Namespace Cobilas.GodotEditor.Utility.Serialization

Filter by title

Classes

- **Cobilas.GodotEditor.Utility.Serialization (Cobilas.GodotEditor.Utility.Serialization.BuildSerialization.html)**
  Class allows to build a serialization list of properties of a node class.
  BuildSerialization (Cobilas.GodotEditor.Utility.Serializa
  HidePropertyAttribute (Cobilas.GodotEditor.Utility.Serialization.HidePropertyAttribute.html)
  The attribute allows you to hide and save the value of a field or property in the editor.
  ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serializa
  MemberItem (Cobilas.GodotEditor.Utility.Serializa
  Represents a property or field.
  PropertyItem (Cobilas.GodotEditor.Utility.Serializa
  The class stores the information for drawing in the editor.
  SNInfo (Cobilas.GodotEditor.Utility.Serializa
  SerializationCache (Cobilas.GodotEditor.Utility.Serializa
  Class to handle property caching.
  SerializeFieldAttribute (Cobilas.GodotEditor.Utility.Serializa
  Base attribute for field and property serialization attributes.
  ShowPropertyAttribute (Cobilas.GodotEditor.Utility.Serializa
  The attribute allows you to show a field or property in the editor.
  ShowRangePropertyAttribute (Cobilas.GodotEditor.Utility.Serializa
  The attribute allows you to display a field or property in the editor in range form.
- **+ Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Sei**
- **+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Sei**
- **+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Sei**
- **+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**

Structs

SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html)

Represents the information of a SerializedNode (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedNode.html).

Interfaces

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

The interface allows property manipulation.

- **Cobilas.GodotEditor.Utility.Serialization (Cobilas.GodotEditor.Utility.Ser**
  - Attributes
    - (Cobilas.GodotEditor.Utility.Serializa
    - HidePropertyAttribute (Cobilas.GodotEditor.Utility.Serializa
    - ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serializa
    - MemberItem (Cobilas.GodotEditor.Utility.Serializa
    - PropertyItem (Cobilas.GodotEditor.Utility.Serializa
    - SNInfo (Cobilas.GodotEditor.Utility.Serializa
    - SerializationCache (Cobilas.GodotEditor.Utility.Serializa
    - SerializeFieldAttribute (Cobilas.GodotEditor.Utility.Serializa
    - ShowPropertyAttribute (Cobilas.GodotEditor.Utility.Serializa
    - ShowRangePropertyAttribute (Cobilas.GodotEditor.Utility.Serializa
- **Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**

Class BuildSerialization

Class allows to build a serialization list of properties of a node class.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)

↳ BuildSerialization

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)

object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public class BuildSerialization
```

Methods

Build(Object)

The method constructs a serialization list of properties for the node.

Declaration

```
public static SerializedNode? Build(Object obj)
```

Parameters

Type	Name	Description
Object	obj	The Godot.Object to use.

Returns

Cobilas.GodotEditor.Utility.Serialization

(Cobilas.GodotEditor.Utility.Serialization)

BuildSerialization

(Cobilas.GodotEditor.Utility.Serialization.BuildSerialization)

HidePropertyAttribute

(Cobilas.GodotEditor.Utility.Serialization.HidePropertyAttribute)

ISerializedPropertyManipulation

(Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation)

MemberItem

(Cobilas.GodotEditor.Utility.Serialization.MemberItem)

PropertyItem

(Cobilas.GodotEditor.Utility.Serialization.PropertyItem)

SRInfo

(Cobilas.GodotEditor.Utility.Serialization.SRInfo)

SerializationCache

(Cobilas.GodotEditor.Utility.Serialization.SerializationCache)

SerializeFieldAttribute

(Cobilas.GodotEditor.Utility.Serialization.SerializeFieldAttribute)

ShowPropertyAttribute

(Cobilas.GodotEditor.Utility.Serialization.ShowPropertyAttribute)

ShowRangePropertyAttribute

(Cobilas.GodotEditor.Utility.Serialization.ShowRangePropertyAttribute)

Cobilas.GodotEditor.Utility.Serialization.Hints

(Cobilas.GodotEditor.Utility.Serialization.Hints)

Cobilas.GodotEditor.Utility.Serialization.Properties

(Cobilas.GodotEditor.Utility.Serialization.Properties)

Cobilas.GodotEditor.Utility.Serialization.RenderObjects

(Cobilas.GodotEditor.Utility.Serialization.RenderObjects)

Cobilas.GodotEngine.Utility

(Cobilas.GodotEngine.Utility.html)

Cobilas.GodotEngine.Utility.IO

(Cobilas.GodotEngine.Utility.IO

Type	Description
SerializedNode (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedNode.html)	Returns a serialization representation of the node.

IsPropertyCustom(Type)

Checks if the type has a PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html).

Declaration

