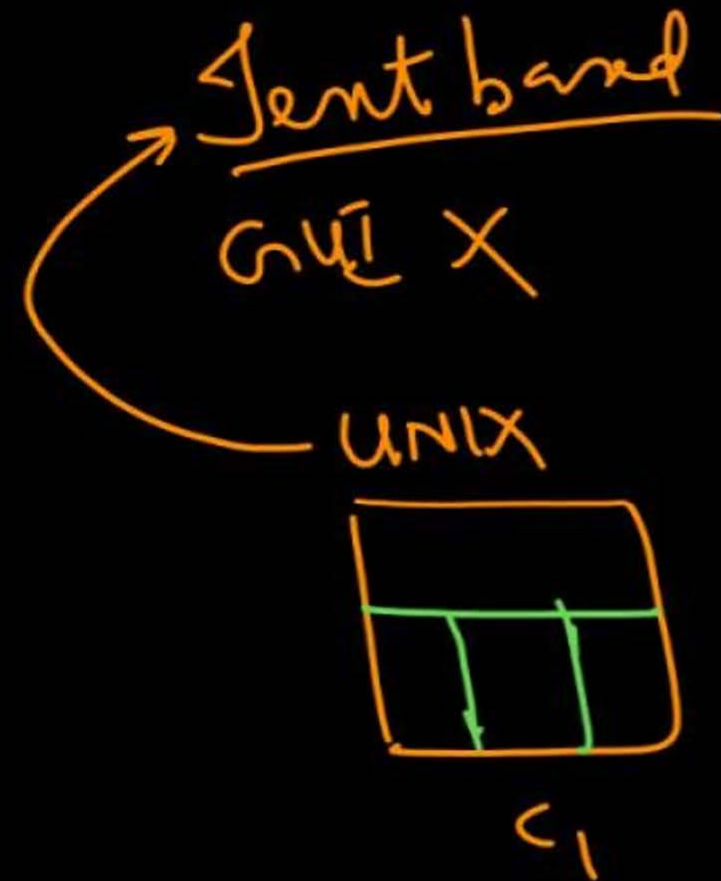


Functions & Goals of OS



\xrightarrow{A} Convenience^P
 \xrightarrow{B} efficiency^S

\xrightarrow{C} Robustness

\xrightarrow{D} Reliability

\xrightarrow{E} Scalability (Ability to evolve)

\xrightarrow{F} Portability

Primary
Goal
of OS

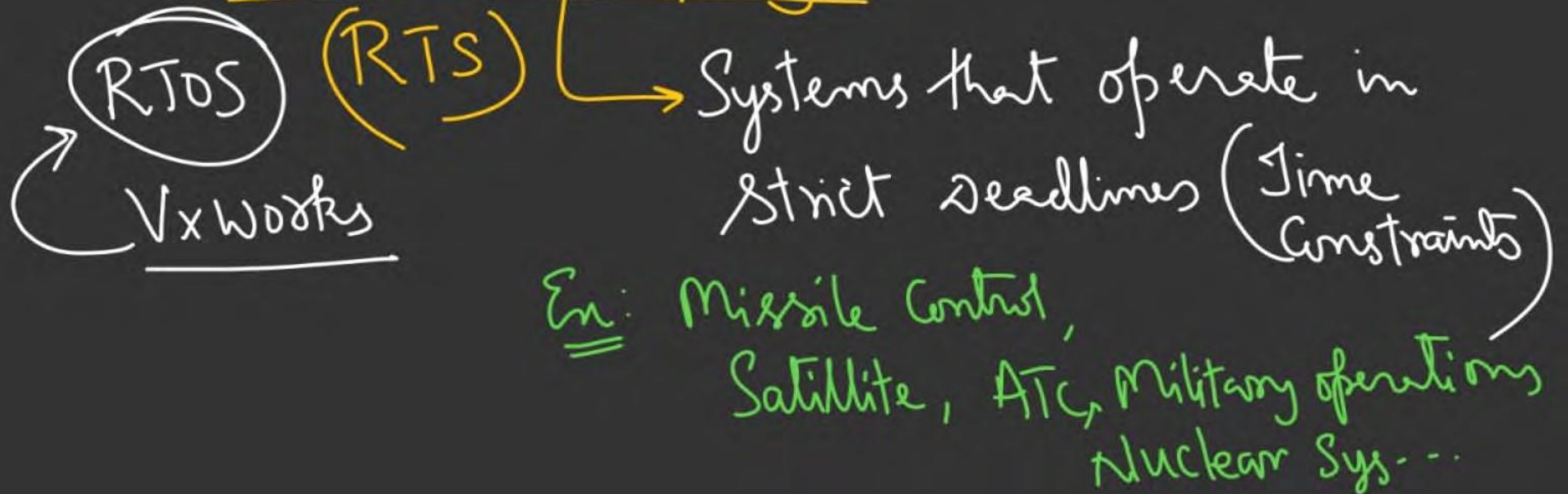
Sat: 5-9

Sun: 9am-1pm

Personal Computing
1. For Von-Neumann Arch. Primary Goals is
Convenience

Computing domain changes, Goals changes

1. Real time Computing:



Real time Systems

Hard

- Deadlines are very tight (strict)
- heavy losses
destruction

Soft

Enquiry System

Bank ATM

- { Deadlines Not Strict
- { No loss / Destruction

Primary Goal
of RTOS

efficiency

Mobile O.S (Mobile Computing)

