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Assignment 1

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1) Booting process

Power up / Reset

(1) System startup - BIOS / Boot loader
(2) Stage 1 Bootloader - Master Boot Record (MBR)
(3) Stage 2 Bootloader - GRUB, LILO, UEFI etc.
(4) Kernel - User space

BIOS is Basic Input/Output system.
- Stored in flash memory on the mother board
- First code executed by processor.
- BIOS decides which devices are candidates for boot.
- When boot device is found, the first stage boot loader is loaded into RAM & executed.

MBR (Master boot record)
- Located in 1st sector of bootable disk.
- usually /dev/hda or /dev/sda
- Contains information about GRUB (or LILO in old systems)
- MBR loads & executes GRUB boot loader

GRUB
- Grand Unified Bootloader
- Config file is : /boot/grub/grub.conf.

Kernel

- Mounts the root file system.
- Helps to access the harddrive partitions.

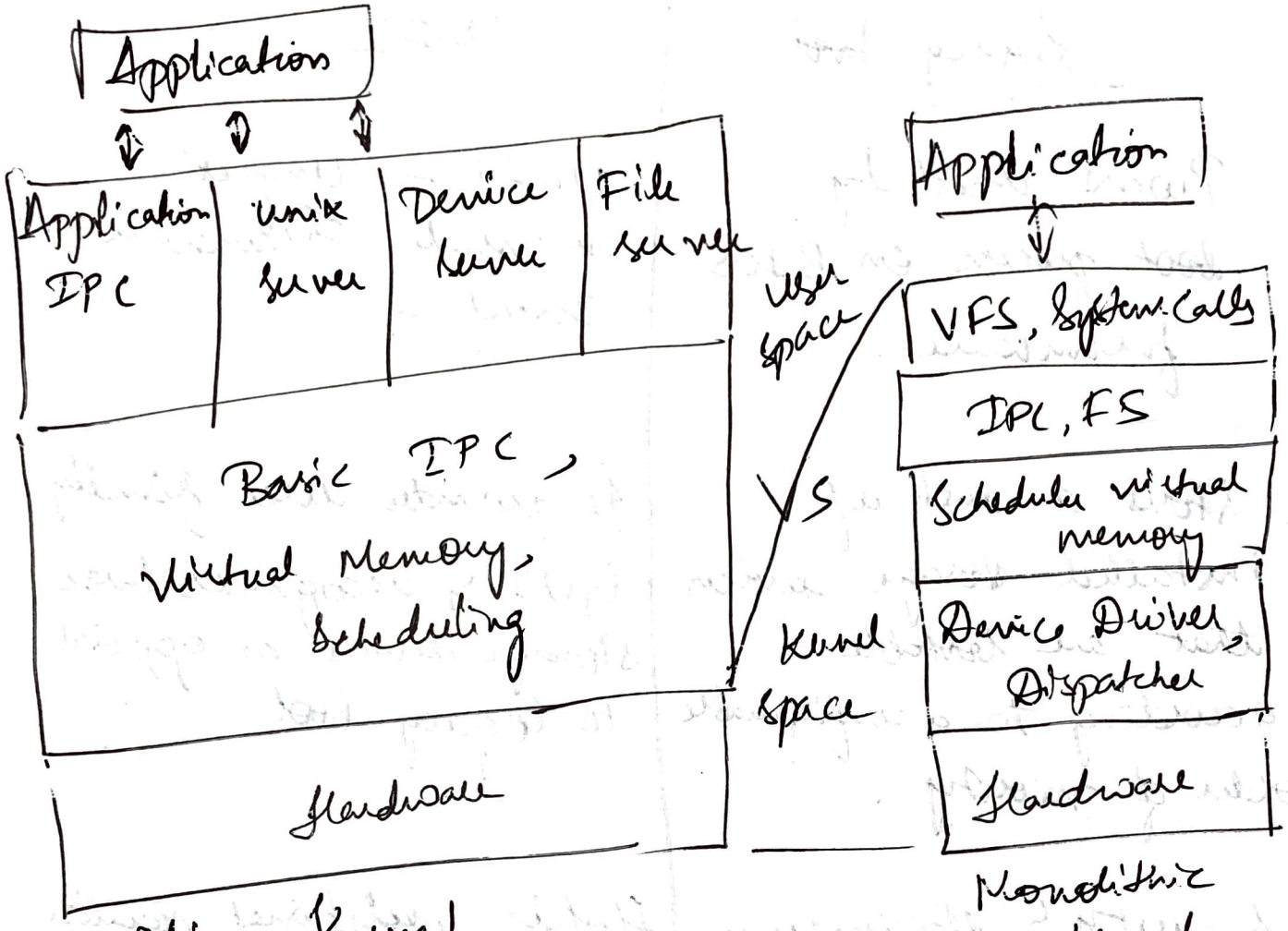
Init

- Runlevels :- 0 to 6
- Identify the default init level from /etc/inittab & to load all appropriate program.
- grep 'initdefault' /etc/initab shall identify the default run level.

(2) Functions of Operating System:

1) Security
2) Job accounting
3) Control over system performance
4) Error detection
5) Co-ordination between software & users.
6) Memory management
7) Processor management
8) Device management
9) File management

③ Microkernel vs Monolithic kernel:



Basic	Microkernel	Monolithic kernel
Basic	User service & Kernel service are kept in different spaces	Both user & services & kernel services are kept in same address space
Size	Microkernel are small in size	Larger than microkernel
Execution	Slow	Fast

④ UEFI vs legacy boot

Legacy boot	UEFI
- Proces used by boot proces on BIOS firmware.	UEFI → Unified extensible Firmware Interface
- Stores a list of installed storage devices that are bootable according to a configurable order of priority.	It provides user friendly GUI & recognises large storage devices as opposed to legacy boot.
- Security & efficiency is lower compared to UEFI	Holds additional security features
- Less user friendly	More user friendly
- Uses MBR partition	Uses GPT partitioning scheme
- BIOS firmware for boot process	use UEFI firmware for boot process

(5) Discuss on Operating systems
—Linux, windows & Mac OS.

Linux	Windows	Mac OS
• Open source	Close source	Closed source
• Stores data in the form of file	uses the directory structure	uses the file structure commonly known as MAC OSX.
• Does not have a specific registry of its own	Registry is a master database which stores all the settings.	Stores all application settings in a series of plist files.
Easy to switch interfaces	Not interchangable interfaces tie with OS	Has a facility to bridge virtual network interface

(6) To check disk partitions in Windows OS.

(1) Open Command Prompt
(2) Use diskpart

Some of the commands to use:—
Active, Break, clean, Create, Add, Assign,
Detach, exit, compact, Extend, expand,
Import, help, Inactive, Select.

⑦ Command to check services on windows,

Step 1 : Win + R

Step 2 : Run opens

Steps : Type services.msc & Enter.

⑧ Steps to check disk partitions in windows.

① Open file explorer.

② Right click of This PC

③ Choose Manage from menu

④ Navigate to Storage → Disk management in Navigation panel.

⑨ List to Start or Stop services in windows

① Open Task manager

② Check Services tab

③ View the services in Running, Stopped state

④ Right click on service & Start / Stop.