

Software



ICS 20



What is an operating system?



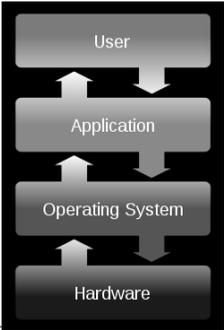
Almost all computers use an operating system!

Including:

- handheld computers, desktop computers, supercomputers, video game consoles
- robots, domestic appliances
 - (dishwashers, washing machines)
- portable media players

What is an operating system?

- Often called an O/S or OS
- An interface between the hardware and the user
- Shares resources and manages activities
- Acts as a host for applications to run



Managing Files

- File management is a central feature of almost all operating systems

The screenshot displays a file explorer interface. On the left, a sidebar shows a tree view of a local disk with folders like Applications, Desktop, Documents, Downloads, Library, Movies, Music, iTunes, Pictures, and Sites. The central pane shows the contents of the selected folder, including subfolders like Album Artwork, iTunes Library, and iTunes Music. On the right, a terminal window shows a series of shell commands and their outputs, such as `cd ..`, `ls`, `cd home`, and `ls`, along with their respective directory listings.

Managing Files



- Differences between operating systems?
 - Allowed characters, length of names, case sensitivity
 - File security
- Many different file & disk formats

User Interface



- Brings structure to the interaction between a user and the computer
- A program or set of programs that sits as a layer above the operating system itself.
- Almost always a **Graphical** User Interface
- Text-based interfaces are often called 'shell's

Types of Operating Systems



- **Real-Time Operating System (RTOS)**
 - For control machinery, scientific / industrial equipment
 - Little (if any) user interface
 - Good at doing something specific

- **Single-User, Single-Task**
 - More features, but simple
 - Just one thing at a time
 - iPhone (not always true anymore), Palm OS, etc

Types of Operating Systems



- **Single-User, Multi-Task**
 - The type most people have today
 - Designed for one person to do a variety of tasks, possibly at the same time
 - Ex: Windows, Mac OS, Linux

- **Multi-User, Multi-Task**
 - Allows many users to make full use of the computer's resources simultaneously
 - Must make sure to balance each user to make sure they don't affect each other.
 - Ex: Mainframes, large UNIX systems, VMS, etc

Device Driver



- All devices need a driver
- A “translator”
 - Allows the operating system to talk to any specific device
- Why don't your USB keys work right away?
 - You need a driver!