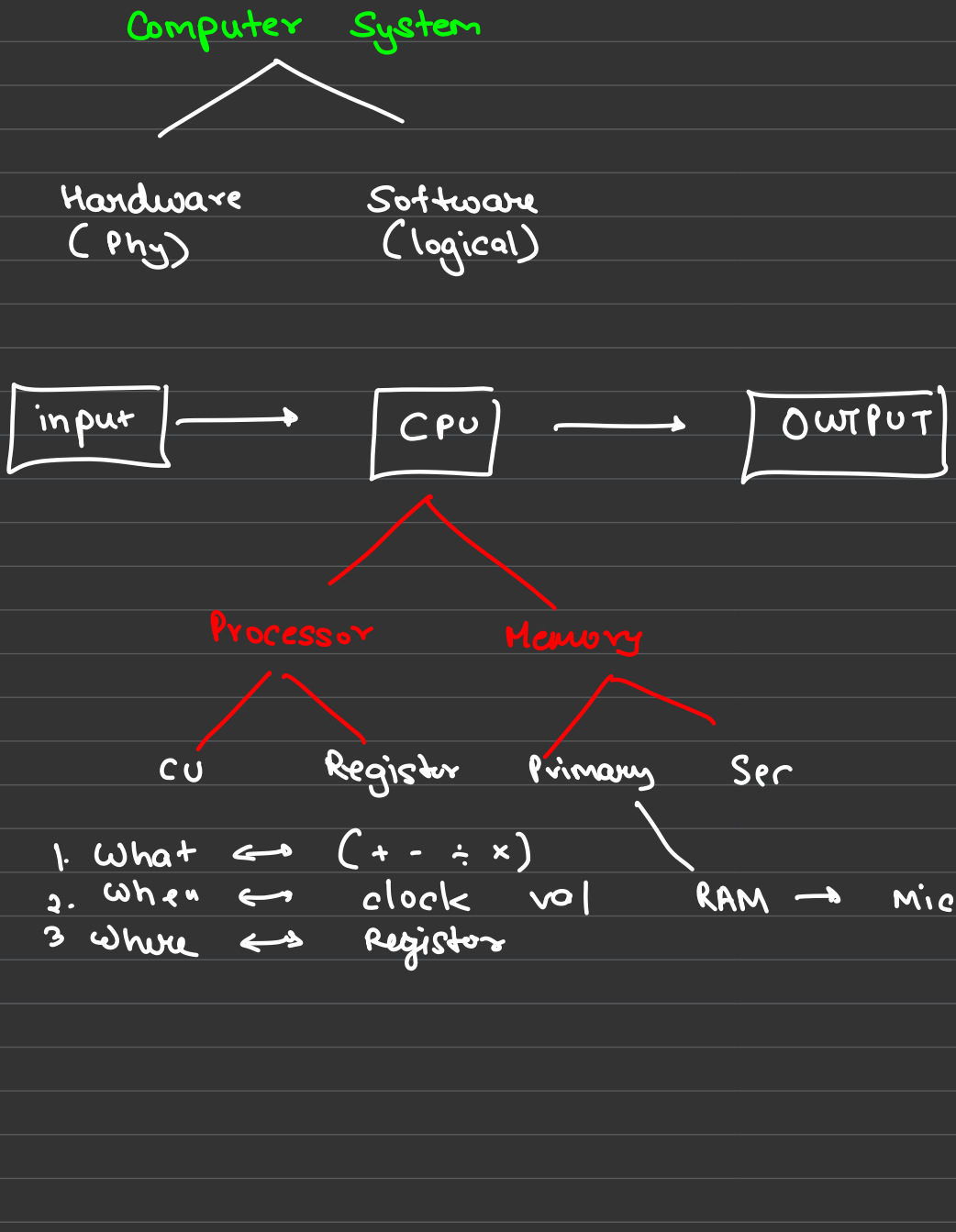
Sumedh

- Computers



- Generation of Comps

Gen	Year	Components used	Size	Example
I	1950 - 59	Vaccum tubes	larger Mainframe	UNIVAC (Univer. Calc) ENIAC (Enumurable Integrator & Calc)
II	1960 - 69	Transistor & Capacitor	Micro Comps, Mini comps	
III	1970 - 79	IC's	Desktop	
IV	1980 - 89	VLSI	8086, 8085	
V	1990	AI era (ML)		

