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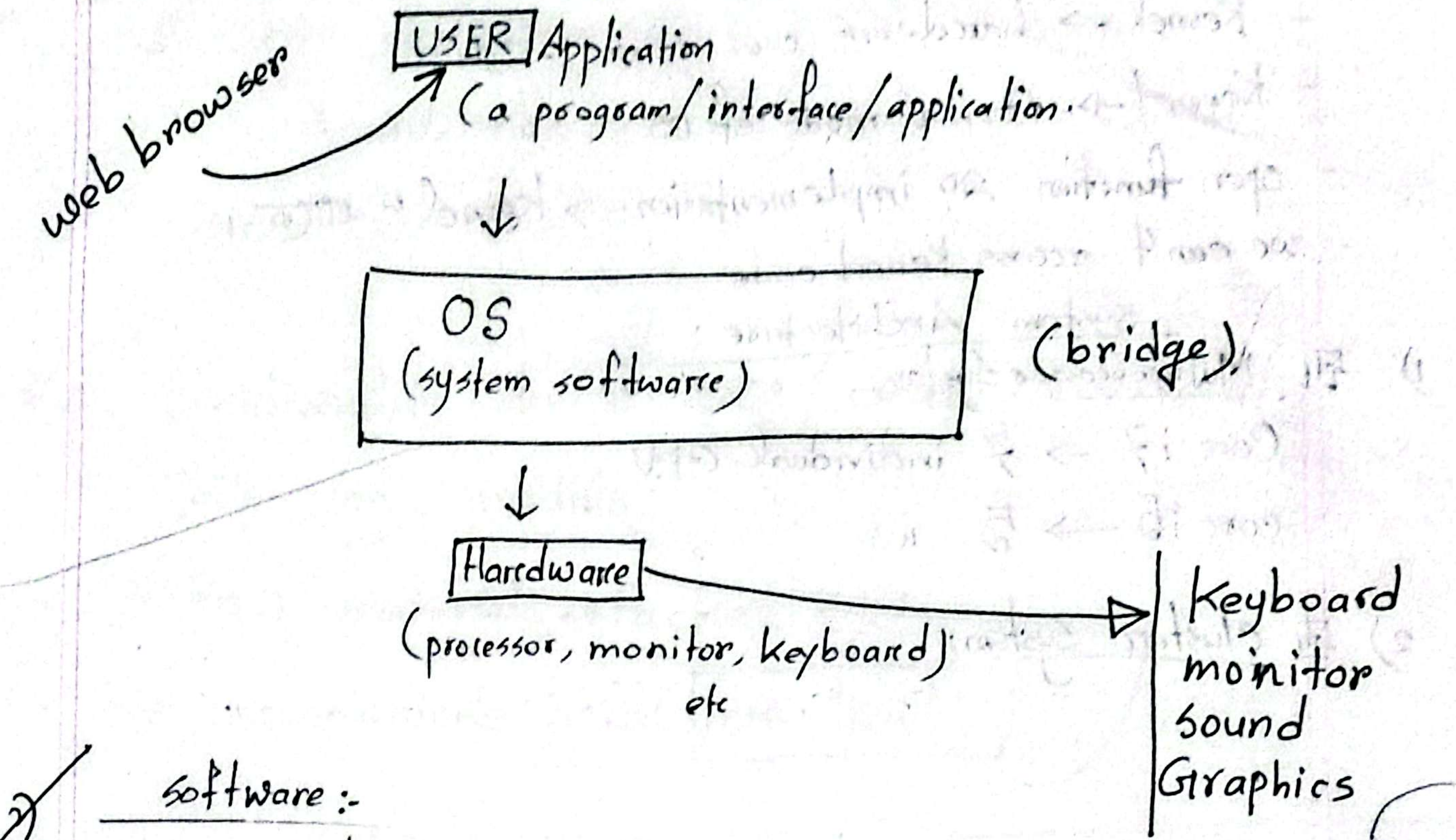
Lecture-1
CSE-321

Part-1

1) OS:- A pogram that acts an bridge/intermediary between a user of a computer & computer hardware



2) software :-

2 types

1) System Software: (OS) & all utility programs that manage computer resources at a low level.

Ex: Compilers, loaders, linkers & debuggers.

2) Application " : VLE, VS code

↳ Design for the end users

Major Goal of OS:-

- execute user programs.
- Security
- convenient to use.
- Multiple tabs open (Multiple task)
- Use computer hardware in an efficient way.
- Setup Soul of OS.

- linux → open source
  ↓
  Individually modify
- Windows is more vulnerable.

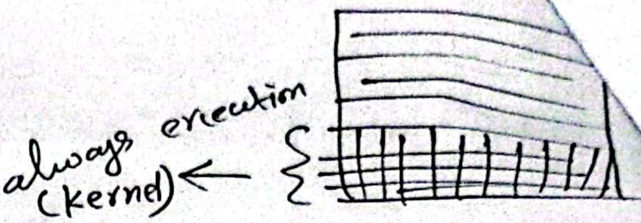
1) User space

2) Kernel space

- ↳OS নিজের code চালায়
- Kernel → hardware code access করে।
- Kernel → Central mode of OS
- open function এর implementation → Kernel এ থাকে
- we can't access kernel code

Architecture :

Kernel:



The one program running at all times.

→ Central module of an OS.

→ Part of OS that loads first & it remains in the main memory.
(execution

→ As Small as Possible.

→ Provide all the essential services required by other parts of the OS & application.
(kernel)

→ Kernel code is loaded into a protected area of a memory. to prevent it from overwritten.

OS is a program or Software.

Web browser → User Application

User Application use করে hardware (keyboard, monitor etc.) by a medium which is OS.

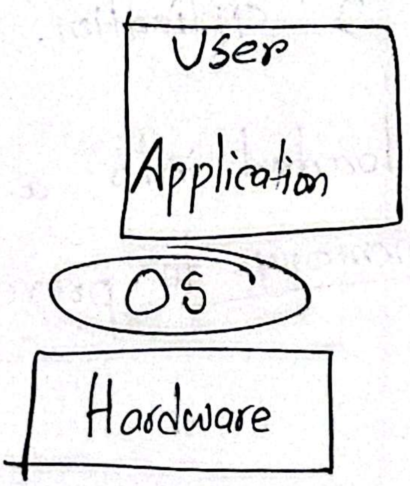
OS:

functionality divide করে / create interface করে by module.

↳ Raw materials → Packet করে

↳ communicate with low level

OS.

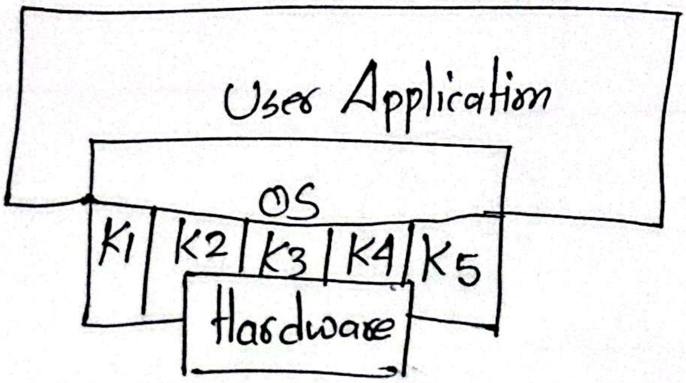


→ hardware use করে O

→ OS - hardware এ দিয়ে interfac create করে functionality অনুযায়ি

→ Application use করে interface.

→ User - people uses Application software



K1 K2 K3 K4 K5 → module (Kernel)

Keyboard button pressed

↓

keyboard controller

↓

Keyboard Buffer

↓↑ [communicates]

System software

↓ sends (process the scan code to CPU

CPU

OS Architecture :

1) Single- Processore System : } → Compact Single place or Single hardware or cable connection
2) Multiprocessore System : }
3) Clustered System } →

1) Single Processore System :

- 1 main CPU to execute general-purpose instruction
- All single processor systems have other special-purpose processor ↳ (device specific processor)

2) Multiprocessor System : → Modern Processor

↳ (Parallel System / Multicore System)

- Two or more processor
- close communication
- Share → i). Computer bus | iii) Memory
  ii) Clock | iv) Peripheral devices

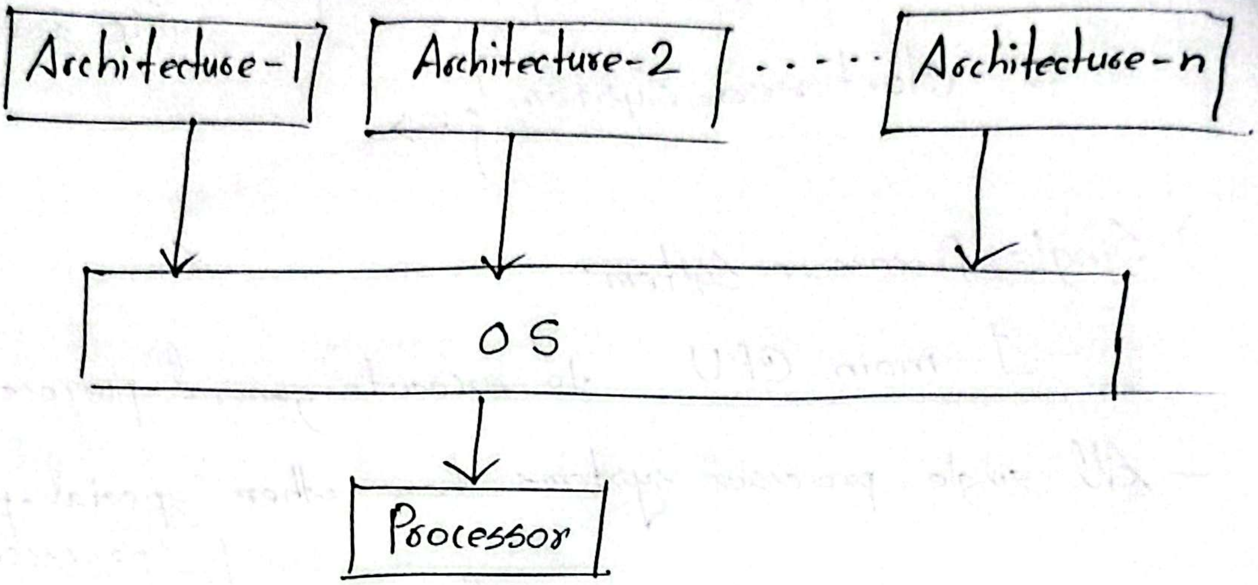
3) Clustered System :