```
public static bool IsPropertyCustom(Type type)
```

Parameters

Type	Name	Description
Type (https://learn.microsoft.com/dotnet/api/system.type)	*type*	The type to check.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the type has a PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html).

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  - ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serializa
  - MemberItem (Cobilas.GodotEditor.Utility.Serializa
  - PropertyItem (Cobilas.GodotEditor.Utility.Serializa
  - RMInfo (Cobilas.GodotEditor.Utility.Serializ
  - SerializationCache (Cobilas.GodotEditor.Utility.Serializa
  - SerializeFieldAttribute (Cobilas.GodotEditor.Utility.Serializa
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- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**

Class HidePropertyAttribute

The attribute allows you to hide and save the value of a field or property in the editor.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)

↳ Attribute (https://learn.microsoft.com/dotnet/api/system.attribute)

↳ SerializeFieldAttribute (Cobilas.GodotEditor.Utility.Serialization.SerializeFieldAttribute.html)

↳ HidePropertyAttribute (Cobilas.GodotEditor.Utility.Serialization.HidePropertyAttribute.html)

Implements

_Attribute (https://learn.microsoft.com/dotnet/api/system.runtime.interopservices._attribute)

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

Inherited Members

Attribute.GetCustomAttributes(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-type))

Attribute.GetCustomAttributes(MemberInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-type-system-boolean))

Attribute.GetCustomAttributes(MemberInfo) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo))

Attribute.GetCustomAttributes(MemberInfo, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-boolean))

Attribute.IsDefined(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-memberinfo-system-type))

Attribute.IsDefined(MemberInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-memberinfo-system-type-system-boolean))

Attribute.GetCustomAttribute(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-memberinfo-system-type))

Attribute.GetCustomAttribute(MemberInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-memberinfo-system-type-system-boolean))

Attribute.GetCustomAttributes(ParameterInfo) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo))

Attribute.GetCustomAttributes(ParameterInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo-system-type))

Attribute.GetCustomAttributes(ParameterInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo-system-type-system-boolean))

Attribute.GetCustomAttributes(ParameterInfo, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo-system-boolean))
Attribute.IsDefined(ParameterInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-parameterinfo-system-type))
Attribute.IsDefined(ParameterInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttribute(ParameterInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-parameterinfo-system-type))
Attribute.GetCustomAttribute(ParameterInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(Module, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module-system-type))
Attribute.GetCustomAttributes(Module) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module))
Attribute.GetCustomAttributes(Module, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module-system-boolean))
Attribute.GetCustomAttributes(Module, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module-system-type-system-boolean))
Attribute.IsDefined(Module, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-module-system-type))
Attribute.IsDefined(Module, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-module-system-type-system-boolean))
Attribute.GetCustomAttribute(Module, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-module-system-type))
Attribute.GetCustomAttribute(Module, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-module-system-type-system-boolean))
Attribute.GetCustomAttributes(Assembly, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-type))
Attribute.GetCustomAttributes(Assembly, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-type-system-boolean))
Attribute.GetCustomAttributes(Assembly) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly))
Attribute.GetCustomAttributes(Assembly, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-

- **Cobilas.GodotEditor.Utility.Serialization**
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  - (Cobilas.GodotEditor.Utility.Serializ
  - **SerializeFieldAttribute**
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  - **ShowRangePropertyAttribute**
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getcustomattributes(system-reflection-assembly-system-boolean))
Attribute.IsDefined(Assembly, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-assembly-system-type))
Attribute.IsDefined(Assembly, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-assembly-system-type-system-boolean))
Attribute.GetCustomAttribute(Assembly, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-assembly-system-type))
Attribute.GetCustomAttribute(Assembly, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-assembly-system-type-system-boolean))
Attribute.Equals(object) (https://learn.microsoft.com/dotnet/api/system.attribute.equals)
Attribute.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.attribute.gethashcode)
Attribute.Match(object) (https://learn.microsoft.com/dotnet/api/system.attribute.match)
Attribute.IsDefaultAttribute() (https://learn.microsoft.com/dotnet/api/system.attribute.isdefaultattribute)
Attribute.TypeId (https://learn.microsoft.com/dotnet/api/system.attribute.typeid)
object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
[AttributeUsage(AttributeTargets.Property|AttributeTargets.Field, AllowMultiple = false, Inh
erited = true)]
public class HidePropertyAttribute : SerializeFieldAttribute, _Attribute
```

Constructors

HidePropertyAttribute()

Creates a new instance of this object.

