# Review: Using the .Net FCL Stack class

**The goal for this exercise** is to make use of a Stack class that's already been built for you (as part of the .Net framework), and to review the Big "Oh" notation.

In the last exercise, you figured out what a Stack abstract data type is. In this exercise, you should try writing some C# code using the Stack class that is provided as part of the .Net Framework Class Library.

**What you need to do for this exercise:**  In the starter solution, in the **PCE\_Starter** project, fill in the Using\_DotNets\_Stack class.

1. In the RunExercise method create a stack, push the numbers 1, 2, and 3 onto it, and the print out the values as you pop them back off the stack. Make sure that you use the Push, Pop, and Peek methods in your code - you should be able to do this with less than 25 lines of code in total. (Note that there are many, many other methods – feel free to skim through those, but don't worry about anything other than Push, Pop, Peek, and the constructors)

Hint: You'll need to put using System.Collections; at the top of your C# file, right under using System; (if it isn't there already)

Hint: The following may (or may not) be useful:  
<http://www.dotnetperls.com/stack>

1. Also, in your comments above the RunExercise method, briefly explain, in your own words what the following description means, when it talks about O(1) operation, and O(N) operations. What does N refer to? Can you offer up a plausible explanation as to why these operations take the time that they do?

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| The capacity of a **Stack** is the number of elements the **Stack** can hold. The default initial capacity for a **Stack** is 10. As elements are added to a **Stack**, the capacity is automatically increased as required through reallocation.  If [Count](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.NETDEVFX.v20.en/cpref2/html/P_System_Collections_Stack_Count.htm) is less than the capacity of the stack, [Push](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.NETDEVFX.v20.en/cpref2/html/M_System_Collections_Stack_Push_1_b4c5a2da.htm) is an O(1) operation. If the capacity needs to be increased to accommodate the new element, **Push** becomes an O(n) operation, where n is **Count**. [Pop](ms-help://MS.VSCC.v80/MS.MSDN.v80/MS.NETDEVFX.v20.en/cpref2/html/M_System_Collections_Stack_Pop.htm) is an O(1) operation. |

(This is taken directly from the 2005 Visual Studio online help)

Note: The objective here is to get you familiar with the syntactic details how one might implement a Stack, using the Stack class built-in to the .Net Framework Class Library as an example. So if the coding portion of this exercise seems really easy to you, that is good, and normal! ☺