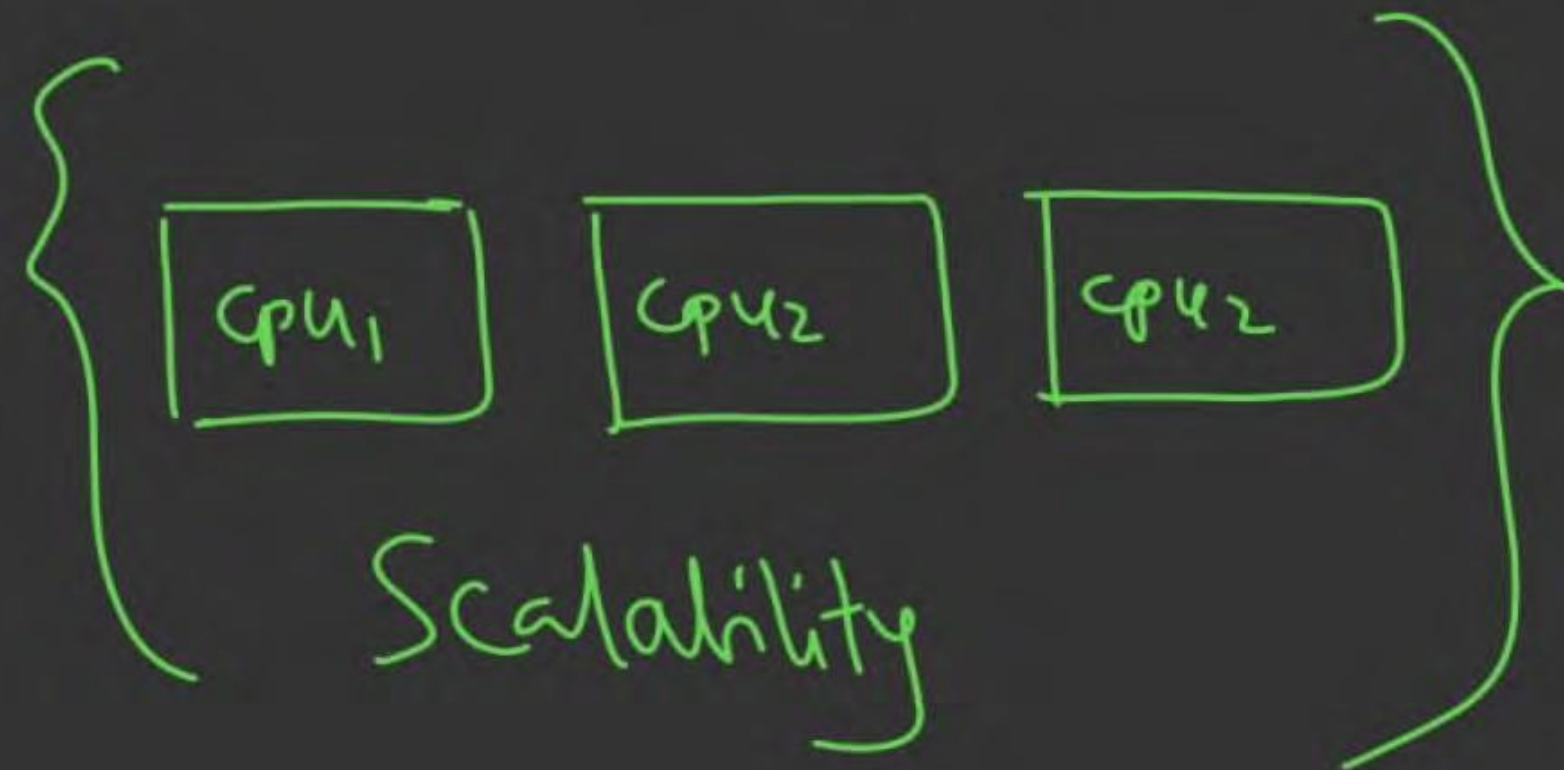
→ Primary Goal?

Convenience

efficiency

Battery Power

Parallel Computing Domain
Distributed : Amoeba (1x Multi-processor Systems)



Types of O.S?

