

Definition: It is a master control program (like Android, iOS, DOS, Linux, Windows, Mac OS etc.) that runs automatically when a computer is switched on, and remains in the background when system is running.

Sub-Topics

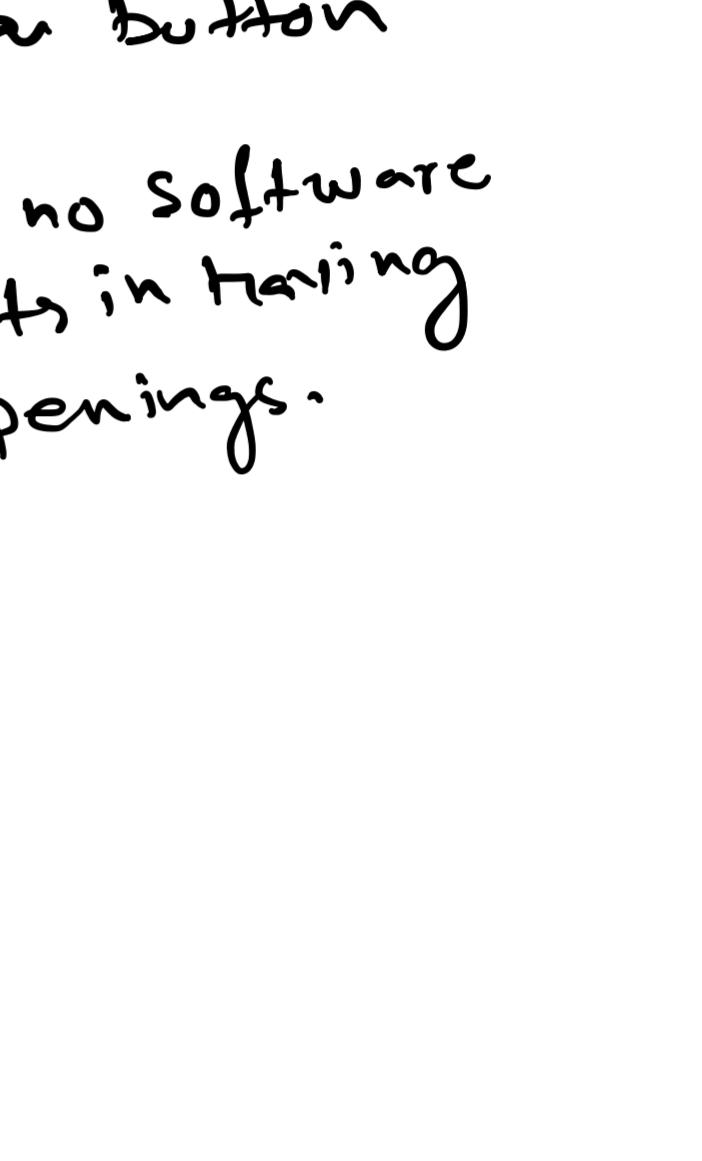
- ✓ Definition*
- ✓ Functions*
- ✓ Interface*
- ✓ Booting
- ✓ Buffer
- ✓ Interrupt*
- ✓ Spooling
- ✓ Polling

Computer System is a most complicated hardware system where there are several HW drives working together. O/S helps these HW drives to coordinate & work like a single unit.

Operating System hides (makes transparent) the complexity of HW from user makes it easy to be used.

Functions of an OS:

- ✓ Booting (Starting of Computer/Cellphone/Tab)
- Memory management.
- ✓ Storage management.
- Security (Passwords, User accounts, encryption etc.)
- Communications.
- Input & Output devices management. Device Drivers.
- ✓ Interrupts management
- User Interface.
- etc.

