



Operating Systems

Freedom High School

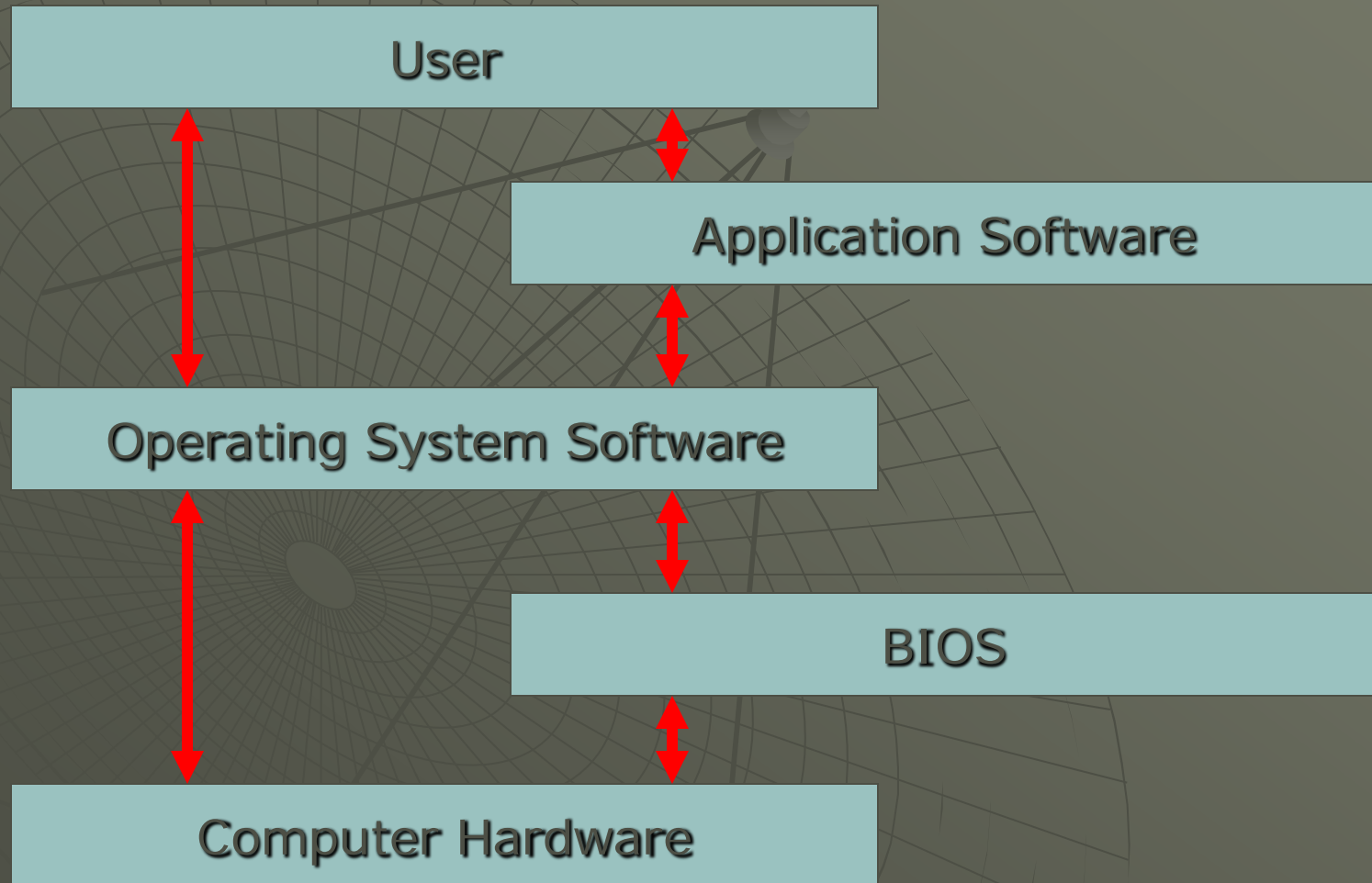
What Is an Operating System?

- ◆ Before operating systems users had to write code if they wanted to do **ANYTHING**
- ◆ OS provides a computer user with a file system structure and with a means of communicating with the computer hardware

Objectives

- ◆ ID various computer operating systems
- ◆ Explain minimum requirements for an OS
- ◆ Describe DOS / core files and limitations
- ◆ Boot process
- ◆ Relationship between BIOS, operating system, applications, hardware
- ◆ Characteristics between different OS

Typical Relationship



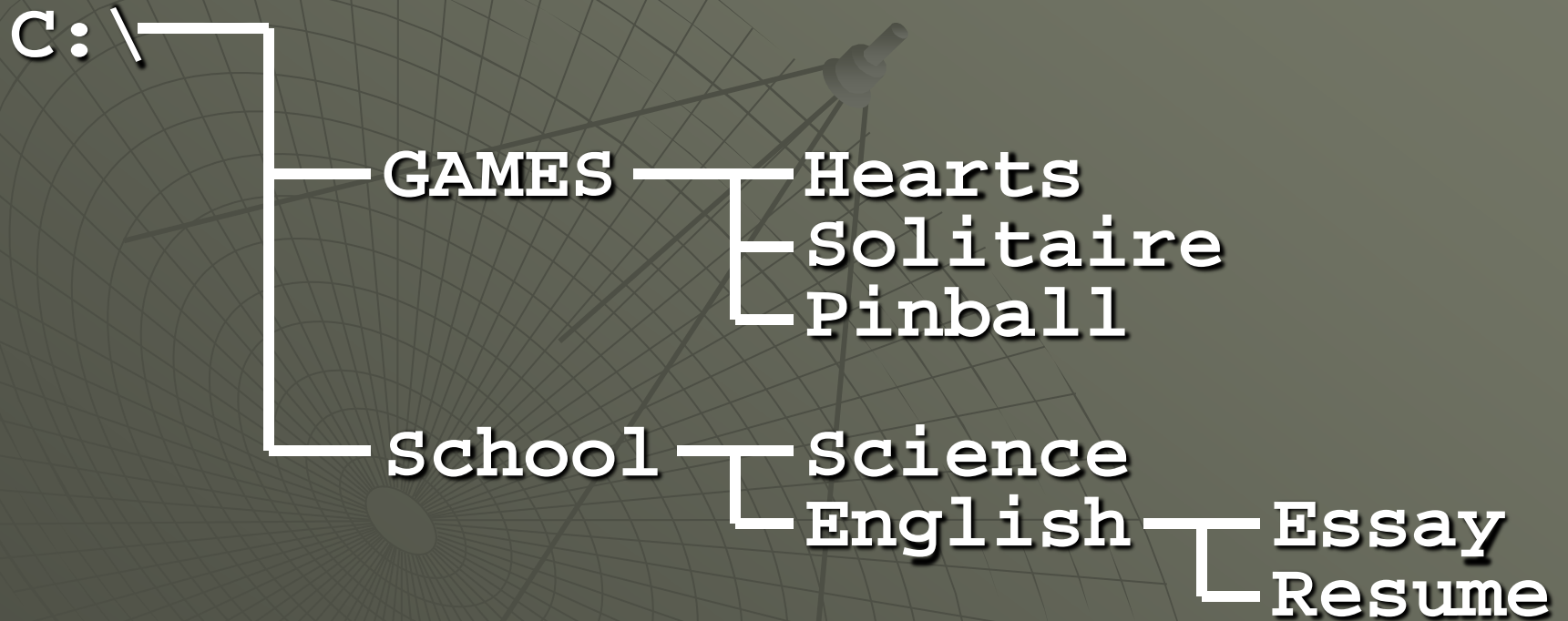
Multitasking

- ◆ Illusion
 - CPU can only process a single instruction at a time
 - Computer simply switches between running programs
- ◆ Preemptive Multitasking
 - No single program controls the system
- ◆ Cooperative Multitasking
 - One program dominates, but lets others use the system when idle

User Interface

- ◆ Text Line Commands
 - MS-DOS, PC-DOS, Linux, and Unix
- ◆ DOS no longer used
 - Text-based commands are an essential tool for today's PC technician
- ◆ Graphical User Interface (GUI)
 - Popularized by Apple on the Macintosh
 - GUIs are now the standard