Disk Technology



1st Gen: 1930-40's

No OS

(Card-Reader)

2nd Gen: (1940-50)

Mag. Tapes

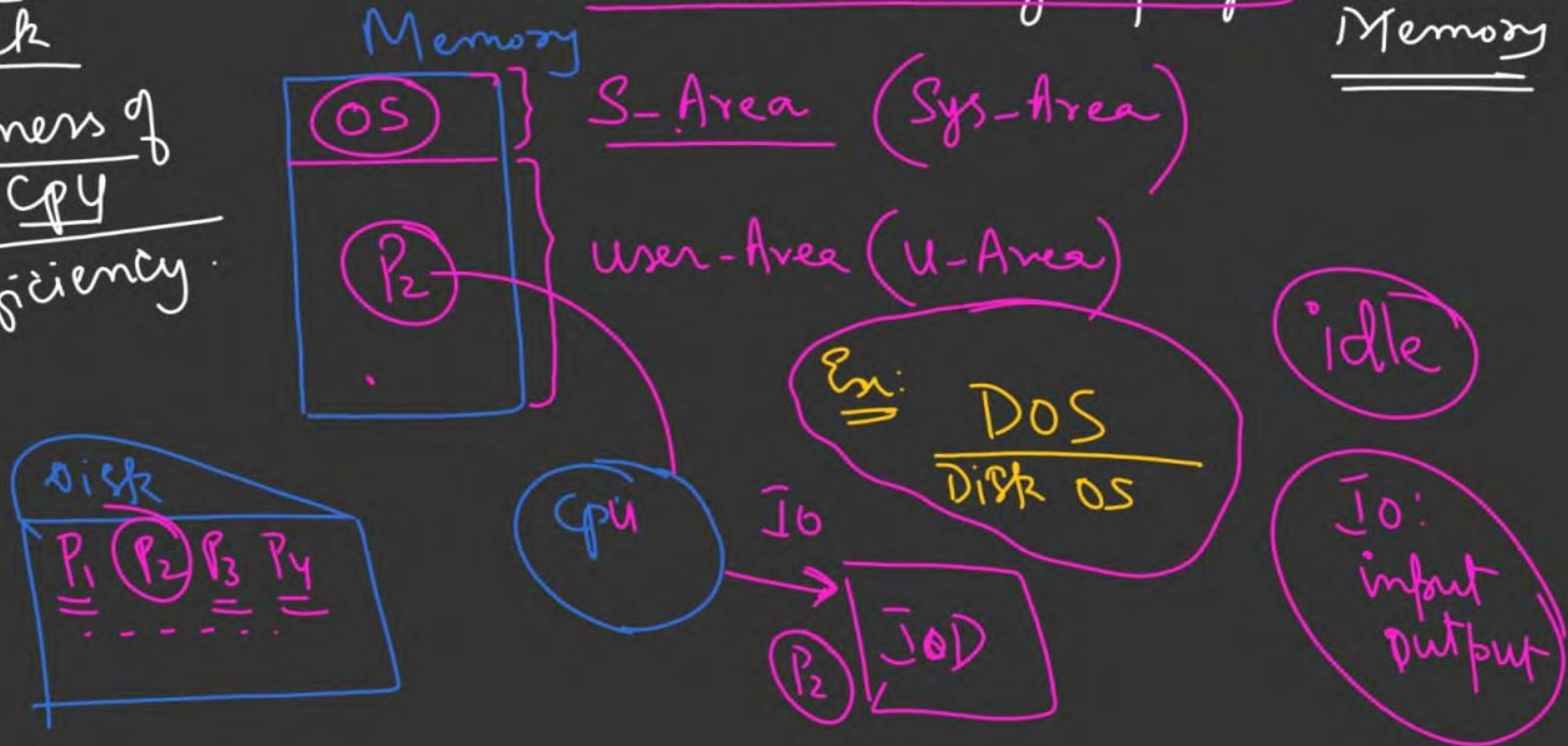
(No OS)

3rd Gen: 1950-60's

(Mag. Disk)

Uniprogramming: Ability of the O.S to Load and execute a single program in Memory

Drawback
: Idleness of CPU
Inefficiency



Multi programming: Ability of O.S to Load and manage execution of Multiple Ready to Run programs in Memory;

