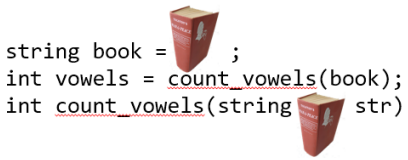
String Value Parameters

Imagine you want to write a function named `count_vowels()`, which counts the number of vowels in a **`string`**. Here's a first attempt:

```
int count_vowels(string str) {
  int vowels = 0;
  for (char c : str) {
    switch (c) {
      case 'a': case 'A': case 'e': case 'E': case 'i':
      case 'I': case 'o': case 'O': case 'u': case 'U':
      vowels++;
    }
  }
  return vowels;
}
```

The code in this function is correct, readable, and quite efficient. However, it has **one flaw**. Imagine calling the function with a long **`string`**, say the text of *War and Peace*. Because the parameter variable **`str`** is a **value** parameter, your code will make a copy of the whole text of the book and store that in **`str`**.



Thus, using pass-by-value with **`string`** arguments is **very inefficient**.

> *Never pass class types, such as **`string`** and **`vector`** by value.*