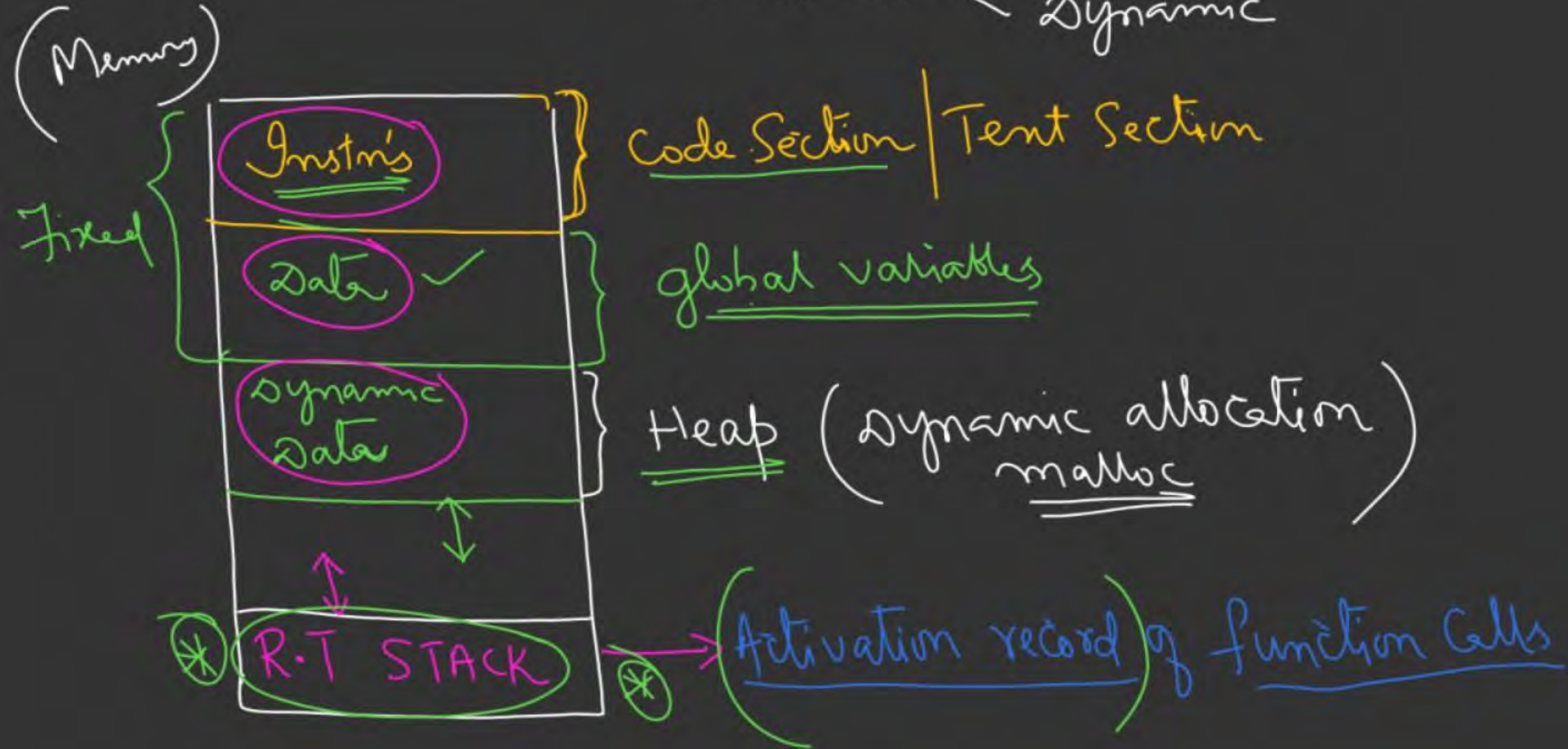
Terminate

Abstract view of Process (in Memory) / Process Structure



Program $\begin{cases} \text{Instn's} \\ \text{Data} \end{cases} \begin{cases} \text{Static} \\ \text{Dynamic} \end{cases}$

R.T. Run-time



Process Attributes:

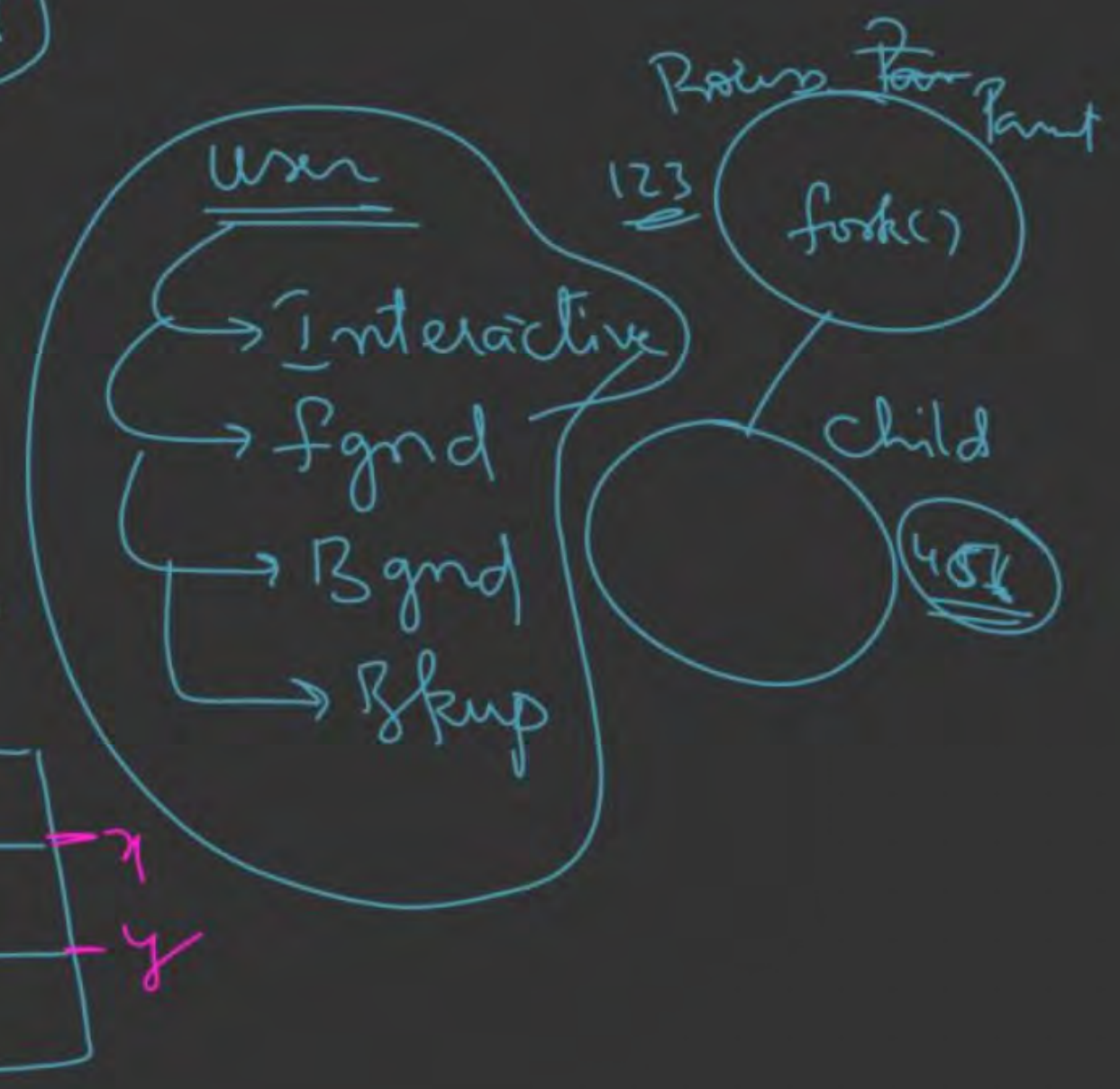
PC: Address of next Inst'n in Code Section

1) Identification: Process-id (Pid); Parent Pid (PPid)
group-id (gid)

2) cpu-related: Type; PC;
Register-set;
Priority; Burst Times
(State)

3) Memory related: Size, Mem. limits

4) File related: list of open files



→ Attributes of a Process are Stored in a table (d.s) known as P.C.B (1m)

→ Each Process has its own PCB;

→ PCB is created @ the time of Process Creation & destroyed @ Process termination

→ Volume of Information kept in PCB is known as Content/Environment of Process (Process Content)

