C style Strings and Multidimensional Arrays

10 15 2001

Opening Discussion

- Make sure you get assignment 3 in to me today. I will probably be leaving campus earlier than normal.
- What did we talk about last class?
- Today is our last class formally discussing arrays. Did doing assignment #3 help you to understand the array concept? Do you see what arrays allowed you to do that you couldn't do without them?

Strings as Arrays

- When we have needed to use strings we have use the C++ class string. Strings can be represented as arrays of characters though.
- It is likely that the string class uses an array or chars and in integer for the length of the string.
- This is hidden by being wrapped in a C++ class.

C style Strings

- In C, strings were constructed with just an array of characters. The end of the string was denoted by a zero (remember that characters are int types).
- By reserving room for this "special" end character you don't have to pass a separate length to function calls. Functions process until they reach the zero.

Multidimensional Array

- We have talked about arrays that are one dimensional, they have one index to specify an element. You don't have to stop there.
- In C++ arrays of higher dimensions are implemented as arrays of arrays. This has power that we won't discuss now. For now we will only consider rectangular multi dimensional arrays.

2D Arrays

- While arrays can be made with nearly arbitrary dimensionality, you typically won't use more than 2 or 3. A 2D array can be used to implement things like matrices or all the assignment grades for an entire class.
- The syntax for declaration and use looks like this:

```
int a[20][5];
cin >> a[i][j];
a[0][k+3]+=a[1][k+3];
```

Minute Essay

- Write the code to declare a 10x10 two dimensional array of ints and read in values into all the elements.
- We have a week and a half before the first test. If you are having problems with concepts in this class this is the time to make sure you can do the drill problems and some problems from the text book.