Declaration

```
public HidePropertyAttribute()
```

HidePropertyAttribute(CustomHint)

Creates a new instance of this object.

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    - PropertyItem
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    - SNInfo
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    - SerializationCache
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    - SerializeFieldAttribute
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  - **(Cobilas.GodotEngine.Utility.IO**

Declaration

```
public HidePropertyAttribute(CustomHint hint)
```

Parameters

Type	Name	Description
CustomHint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html)	*hint*	You can receive a customized hint.

HidePropertyAttribute(bool)

Creates a new instance of this object.

Declaration

```
public HidePropertyAttribute(bool saveInCache)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*saveInCache*	Allows fields and properties that are not normally serialized.

HidePropertyAttribute(bool, CustomHint)

Creates a new instance of this object.

Declaration

```
public HidePropertyAttribute(bool saveInCache, CustomHint hint)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*saveInCache*	Allows fields and properties that are not normally serialized.
CustomHint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html)	*hint*	You can receive a customized hint.

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Properties

Flags

The flags that will be used to serialize fields and properties.

Declaration

```
public override PropertyUsageFlags Flags { get; protected set; }
```

Property Value

Type	Description
PropertyUsageFlags	Returns the flags that will be used to serialize fields and properties.

Overrides

SerializeFieldAttribute.Flags (Cobilas.GodotEditor.Utility.Serialization.SerializeFieldAttribute.html#Cobilas_GodotEditor_Utility_Serialization_SerializeFieldAttribute_Flags)

Hint

Custom property custom hint.

Declaration

```
public Cobilas.GodotEditor.Utility.Serializa { get; protected set; }
```

Property Value

Type	Description
CustomHint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html)	Returns a custom hint for the custom property.

Overrides

SerializeFieldAttribute.Hint (Cobilas.GodotEditor.Utility.Serialization.SerializeFieldAttribute.html#Cobilas_GodotEditor_Utility_Serialization_SerializeFieldAttribute_Hint)

SaveInCache

Indicates whether fields and properties are cached.

Declaration

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- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**

```
public override bool SaveInCache { get; protected set; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	`true` if fields and properties are cached.

Overrides

SerializeFieldAttribute.SaveInCache (Cobilas.GodotEditor.Utility.Serialization.SerializeFieldAttribute.html#Cobilas_GodotEditor_Utility_Serialization_SerializeFieldAttribute_SaveInCache)

Implements

_Attribute (https://learn.microsoft.com/dotnet/api/system.runtime.interopservices._attribute)

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- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**

Interface ISerializedPropertyManipulation

The interface allows property manipulation.

Filter by title

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public interface ISerializedPropertyManipulation
```

Methods

Get(string?)

The method allows you to get the value of the property.

Declaration

```
object? Get(string? propertyName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.

Returns

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the value of the property.

GetPropertyList()

The method allows you to create a property serialization list.

Declaration

```
PropertyItem[] GetPropertyList()
```

Returns

Serialization
(Cobilas.GodotEditor.Utility.Ser
BuildSerialization
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HidePropertyAttribute
(Cobilas.GodotEditor.Utility.Serializa
ISerializedPropertyManipulation
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MemberItem
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PropertyItem
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SerializationCache
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SerializeFieldAttribute
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ShowPropertyAttribute
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StepRangePropertyAttribute
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+ Cobilas.GodotEditor.Utility.
Serialization.Hints
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+ Cobilas.GodotEditor.Utility.
Serialization.Properties
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+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
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+ Cobilas.GodotEngine.Utility.
IO
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+ Cobilas.GodotEngine.Utility.

Type	Description
PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html)[]	Returns a property serialization list.

Set(string?, object?)

This method allows you to set the property value.

Declaration

```
bool Set(string? propertyName, object? value)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	The value that will be set in the property.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the property is changed.