Pid, gid	
Pc	Reg-set
Prio	State
Type	Size
limits	Files
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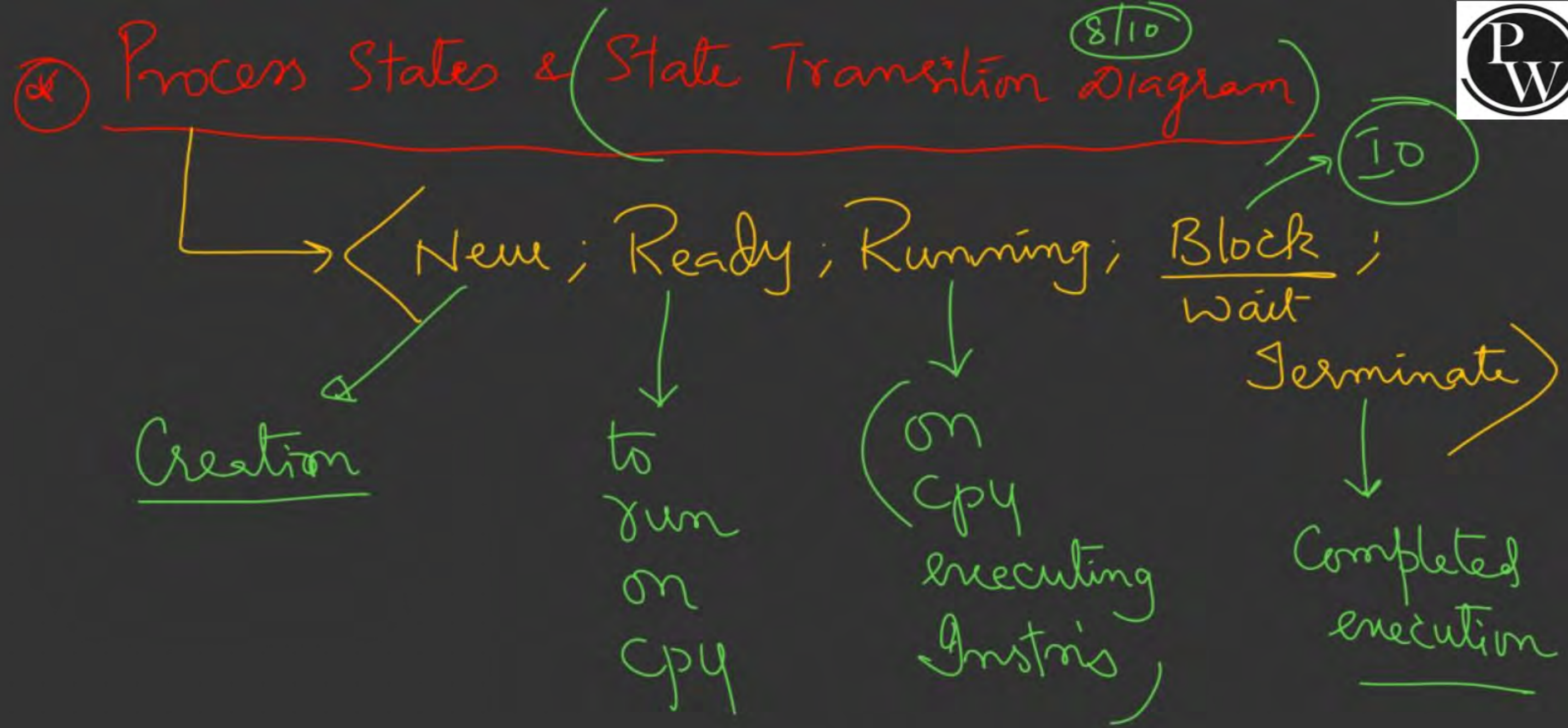
PCB

(Process Control Block)