- Multiprocessor System which have (Multiple CPU)
- Composed of two or more (Individual systems - or nodes-joined together)
- Share Storage

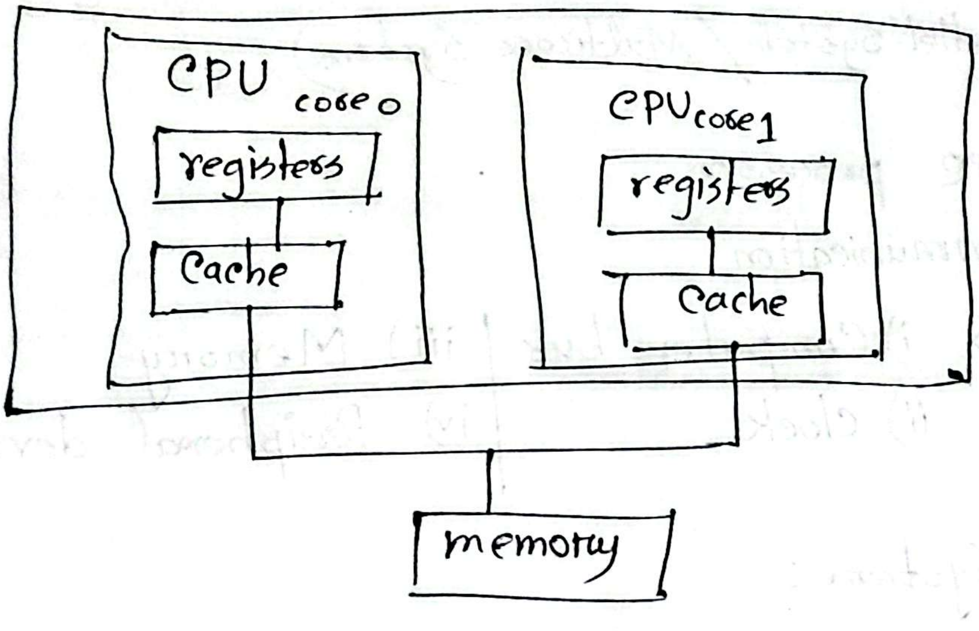
- closely linked by Local Area Network (L

or faster interconnect (Infiniband)

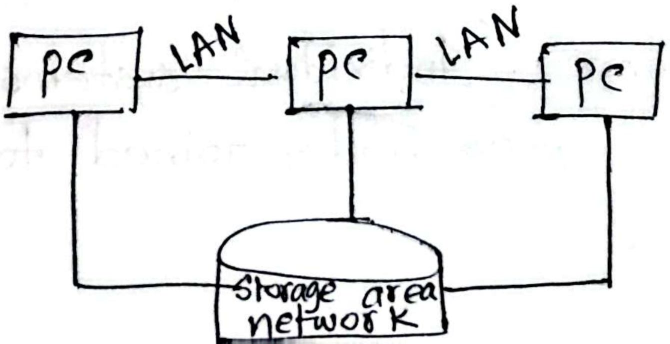
Single Processor System:



-Multiprocessor System:



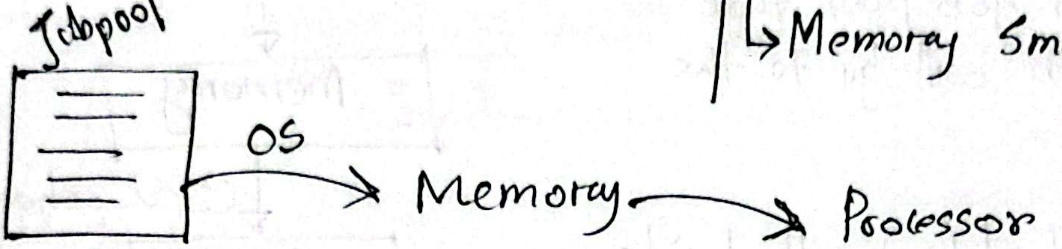
Clustered System:



Multiprogramming:

- System can execute multiple tabs.
- Increases CPU utilization
- CPU always has one to execute.

