

Re: Can you write code directly in CIL ???

Source:

<http://www.tech-archive.net/Archive/DotNet/microsoft.public.dotnet.languages.csharp/2005-12/msg04950.html>

- *From:* "Nicholas Paldino [.NET/C# MVP]" <mvp@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>
 - *Date:* Tue, 27 Dec 2005 00:52:59 -0500
-

Peter,

I highly recommend that you read up on how Garbage Collection works exactly.

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- Nicholas Paldino [.NET/C# MVP]
- mvp@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

"Peter Olcott" <olcott@xxxxxxx> wrote in message
[news:Hy4sf.37932\\$QW2.22826@xxxxxxxxxxxxxx](mailto:news:Hy4sf.37932$QW2.22826@xxxxxxxxxxxxxx)

>

> "Nicholas Paldino [.NET/C# MVP]" <mvp@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx> wrote
> in message [news:%23YB\\$FaqCGHA.3820@xxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:news:%23YB$FaqCGHA.3820@xxxxxxxxxxxxxxxxxxxxxxxxxxxx)

>> Peter,

>>

>> You are missing the point completely. If you implement your code as
>> managed code, even in IL, you can't stop a GC no matter what. Your
>> thread is going to be pre-empted (in most situations, except if you have
>> the GC running on a separate thread) and it WILL stop and it WILL affect
>> your performance when it happens.

>

> I don't care if a GC occurs during the execution of my code. It can't
> occur because of my code because my code knows how much memory it needs in
> advance and always needs all of this memory the whole time that it is
> executing. If some other process interrupts my code, it won't hurt it. My
> code just can't take more than 1/10 second to execute, since it needs to
> execute every second this will limit its use to 10% of the CPU time.
> Ultimately I want to limit my thread's required execution to no more than
> 10% of the CPU time. This means that this one function can't take more
> than 1/10 second to execute.

>

>>

>> Just because your code knows how much memory it needs doesn't mean
>> that you can pre-empt a GC. If it happens, it's going to happen, and
>> there is nothing you can do about it. Your 100-line function isn't going
>> to be able to stop it, and the CLR isn't going to care what your function

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>> is doing.
>>
>> You can't just pretend its not going to happen. It does, and it will,
>> and you can't stop it. This isn't a choice you have if you are running
>> managed code, whether you do it in IL or not.
>>
>> This is what it means to have ^managed^ code. The CLR is going to
>> provide a good number of services, but you are going to have to pay for
>> them, and should be aware of how they impact your code.
>>
>> This is why I recommended that you use interop with your unmanaged
>> code. You will have your performance requirements fulfilled, and not have
>> to worry about doing something that will ultimately be self-defeating.
>
> I don't think that unmanaged code would make a good .NET component. The
> current design requires the function to be implemented as a .NET
> component.
>
>>
>> --
>> - Nicholas Paldino [.NET/C# MVP]
>> - mvp@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
>>
>> "Peter Olcott" <olcott@xxxxxxx> wrote in message
>> [news:GV3sf.37927\\$QW2.2410@xxxxxxxxxxxxxx](mailto:news:GV3sf.37927$QW2.2410@xxxxxxxxxxxxxx)
>>>
>>> "Nicholas Paldino [.NET/C# MVP]" <mvp@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx> wrote
>>> in message news:uvvaatpCGHA.4004@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
>>>> Peter,
>>>>
>>>> You don't understand a fundamental concept to .NET and CIL. Yes,
>>>> there are compilers that will perform optimization of IL to a certain
>>>> degree.
>>>>
>>>> However, when the managed code is run, the CLR will take the CIL and
>>>> then compile it into native code. At this point in time, it is free to
>>>> optimize, or not optimize, or mangle your code in any way you want when
>>>> making the transition from CIL to native code.
>>>>
>>>> When you are dealing with assembly language in general, you have
>>>> complete control of what is going on, memory allocation, deallocation,
>>>> execution, etc, etc. With the CLR, this is taken out of your hands to
>>>> a degree.
>>>
>>> I don't care about these things they are not effecting my performance.
>>> What is effecting my performance are things such as the compiler failing
>>> to inline my functions code, and unnecessary overhead in the translation
>>> of a switch statement. My function will be always executed several
>>> million times every second. It must run concurrently with other
>>> applications.
>>>

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>>>> For example, have you considered, what happens when a Garbage
>>>> Collection (GC) occurs while your function is running? If it is in
>>>> complete managed code, then there is nothing that you can do about it,
>>>> and your function will resume running when the GC is complete.
>>>> Depending on what is happening on the machine at the time, combined
>>>> with what your program is doing, etc, etc, it is very feasible that
>>>> your code will take more than 1/10th of a second.
>>> My code knows exactly how much memory it needs at load time. It needs
>>> all of this memory the whole time that it executes. It would make no
>>> sense to have any garbage collection of my code's memory in this case. I
>>> want my code to be implemented as a .ET component.
>>>
>>>>
>>>> Just because it looks like assembly language, don't assume that CIL
>>>> is assembly language. There are some very different things going on
>>>> under the hood.
>>>>
>>>> --
>>>> - Nicholas Paldino [.NET/C# MVP]
>>>> - mvp@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
>>>>
>>>> "Peter Olcott" <olcott@xxxxxxx> wrote in message
>>>> [news:xj2sf.37906\\$QW2.34052@xxxxxxxxxxxxxxxx](mailto:news:xj2sf.37906$QW2.34052@xxxxxxxxxxxxxxxx)
>>>>>I want to be able to stick with purely managed code, if possible. I
>>>>>just need this 100 line function to run as fast as if it was hand
>>>>>tweaked assembly language. I have examined CIL, for the most part it is
>>>>>essentially assembly language. From what I understand any optimizations
>>>>>take place before the CIL is generated. When I designed this system (in
>>>>>1998) I had hand tweaked assembly language in mind for this crucial
>>>>>function all along.
>>>>>
>>>>> "Nicholas Paldino [.NET/C# MVP]" <mvp@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>
>>>>> wrote in message [news:%23RjK3\\$oCGHA.2040@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:news:%23RjK3$oCGHA.2040@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx)
>>>>>> Peter,
>>>>>>
>>>>>>> Not at all. When the CLR gets a hold of the JIT, it is free to
>>>>>>> perform any optimizations it deems necessary, and that might not
>>>>>>> necessarily be in line with what you are expecting.
>>>>>>>
>>>>>>>> My recommendation would be to use Managed C++ to create a wrapper
>>>>>>>> to your unmanaged code which uses It Just Works (IJW, seriously).
>>>>>>>> You should get a managed interface, and the best possible performance
>>>>>>>> (for this specific situation, not all situations) between managed an
>>>>>>>> unmanaged code.
>>>>>>>>
>>>>>>>>
>>>>>>>> --
>>>>>>>> - Nicholas Paldino [.NET/C# MVP]
>>>>>>>> - mvp@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
>>>>>>>>

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• **Follow-Ups:**

- ◆ **Re: Can you write code directly in CIL ???**
◇ From: Peter Olcott

• **References:**

- ◆ **Can you write code directly in CIL ???**
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