

# .NET 2.0 performance bug in ArrayList.Sort

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I have come across with what appears to be a significant performance bug in .NET 2.0 ArrayList.Sort method when compared with Array.Sort on the same data. Same data on the same CPU gets sorted a lot faster with both methods using .NET 1.1, that's why I am pretty sure its a (rather serious) bug. Below you can find C# test case that should allow you to reproduce this error, to run it you will need to put 2 data files into current directory where executable is or just change filename pathes accordingly, the data files can be obtained from here:

fast\_data.txt: [http://majestic12.co.uk/files/other/dotnet2bug/fast\\_data.txt](http://majestic12.co.uk/files/other/dotnet2bug/fast_data.txt)  
slow\_data.txt: [http://majestic12.co.uk/files/other/dotnet2bug/slow\\_data.txt](http://majestic12.co.uk/files/other/dotnet2bug/slow_data.txt)

The data are strings (URLs) of about similar size in bytes and number.

The following are the console outputs from code on the same machine (AMD x2 3800, 2 GB RAM, XP Pro SP2):

VS2003 .NET 1.1 (with SP1) run:

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```
Loaded 29974 lines from file slow_data.txt
Time to sort strings in ArrayList is: 250 msec
Time to sort strings in string[] array is: 234 msec
Loaded 31688 lines from file fast_data.txt
Time to sort strings in ArrayList is: 250 msec
Time to sort strings in string[] array is: 250 msec
```

---

Note that sorting times are almost exactly the same here, so all good in .NET 1.1 .

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VS2005 .NET 2.0 run:

```
Loaded 29974 lines from file slow_data.txt
Time to sort strings in ArrayList is: 1531 msec
Time to sort strings in string[] array is: 187 msec
Loaded 31688 lines from file fast_data.txt
```

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Time to sort strings in ArrayList is: 703 msec  
Time to sort strings in string[] array is: 171 msec  
Press ENTER to exit

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Notice that on the same machine with the same data sorting times are MUCH slower in ArrayList.Sort, and particularly for the "slow\_data.txt" file, Array.Sort times are actually better, so I am not complaining there, but clearly ArrayList sorts are seriously flawed – this appears to be data dependent and by that I don't mean size of the data or number of strings: I have got lots of such data files and about every 10th of them is 10–20 times slower than the other even though it has got about the same number of lines and bytesize.

Note: I am aware of boxing/unboxing overheads when dealing with ArrayLists, however in this case the slowdown is really bad comparing to .NET 1.1 and it appears to be data dependent – I am getting it on about 10% of my dataset from which I have selected 2 examples (slow and fast) to demonstrate that its a very serious performance issue.

Here is the code that should allow you to replicate the problem:

```
////////////////////////////////////  
using System;  
using System.Collections;  
using System.IO;  
  
/*  
This is a test case of what appears to be a major performance issue in  
ArrayList.Sort method for strings  
in .NET 2.0 – it appears to be data dependant as some similarly sized  
data files have got a lot less  
performance penalty when sorting them using Array.Sort method on  
string[] array.
```

The kicker: both versions run fast in .NET 1.1

```
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Date: 28 Apr 2006  
*/
```

```
namespace Majestic12  
{  
    /// <summary>  
    /// Tests sorting performance of Array.Sort of string[] versus  
    ArrayList.Sort of the same strings  
    /// It appears that in .NET 2.0 in some cases ArrayList will take a LOT  
    more time to do the sorting  
    /// </summary>  
    class SlowArrayListSortTest
```

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```
{
static void Main(string[] args)
{
// load strings from file: assumed to be in the same place as
the executable
TestFile("slow_data.txt"); // <---- this data file has got 10
times slower
TestFile("fast_data.txt"); // <---- more reasonable 2 times slower

Console.WriteLine("Press ENTER to exit");
Console.ReadLine();
}

static void TestFile(string sFile)
{
FileStream oFS=File.OpenRead(sFile);

ArrayList oLines=new ArrayList();

StreamReader oSR=new StreamReader(oFS);

while(oSR.BaseStream.Position<oSR.BaseStream.Length)
{
oLines.Add(oSR.ReadLine());
}

oFS.Close();

Console.WriteLine("Loaded {0} lines from file
{1}",oLines.Count,sFile);

// now copy same strings into string array for speed comparisons
string[] sLines=new string[oLines.Count];

for(int i=0;i<sLines.Length;i++)
sLines[i]=(string)oLines[i];

DateTime oTime=DateTime.Now;
oLines.Sort();
Console.WriteLine("Time to sort strings in ArrayList is: {0}
msec", (DateTime.Now.Ticks-oTime.Ticks)/TimeSpan.TicksPerMillisecond);

oTime=DateTime.Now;
Array.Sort(sLines);
Console.WriteLine("Time to sort strings in string[] array is:
{0} msec", (DateTime.Now.Ticks-oTime.Ticks)/TimeSpan.TicksPerMillisecond);
}
}
}

////////////////////////////////////
```

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