System.Attribute Class

```
[ILASM]
.class public abstract serializable Attribute extends
System.Object

[C#]
public abstract class Attribute
```

Assembly Info:

- *Name:* mscorlib
- *Public Key:* [00 00 00 00 00 00 00 00 04 00 00 00 00 00 00 00]
- *Version:* 1.0.x.x
- *Attributes:*
  - CLSCompliantAttribute(true)

Type Attributes:

- AttributeUsageAttribute(AttributeTargets.All, AllowMultiple=false, Inherited=true)

Summary

Serves as the base class for custom attributes.

Inherits From: System.Object

Library: BCL

Thread Safety: This type is safe for multithreaded operations.

Description

All attributes, whether built-in or user-defined, derive directly or indirectly from **System.Attribute**. Attributes inherit certain default behaviors: the attribute may be associated with any target element (see **System.AttributeTargets**); may or may not be inherited by a derived element; and multiple instances may or may not be allowed on the same target element. These behaviors are specified using **System.AttributeUsageAttribute**.

[*Note:* An attribute is an annotation that may be placed on an element of source code and used to store application-specific information at compile time. This information is stored in the metadata and can be accessed either during application execution, through a process known as reflection, or when another tool reads the metadata. Attributes might change the behavior of the application during execution, provide

transaction information about an object, or convey organizational information to a designer.]

The CLI predefines some attribute types and uses them to control runtime behavior. Some languages predefine attribute types to represent language features not directly represented in the Common Language Specification (CLS). User-defined attribute classes, inheriting from **System.Attribute**, may also be created. The definition of such a class includes the name of the attribute, its default behavior, and the information to be stored.

Example

The following example creates and assigns multiple custom attributes to a class. The attribute contains the name of the programmer and the version number of the class.

[C#]

```
using System;

[AttributeUsage(AttributeTargets.Class|
                AttributeTargets.Struct,
                AllowMultiple=true)]
public class Author: Attribute
{
   string authorName;
   public double verSion;

   public Author(string name)
   {
      authorName = name;
      verSion = 1.0;
   }

   public string getName()
   {
      return authorName;
   }
}

[Author("Some Author")]
class FirstClass
{
   /*...*/
}

class SecondClass  // no Author attribute
{
   /*...*/
}

[Author("Some Author"),
       Author("Some Other Author", verSion=1.1)]
```

```
class ThirdClass
{
   /*...*/
}

class AuthorInfo
{
   public static void Main()
   {
      PrintAuthorInfo(typeof(FirstClass));
      PrintAuthorInfo(typeof(SecondClass));
      PrintAuthorInfo(typeof(ThirdClass));
   }
   public static void PrintAuthorInfo(Type type)
   {
      Console.WriteLine("Author information for {0}",
                        type);
      Attribute[] attributeArray =
          Attribute.GetCustomAttributes(type);
      foreach(Attribute attrib in attributeArray)
      {
         if (attrib is Author)
         {
            Author author = (Author)attrib;
            Console.WriteLine("   {0}, version {1:f}",
                              author.getName(),
                              author.verSion);
         }
      }
      Console.WriteLine();
   }
}
```

The output is

```
Author information for FirstClass


Some Author, version 1.00


Author information for SecondClass
```

```
Author information for ThirdClass


Some Author, version 1.00


Some Other Author, version 1.10

```

Attribute() Constructor

[ILASM]
```
family rtspecialname specialname instance void .ctor()
```

[C#]
```
protected Attribute()
```

Summary

Constructs a new instance of the **System.Attribute** class.

Attribute.Equals(System.Object) Method

```
[ILASM]
.method public hidebysig virtual bool Equals(object obj)

[C#]
public override bool Equals(object obj)
```

Summary

Determines whether the current instance and the specified **System.Object** represent the same type and value.

Parameters

Parameter	Description
obj	The **System.Object** to compare to the current instance.

Return Value

A **System.Boolean** where **true** indicates *obj* represents the same type and value as the current instance. If *obj* is a null reference or is not an instance of **System.Attribute**, returns **false**.

Description

[*Note:* This method overrides **System.Object.Equals**.]

The following member must be implemented if the Reflection library is present in the implementation.