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HidePropertyAttribute (Cobilas.GodotEditor.Utility.Serializa

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serializa

MemberItem (Cobilas.GodotEditor.Utility.Serializa

PropertyItem (Cobilas.GodotEditor.Utility.Serializa

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SerializationCache (Cobilas.GodotEditor.Utility.Serializa

SerializeFieldAttribute (Cobilas.GodotEditor.Utility.Serializa

ShowPropertyAttribute (Cobilas.GodotEditor.Utility.Serializa

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+ **Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser**

+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**

+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**

+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**

+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**

+ **Cobilas.GodotEngine.Utility.**

Class MemberItem

Represents a property or field.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)

↳ MemberItem

Implements

INullObject (../com.cobilas.cs.lib.core.net4x.api/Cobilas.INullObject.html)

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)

object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object,system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public sealed class MemberItem : INullObject
```

Properties

IsHide

Check if the member is hidden from the editor.

Declaration

```
public bool IsHide { get; }
```

Property Value

bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	returns `true` when the member is hidden from the editor.

IsRead

Check if it is reading.

Declaration

```
public bool IsRead { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if it is read.

IsSaveCache

Check if the member value is cacheable.

Declaration

```
public bool IsSaveCache { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the member value is cacheable.

IsStruct

Check if the member is a struct.

Declaration

```
public bool IsStruct { get; }
```

Property Value

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HidePropertyAttribute (Cobilas.GodotEditor.Utility.Serializa

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serializa

MemberItem (Cobilas.GodotEditor.Utility.Serializa

PropertyItem (Cobilas.GodotEditor.Utility.Serializa

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+ Cobilas.GodotEditor.Utility. Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser

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+ Cobilas.GodotEngine.Utility. IO (Cobilas.GodotEngine.Utility.IO

+ Cobilas.GodotEngine.Utility. Input

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the member is a `struct`.

IsWrite

Check if it is written.

Declaration

```
public bool IsWrite { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if written.

Member

The field or property.

Declaration

```
public MemberInfo? Member { get; set; }
```

Property Value

Type	Description
MemberInfo (https://learn.microsoft.com/dotnet/api/system.reflection.memberinfo)	Receives the field or property.

Name

The name of the member.

Declaration

```
public string Name { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns the name of the member.

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+ Cobilas.GodotEditor.Utility. Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser

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+ Cobilas.GodotEngine.Utility. Input

Null

Null representation of MemberItem (Cobilas.GodotEditor.Utility.Serialization.MemberItem.html).

Declaration

```
public static MemberItem Null { get; }
```

Property Value

Type	Description
MemberItem (Cobilas.GodotEditor.Utility.Serialization.MemberItem.html)	Returns a null representation of MemberItem (Cobilas.GodotEditor.Utility.Serialization.MemberItem.html).

Parent

The parent object of the member.

Declaration

```
public object? Parent { get; set; }
```

Property Value

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Receives the parent object of the member.

TypeMember

The type of member.

Declaration

```
public Type TypeMember { get; }
```

Property Value

Type	Description
Type (https://learn.microsoft.com/dotnet/api/system.type)	Returns the type of the member.

Value

The value of the member.

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IO
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+ Cobilas.GodotEngine.Utility.
Input

Declaration

```
public object? Value { get; set; }
```

Property Value

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the member value.

Implements

INullObject (../com.cobilas.cs.lib.core.net4x.api/Cobilas.INullObject.html)

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BuildSerialization
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+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
+ **Cobilas.GodotEngine.Utility.Input**

Class PropertyItem

The class stores the information for drawing in the editor.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ PropertyItem

Implements

IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object,system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public class PropertyItem : IDisposable
```

Constructors

PropertyItem(string, Type, PropertyHint, string, PropertyUsageFlags)

Creates a new instance of this object.