User

↓

App prog / Web browser

↓

OS

↓

COMP H/W → I/O Devices

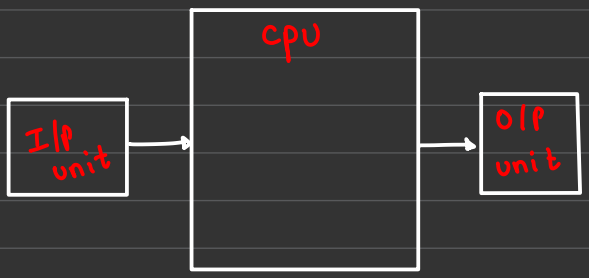
- Computer - System Structure

↓ 4 components

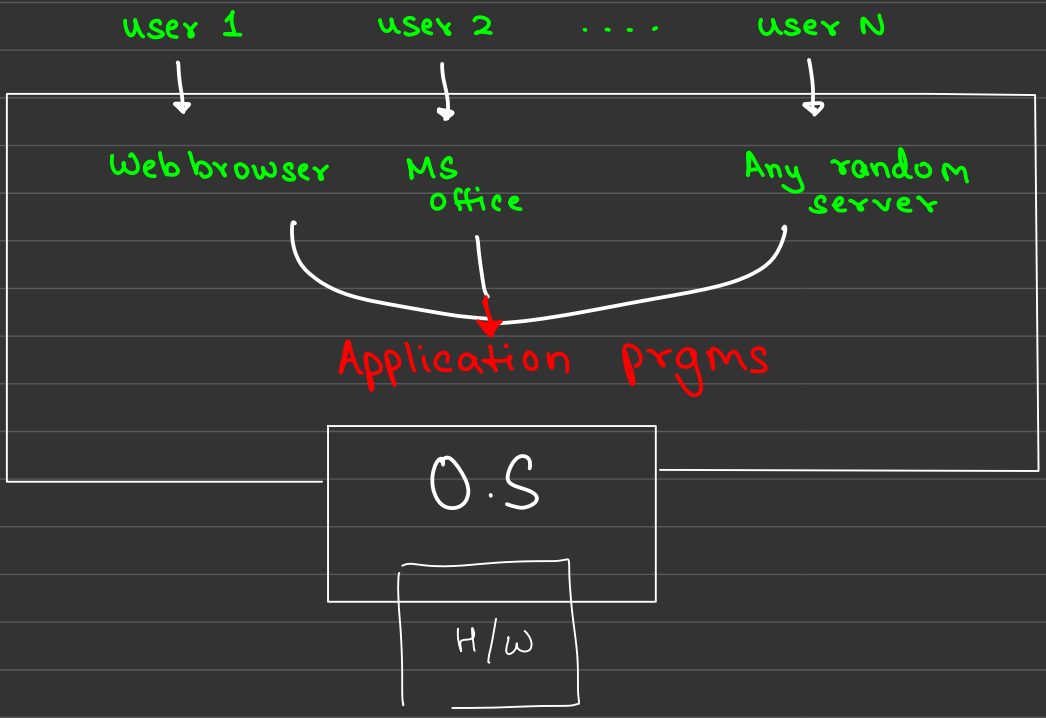
1. Hardware → Physical Components
   - ① I/O devices
   - ② Processors
   - ③ Memory

When PC starts → Boot-strap Loader ROM / EPROM

2. OS
3. App Programs
4. User Interface → CLI [Command line Interface]
   → GUI [Graphical user Interface]



- OS is a system software that controls & coordinates the use of hardwares among various applications and uses



