Administrivia

- (None?)

Slide 1

Minute Essay From Last Lecture

- Most people thought multi-dimensional arrays sounded useful, but no applications stood out. One person said you could use them for that stars-and-spaces homework problem. True!

- People seemed find Homework 6 difficult? I mean for these assignments to be somewhat challenging but doable.

Slide 2

Multi-Dimensional Arrays in C — Recap/Review

- Multi-dimensional arrays can be quite useful, and many languages support them pretty well. C, alas — not so much.

- For small arrays, VLAs work well.

- For large arrays, other options are better. More later.

Slide 3

Multi-Dimensional Arrays, Example — ASCII Art

- We could write a simple "ASCII art" program that "draws" pictures using characters only, with:

    - a two-dimensional array of `char` as the "canvas", and

    - a simple text-menu-driven interface to print, set blocks, clear.

Slide 4   (Look briefly at pre-written code.)

Sorting and Searching

Slide 5

- Traditional topics in CS1 courses. Arguably not of first importance to people more interested in using computers as tools, but still interesting . . . :

- Both are good examples of problems that can be solved in different ways.

- Both are good examples for introducing the idea of "order of magnitude" for algorithms.

- (But if you actually need to do one of these operations, look first for a library function!)

Sorting — The Problem and Some Solutions

Slide 6

- Problem: Given an array (or list) of elements for which there is a sensible "less than" operator, put them in order.

- Simple solutions include bubble sort, selection sort, insertion sort. Easy to program but not "fast" (more later).

  Textbook has good discussions. We could easily code up bubble sort . . . .

- More-complex but "faster" solutions exist, and two of the best-known use recursion(!). More about them later.

Searching — The Problem and Some Solutions

Slide 7

- Problem: Given an array (or list) and an element, search the array for the element.

- Simplest solution is sequential search. Easy to program and works for any array but not "fast".

- Slightly more-complex solution is binary search. "Faster" but requires array to be in order.

Just For Fun — Extreme ASCII Art

Slide 8

- Try `telnet towel.blinkenlights.nl`. Sometimes site is inaccessible, but when it works . . .

  Control-`]` then Enter, then q, to exit.

- (This has been around for a *long* time.)

Minute Essay

- Any questions? otherwise just sign in.

Slide 9