Declaration

```
public PropertyItem(string name, Variant.Type type, PropertyHint hint = PropertyHint.None, s
tring hintString = "", PropertyUsageFlags usage = (PropertyUsageFlags)8195)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	
Variant.Type	*type*	

BuildSerialization (Cobilas.GodotEditor.Utility.Serializa
HidePropertyAttribute (Cobilas.GodotEditor.Utility.Serializa
ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serializa
MemberItem (Cobilas.GodotEditor.Utility.Serializa
PropertyItem (Cobilas.GodotEditor.Utility.Serializa
SNInfo (Cobilas.GodotEditor.Utility.Serializa
SerializationEvents (Cobilas.GodotEditor.Utility.Serializa
ShowPropertyAttribute (Cobilas.GodotEditor.Utility.Serializa
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+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In

Type	Name	Description
PropertyHint	*hint*	
string (https://learn.microsoft.com/dotnet/api/system.string)	*hintString*	
PropertyUsageFlags	*usage*	

BuildSerialization
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HidePropertyAttribute
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ISerializedPropertyManipulation
(Cobilas.GodotEditor.Utility.Serializa
MemberItem
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PropertyItem
(Cobilas.GodotEditor.Utility.Serializa
SNInfo
(Cobilas.GodotEditor.Utility.Serializa
SerializationCache
(Cobilas.GodotEditor.Utility.Serializa
ShowEnumAttribute
(Cobilas.GodotEditor.Utility.Serializa
ShowPropertyAttribute
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ShowRangePropertyAttribute
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+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se**
+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**

Methods

Dispose()

Performs application-defined tasks associated with freeing, releasing, or resetting unmanaged resources.

Declaration

```
public void Dispose()
```

ToDictionary()

Converts PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html) to Godot.Collections.Dictionary.

Declaration

```
public Dictionary ToDictionary()
```

Returns

Type	Description
Dictionary	Returns PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html) converted to Godot.Collections.Dictionary.

Implements

IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)

Struct SNInfo

Represents the information of a SerializedNode (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedNode.html).

Inherited Members

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)
ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)
ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object,system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public readonly struct SNInfo
```

Properties

Empty

Represents an empty SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html).

Declaration

```
public static SNInfo Empty { get; }
```

Property Value

Type	Description
SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html)	Returns an empty representation of SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html).

this[int]

The indexer to get values from the object.

`0` = Get the value of the id.

`1` = Get the value of the NodePath.

Declaration

```
public object this[int index] { get; }
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	The index from which the value will be obtained.

Property Value

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns a specific value from the object.

this[string]

The indexer to get values from the object.

`"id"` = Get the value of the id.

`"nodePath"` = Get the value of the NodePath.

Declaration

```
public object this[string tag] { get; }
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*tag*	The tag to get the value from.

Property Value

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns a specific value from the object.

Methods

Create(params object[])

(Cobilas.GodotEditor.Utility.Serializa
HidePropertyAttribute
(Cobilas.GodotEditor.Utility.Serializa
ISerializedPropertyManipulation
(Cobilas.GodotEditor.Utility.Serializa
MemberItem
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PropertyItem
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SNInfo
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SerializationCache
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SerializeFieldAttribute
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ShowPropertyAttribute
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+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In

Creates an instance of the SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html) object.

Declaration

```
public static SNInfo Create(params object[] values)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object) []	*values*	The values that will be inserted in the constructor. `0` = Gets the id value. `1` = Gets the NodePath value.

Returns

Type	Description
SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html)	Returns an instance of the SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html) object.

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HidePropertyAttribute
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+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In

Class SerializationCache

Class to handle property caching.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ SerializationCache

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class SerializationCache
```

Methods

GetValueInCache(SNInfo, string?, out string)

Gets the value of the property that is cached.

Declaration

```
public static bool GetValueInCache(SNInfo info, string? propertyName, out string value)
```

Parameters

Type	Name	Description
SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html)	*info*	Contains information about the SerializedObject.

HidePropertyAttribute (Cobilas.GodotEditor.Utility.Serializa
ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serializa
MemberItem (Cobilas.GodotEditor.Utility.Serializa
PropertyItem (Cobilas.GodotEditor.Utility.Serializa
SNInfo (Cobilas.GodotEditor.Utility.Serializa
SerializationCache (Cobilas.GodotEditor.Utility.Serializa
SerializeFieldAttribute (Cobilas.GodotEditor.Utility.Serializa
ShowPropertyAttribute (Cobilas.GodotEditor.Utility.Serializa
ShowRangePropertyAttribute (Cobilas.GodotEditor.Utility.Serializa
+ Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
string (https://learn.microsoft.com/dotnet/api/system.string)	*value*	The value of the property that is cached.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the value is retrieved from the cache.

SetValueInCache(SNInfo, string?, object?)

Caches the property value.