* - OS keeps severals jobs on memory simultaneously.
- it keeps the jobs on disk (job pool)
  - → Memory Small



→ OS will pick job from (job pool) to memory

OS
Job1
Job2
Job3

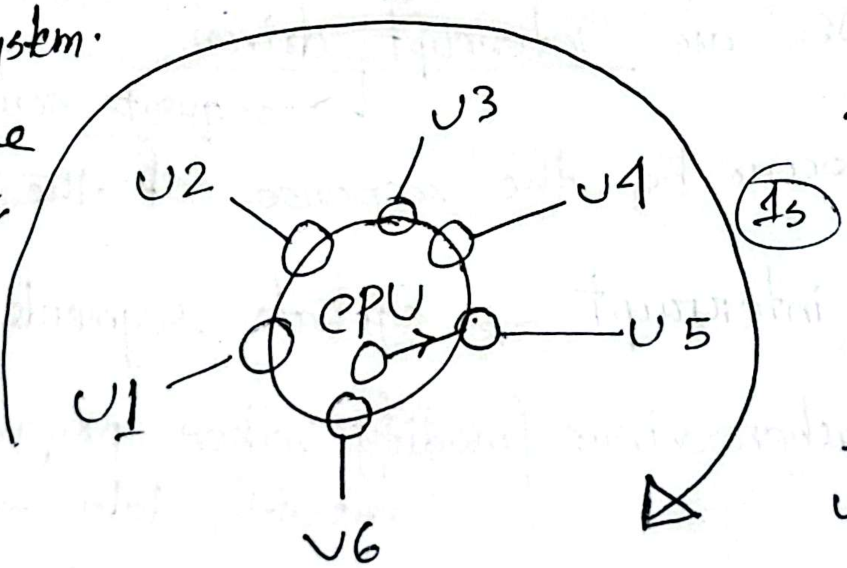
- always memory তে job থাকবে।
- processor ফাকা থাকবে না।

Time Sharing:

- 1 CPU → Shared by diff^n users.

Interactive System.

esponse time
uld be short

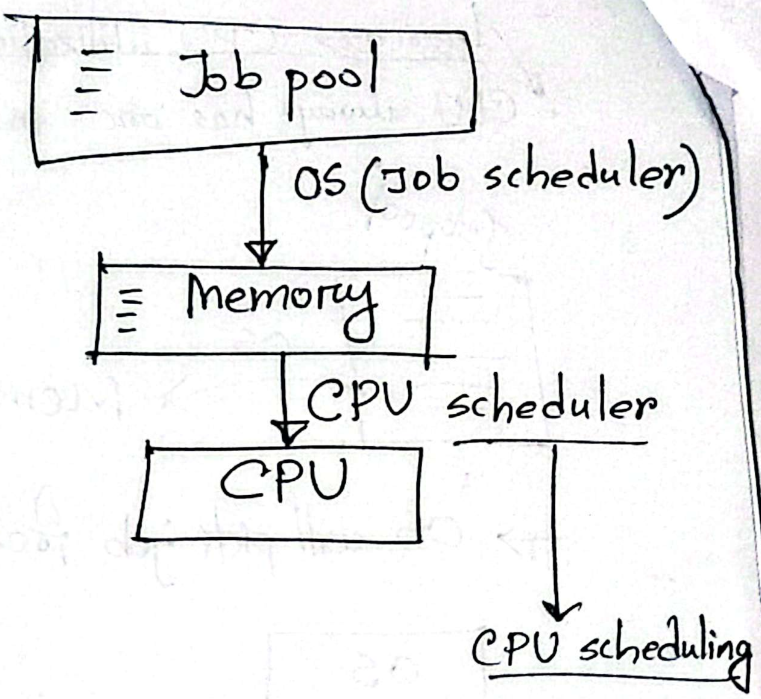


- User can use the system for very small time.
↗ Other user can't notice that another user is using the system.

- access হারায় ফেলবে।
- user ভাবে তা use করছে।

4 Requirements of Multiprogramming :

1) Job scheduling :



↳ OS (job scheduler) pick from job pool that which job will go to the memory.

↳ (CPU scheduler) will decide which job will be executed to the processor from memory

→ If processes don't fit in memory then by swapping in & out

Virtual Memory

Context Switch

OS operations :

- Modern OS are interrupt driven
↳ request send করবে