Strings (using *string* header file)

The string header file allows us to define a variable type or data type called string.

```
#include <iostream>
#include <string>                  // allows the use of the string 'variable type'
using namespace std;

int main()
{
        string a = "One way to use a string is to simply assign the value of the string with an = ";
        cout << a << endl << endl;

        string b ("Another way to use a string is to use parentheses instead of an = ");
        cout << b << endl << endl;

        string c;
        cout << "You can have the user input a string just like any other variable type" << endl
             << "Enter a word   ";
        cin >> c;
        cout<< "You entered the word " << c << endl << endl;

        return 0;
}
```

Strings are actually just arrays of **char** in which the last element is the null-terminator character '\0'. This null terminator is considered to be **one** character.

Example.

string x = "ABC"; // x is an array of length 4

In other words, x is represented by the array:

'A'	'B'	'C'	'\0'
x[0]	x[1]	x[2]	x[3]

Remember that arrays, and hence strings, begin their indices with 0.

Question:

Suppose we wanted to operate on each character of a string inputted by the user. However, we don't know in advance how long the string is. How would we structure the code?

Answer:

Use a while loop.

```
int i = 0;
string x;

cout << "Enter a string: ";
cin >> x;

while (x[i] != '\0')
{       statement 1;            // manipulate the (i+1)th character in the string
        statement 2;
            ...
        i++;                    // when finished, update the index by 1 to look at the next character
}
```