Command-Line Interface (CLI):-

• Command-Line Interface (CLI) allows direct command entry

• Sometimes implemented in kernel, sometimes by systems program

• Sometimes multiple flavors implemented – shells

• Primarily receives command from user and executes it

• Sometimes commands built-in, sometimes just names of programs, sometimes a combination

• If the latter, adding new features doesn't require CLI modification

• (The kernel is a computer program that is the core of a computer's operating system, with complete control over everything in the system. The kernel facilitates interactions between hardware and software components.)

- A command line interface (CLI) is a text-based user interface (UI) used to view and manage computer files.
- Command line interfaces are also called command-line user interfaces, console (comfort) user interfaces and character user interfaces.
- Typically, the command line interface features a black box with white text.
- The user responds to a prompt in the command line interface by typing a command.
- The output or response from the system can include a message, table, list, or some other confirmation of a system or application action.

- Today, most users prefer the graphical user interface (GUI) offered by operating systems such as Windows, Linux and macOS.

- Most current Unix-based systems offer both a command line interface and a graphical user interface.

- Def. :- Command line interface (CLI) is a text-based interface that is used to operate software and operating systems while allowing the user to respond to visual prompts by typing single commands into the interface and receiving a reply in the same way.

GUI:-

- User-friendly desktop metaphor interface (character)
- Usually mouse, keyboard, and monitor
- Icons represent files, programs, actions, etc
- Various mouse buttons over objects in the interface cause various actions (provide information, options, execute function, open directory (known as a folder)
- Invented at Xerox PARC

- Many systems now include both CLI and GUI interfaces

- Microsoft Windows is GUI; CLI is "command" shell

- Apple Mac OS X has "Aqua" GUI; UNIX kernel underneath(under) and multiple shells available

- Solaris has multiple GUIs; CLI is multiple shells

- A **GUI** (graphical user interface) is a system of interactive visual components for computer software. A GUI displays objects that convey information, and represent actions that can be taken by the user. The objects change color, size, or visibility when the user interacts with them.

- GUI objects include icons, cursors, and buttons. These graphical elements are sometimes enhanced with sounds, or visual effects like transparency and drop shadows.

- A GUI is considered to be more user-friendly than a text-based command-line interface, such as MS-DOS, or the shell of Unix-like operating systems.

- The GUI was first developed at Xerox PARC by Alan Kay, Douglas Engelbart, and a group of other researchers in 1981. Later, Apple introduced the Lisa computer with a GUI on January 19, 1983.

Windows 7 Desktop

Start button

Taskbar icons

Windows Notification Area

Time and Date

ComputerHope.com

System Boot:-

•Booting the system is done by loading the kernel into main memory, and starting its execution.
•The CPU is given a reset event, and the instruction register is loaded with a predefined memory location, where execution starts.

•The initial bootstrap program is found in the BIOS read-only memory.
•This program can run diagnostics, initialize all components of the system, loads and starts the Operating System loader.
(Called **boot strapping**)
•The loader program loads and starts the operating system.
•When the Operating system starts, it sets up needed data structures in memory,
sets several registers in the CPU, and then creates and starts the first user level program.
From this point, the operating system only runs in response to interrupts. See CPU Response to Interrupts.

- n computing, **booting** is the process of starting a computer. It can be initiated by hardware such as a button press, or by a software command. After it is switched on, a computer's central processing unit (CPU) has no software in its main memory, so some process must load software into memory before it can be executed. This may be done by hardware or firmware in the CPU, or by a separate processor in the computer system.

- Restarting a computer also is called rebooting, which can be "hard", e.g. after electrical power to the CPU is switched from off to on, or "soft", where the power is not cut. On some systems, a soft boot may optionally clear RAM to zero. Both hard and soft booting can be initiated by hardware such as a button press or by software command. Booting is complete when the operative runtime system, typically operating system and some applications, is attained.