Lec 6: Opreating Systems, Programming Languages, and Software Development

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Integrated Development Environments (IDE)

- Combine all of the capabilities that a programmer wants while developing software (ex: Eclipse)
  - Editor
  - Compiler
  - Linker
  - Loader
  - Debugger
  - Viewer

User Interface Mechanism

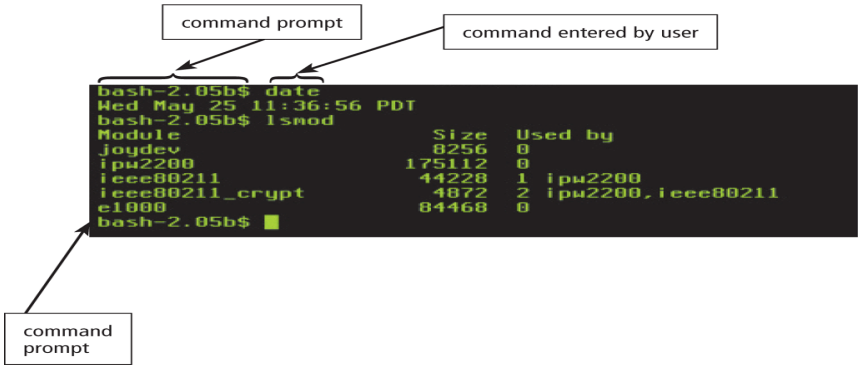
A user interface (UI) controls how you enter data and instructions and how information is displayed on the screen

There are two types of user interfaces

1- Command Line Interface

2- Graphical User Interface

✓ In a ***command-line interface***, a user types commands represented by short keywords or abbreviations or presses special keys on the keyboard to enter data and instructions.



✓ With a graphical user interface (GUI), you interact with menus and visual images.

Types of Operating Systems

1. ***Batch Operating System:*** A batch operating system is a type of operating system that allows multiple users to use it at the same time, *without direct communication between them*. This is done by having the users submit their jobs to the operating system, which then processes them one at a time.

2. ***Time-Sharing OS:*** A kind of computer operating system that permits multiple users to use a single computer at the same time by distributing the computer's resources (such as the CPU, memory, and input/output devices) among various users or applications.

3. ***Multiprocessing OS:*** Multiprocessor operating systems are used in operating systems to boost the performance of multiple CPUs within a single computer system. Multiple CPUs are linked together so that a job can be divided and executed more quickly. When a job is completed, the results from all CPUs are compiled to provide the final output.

4. ***Distributed OS:*** A distributed operating system (DOS) is an essential type of operating system. Distributed systems use many processors to serve multiple applications and users. As a result, data processing jobs are distributed between the processors. It connects multiple computers via a single communication channel. Furthermore, each of these systems has its own processor and memory. Additionally, these CPUs communicate via high-speed buses or telephone lines.

5. ***Network OS:*** A Network Operating System (**NOS**) is an operating system specifically designed to manage and facilitate the communication and coordination of activities among a group of interconnected computers or devices within a network. Its primary function is to enable file sharing and provide access to printers on a private network, a local area network, or other networks with many devices.

6. ***Real-Time OS:*** A real-time operating system (**RTOS**) is an OS that guarantees real-time applications a certain capability within a specified deadline. RTOS is designed for critical systems and for devices like

microcontrollers that are timing-specific. RTOS processing time requirements are measured in milliseconds.

7. ***Embedded OS:*** An embedded operating system is a specialized operating system designed to perform a specific task for a device that is not a computer. The main job of an embedded OS is to run the code that allows the device to do its job. The embedded OS also makes the device's hardware accessible to software that is running on top of the OS. Examples include computer systems in cars, traffic lights, digital televisions, ATMs, airplane controls, digital cameras, and GPS navigation systems.

Popular OS Examples:

- Desktop Class
  - ❖ Windows
  - ❖ OS X
  - ❖ Unix/Linux
  - ❖ Chrome OS
- Server Class
  - ❖ Windows Server
  - ❖ Mac OS X Server
  - ❖ Unix/Linux
- Mobile Class
  - ❖ Android
  - ❖ iOS
  - ❖ Windows Phone