

Gaining Flexibility and Expanding Your Solutions with Custom Attributes



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Overview



Defining where a custom attribute can be applied

Allowing a custom attribute to be used multiple times

Controlling attribute inheritance

Create a custom display attribute

Access at runtime with reflection

Apply custom attribute

Add a class level custom attribute

Add a multiple use custom attribute



[

]



[AttributeUsage]



AttributeTargets Enum

All
Assembly
Class
Constructor
Delegate
Enum
Event
Field
GenericParameter
Interface
Method
Module
Parameter
Property
ReturnValue
Struct



Defining Where a Custom Attribute Can Be Applied

```
[AttributeUsage(AttributeTargets.All)]
```

```
[AttributeUsage(AttributeTargets.Property)]
```

```
[AttributeUsage(AttributeTargets.Property |  
                AttributeTargets.Field)]
```



Allowing a Custom Attribute to Be Used Multiple Times

[Theory]

[InlineData(1)]

[InlineData(2)]

[InlineData(3)]

```
public void Calculate(int value)
{
    // Test code ...
}
```



Allowing a Custom Attribute to Be Used Multiple Times

```
[AttributeUsage(AttributeTargets.All)]
```

```
[AttributeUsage(AttributeTargets.All,  
                AllowMultiple = false)]
```

```
[AttributeUsage(AttributeTargets.All,  
                AllowMultiple = true)]
```



Controlling Attribute Inheritance

```
[AttributeUsage(AttributeTargets.All)]
```

```
[AttributeUsage(AttributeTargets.All, Inherited = true)]
```

```
[AttributeUsage(AttributeTargets.All, Inherited = false)]
```



Demo



Creating a custom Display attribute

New DisplayAttribute class

Label

Color

Inherit from System.Attribute

Required and optional ctor parameters

[AttributeUsage]

Restrict to properties



Demo



Accessing attributes at runtime

Reflection

`Attribute.GetCustomAttribute`

Any `[Display]` on `FirstName`?

Set display color

Output label



Demo



Applying a custom attribute

Decorate `Contact.FirstName` property

Run console app



Demo



Adding a new custom attribute

New default color attribute

`AttributeTargets.Class`

Modify `ContactConsoleWriter`



Demo



Adding a multiple use custom attribute

New indent attribute

`AllowMultiple = true`

Modify `ContactConsoleWriter`

`Attribute.GetCustomAttributes`



Summary



[AttributeUsage(...)]

AttributeTargets.Property

AllowMultiple = true

Inherited = true

[Display]

Attribute.GetCustomAttribute(...)

[DefaultColor]

[Indent]

Attribute.GetCustomAttributes(...)



Resources and Further Learning

Microsoft attributes docs

- <http://bit.ly/csattrib>

Custom ASP.NET Core validation attributes

- <http://bit.ly/customval>

Technical debt attributes

- <http://bit.ly/techdebtattributes>

