TECHNICAL STUFF

On the difference between numbers and strings, if you dare to care

You have to know when a number in C is a value and when it's a string. A numeric value is what you find lurking in a numeric variable. This book calls those things *values,* and not *numbers.* A value is 5 apples, 3.141 (for example), the national debt, and the number of pounds you can lose on celebrity diets featured in this week's *Star.* Those are values.

Numbers are what appear in strings of text. When you type 255, for example, you're entering a string. Those are the characters 2, 5, and 5, as found on your keyboard. The string "255" is not a value. I call it a number. By using the

atoi() function in the C language, you can translate it into a value, suitable for storage in a numeric variable.

There are numbers and there are values. Which is which? It depends on how you're going to use it. Obviously, if someone is entering a phone number, house number, or zip code, it's probably a string. (My zip code is 94402, but that doesn't mean that it's the 94-thousandth-something post office in the United States.) If someone enters a dollar amount, percentage, size, or measurement — anything you work with mathematically — it's probably a value.

The atoi() function follows the equal sign. Then comes the *string* to convert, hugged by atoi()'s parentheses. The string can be a string variable or a string "constant" enclosed in double quotes. Most often, the *string* to convert is the name of a string variable, one created by the char keyword and read from the keyboard by using gets() or scanf() or some other keyboard-reading function.

The line ends in a semicolon because it's a complete C language statement.

The atoi function also requires a second number-sign thingy at the beginning of your source code:

```
#include <stdlib.h>
```

This line is usually placed below the traditional #include <stdio.h> thing — both of them look the same, in fact, but it's stdlib.h in the angle pinchers that's required here. The line does not end with a semicolon.

- ✔ atoi is not pronounced "a toy." It's "A-to-I," like what you see on the spine of Volume One of a 3-volume encyclopedia.

- ✔ Numbers are values; strings are composed of characters.

- ✔ If the *string* that atoi() converts does not begin with a number, or if the number is too large or too weird to be an integer, atoi spits back the value 0 (zero).