Declaration

```
public static bool SetValueInCache(SNInfo info, string? propertyName, object? value)
```

Parameters

Type	Name	Description
SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html)	*info*	Contains information about the SerializedObject.
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	The property value that will be cached.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the property value is cached.

- HidePropertyAttribute (Cobilas.GodotEditor.Utility.Serializa
- SerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serializa
- MemberItem (Cobilas.GodotEditor.Utility.Serializa
- PropertyItem (Cobilas.GodotEditor.Utility.Serializa
- SNInfo (Cobilas.GodotEditor.Utility.Serializa
- SerializationCache (Cobilas.GodotEditor.Utility.Serializa
- SerializeFieldAttribute (Cobilas.GodotEditor.Utility.Serializa
- ShowPropertyAttribute (Cobilas.GodotEditor.Utility.Serializa
- ShowRangePropertyAttribute (Cobilas.GodotEditor.Utility.Serializa

+ Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se

+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In

+ Cobilas.GodotEngine.Utility.

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+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**

+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**

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+ **Cobilas.GodotEngine.Utility.**

Class SerializeFieldAttribute

Base attribute for field and property serialization attributes.

Filter by title

Inheritance

↳ object (https://learn microsoft.com/dotnet/api/system.object)
↳ Attribute (https://learn.microsoft.com/dotnet/api/system.attribute)
↳ SerializeFieldAttribute
↳ HidePropertyAttribute (Cobilas.GodotEditor.Utility.Serialization.HidePropertyAttribute.html)
↳ ShowPropertyAttribute (Cobilas.GodotEditor.Utility.Serialization.ShowPropertyAttribute.html)

Implements

_Attribute (https://learn.microsoft.com/dotnet/api/system.runtime.interopservices._attribute)

Inherited Members

Attribute.GetCustomAttribute(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-type))
Attribute.GetCustomAttribute(MemberInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(MemberInfo) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo))
Attribute.GetCustomAttributes(MemberInfo, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-boolean))
Attribute.IsDefined(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-memberinfo-system-type))
Attribute.IsDefined(MemberInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttribute(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-memberinfo-system-type))
Attribute.GetCustomAttribute(MemberInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(ParameterInfo) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo))
Attribute.GetCustomAttributes(ParameterInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo-system-type))
Attribute.GetCustomAttributes(ParameterInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-

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+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se

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+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

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+ Cobilas.GodotEngine.Utility.Numerics

getcustomattributes(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(ParameterInfo, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo-system-boolean))
Attribute.IsDefined(ParameterInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-parameterinfo-system-type))
Attribute.IsDefined(ParameterInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttribute(ParameterInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-parameterinfo-system-type))
Attribute.GetCustomAttribute(ParameterInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(Module, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module-system-type))
Attribute.GetCustomAttributes(Module)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module))
Attribute.GetCustomAttributes(Module, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module-system-boolean))
Attribute.GetCustomAttributes(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module-system-type-system-boolean))
Attribute.IsDefined(Module, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-module-system-type))
Attribute.IsDefined(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-module-system-type-system-boolean))
Attribute.GetCustomAttribute(Module, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-module-system-type))
Attribute.GetCustomAttribute(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-module-system-type-system-boolean))
Attribute.GetCustomAttributes(Assembly, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-type))
Attribute.GetCustomAttributes(Assembly, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-type-system-boolean))
Attribute.GetCustomAttributes(Assembly)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly))

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  ShowPropertyAttribute
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  ShowRangePropertyAttribute
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Attribute.GetCustomAttributes(Assembly, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-boolean))
Attribute.IsDefined(Assembly, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-assembly-system-type))
Attribute.IsDefined(Assembly, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-assembly-system-type-system-boolean))
Attribute.GetCustomAttribute(Assembly, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-assembly-system-type))
Attribute.GetCustomAttribute(Assembly, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-assembly-system-type-system-boolean))
Attribute.Equals(object) (https://learn.microsoft.com/dotnet/api/system.attribute.equals)
Attribute.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.attribute.gethashcode)
Attribute.Match(object) (https://learn.microsoft.com/dotnet/api/system.attribute.match)
Attribute.IsDefaultAttribute() (https://learn.microsoft.com/dotnet/api/system.attribute.isdefaultattribute)
Attribute.TypeId (https://learn.microsoft.com/dotnet/api/system.attribute.typeid)
object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas.GodotEngine.Utility.GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public abstract class SerializeFieldAttribute : Attribute, _Attribute
```

Constructors

SerializeFieldAttribute(PropertyUsageFlags, bool, CustomHint)

Creates a new instance of this object.

Declaration