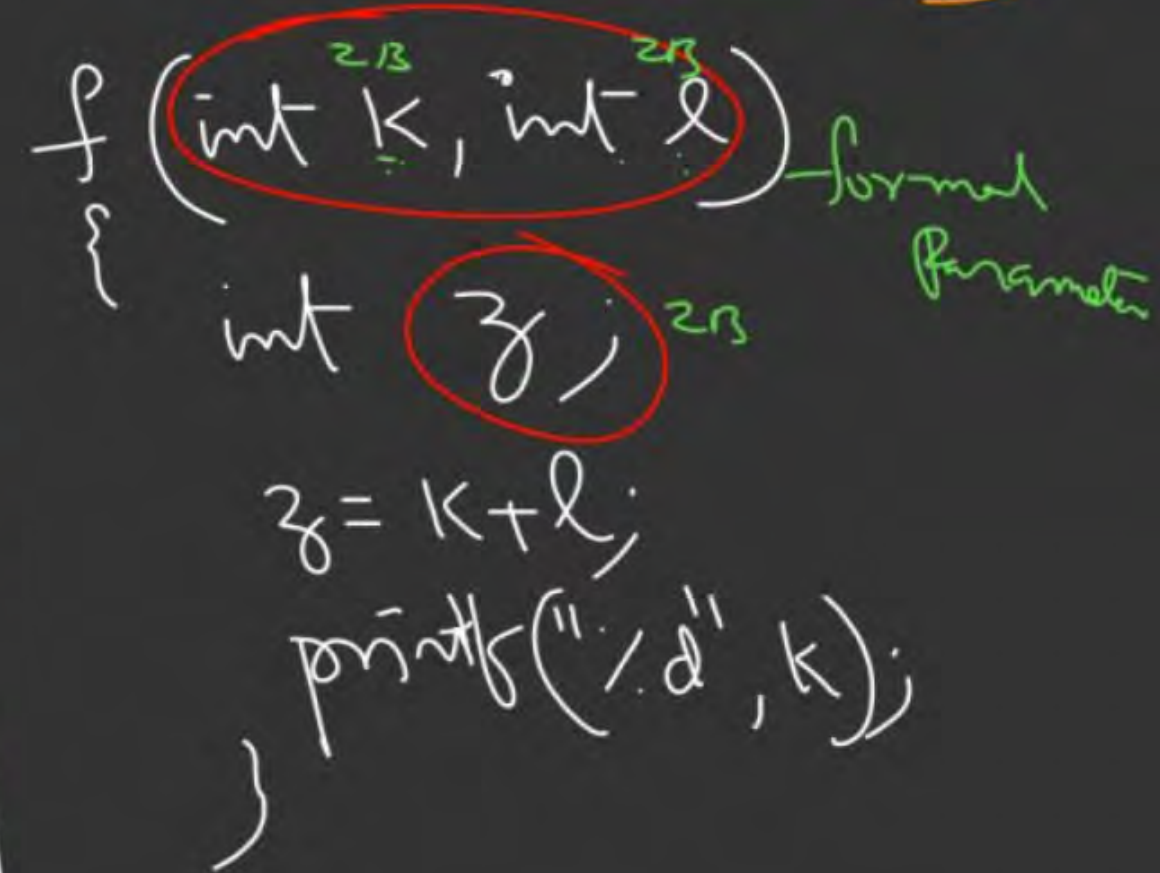
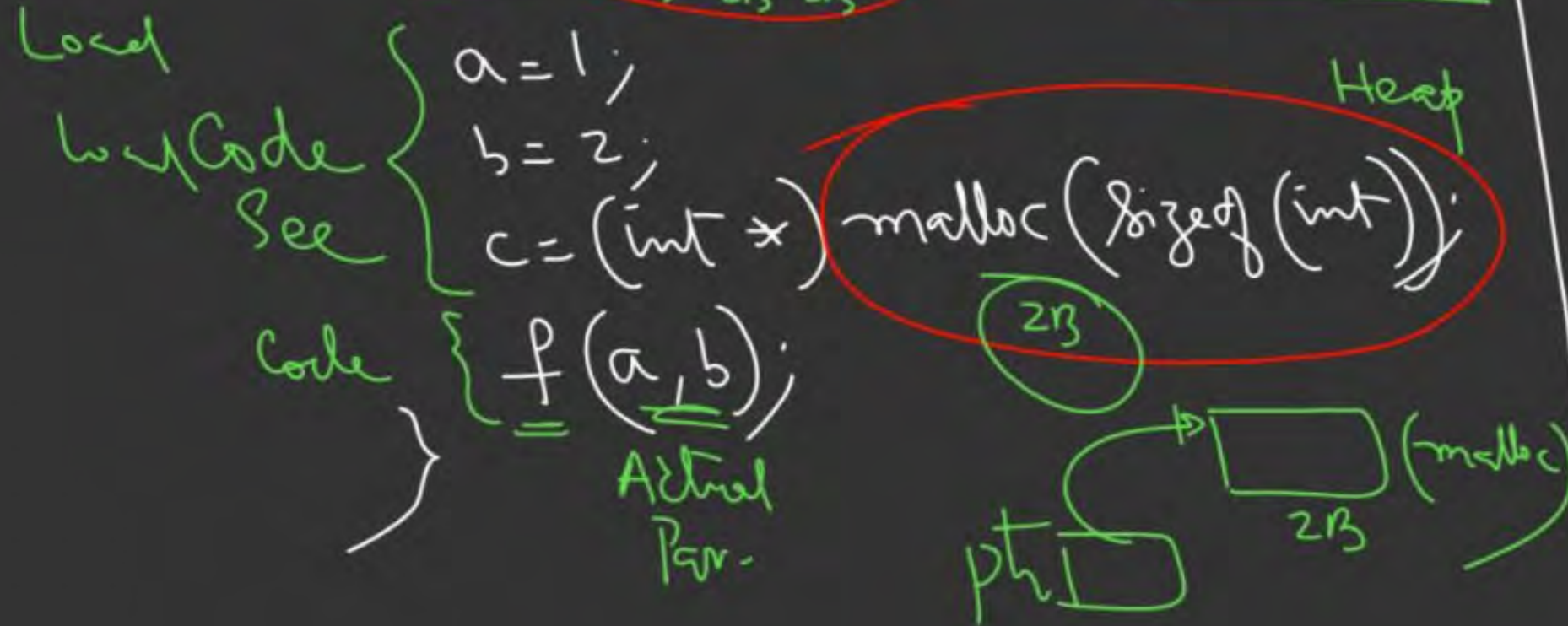
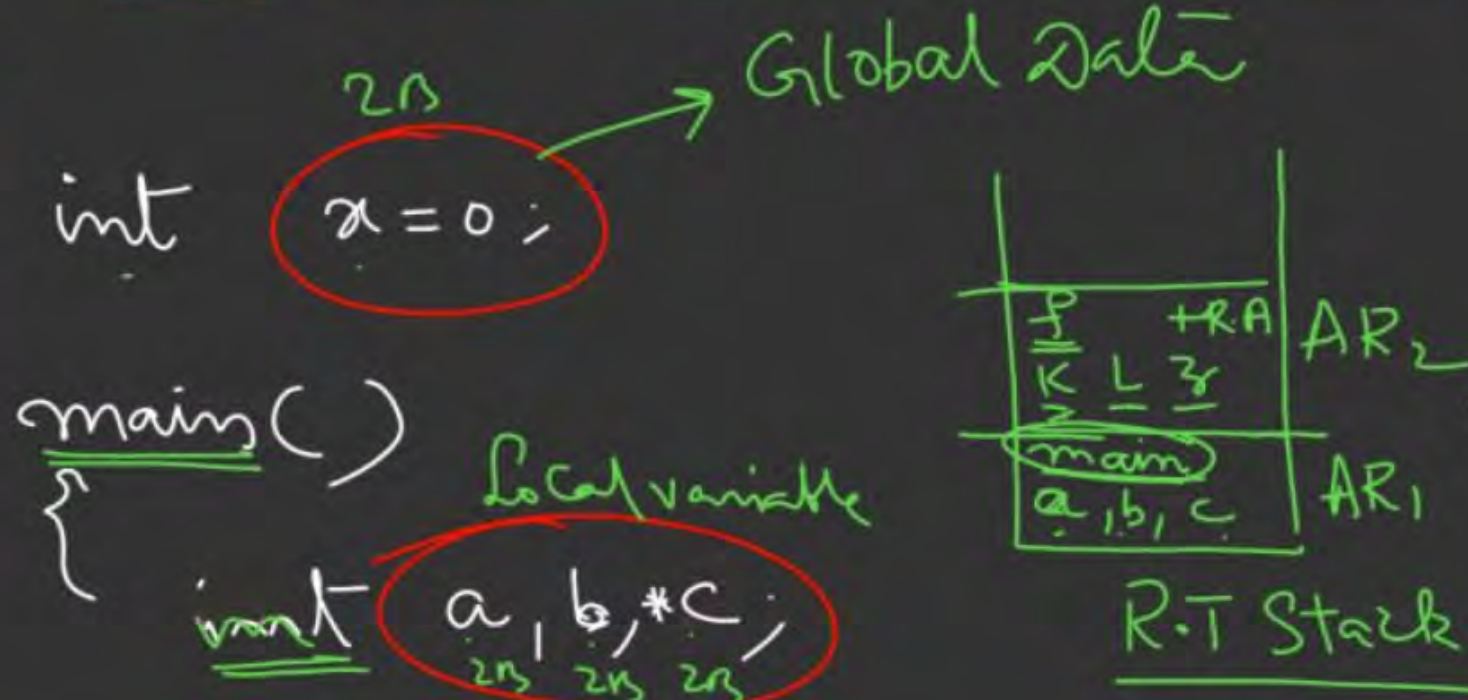
Id-Card

Adhar Card

Data Structure (R.D)



Activation Record contains: (Mem. for formal Parameters, Local variables, + Return Address)



In the top-left corner, there are three interlocking gears of different sizes, rendered in a light blue color.

**THANK
YOU!**