M.Pr

Memory

O.S

S-Area

Load

```
graph LR; Load[Load] --> Memory[Memory]; subgraph Memory; OS[O.S]; SArea[S-Area]; end; SArea --- Dot((.));
```

m.Pr

Memory

S- Area

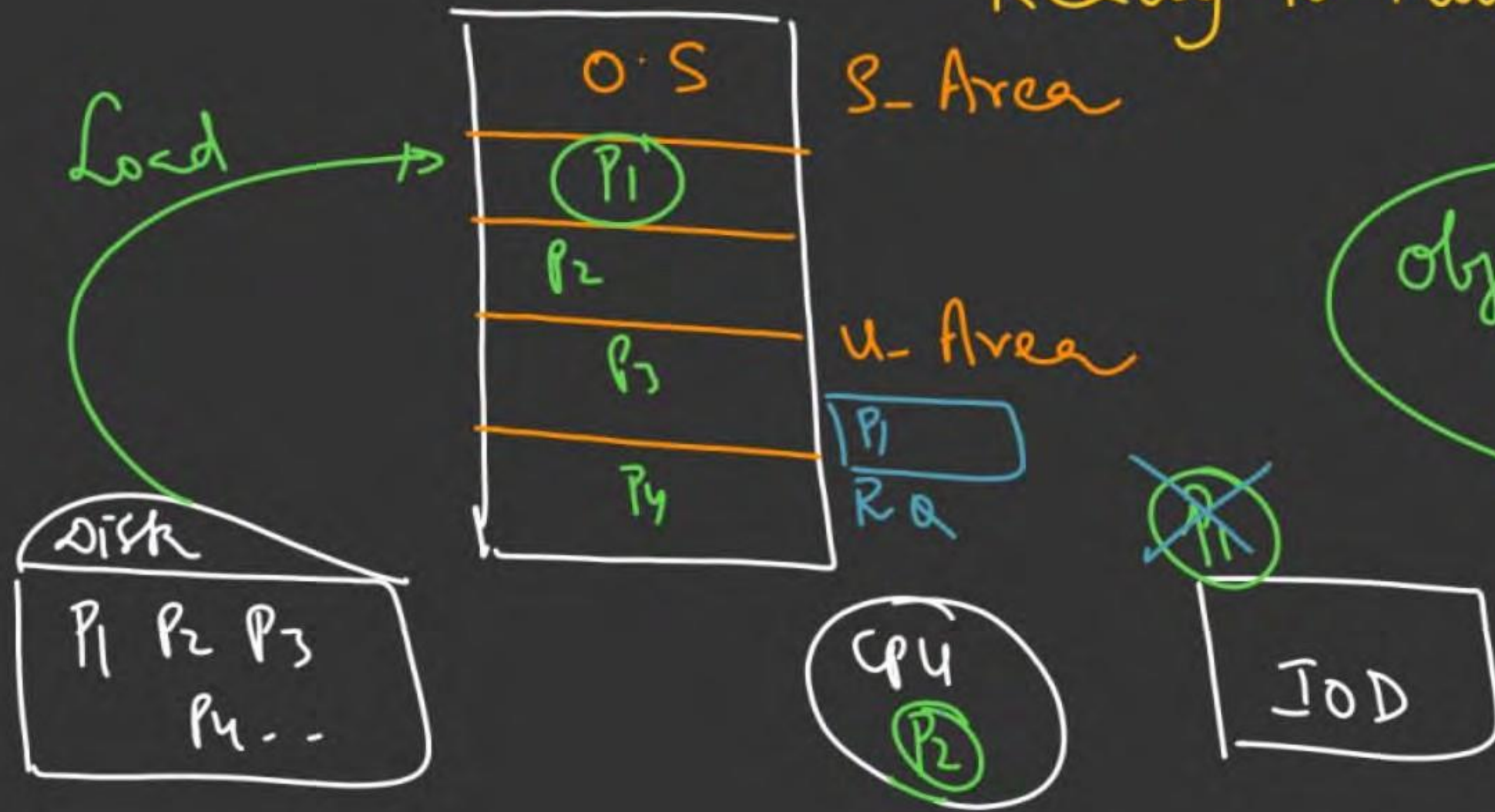
u- Area

objective of
M.P.V.O.S

Throughput

Man. cpu utiliz

Min. Galleries of
Q4



Thruput: no. of Programs/Tasks/appl.
Completed per unit time;

10 programs — 60 m
 — 1 m

$$\frac{10}{60} = \left(\frac{1}{6} \right)$$

9-1

$$4 \times 60 \\ = \underline{240 \text{ m}}$$

15 topics — 240 m
 — 1 m

$$\frac{15}{240}$$

Types of Multiprogramming

Pr. M. Pr OS

UNIX; LINUX; WINDOWS; MACH

(WIN 3.x)
Non Pre Emptive
(N.Pr)

Pre Emptive
(Pr) [Forcible deallocation]

Program releases CPU voluntarily

OS
P ₁
P ₂
P ₃

(Starvation)
(responsiveness)
Interactiveness

→ Completion

→ I/O
→ System Call

Function call to O.S for availing OS service

Enforce Preemption:

→ Priority
→ Time

Pr. M. Pr is multitasking