Attribute.GetCustomAttribute(System.Reflection.MemberInfo, System.Type) Method

```
[ILASM]
.method public hidebysig static class System.Attribute
GetCustomAttribute(class System.Reflection.MemberInfo
element, class System.Type attributeType)

[C#]
public static Attribute GetCustomAttribute(MemberInfo
element, Type attributeType)
```

Summary

Returns an instance of a specified custom attribute if a single instance of the attribute is in the metadata for the specified member.

Parameters

Parameter	Description
element	An instance of a type derived from **System.Reflection.MemberInfo** that describes a type member.
attributeType	The **System.Type** of the custom attribute for which to check.

Return Value

The single instance of **System.Attribute** of type *attributeType* that is applied to *element.* Returns **null** if the specified attribute was not found.

Description

[*Note:* If multiple instances of *attributeType* can be applied to *element*, use **System.Attribute.GetCustomAttributes**.]

Exceptions

Exception	Condition
System.ArgumentNullException	*element* or *attributeType* is **null**.
System.ArgumentException	*attributeType* is not a type derived from **System.Attribute**.

System.NotSupportedException	*element* does not represent a constructor, method, property, event, type, or field member.
System.Reflection. AmbiguousMatchException	More than one instance of the specified custom attribute was found.

The following member must be implemented if the Reflection library is present in the implementation.

Attribute.GetCustomAttribute(System.Reflection.ParameterInfo, System.Type) Method

```
[ILASM]
.method public hidebysig static class System.Attribute
GetCustomAttribute(class System.Reflection.ParameterInfo
element, class System.Type attributeType)

[C#]
public static Attribute GetCustomAttribute(ParameterInfo
element, Type attributeType)
```

Summary

Returns an instance of a specified custom attribute if a single instance of the attribute is in the metadata for the specified parameter.

Parameters

Parameter	Description
element	A **System.Reflection.ParameterInfo** instance.
attributeType	The **System.Type** of the custom attribute for which to check.

Return Value

The single instance of **System.Attribute** of type *attributeType* that is applied to *element*. Returns **null** if the specified attribute was not found.

Description

[*Note:* If multiple instances of *attributeType* can be applied to *element*, use **System.Attribute.GetCustomAttributes**.]

Exceptions

Exception	Condition
System.ArgumentNullException	*element* or *attributeType* is **null**.

System.ArgumentException	*attributeType* is not a type derived from **System.Attribute**.
System.Reflection.AmbiguousMatchException	More than one instance of the specified custom attribute was found.

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The following member must be implemented if the Reflection library is present in the implementation.

Attribute.GetCustomAttribute(System.Reflection.Module, System.Type) Method

```
[ILASM]
.method public hidebysig static class System.Attribute
GetCustomAttribute(class System.Reflection.Module element,
class System.Type attributeType)

[C#]
public static Attribute GetCustomAttribute(Module element,
Type attributeType)
```

Summary

Returns an instance of a specified custom attribute if a single instance of the attribute is in the metadata for the specified module.

Parameters

Parameter	Description
element	A **System.Reflection.Module** instance.
attributeType	The **System.Type** of the custom attribute for which to check.

Return Value

The single instance of **System.Attribute** of type *attributeType* that is applied to *element.* Returns **null** if the specified attribute was not found.

Description

[*Note:* If multiple instances of *attributeType* can be applied to *element*, use **System.Attribute.GetCustomAttributes**.]

Exceptions

Exception	Condition
System.ArgumentNullException	*element* or *attributeType* is **null**.
System.ArgumentException	*attributeType* is not a type derived from **System.Attribute**.

System.Reflection. AmbiguousMatchException	More than one instance of the specified custom attribute was found.

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The following member must be implemented if the RuntimeInfrastructure library is present in the implementation.

Attribute.GetCustomAttribute(System.Reflection.Assembly, System.Type) Method

```
[ILASM]
.method public hidebysig static class System.Attribute
GetCustomAttribute(class System.Reflection.Assembly
element, class System.Type attributeType)

[C#]
public static Attribute GetCustomAttribute(Assembly
element, Type attributeType)
```

Summary

Returns an instance of a specified custom attribute if a single instance of the attribute is in the metadata for the specified assembly.

