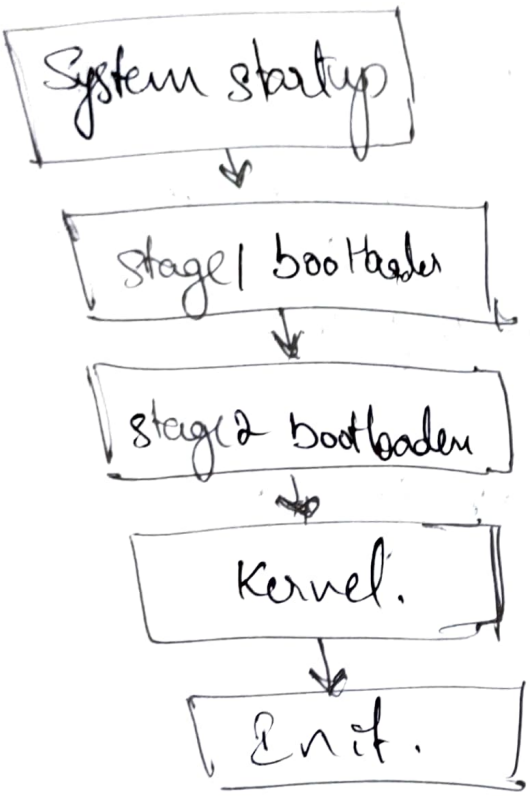
(1) Booting Process.



System startup :→ when a system is first booted / reset, the processor executes code at a well known location. In PC - BIOS stored on a flash memory on motherboard.

BIOS is a small piece of code (512 bytes) - 1st prog to run.

BIOS : identifies HW (bootdevice) which is bootable & active.

Stage1 Boot Loader :- Job is to find & load secondary bootloader.

MBR loads the stage1 bootloader.

Stage 2 boot loader → Also called as Kernel loader. Its task is to load the linux kernel.

1st & 2nd stage boot loader combined are called LILO or GRUB.

File system is consulted, default kernel image & initrd image are loaded into memory.

Kernel → At the head of the kernel image, a routine does some setup & decompress the kernel image & place it in high memory.

kernel is then called & kernel boot begins.

Init → Kernel starts the first user space application.

Compiled with C library.

first prog /sbin/init.

(2) Function of OS.

Security :- protects user data.

It prevents unauthorized access to program & user data.

Job accounting :- OS keeps track of time & resources used by various tasks.

Error detecting aids :- Constantly monitors the system to detect error & avoid malfunctioning of system.

Coordination b/w software & users OS coordinates & assign interpreters, compilers, assemblers.

Memory management :- The OS manages the primary memory. It keeps track of memory, which bytes are used by which progs. Allocate memory for the process, deallocates when the process has terminated.

Processor management :- OS decides the order in which the processes have access to the processor.

Keeps tracks of the status of processes.

File management :- A file management system is organised into directories for efficient navigation & usage.

(3) Monolithic & Micro kernel diffrence with diagram.

→ Micro Kernel

user services & kernel are kept in seperate address space

OS is complex to design

Micro kernel is small in size

Easier to add new function

Failure of one component does not effect the work of microkernel

Execution speed is low.

Monolithic Kernel

Both user services & kernel services are kept in same address space.

