

String interchange between C# to and ANSI C DLL

How to send and receive a string between C# and C.

Recently we had some problems interfacing a C# code with a C (especially MinGW) DLL. The main problem was that we needed to interchange strings, send and received from both directions.

Sending a registry entry from C# to C

C

CS

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Runtime.InteropServices;
using System.Threading;

namespace CODE
{
    public unsafe class Connector
    {
        private string PathKey = "Path";
        // needs to be constant...
        private const string PathToCDLL = @"C:pathtocdll";

        public void InitPath()
        {
            string Path = new
Globals().getRegistryEntry(this.PathKey);
            // string characters are 2 bytes long in C#, C
needs 1 byte chars:
            System.Text.ASCIIEncoding encoding = new
System.Text.ASCIIEncoding();
            Byte[] path = encoding.GetBytes( Path );
            init_path_c(path);
        }

        [DllImport(PathToCDLL, EntryPoint = "init_path",
ExactSpelling = true, CharSet = CharSet.Ansi,
CallingConvention = CallingConvention.Cdecl)]
        private static extern void
init_path_c([MarshalAs(UnmanagedType.LPArray)] byte[] Path );
    }
}
```

C

```
char* global_path;  
void init_path( char* path )  
{  
    global_path = path;  
}
```

C

Receiving a string in C# from C

CS

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Runtime.InteropServices;
using System.Threading;

namespace CODE
{
    public unsafe class Connector
    {
        public string getCString()
        {
            IntPtr strPtr =
Marshal.AllocHGlobal(Marshal.SizeOf(typeof(int)));
            get_c_string(strPtr);
            return Marshal.PtrToStringAnsi(strPtr);
        }

        [DllImport(PathToCDLL, EntryPoint = "c_string",
ExactSpelling = true, CharSet = CharSet.Ansi,
CallingConvention = CallingConvention.Cdecl)]
        private static extern void get_c_string( IntPtr
Path );
    }
}
```

CS

C

```
#include <string.h>

void c_string( char* path )
```

C

```
{  
    char* str = "This is a test string";  
    strcpy ( path, str );  
}
```

Created by Peter Molnar <mail@petermolnar.net>, published at 2012-05-08 07:30 UTC, last modified at 2021-10-31 15:57 UTC , to canonical URL <https://petermolnar.net/article/interfacing-c-with-csharp/> , licensed under CC-BY-4.0 .