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Administrivia

- Reminder: Homework 2 due today at 5pm.
- Homework 3 to be on Web soon, probably later today / tomorrow.

Slide 2

Arrays in C, Briefly

- Syntax for creating arrays is somewhat different from Java's — no explicit `new`, but instead something like

```
int x[10];
```

to reserve space for 10 `ints`. In old-style C, sizes must be constants known at compile time. In new-style C, "variable-length arrays" (VLAs) are permitted as well.

- Syntax for array access is the same as Java, but there's no `length` variable, and no checks are made to ensure that the index is legit (between 0 and array size minus one). This can make for interesting bugs ...
- Syntax for passing arrays as parameters to functions is somewhat like Java's, except brackets typically go after the parameter name, and arrays and pointers (more soon) can be used more or less interchangeably.

Arrays in C — Example

- Let's write a sort program ...
- (Where to get input? let's just generate random values, using library function `rand()`.)

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

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Sidebar: Input/Output Redirection in UNIX/Linux

- 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`.)

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- What's the difference?

I/O Redirection, Continued

- `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.

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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`.

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Minute Essay

- How might input/output redirection be useful? (e.g., in program development? testing?)

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Minute Essay Answer

- Some possible answers I had in mind:
 - Input redirection could be useful in testing programs — you could put test-case input in a file or files rather than typing it in every time.
 - Output redirection could be also be useful in testing programs, especially in “regression testing” (re-testing after making a change) — you could capture program output in a file and compare it to a file containing expected output.

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