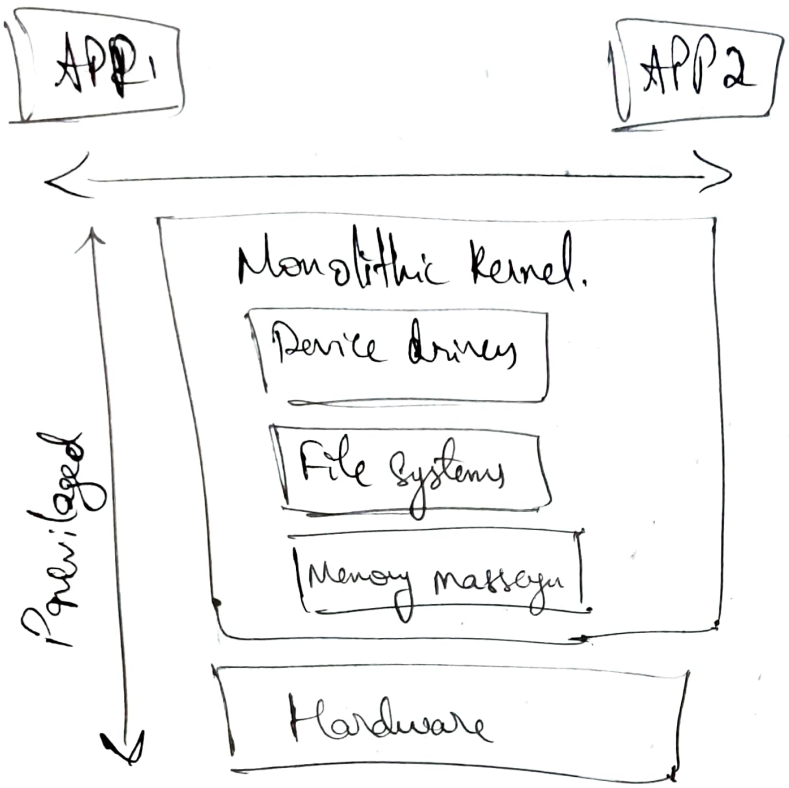
OS is easy to design & implement

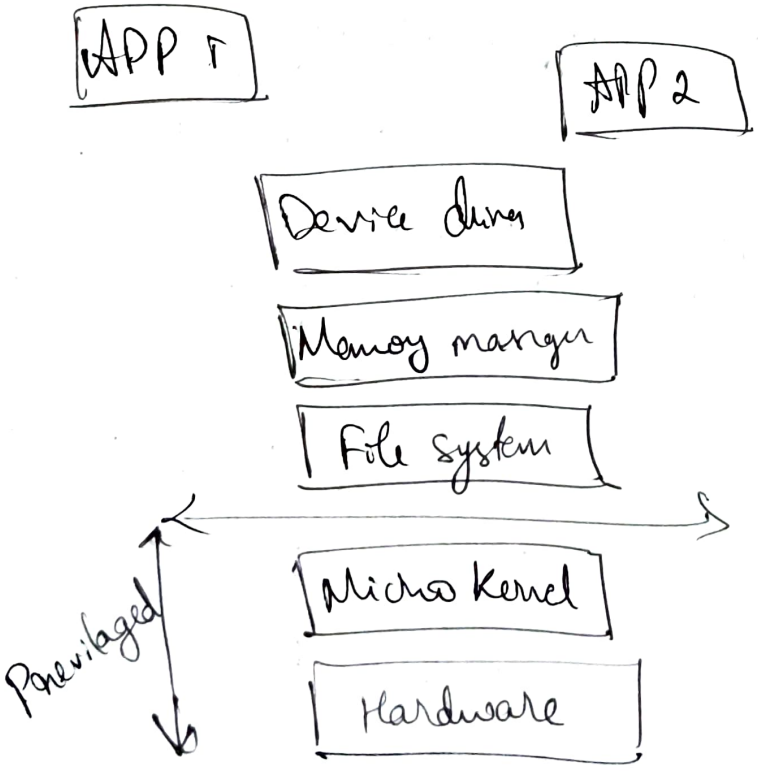
Monolithic kernel are larger in size

Difficult to add new function

Failure of one component leads to failure of entire system.

Execution speed is high.


APP 1
APP 2
Monolithic Kernel.
Device drivers
File Systems
Memory manager
Hardware
Privileged


APP 1
APP 2
Device drivers
Memory manager
File System
Micro Kernel
Hardware
Privileged

4) UEFI and Legacy boot

UEFI stands for unified extensible firmware interface. Most new motherboards consists of this type. It has more advantage than using BIOS.

In regular BIOS that uses the keyboard to select the options.
UEFI allows controls via mouse.
UEFI contains secure boot.

Legacy BIOS used by BIOS firmware. It stores a list of installed storage device that are bootable. BIOS performs POST

5) Commands on windows to check disk partition.

-> Open power shell terminal
-> Type diskpart.
-> Diskpart > list disk.
  └> It will list any detected disks.
-> Diskpart > list volume.
  └> It will list detected volumes.
-> Diskpart > list partition.
  └> this will list the current partitions on the device.

⑥ Commads to check Service in windows.

-> List all services

sc queryex type = service state = all.

-> Search for specific service.

> sc queryex type = service state = all | find /i "servicename"

⑦ Steps to start or stop services in windows.

Start Service.

open start

Search services.

Click on the service you want to start

click start button

Apply button.

Stop service.

open start

search service

Click on the service you want ~~to start~~ stop.

click stop button.

then click apply.