Using Conversion Operators

Example

This is an example of an explicit conversion operator. This operator converts from the type [Byte](#) to a value type called Digit. Because not all bytes can be converted to a digit, the conversion is explicit, meaning that a cast must be used, as shown in the Main method.

```csharp
struct Digit

{
    byte value;

    public Digit(byte value)  //constructor
    {
        if (value > 9)
        {
            throw new System.ArgumentException();
        }
        this.value = value;
    }

    public static explicit operator Digit(byte b)  // explicit byte to digit conversion
operator
    {
        Digit d = new Digit(b);  // explicit conversion

        System.Console.WriteLine("Conversion occurred.");
        return d;
    }
}

class TestExplicitConversion
{
    static void Main()
    {
        try
        {
            byte b = 3;
            Digit d = (Digit)b;  // explicit conversion
        }
        catch (System.Exception e)
        {
            System.Console.WriteLine("{0} Exception caught.", e);
        }
    }
}
// Output: Conversion occurred.
```

Example

This example demonstrates an implicit conversion operator by defining a conversion operator that undoes what the previous example did: it converts from a value class called Digit to the integral [Byte](#) type. Because any digit can be converted to a [Byte](#), there's no need to force users to be explicit about the conversion.

```csharp
struct Digit
{
    byte value;

    public Digit(byte value)  //constructor
    {
        if (value > 9)
        {
            throw new System.ArgumentException();
        }
        this.value = value;
    }

    public static implicit operator byte(Digit d)  // implicit digit to byte conversion operator
    {
        System.Console.WriteLine("conversion occurred");
        return d.value;  // implicit conversion
    }
}

class TestImplicitConversion
{
    static void Main()
    {
        Digit d = new Digit(3);
        byte b = d;  // implicit conversion -- no cast needed
    }
}
// Output: Conversion occurred.
```