

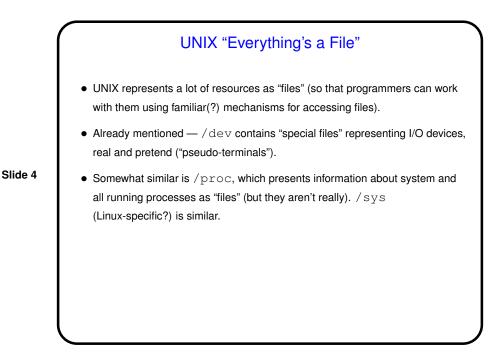
Slide 1

Minute Essay From Last Lecture Most people came fairly close on the question about different filesystems, but – review question/answer. Most people didn't have much to report about Homework 5, but one student ran into an interesting problem ... Apparently Linux memory management is such that malloc can report success even if there might not be enough memory. Presumably the hope is that when the memory is needed it will likely be there, but if not — runtime crash. Web search for "Linux OOM killer" for more information.



Apparently on (some?) Linux systems malloc returns true as long as you
haven't asked for more memory than you're allowed to have. But it doesn't
actually try to find space for the allocated memory (either in real memory or
on disk) until it's used — it "overcommits" memory resources.

- So what happens if a process tries to use space that was allocated but not previously used? system tries to find some — and if it can't, it calls the "OOM killer" to terminate one or more processes.
- (My first reaction is "what a bad design?" but it may make sense?)

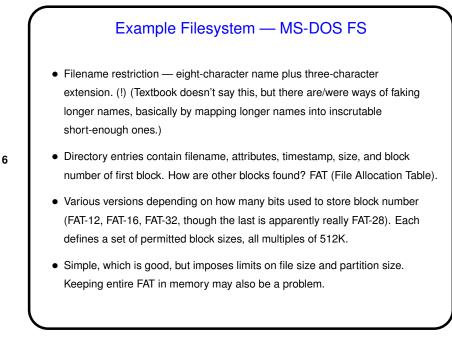


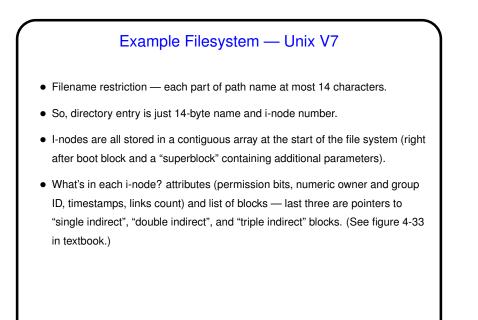
UNIX Filesystems — Hard Links versus Symbolic Links, Revisited

 As mentioned previously, many filesystems provide a mechanism for creating not-strictly-hierarchical relationships among files/folders. UNIX typically has two:

Slide 5

- "Hard" links allow multiple directory entries to point to the same i-node. "Soft" (symbolic) links are a special type of file containing a pathname
 - (absolute or relative).
- (Why two? Good question. Compare and contrast ...)





Slide 7

Example Filesystem — Unix V7, Continued

• To find a file:

- Start with root directory its i-node is in a known place.
- Scan directory for first part of path, get its i-node, read it, scan for next part of path, etc.
- Relative path names are handled by including "." and ".." in each directory, so no special code needed(!).
- Not so simple, and still imposes a limit on total file size, but flexible? and probably requires less system memory, since only i-nodes for open files need to be in memory.

