
BEAUTIFUL C#

by Jeremy Fonte

I hail primarily from a JavaScript and Visual Basic-dialect world (think VBA, VB.NET). I've dabbled in C, C++ and Java, and I use HTML, CSS and SQL all the time – but it wasn't until recently that I devoted time to learning and using C#, Microsoft's flagship .NET language.

I'm beyond pleasantly surprised – C# is a wonderful mix of imperative and functional programming paradigms, offering a highly powerful set of features that give the programmer multiple avenues through which to solve a given programming problem. Pile on top of this the support for generics and the vast .NET library, and there's little that C# can't do.

Take for example the support for lambda expressions and delegates. These tools both offer the ability to define, assign, and return anonymous functions. Anonymous functions are, on the surface, functions without a name, which can be assigned to a variable or returned from a function. Essentially, anonymous functions enable first-class functions, that is, functions that can be assigned to variables, used as function parameters, or returned from functions, just like any other value.

The real power of first-class functions comes in the creation of a closure. Closures consist of functions inside of other functions that keep the outer function's variables in scope for as long as a reference to the inner function is maintained. This means that the stored inner function can remember the values in the outer function across function calls – preserving the state of the “captured” variables indefinitely.

The object-oriented side of C# is quite robust: classes, interfaces, single-inheritance, and 100% OOP design – which is to say that *everything* resides in a class. Unlike C++, there is no support for a function living outside of a class. There are also no true global variables – which is, of course, a good thing! Instead, you can declare a public static class with a public static property that other classes can easily access.

I personally place C# at the top of Microsoft's achievements – alongside the Xbox 360 and the Office 2010 productivity suite. It is without a doubt their most beautiful, powerful language, and is a joy to use.