

C# program using the APLNext Lightweight Array Engine

The APLNext 'Lightweight Array Engine' provides array based operations, analogous to many APL operations. The APLNext LAE is contained in small, fully-managed .Net 2.0 assemblies. In this very simple example a C# console project is used to illustrate the convenience and utility of dynamic datatyping available in the APLNext LAE.

One Cielo (cvar type) variable, X, is defined initially as a Boolean (true) and then modified by operations which dynamically change its type appropriately.

The SynOps class includes many of the array-based operators of APL extended from scalar to array arguments. In this example the SynOps.Catenate() and SynOps.Divide methods are illustrated.

C# Console Project source code:

```
using System;
using System.Collections.Generic;
using System.Text;
using VisualCielo.Numerical;
using VisualCielo.Numerical.DataObjects;

namespace LAE_Example_2
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("APLNext: LAE: Example 2");
            Console.WriteLine("Dynamic DataTyping");
            Console.WriteLine(" ");

            cvar X = new cvar(true);
            Console.WriteLine("Boolean: true: " + X.ToString());

            X = 100 + X;
            Console.WriteLine("Integer: Add 100: " + X.ToString());

            X = 1.23456 + X;
            Console.WriteLine("Double: Add 1.23456: " + X.ToString());

            X = SynOps.Catenate(X, new cvar(50, 60, 70), X);
            Console.WriteLine("Double[4]: Concatenate 50, 60, 70: " + X.ToString());

            X = SynOps.Divide(X, new cvar(10, 20, 30, 40));
            Console.WriteLine("Double[4]: Divide [element-wise] by 10, 20, 30, 40: " + X.ToString());

            Console.ReadLine();
        }
    }
}
```

Use the SynOps.Catenate method to append the 1-dimensional array 50, 60, 70 to the variable X and the LAE automatically promotes the data type to double[4].

Create a new variable X using the cvar() overload for boolean.

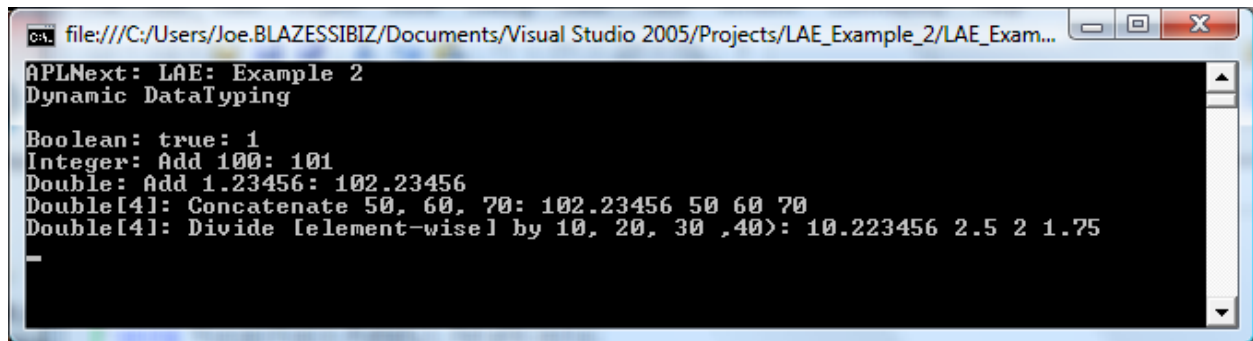
Add 100 to the variable X and the LAE automatically promotes the data type to integer.

Add the double 1.23456 to the variable X and the LAE automatically promotes the data type to double.

Use the SynOps.Divide() method to divide the elements of X by the 1-dimensional array 10, 20, 30, 40 and re-assign the result to X.

Note that this operation is performed without adding explicit looping code to the project.

Output of C# Console Project:



```
file:///C:/Users/Joe.BLAZESSIBIZ/Documents/Visual Studio 2005/Projects/LAE_Example_2/LAE_Exam...
APLNext: LAE: Example 2
Dynamic DataTyping

Boolean: true: 1
Integer: Add 100: 101
Double: Add 1.23456: 102.23456
Double[4]: Concatenate 50, 60, 70: 102.23456 50 60 70
Double[4]: Divide [element-wisely by 10, 20, 30 ,40]: 10.223456 2.5 2 1.75
_
```