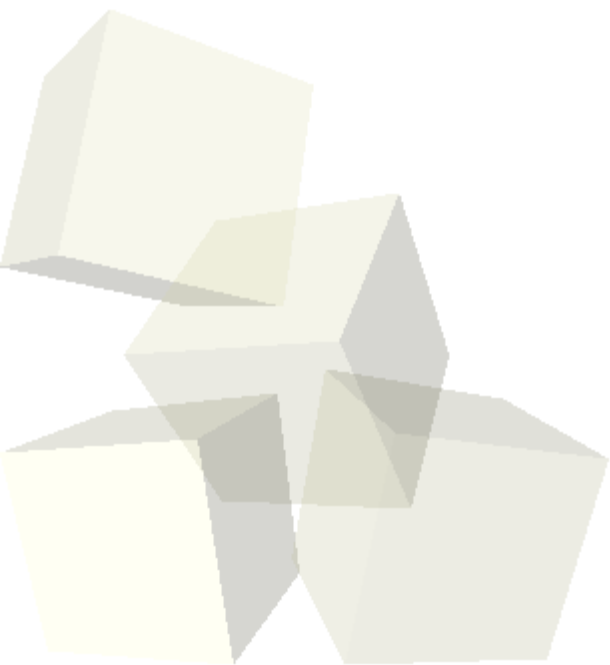




Arrays as Pointers

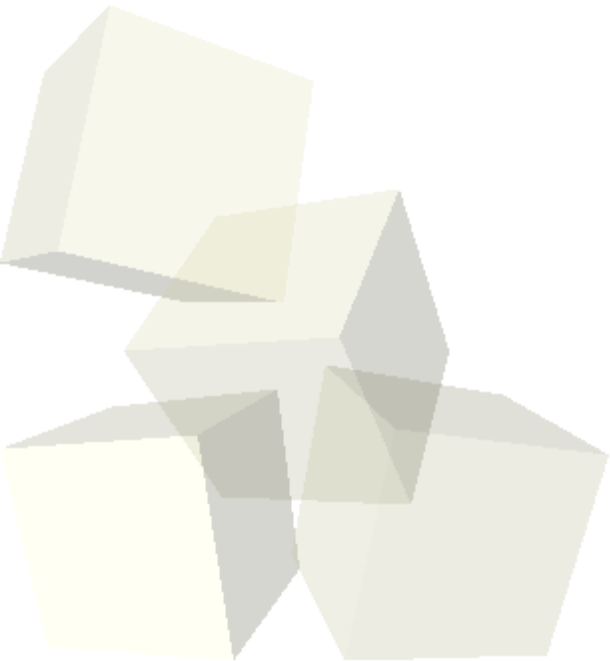
10-26-2006





Opening Discussion

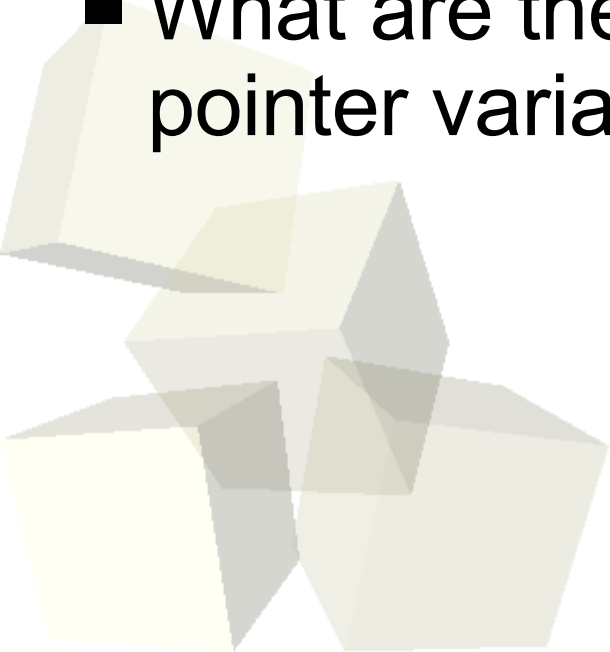
- What did we talk about last class?
- Do you have any questions about the reading?
- Do you have any questions about the assignment?
- Minute essay responses.