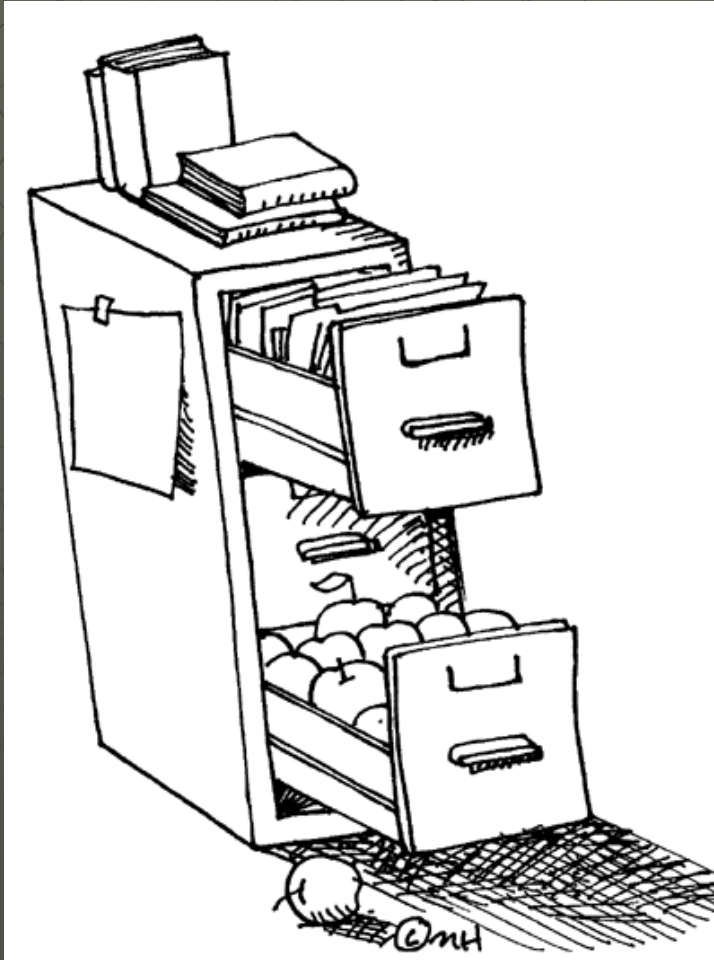
File Structure



File Structure

- ◆ Root directory
 - C: (hard drive)
- ◆ Directory
 - Games and School
- ◆ Subdirectory
 - Science and English
- ◆ Files
 - Hearts, Solitaire, Pinball, Essay, Resume

File Structure



- ◆ File Cabinet
 - Root directory
- ◆ File Drawer
 - Directory
- ◆ File Folder
 - Subdirectory
- ◆ Paper
 - File

Pathname

Root directory

Directory

Subdirectory

File

C:\School\English\Essay

A diagram illustrating the components of a pathname. The pathname 'C:\School\English\Essay' is shown at the bottom. Four red arrows point upwards from the path to labels above: 'Root directory' points to 'C:', 'Directory' points to '\School', 'Subdirectory' points to '\English', and 'File' points to '\Essay'. The background features a faint grid pattern.

Disk Operating System (DOS)

- ◆ First widely accepted OS
- ◆ Set the standard
- ◆ Still used
- ◆ Integrated into Windows 98
 - Backwards compatibility

