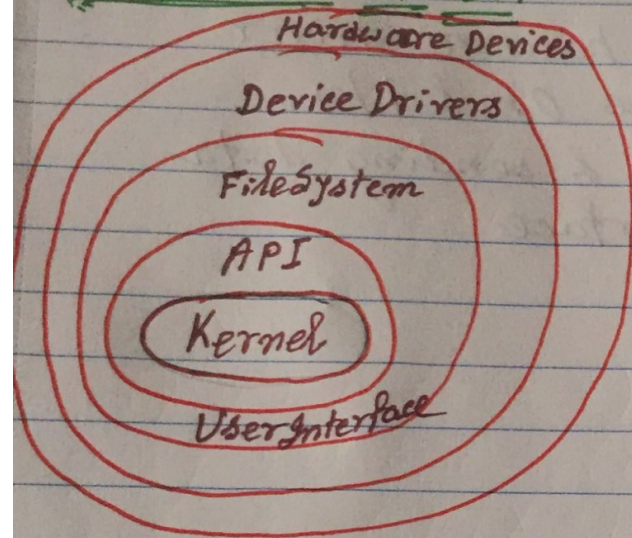


Operating System:-

- OS is a program that acts as a bridge between User & Hardware.
- OS manages computer hardware & software resources & provides common services for computer programs.

Components of OS:-kernel:-

- Central part of an OS.
- Manages the operations of the program & h/w

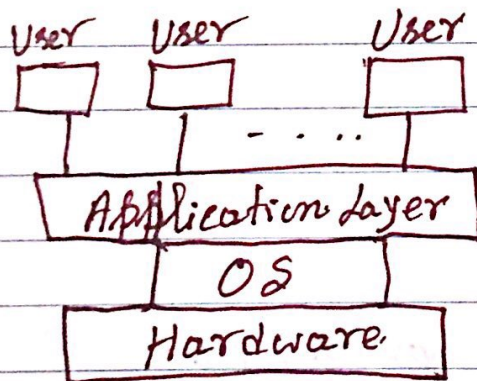
Types of Kernel:-

- 1) Micro Kernel:- Contains basic function.
- 2) Monolithic Kernel:- Contains many device drivers.
- 3) Hybrid Kernel:- Based on Combining aspects of micro kernel & monolithic kernel
- 4) Exo Kernel:- Contain h/w resources to applications through high level abstraction.
- 5) Nano Kernel:- Contain h/w abstraction, but without system services.

- API:- • An application program interface.
- Its sets of routines, protocols, & tools for building software application.

- File System:- • ~~It is~~ data is a data structure
- OS uses for keep track of files.
 - Methods of file organization.

- Device Driver:- • Basically known as hardware driver
- Communicate with the OS & h/w.
 - Responsible for receive & sending data
 - Work on User Interface



- Hardware device:-
- RAM / ROM
 - Keyboard / Mouse
 - Printer / Monitor.

Types of Operating System:-

- Batch system:-
- Many jobs are punched on a punch card & given to ~~operating~~ operator for execution on a main frame system.
 - Processes are executed one after the other and after completion of all job the o/p is given back to user.

Disadvantage:-

- No interaction between user & computer.
- No prioritization.

Multiprogramming system:-

- More than one program get executed together.
- One job picked up from memory & start execution but when it needs I/O operation it switches to next.
- System chooses one job to run through process CPU scheduling.
- CPU never sits idle.
- Focus on maximize CPU usage.

Example:-

- I/O Bound Process
- CPU Bound Process

Time sharing system:-

- Logical extension of multiprogramming system.
- Prime focus is on minimizing the response time.

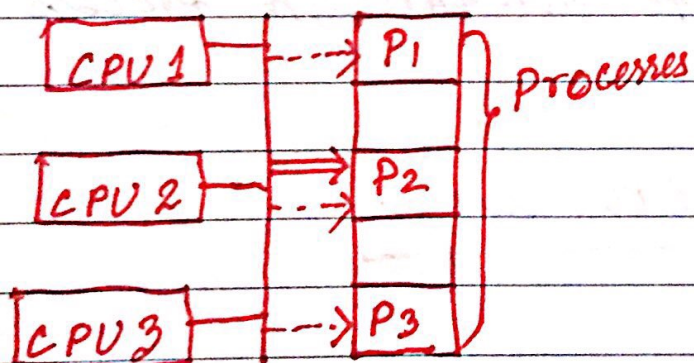
Multiprocessor System / Parallel System:-

- Two or more ~~process~~ processors in close communication.
- Sharing computer Bus, Clock, Memory etc.
- More than one processor in a single CPU with common Bus, Clock, Memory.
- If you have n processor then maximum n processes can get executed parallelly on the system.

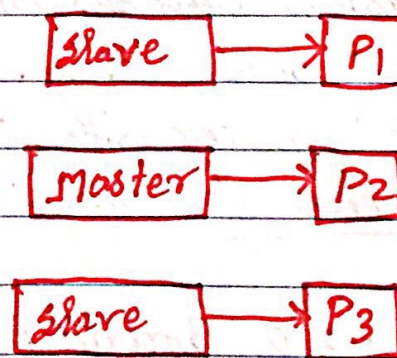
Advantages

- Increased Throughput
- Economy of scale
- Increase Reliability.
- Asymmetric & symmetric multiprocessing

Symmetric Multiprocessing



Asymmetric Multiprocessing

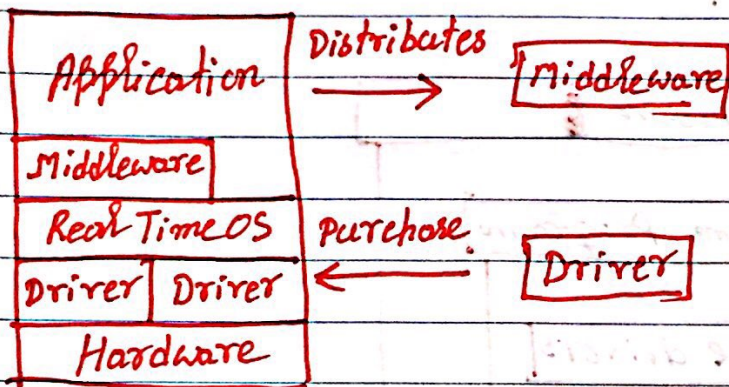


Shared Memory

No Shared Memory

Real Time System:-

- Uses Maximum time & resources for exact O/P & on-time result.
- Used for automatic system.
eg. aircrafts during takeoff & landing.
- Two types of Real Time system.
 - Soft Real Time System \rightarrow less strict to time & accuracy
 - Hard Real Time System \rightarrow exact execution time & result.



Distributed System:-

- Collection of autonomous computers linked by computer n/w & equipped with Distributed system s/w.
- Components are located on different n/w computers.
- Communicate by message passing to each other.

Advantages:-

- Resource Sharing
- Heterogeneity
- Concurrency
- Scalability
- Transparency

