

System.Runtime.InteropServices.GCHandle

Structure

```
[ILAsm]  
.class public sequential sealed GCHandle extends System.ValueType  
  
[C#]  
public struct GCHandle
```

Assembly Info:

- *Name:* mscorlib
- *Public Key:* [00 00 00 00 00 00 00 00 04 00 00 00 00 00 00 00]
- *Version:* 2.0.x.x
- *Attributes:*
 - CLSCompliantAttribute(true)

Summary

Provides a means for referencing a managed object from unmanaged memory.

Inherits From: System.ValueType

Library: RuntimeInfrastructure

Thread Safety: All public static members of this type are safe for multithreaded operations. No instance members are guaranteed to be thread safe.

Description

Use a `System.Runtime.InteropServices.GCHandle` when an object reference is required to be accessible from unmanaged memory.

The `System.Runtime.InteropServices.GCHandleType` enumeration describes the possible `System.Runtime.InteropServices.GCHandle` types.

[*Note:* If the type of the `System.Runtime.InteropServices.GCHandle` is `System.Runtime.InteropServices.GCHandleType.Normal`, then it is an opaque handle, and the address of the object it references cannot be resolved through it.]

GCHandle.AddrOfPinnedObject() Method

```
[ILAsm]  
.method public hidebysig instance valuetype System.IntPtr  
AddrOfPinnedObject()  
  
[C#]  
public IntPtr AddrOfPinnedObject()
```

Summary

Returns the address of an object being referred to by a `System.Runtime.InteropServices.GCHandleType.Pinned` handle.

Return Value

A `System.IntPtr` containing the address of the of the `System.Runtime.InteropServices.GCHandleType.Pinned` object as a `System.IntPtr`.

Exceptions

Exception	Condition
System.InvalidOperationException	The handle type is not <code>System.Runtime.InteropServices.GCHandleType.Pinned</code> .

Permissions

Permission	Description
System.Security.Permissions.SecurityPermission	Requires permission to call unmanaged code. See <code>System.Security.Permissions.SecurityPermissionFlag.UnmanagedCode</code> .

GCHandle.Alloc(System.Object) Method

```
[ILAsm]  
.method public hidebysig static valuetype  
System.Runtime.InteropServices.GCHandle Alloc(object value)  
  
[C#]  
public static GCHandle Alloc(object value)
```

Summary

Allocates a `System.Runtime.InteropServices.GCHandleType.Normal` handle for the specified object.

Parameters

Parameter	Description
<i>value</i>	The object for which the <code>System.Runtime.InteropServices.GCHandle</code> is created. Can be null.

Return Value

A new `System.Runtime.InteropServices.GCHandle` instance that protects the object from garbage collection.

Description

A `System.Runtime.InteropServices.GCHandleType.Normal` handle ensures the object will not be collected by the garbage collector.

If the *value* parameter is null, this method returns a valid `System.Runtime.InteropServices.GCHandle`. [*Note:* The target of the handle can be changed via the `System.Runtime.InteropServices.GCHandle.Target` property.]

Permissions

Permission	Description
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**System.Security.Permissions.
SecurityPermission**

Requires permission to call unmanaged code. See
`System.Security.Permissions.SecurityPermissionFlag.
UnmanagedCode`.

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GCHandle.Alloc(System.Object, System.Runtime.InteropServices.GCHandleType) Method

```
[ILAsm]  
.method public hidebysig static valuetype  
System.Runtime.InteropServices.GCHandle Alloc(object value, valuetype  
System.Runtime.InteropServices.GCHandleType type)  
  
[C#]  
public static GCHandle Alloc(object value, GCHandleType type)
```

Summary

Allocates a handle of the specified type for the specified object.

Parameters

Parameter	Description
<i>value</i>	The object for which the System.Runtime.InteropServices.GCHandle is created. Can be null.
<i>type</i>	A System.Runtime.InteropServices.GCHandleType value that specifies the type of System.Runtime.InteropServices.GCHandle to create.

