Administrivia

- Homework 4 to be on Web soon. Due date to be announced.

Slide 1

Review — Strings and Pointers

- Strings in C are null-terminated arrays of `chars`.

- Pointers are in some ways a less abstract and less safe version of Java references. They're also in some respects interchangeable with arrays.

Slide 2

I/O in C — Some Very Basic Functions

- `getchar` gets one character and returns it as an `int`. The special value `EOF` indicates end of input. ("End of input"? control-D from terminal, more in next sidebar.)

- `putchar` writes out one character.

Slide 3

- Use this to write a very simple program that simply copies its input to its output . . .

I/O in C, Continued

- You already know about a function to write output to "standard output", `printf`. Many options, allowing a lot of control over what's printed.

- How about input? Counterpart of `printf` is `scanf` (skim man page). Simple to use, though error detection is somewhat crude, and reading text strings can be hazardous.

Slide 4

- One way to work with files is I/O redirection. Is there something more general? Yes . . . (next time).

Sidebar: Input/Output Redirection in UNIX/Linux

Slide 5

- In programming classes I talk about "reading from standard input" rather than "reading from the keyboard", and "writing to standard output" (or "writing to standard error") rather than "writing to the screen".

  (In Java terms — `System.in`, `System.out`, and `System.err`. C has similar concepts but calls them `stdin`, `stdout`, and `stderr`.)

- What's the difference?

I/O Redirection, Continued

Slide 6

- `stdin` (standard input) can come from keyboard, file, or from another program or shell script.

- `stdout` and `stderr` (standard output, error) can go to terminal or file (overwrite or append), separately or together.

I/O Redirection, Continued

- For example — to redirect output of `ls` to `ls.out`, type

  `ls >ls.out`

  (Overwrites `ls.out`. To append, replace $>$ with $>>$.)

  To also redirect any error messages, append $2>\&1$.

- To redirect input, use $<$`infile`.

Slide 7

Minute Essay

- None — sign in.

Slide 8