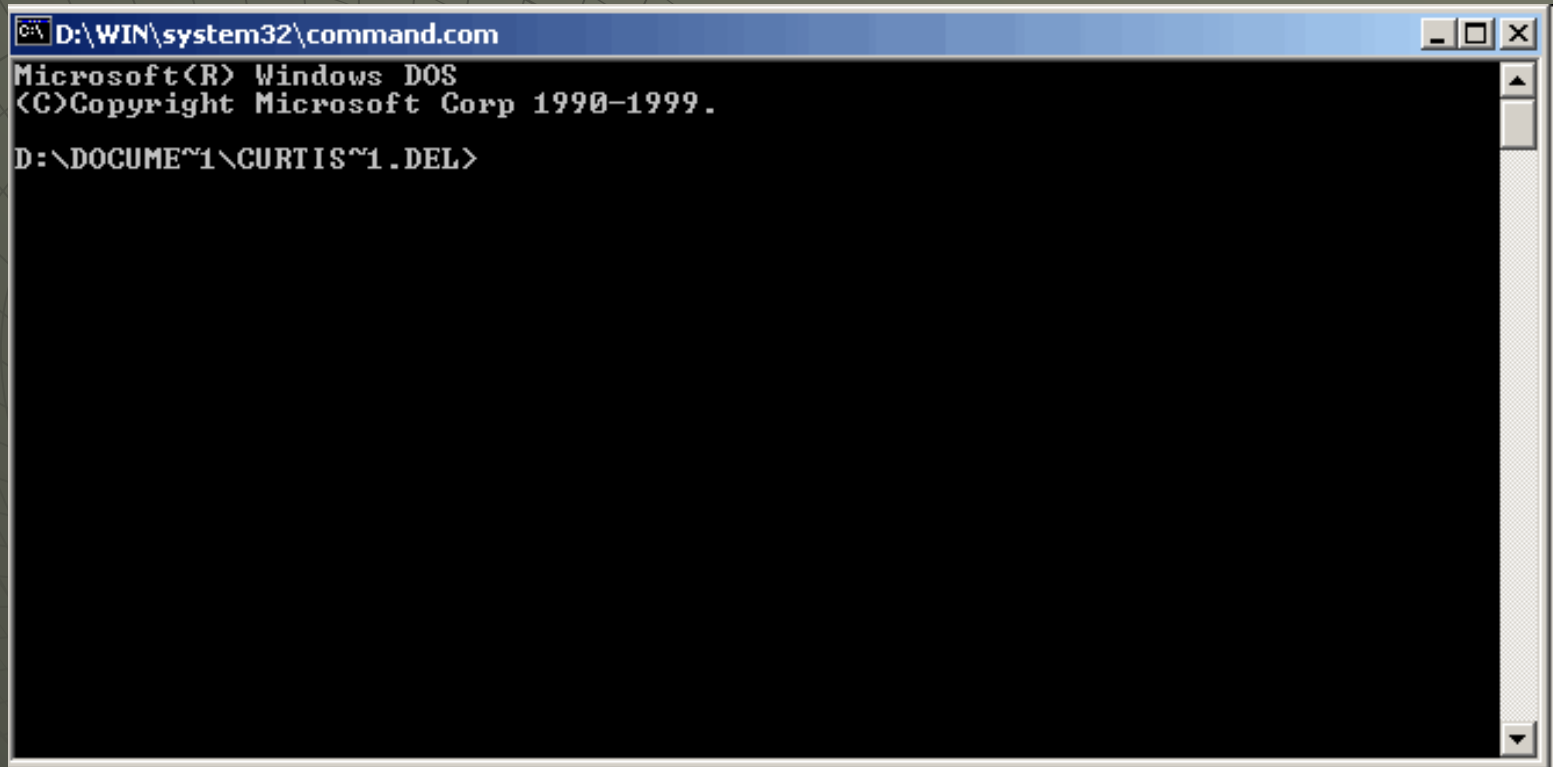
DOS Core Files

- ◆ *io.sys, msdos.sys, & command.com*
- ◆ Minimum set of files to run DOS
- ◆ Computer will fail if these are not present (in DOS mode)
 - Usually are hidden files to prevent accidental deletion

DOS System Boot Disk

- ◆ Floppy containing files needed run a computer with DOS
- ◆ Can be created in WindowsXP and Vista
 - Must have floppy drive (external fine)
- ◆ Windows backward compatibility.

Command.com



```
D:\WIN\system32\command.com
Microsoft(R) Windows DOS
(C)Copyright Microsoft Corp 1990-1999.
D:\DOCUME~1\CURTIS~1.DEL>
```

Command.com

- ◆ Compact program
- ◆ Command interpreter
- ◆ Activated by text entered at the command prompt
- ◆ Internal commands

`ver`

`dir`

`time`

`date`

`copy`

`del`

`rename`

Command.com

- ◆ Internal commands

`ver`

`dir`

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`rename`

- ◆ External commands

`edit`

`format`

`chkdsk`

`print`

Msdos.sys

- ◆ Kernel of the DOS operating system
- ◆ Contains smaller programs
 - Allows communication between user and hardware

Io.sys

- ◆ Contains generic drivers
 - Needed to communicate with hardware
 - ◆ Monitor
 - ◆ Floppy drive
 - ◆ Hard disk drive
 - ◆ Keyboard
- ◆ Works with `msdos.sys` to boot the computer

DOS File Names

- ◆ Eight point three (8.3) convention
- ◆ Two part name
 - First part – name up to 8 characters
 - Second part – extension 3 characters
- ◆ Common extensions

.bmp

.com

.dll

.doc

.exe

.ini

.log

.pif

.txt

DOS File Names

- ◆ Acceptable characters
 - A through Z
 - 0 through 9
 - Plus the following

= ^ \$ ~ ! # %
& - { } () @
, ' ,

DOS File Names

- ◆ Unacceptable characters
 - Characters have special meanings
 - Back slash, comma, spaces
 - Plus the following

| + = * > < ?
: []

- ◆ Other OS systems may have additional restrictions