Return Value

A new System.Runtime.InteropServices.GCHandle instance that protects the object.

Description

If the *value* parameter is null, this method returns a valid System.Runtime.InteropServices.GCHandle. [Note: The target of the handle can be changed via the System.Runtime.InteropServices.GCHandle.Target property.]

Permissions

Permission	Description
System.Security.Permissions.SecurityPermission	Requires permission to call unmanaged code. See <code>System.Security.Permissions.SecurityPermissionFlag.UnmanagedCode</code> .

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GCHandle.Free() Method

```
[ILAsm]  
.method public hidebysig instance void Free()  
  
[C#]  
public void Free()
```

Summary

Frees a `System.Runtime.InteropServices.GCHandle`.

Description

The caller is required to provide synchronization to prevent multiple threads from executing this method simultaneously for a given handle.

Exceptions

Exception	Condition
<code>System.InvalidOperationException</code>	The handle has already been freed or was never initialized.

Permissions

Permission	Description
<code>System.Security.Permissions.SecurityPermission</code>	Requires permission to call unmanaged code. See <code>System.Security.Permissions.SecurityPermissionFlag.UnmanagedCode</code> .

GCHandle.op_Explicit(System.IntPtr) Method

```
[ILAsm]  
.method public hidebysig static specialname valuetype  
System.Runtime.InteropServices.GCHandle op_Explicit(valuetype  
System.IntPtr value)  
  
[C#]  
public static explicit operator GCHandle(IntPtr value)
```

Summary

Convert a System.IntPtr to a System.Runtime.InteropServices.GCHandle instance.

Parameters

Parameter	Description
<i>value</i>	The System.IntPtr to be converted.

Return Value

A System.Runtime.InteropServices.GCHandle.

Description

System.Runtime.InteropServices.GCHandle instances are stored using an internal integer representation. This method allows you to retrieve a System.Runtime.InteropServices.GCHandle from its integer representation.

GCHandle.op_Explicit(System.Runtime.InteropServices.GCHandle) Method

```
[ILAsm]  
.method public hidebysig static specialname valuetype System.IntPtr  
op_Explicit(valuetype System.Runtime.InteropServices.GCHandle value)  
  
[C#]  
public static explicit operator IntPtr(GCHandle value)
```

Summary

Converts a System.Runtime.InteropServices.GCHandle instance to a System.IntPtr.

Parameters

Parameter	Description
<i>value</i>	The System.Runtime.InteropServices.GCHandle to be converted.

Return Value

A System.IntPtr representation of the specified System.Runtime.InteropServices.GCHandle.

Description

System.Runtime.InteropServices.GCHandle instances are stored using an internal integer representation. This method allows you to retrieve that representation.

GCHandle.IsAllocated Property

```
[ILAsm]  
.property bool IsAllocated { public hidebysig specialname instance bool  
get_IsAllocated() }  
  
[C#]  
public bool IsAllocated { get; }
```

Summary

Gets a System.Boolean value indicating whether the current System.Runtime.InteropServices.GCHandle instance is allocated.

Property Value

true if the handle is allocated; otherwise, false.

Description

This property is read-only.

Use this method to determine whether the System.Runtime.InteropServices.GCHandle is still available.

[*Note:* When the garbage collector collects the object, the handle could still be resurrected in the finalizer.]

GCHandle.Target Property

```
[ILAsm]
.property object Target { public hidebysig specialname instance object
get_Target() public hidebysig specialname instance void set_Target(object
value) }

[C#]
public object Target { get; set; }
```

Summary

Gets or sets a reference to the object the current `System.Runtime.InteropServices.GCHandle` instance represents.

Property Value

The object this handle represents.

Exceptions

Exception	Condition
System.InvalidOperationException	The current <code>System.Runtime.InteropServices.GCHandle</code> instance has already been freed or was never initialized.