

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

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 System.Security.Permissions.SecurityPermissionFlag.

	UnmanagedCode.
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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
System.InvalidOperationException	The handle has already been freed or was never initialized.

Permissions

Permission	Description
System.Security.Permissions.SecurityPermission	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 System.Runtime.InteropServices.GCHandle instance has already been freed or was never initialized.