Parameters

Parameter	Description
element	A **System.Reflection.Assembly** instance.
attributeType	The **System.Type** of the custom attribute for which to check.

Return Value

The single instance of **System.Attribute** of type *attributeType* that is applied to *element.* Returns **null** if the specified attribute was not found.

Description

[*Note:* If multiple instances of *attributeType* can be applied to *element*, use **System.Attribute.GetCustomAttributes**.]

Exceptions

Exception	Condition
System.ArgumentNullException	*element* or *attributeType* is **null**.
System.ArgumentException	*attributeType* is not a type derived from **System.Attribute**.

System.Reflection. AmbiguousMatchException	More than one instance of the specified custom attribute was found.

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The following member must be implemented if the Reflection library is present in the implementation.

Attribute.GetCustomAttributes(System.Reflection.MemberInfo, System.Type) Method

```
[ILASM]
.method public hidebysig static class System.Attribute[]
GetCustomAttributes(class System.Reflection.MemberInfo
element, class System.Type type)

[C#]
public static Attribute[] GetCustomAttributes(MemberInfo
element, Type type)
```

Summary

Returns an array of the instances of a specified custom attribute if the attribute is in the metadata for the specified member.

Parameters

Parameter	Description
element	An instance of a type derived from **System.Reflection.MemberInfo** that describes a type member.
type	The **System.Type** of the custom attribute for which to check.

Return Value

An array of type *type* containing the instances that are applied to *element*. The array includes instances of *type* that are inherited by *element*, if any. Returns an empty array if the specified attribute was not found.

Exceptions

Exception	Condition
System.ArgumentNullException	*element* or *type* is **null**.
System.ArgumentException	*type* is not a type derived from **System.Attribute**.
System.NotSupportedException	*element* does not represent a constructor.

	method, property, event, type, or field member.

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The following member must be implemented if the Reflection library is present in the implementation.

Attribute.GetCustomAttributes(System.Reflection.MemberInfo) Method

```
[ILASM]
.method public hidebysig static class System.Attribute[]
GetCustomAttributes(class System.Reflection.MemberInfo
element)

[C#]
public static Attribute[] GetCustomAttributes(MemberInfo
element)
```

Summary

Returns an array of all custom attributes in the metadata for the specified member.

Parameters

Parameter	Description
element	An instance of a type derived from **System.Reflection.MemberInfo** that describes a type member.

Return Value

A **System.Attribute** array containing all custom attributes that are applied to *element.* The array includes custom attributes that are inherited by *element*, if any. Returns an empty array if no custom attributes were found in the metadata for *element*.

Exceptions

Exception	Condition
System.ArgumentNullException	*element* is **null**.
System.NotSupportedException	*element* does not represent a constructor, method, property, event, type, or field member.

The following member must be implemented if the Reflection library is present in the implementation.

Attribute.GetCustomAttributes(System.Reflection.ParameterInfo, System.Type) Method

```
[ILASM]
.method public hidebysig static class System.Attribute[]
GetCustomAttributes(class System.Reflection.ParameterInfo
element, class System.Type attributeType)

[C#]
public static Attribute[] GetCustomAttributes(ParameterInfo
element, Type attributeType)
```

Summary

Returns an array of the instances of a specified custom attribute if the attribute is in the metadata for the specified parameter.

Parameters

Parameter	Description
element	A **System.Reflection.ParameterInfo** instance.
attributeType	The **System.Type** of the custom attribute for which to check.

Return Value

An array of type *attributeType* containing the instances that are applied to *element*. The array includes any inherited instances of *attributeType*. Returns an empty array if the specified attribute was not found.

Description

If *element* represents a method parameter, the array returned by **System.Attribute.GetCustomAttributes** includes any *attributeType* instances for the parameter *element* in the base methods.

Exceptions

Exception	Condition

System.ArgumentNullException	*element* or *type* is **null**.
System.ArgumentException	*attributeType* is not a type derived from **System.Attribute**.

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The following member must be implemented if the Reflection library is present in the implementation.