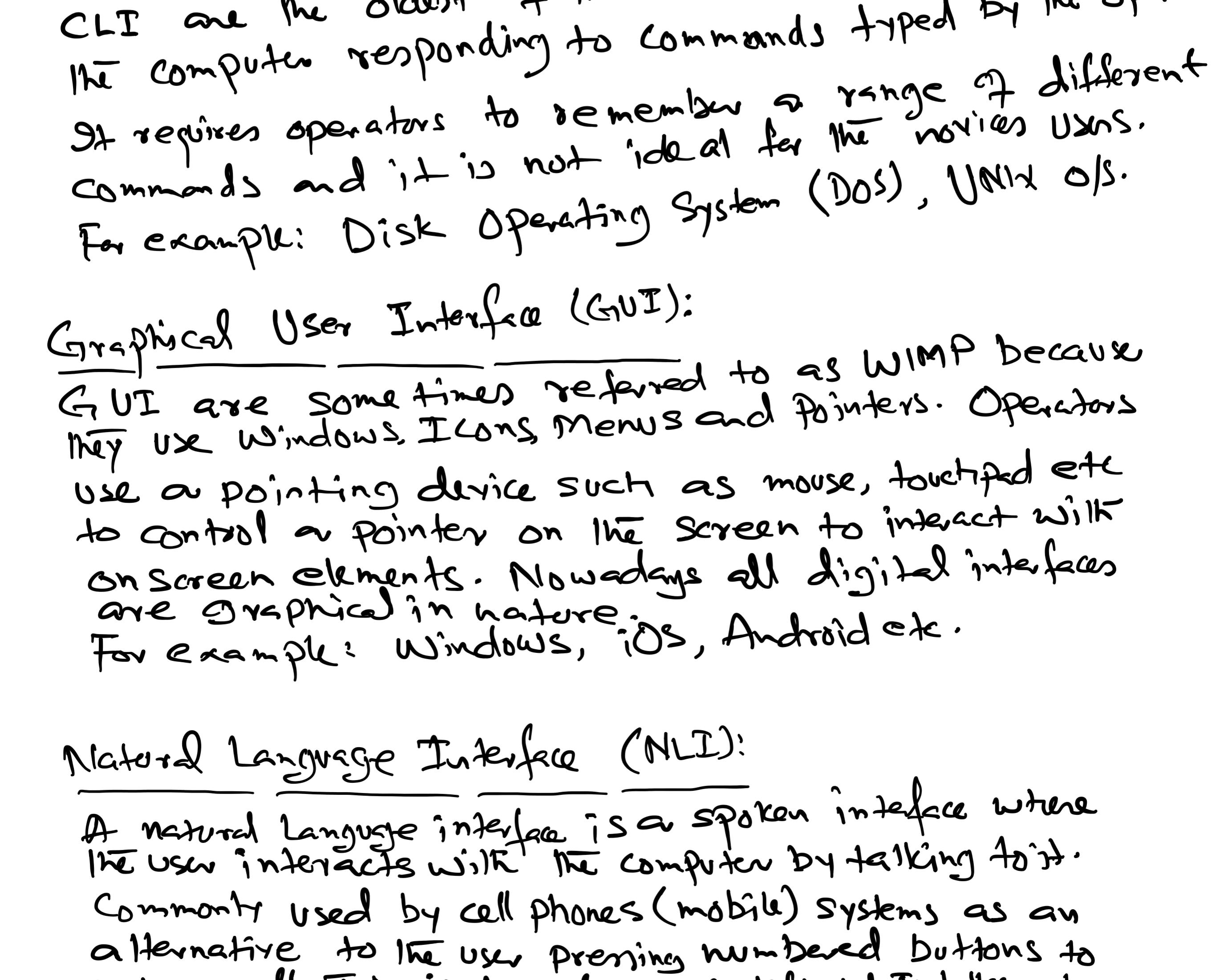
Storage Management:

- Storage management is done by the OS with the use of a file management system like FAT, NTFS. It is means by which a disk can be made useful and useable for the user.
- File System is a technique adapted by the OS to manage files over the disk. For example File Allocation Table (FAT), New technology File System (NTFS).

Simultaneous Peripheral Operations On Line.
SPOOLING.

Peripherals:
Peripheral devices are any of the different devices used to enter information and instructions into a computer for storage or processing and to deliver processed data to users back. These are mostly input and output devices like keyboard, mouse, monitor, mic, speaker and printer etc.

Peripheral devices only work when they are connected to the computer (online).



Buffers: Data Buffer (Buffer) is temporary (Physical) memory used by OS written the rate of data retrieval and the rate of data processing is variable/different.

Use of buffers eliminates data loss or device lagging. For example when the data is being printed over slow printer or data streaming is played back continuously even when the data download/retrieval is slower than playback speed.

Interrupts: Interrupt is an electronic (digital) signal generated by the hardware or software to gain microprocessor's attention and time to execute their required job.

There are different types of interrupts like Software interrupt, hardware interrupt & Trap.

Human Computer Interface (User Interface) (UI)

User Interface - The features of a computer system which allow the user to interact with it.

A user interface (UI), also called a man-computer interface, comprises both hardware & software components. It handles the interactions b/w the user and the system.

There are three main types:

- Command Line Interface (CLI)

- Graphical User Interface (GUI)

- Natural Language Interface (NLI)

Command Line Interface (CLI):

CLI are the oldest of the interfaces available. It involves the computer responding to commands typed by the operator. It requires operators to remember a range of different commands and it is not ideal for the novice users.

For example: Disk Operating System (DOS), UNIX OS.

Graphical User Interface (GUI):

GUI are sometimes referred to as WIMP because they use windows, icons, menus and pointers. Operators use a pointing device such as mouse, touchpad etc to control a pointer on the screen to interact with on-screen elements. Nowadays all digital interfaces are graphical in nature.

For example: Windows, iOS, Android etc.

Natural Language Interface (NLI):

A natural language interface is a spoken interface where the user interacts with the computer by talking to it.

Commonly used by cell phones (mobile) systems as an alternative to the user pressing numbered buttons to make a call. This is based on Artificial Intelligent voice recognition systems.

This kind of interface is used by Apple in popular iPhone application called Siri, Google assistant by Google in Android and cortana by windows.

POLLING:

Polling is a process where the computer or controlling device waits for an external device to check for its readiness or state. For example, when a printer is connected, the computer waits until the printer has received the next data.

In electronic communications, polling is the continuous checking of other programs or devices to see what state they are in, usually to see whether they are still connected or want to communicate.

The main difference b/w interrupt & polling is that in interrupt device notifies the CPU that it requires attention, while in polling, the CPU continuously checks the status of the device to find whether they require any attention.

For example: While microprocessor checks for the printer for its connectivity all the times or an app like WhatsApp checks (poll) the server in cloud for any messages that need to be pushed for our personal.