- Components of an O.S

1. FILE MGMT (reading, updating)
2. I/O MGMT
3. Memory MGMT → Main memory
4. process MGMT → Second storage MGMT

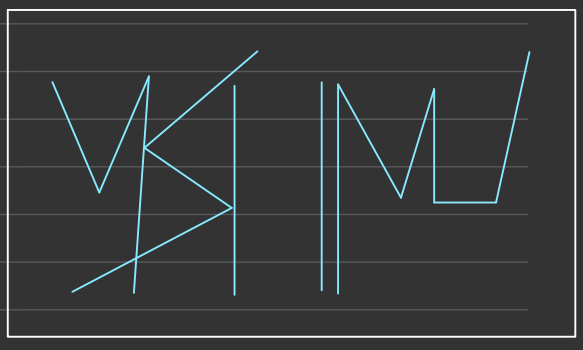
Primary	Secondary
1. Memory ⇌ MP	1. Cannot interact w microprocessors
2. Volatile	2. Non-Volatile
3. eg RAM	eg CD, HD, floppy

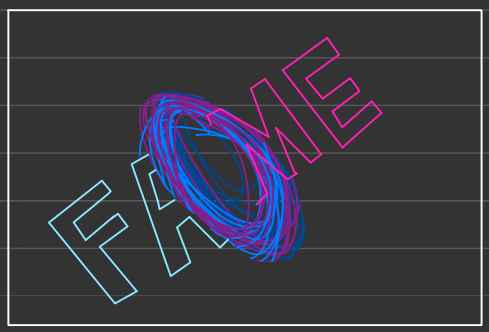
- process Mgmt

eg `c = a + b` → Source code → Compilation → object code sum.obj

`c = a + b` : passive entity execution → A process

sum.obj → Execution → sum.exe

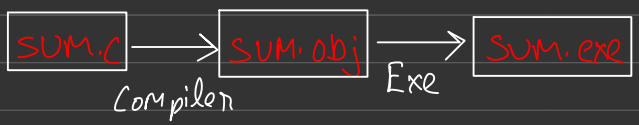




Operating System Service

1) User Interfaces → CLI (User command)
   → GUI (Mouse movement, drag-drop's menu)

2) Execution of user prog.



3) I/O Operation

4) File system manipulation

File System (r w x
read ↓ write ↓ executable)

5) Communication

6) Error Detection
   - Logical & Syntax errors

7) Resource Allocation

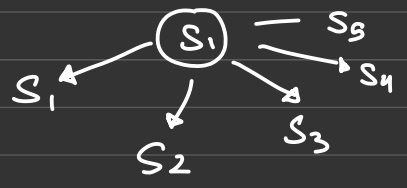
8) Accounting (Keeps track of info

9) Protection & Security

- Computing environment

1. Stand - Alone System

2.



Network
- i) LAN'S (Local Area - Network)
- ii) WAN'S (Wide area network)
- iii) MAN'S (Metropolitan " ")
- iv) PAN'S (Personal " ")
- v) WWW (Internet)

- Evolution of OS

1. Batch OS (1950 - 60's)

$$\text{CPU eff} = \frac{\text{Usefull time of CPU}}{\text{Total t of CPU}}$$

↳ Minimizing the ideal time of CPU

In Batch OS similar job's are grouped together

eg IBM mainframe to form batch OS

2. Time Sharing OS (1960 - 70)

Here time slice has been allocated to every process

eg UNIX

3. Personal OS (1970's - 1980)

eg MS-DOS, Apple DOS

4. GUI's OS (1980-90)

eg Windows 95

└ mouse, icon's drag

5. Networked OS (1990 - 2000s)

eg window's NI, novell netwarr

6. Mobile OS (2000 - 10's)

eg IOS, Gogle androi

7. Cloud-based

└ on-line Service provider

i) Saas (Software as a service)

ii) Paas (Platform as a service)

iii) Iaas (Infra Struc as a service)

8. Multiprogramming & Multiprocessing OS

Note : 3 divisions of UNIX

Shell (Users)

↓

Kernel (Heart of OS) [executes 1st & last prog]

↓

- Kernel DS

1. Stacks (System Calls)
   - (LIFO)
2. Queue's (H/w device printer
   - (FILO)
3. Trees
4. Lists (Memory Mgmt)

Contagious (Arrays)

Non-Cont

Linked list

Singly doubly Circular