Attribute.GetCustomAttributes(System.Reflection.Module, System.Type) Method

```
[ILASM]
.method public hidebysig static class System.Attribute[]
GetCustomAttributes(class System.Reflection.Module element,
class System.Type attributeType)

[C#]
public static Attribute[] GetCustomAttributes(Module
element, Type attributeType)
```

Summary

Returns an array of the instances of a specified custom attribute if the attribute is in the metadata for the specified module.

Parameters

Parameter	Description
element	A **System.Reflection.Module** instance.
attributeType	The **System.Type** of the custom attribute for which to check.

Return Value

An array of type *attributeType* containing the instances that are applied to *element*. The array includes any inherited instances of *attributeType*. Returns an empty array if the specified attribute was not found.

Exceptions

Exception	Condition
System.ArgumentNullException	*element* or *type* is **null**.
System.ArgumentException	*attributeType* is not a type derived from **System.Attribute**.

The following member must be implemented if the RuntimeInfrastructure library is present in the implementation.

Attribute.GetCustomAttributes(System.Reflection.Assembly, System.Type) Method

```
[ILASM]
.method public hidebysig static class System.Attribute[]
GetCustomAttributes(class System.Reflection.Assembly
element, class System.Type attributeType)

[C#]
public static Attribute[] GetCustomAttributes(Assembly
element, Type attributeType)
```

Summary

Returns an array of the instances of a specified custom attribute if the attribute is in the metadata for the specified assembly.

Parameters

Parameter	Description
element	A **System.Reflection.Assembly** instance.
attributeType	The **System.Type** of the custom attribute for which to check.

Return Value

An array of type *attributeType* containing the instances that are applied to *element*. The array includes any inherited instances of *attributeType*. Returns an empty array if the specified attribute was not found.

Exceptions

Exception	Condition
System.ArgumentNullException	*element* or *type* is **null**.
System.ArgumentException	*attributeType* is not a type derived from **System.Attribute**.

The following member must be implemented if the Reflection library is present in the implementation.

Attribute.GetCustomAttributes(System.Reflection.ParameterInfo) Method

```
[ILASM]
.method public hidebysig static class System.Attribute[]
GetCustomAttributes(class System.Reflection.ParameterInfo
element)

[C#]
public static Attribute[] GetCustomAttributes(ParameterInfo
element)
```

Summary

Returns an array of all custom attributes in the metadata for the specified parameter.

Parameters

Parameter	Description
element	A **System.Reflection.ParameterInfo** instance.

Return Value

A **System.Attribute** array containing all custom attributes that are applied to *element*. The array includes any inherited custom attributes. Returns an empty array if no custom attributes were found in the metadata for *element*.

Exceptions

Exception	Condition
System.ArgumentNullException	*element* is **null**.

The following member must be implemented if the Reflection library is present in the implementation.

Attribute.GetCustomAttributes(System.Reflection.Module) Method

```
[ILASM]
.method public hidebysig static class System.Attribute[]
GetCustomAttributes(class System.Reflection.Module element)

[C#]
public static Attribute[] GetCustomAttributes(Module
element)
```

Summary

Returns an array of all custom attributes in the metadata for the specified module.

Parameters

Parameter	Description
element	A **System.Reflection.Module** instance.

Return Value

A **System.Attribute** array containing all custom attributes that are applied to *element*. The array includes any inherited custom attributes. Returns an empty array if no custom attributes were found in the metadata for *element*.

Exceptions

Exception	Condition
System.ArgumentNullException	*element* is **null**.

The following member must be implemented if the RuntimeInfrastructure library is present in the implementation.

Attribute.GetCustomAttributes(System.Reflection.Assembly) Method

```
[ILASM]
.method public hidebysig static class System.Attribute[]
GetCustomAttributes(class System.Reflection.Assembly
element)

[C#]
public static Attribute[] GetCustomAttributes(Assembly
element)
```

Summary

Returns an array of all custom attributes in the metadata for the specified assembly.

Parameters

Parameter	Description
element	A **System.Reflection.Assembly** instance.

Return Value

A **System.Attribute** array containing all custom attributes that are applied to *element*. The array includes any inherited custom attributes. Returns an empty array if no custom attributes were found in the metadata for *element*.

Exceptions

Exception	Condition
System.ArgumentNullException	*element* is **null**.

Attribute.GetHashCode() Method

```
[ILASM]
.method public hidebysig virtual int32 GetHashCode()

[C#]
public override int GetHashCode()
```

Summary

Generates a hash code for the current instance.

Return Value

A **System.Int32** containing the hash code for the current instance.

Description

The algorithm used to generate the hash code is unspecified.

[*Note:* This method overrides **System.Object.GetHashCode**.]

The following member must be implemented if the Reflection library is present in the implementation.

Attribute.IsDefined(System.Reflection.MemberInfo, System.Type) Method

```
[ILASM]
.method public hidebysig static bool IsDefined(class
System.Reflection.MemberInfo element, class System.Type
attributeType)

[C#]
public static bool IsDefined(MemberInfo element, Type
attributeType)
```

Summary

Returns a **System.Boolean** value indicating whether a specified custom attribute is present in the metadata for the specified member.

Parameters

Parameter	Description
element	An instance of a type derived from **System.Reflection.MemberInfo** that describes a type member.
attributeType	The **System.Type** of the custom attribute for which to check.

Return Value

true if a custom attribute of type *attributeType* is applied to *element* either directly or through inheritance; otherwise, **false**.

Exceptions

Exception	Condition
System.ArgumentNullException	*element* or *attributeType* is **null**.
System.ArgumentException	*attributeType* is not derived from **System.Attribute**.
System.NotSupportedException	*element* is not a constructor, method, property, event, type, or field.

The following member must be implemented if the Reflection library is present in the implementation.

Attribute.IsDefined(System.Reflection.ParameterInfo, System.Type) Method

```
[ILASM]
.method public hidebysig static bool IsDefined(class
System.Reflection.ParameterInfo element, class System.Type
attributeType)

[C#]
public static bool IsDefined(ParameterInfo element, Type
attributeType)
```

Summary

Returns a **System.Boolean** value indicating whether a specified custom attribute is present in the metadata for the specified parameter.

Parameters

Parameter	Description
element	A **System.Reflection.ParameterInfo** instance.
attributeType	The **System.Type** of the custom attribute for which to check.

Return Value

true if a custom attribute of type *attributeType* is applied to *element* either directly or through inheritance; otherwise, **false**.

Exceptions

Exception	Condition
System.ArgumentNullException	*element* or *attributeType* is **null**.
System.ArgumentException	*attributeType* is not derived from **System.Attribute**.

The following member must be implemented if the Reflection library is present in the implementation.

Attribute.IsDefined(System.Reflection.Module, System.Type) Method

```
[ILASM]
.method public hidebysig static bool IsDefined(class
System.Reflection.Module element, class System.Type
attributeType)

[C#]
public static bool IsDefined(Module element, Type
attributeType)
```

Summary

Returns a **System.Boolean** value indicating whether a specified custom attribute is present in the metadata for the specified module.

Parameters

Parameter	Description
element	A **System.Reflection.Module** instance.
attributeType	The **System.Type** of the custom attribute for which to check.

Return Value

true if a custom attribute of type *attributeType* is applied to *element*; otherwise, **false**.

Exceptions

Exception	Condition
System.ArgumentNullException	*element* or *attributeType* is **null**.
System.ArgumentException	*attributeType* is not derived from **System.Attribute**.

The following member must be implemented if the RuntimeInfrastructure library is present in the implementation.

Attribute.IsDefined(System.Reflection.Assembly, System.Type) Method

```
[ILASM]
.method public hidebysig static bool IsDefined(class
System.Reflection.Assembly element, class System.Type
attributeType)

[C#]
public static bool IsDefined(Assembly element, Type
attributeType)
```

Summary

Returns a **System.Boolean** value indicating whether a specified custom attribute is present in the metadata for the specified assembly.

Parameters

Parameter	Description
element	A **System.Reflection.Assembly** instance.
attributeType	The **System.Type** of the custom attribute for which to check.

Return Value

true if a custom attribute of type *attributeType* is applied to *element*; otherwise, **false**.

Exceptions

Exception	Condition
System.ArgumentNullException	*element* or *attributeType* is **null**.
System.ArgumentException	*attributeType* is not derived from **System.Attribute**.