C# String in Depth with Examples

Strings are reference types in C#:

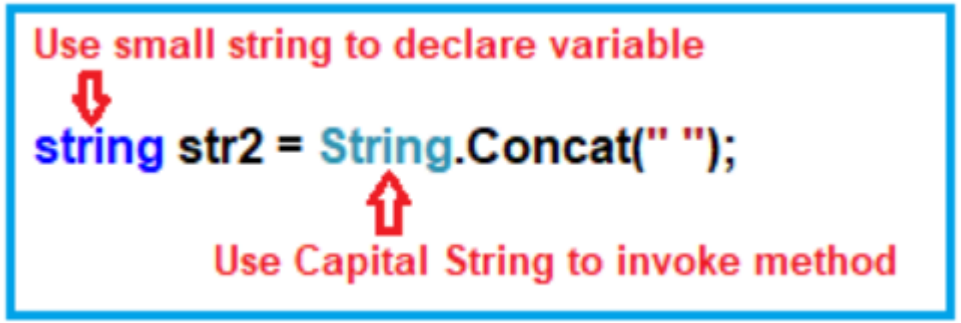
Then if you right-click on the string data type and click on go to definition then you will see that it is a class. Class means reference data type.

```
public sealed class String : IComparable, ICloneable, IConvertible, IEnumerable, IComparable<String>,
  IEnumerable<char>, IEquatable<String>
```

What are the Differences between String(Capital) vs string(small) in C#?

In C#, you can use the string in two ways i.e. you can use the string using capital S (i.e. String) or by using the small "s" (i.e. string) as shown in the below image. The small string is actually an alias of String (Capital string).

```
string str1 = ""; //using small s
String str2 = ""; //using capital S
```



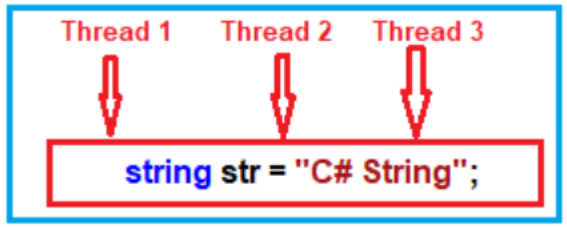
Strings are Immutable in C#:

Before understanding strings are immutable, first, we need to understand two terms i.e. Mutable and Immutable. Mutable means can be changed whereas Immutable means can not be changed. C# strings are immutable means C# strings cannot be changed

```
        static void Main(string[] args)
        {
            string str = "";
            Console.WriteLine("Loop Started");
            var stopwatch = new Stopwatch();

            stopwatch.Start();
            for (int i = 0; i < 30000; i++)
            {
                str ="DotNet Tutorials" + str;
            }
            stopwatch.Stop();

            Console.WriteLine("Loop Ended");
            Console.WriteLine("Loop Exceution Time in MS :" +
stopwatch.ElapsedMilliseconds);

            Console.ReadKey();
        }
```

Why they made C# String Immutable?

They made Strings as Immutable for Thread Safety. Think of one situation where you have many threads and all the threads want to manipulate the same string object as shown in the below image. If strings are mutable then we have thread-safety issues.



What is an Array in C#?

In simple words, we can define an array as a collection of similar types of values that are stored in sequential order i.e. they are stored in a contiguous memory location.

Single dimensional array	Multi-dimensional array

1.Jagged array: Whose rows and columns are not equal
2.Rectangular array: Whose rows and columns are equal

Memory Representation of Arrays in C#: