Topics: Devices, Bits, and more
Approach: Ideas, Examples, Applications
Featuring: more, stty
Main Ideas: Devices, Devices as Files, Drivers

Outline

Today: The Devices Part of the Big Picture
   Two featured commands: stty and more
   Big Idea: Devices look just like files
      with the addition of control panels

Examples:
   List some devices you can attach to a computer
      For each, say if input or output
      For each, list some settings
   Idea: A control Panel with device-specific settings
   Important device: The terminal

Access and Info for Devices
   Each device has a filename in /dev
   Each ‘file’ has owner, modtime, permissions, inode #, ...
   Access is open, read, write, close
   Example: cp hello.c /dev/pts/8
   Example: od -c /dev/pts/8

How it Works: Device Drivers
   The code to control a device is part of the kernel
   The code is called the device driver, it has an ID number (maj,min)
   When you call open, the kernel calls the open method for that code
   To get or set driver params, use ioctl : get_term_dims.c

Back to More:
   - recall what more does: instant input, no echo, handles Ctrl-C
   - recall our more02.c from class 1 - user controls from /dev/tty
     need: instant input, no echo, handle Ctrl-C
   - Summary: we want to control the keyboard/display device

Exploring the terminal device driver:
   showchars.c -- chars are echoed, buffered, edited, Ctrl-C kills
   stty is the control panel for the keyboard/display device
      change settings and run showchars

How stty works: Reading and Using the Terminal Control Panel
   tcgetattr(), tcsetattr()
   bits: test, set, clear
   code: showecho.c, setecho.c, showtty.c
   Note: tcgetattr and tcsetattr are wrappers for ioctl(2)

Now to write more:
   more04.c -- use tty driver control
      results: input handling pretty good, but Ctrl-C not so good

Signals
   What do they do? - interrupt a program, send a message
   How do they work? - kernel sends then
   How do we program with them? - use the signal() function

Back to more
   more05.c -- handles signals correctly