



Searching and Pointers

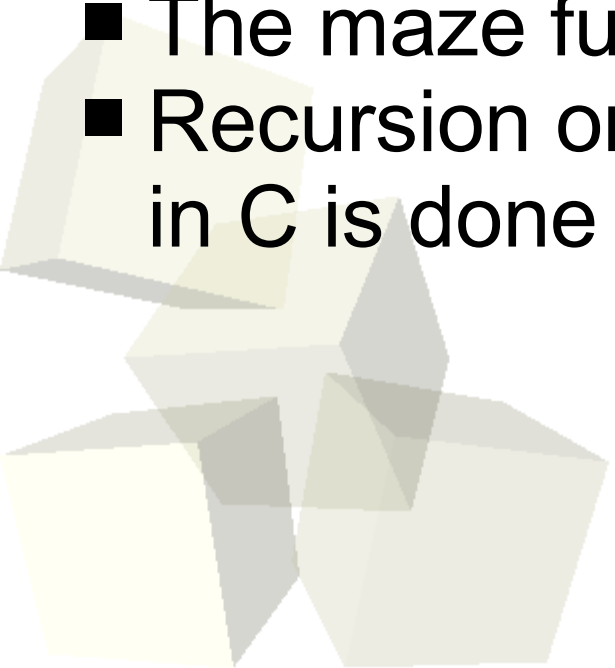
10-19-2006





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?
- Arrays and lengths. Lengths of strings. Examining strings.
- Why is this painful?
- The maze function and tracing through it.
- Recursion on main: don't do this. Simple iteration in C is done with loops.



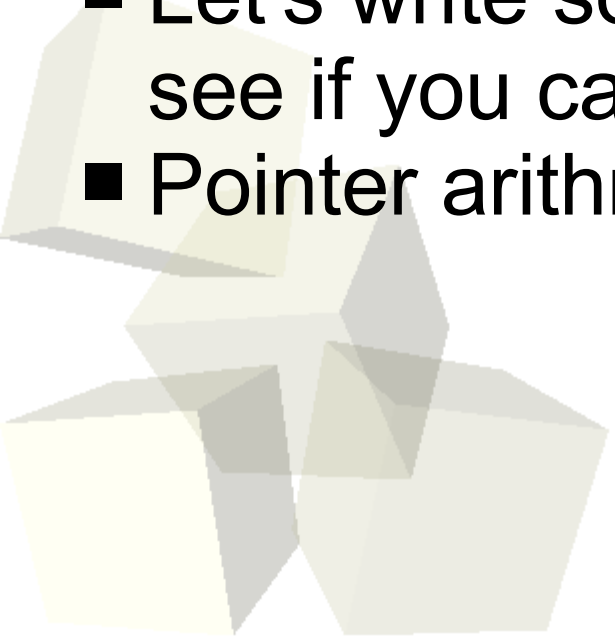


- Let's write both a basic and a fast search. The basic version works on all arrays. The fast one only works on sorted arrays.
- How fast is the fast version? How does it compare to the slower one for speed?





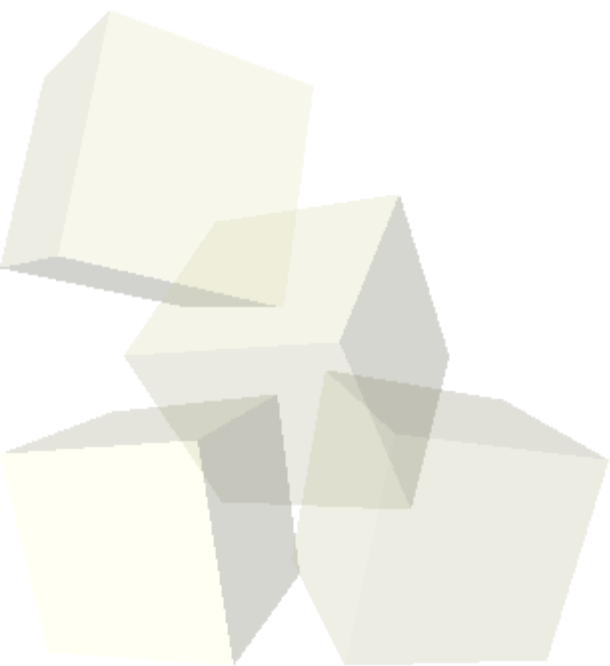
- What is a pointer? How do we express them in C?
- Understanding types in C or any other programming language is critical to being able to understand your programs. If you don't know the type of an expression, how can you possibly know its value?
- Let's write some more complex expressions and see if you can figure out their types.
- Pointer arithmetic.





The Layout of Memory

- What do you think you get when you print a pointer? It's standard to print them in hex.
- Let's write a program that prints some pointers and see what it can tell us about the arrangement of memory.





Common Pitfalls of Pointers

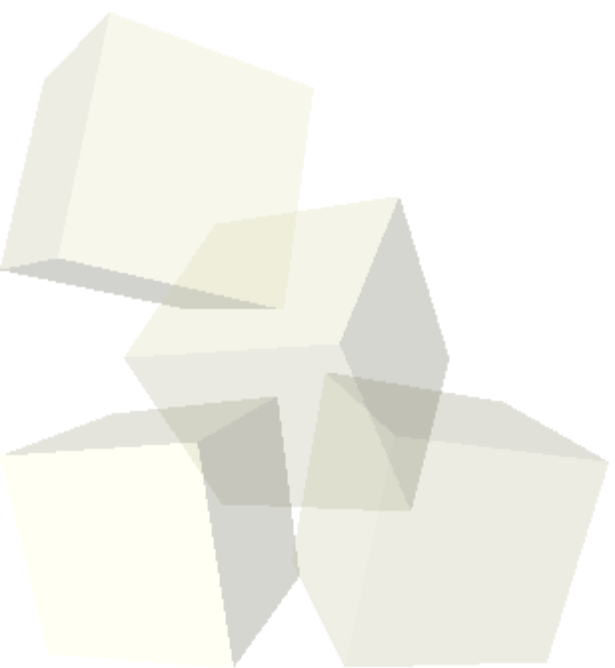
- Pointers need to be initialized to be of any use to you. Remember you can get a pointer with the & operator.
- Functions that take a char* (which we will see more of later) need to it point to something.
- The pointer is passed by value so changing the pointer in the function doesn't do anything outside. You need to have a dereference.





Pass-by-reference

- Passing in a pointer to a function allows you to modify the value of the memory location it points to. This can effectively let you “return” more than one value from a function.
- We saw this in swap last time. Let's write a different function that we would really like to have calculate more than one value for us.





- Remember that function we wanted to write that would read in three values for our gas mileage program? I want you to write it now. Don't worry about nice prompts.
- Assignment #4 is due by midnight. I will be around until 2pm and probably a bit after that. I have a meeting right now that shouldn't last more than an hour.