Arrays as Pointers

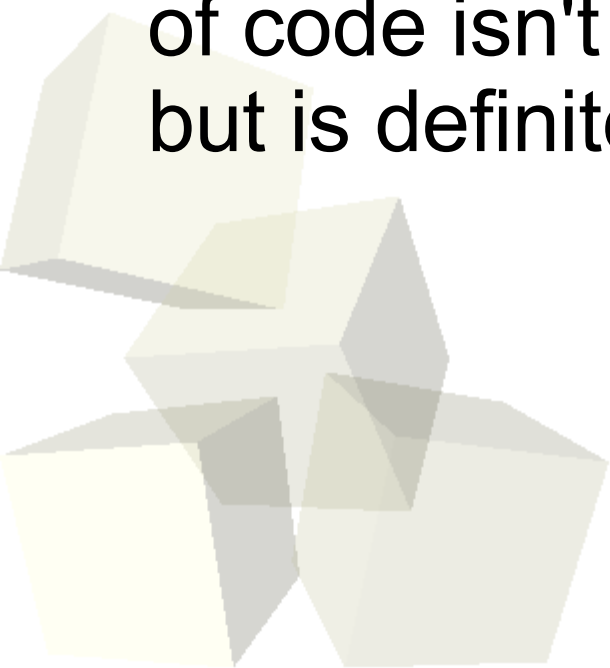
- I've said many times that 1-D arrays are basically just pointers. Let's explore that idea a bit to see how things are laid out in memory.
- What do we get if we print the name of an array? What if we print the address of it?
- What are the addresses of the various elements in an array?
- What are the differences in behavior between a pointer variable and an array variable?





Using Pointer Arithmetic

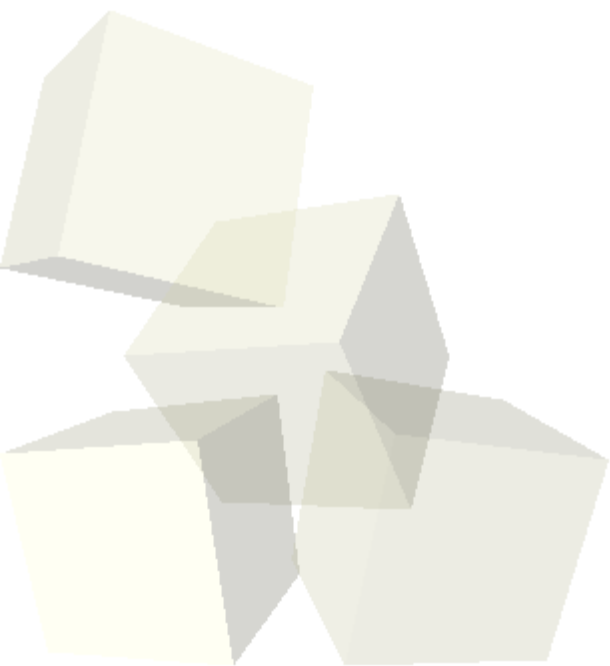
- I've shown you several times how we can do arithmetic on pointers. This gives you low level control to look through memory on a machine.
- Pointer arithmetic behaves properly for the type of things that the pointer points to.
- Let's write a loop that prints the contents of an array, but does it without ever using []. This type of code isn't really needed with modern compilers but is definitely worth understanding.





Multidimensional Arrays

- What does a 2-D array look like in memory?
- How is a 2-D array different from a pointer to a pointer?
- Let's using some print statements to examine the structure of a 2-D array in memory and use that to compare that to the image of how a pointer to a pointer could act like a 2-D array.





Dynamic Memory

- The arrays that we have dealt with have some serious limitations. Most notably, they have to have a fixed length to adhere to the C standard. Having to specify the length of everything but the first dimension in a multidimensional array is also a bit limiting.
- The way we get around this in C (and many other languages) is to use dynamic memory. Dynamic memory is memory that we can request from a different part of memory. Normal arrays get placed on the call stack in the normal stack frames. Dynamic memory, including arrays, comes from the heap.



Minute Essay

- Write a function that will tell you if two strings are equal. The trick is that the function can't use [].
- Remember that assignment #5 is due today.