```
protected SerializeFieldAttribute(PropertyUsageFlags flags, bool saveInCache, CustomHint hint)
```

Parameters

- (Cobilas.GodotEditor.Utility.Serializ
  ISerializedPropertyManipulation
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  MemberItem
  (Cobilas.GodotEditor.Utility.Serializ
  PropertyItem
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  SNInfo
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  SerializationCache
  (Cobilas.GodotEditor.Utility.Serializ
  SerializeFieldAttribute
  (Cobilas.GodotEditor.Utility.Serializ
  ShowPropertyAttribute
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  ShowRangePropertyAttribute
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- **Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics**

Type	Name	Description
PropertyUsageFlags	*flags*	The flags that will be used to serialize fields and properties.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*saveInCache*	Allows fields and properties that are not normally serialized.
CustomHint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html)	*hint*	You can receive a customized hint.

Properties

Flags

The flags that will be used to serialize fields and properties.

Declaration

```
public abstract PropertyUsageFlags Flags { get; protected set; }
```

Property Value

Type	Description
PropertyUsageFlags	Returns the flags that will be used to serialize fields and properties.

Hint

Custom property custom hint.

Declaration

```
public abstract CustomHint Hint { get; protected set; }
```

Property Value

Type	Description
CustomHint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html)	Returns a custom hint for the custom property.

SaveInCache

- Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
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Indicates whether fields and properties are cached.

Declaration

```
public abstract bool SaveInCache { get; protected set; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	`true` if fields and properties are cached.

Implements

_Attribute (https://learn.microsoft.com/dotnet/api/system.runtime.interopservices._attribute)

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ISerializedPropertyManipulation
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MemberItem
(Cobilas.GodotEditor.Utility.Serializa
PropertyItem
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SNInfo
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SerializationCache
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+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In

+ Cobilas.GodotEngine.Utility.Numerics

Class ShowPropertyAttribute

The attribute allows you to show a field or property in the editor.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Attribute (https://learn.microsoft.com/dotnet/api/system.attribute)
↳ SerializeFieldAttribute (Cobilas.GodotEditor.Utility.Serialization.SerializeFieldAttribute.html)
↳ ShowPropertyAttribute
↳ ShowRangePropertyAttribute
(Cobilas.GodotEditor.Utility.Serialization.ShowRangePropertyAttribute.html)

Implements

_Attribute (https://learn.microsoft.com/dotnet/api/system.runtime.interopservices._attribute)

Inherited Members

Attribute.GetCustomAttribute(MemberInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-type))
Attribute.GetCustomAttribute(MemberInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(MemberInfo)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo))
Attribute.GetCustomAttributes(MemberInfo, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-boolean))
Attribute.IsDefined(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-memberinfo-system-type))
Attribute.IsDefined(MemberInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttribute(MemberInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-memberinfo-system-type))
Attribute.GetCustomAttribute(MemberInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(ParameterInfo)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo))
Attribute.GetCustomAttributes(ParameterInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo-system-type))

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+ Cobilas.GodotEngine.Utility.Input
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+ Cobilas.GodotEngine.Utility.Numerics
(Cobilas.GodotEngine.Utility.N

Attribute.GetCustomAttributes(ParameterInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(ParameterInfo, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo-system-boolean))
Attribute.IsDefined(ParameterInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-parameterinfo-system-type))
Attribute.IsDefined(ParameterInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttribute(ParameterInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-parameterinfo-system-type))
Attribute.GetCustomAttribute(ParameterInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(Module, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module-system-type))
Attribute.GetCustomAttributes(Module)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module))
Attribute.GetCustomAttributes(Module, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module-system-boolean))
Attribute.GetCustomAttributes(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module-system-type-system-boolean))
Attribute.IsDefined(Module, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-module-system-type))
Attribute.IsDefined(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-module-system-type-system-boolean))
Attribute.GetCustomAttribute(Module, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-module-system-type))
Attribute.GetCustomAttribute(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-module-system-type-system-boolean))
Attribute.GetCustomAttributes(Assembly, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-type))
Attribute.GetCustomAttributes(Assembly, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-type-system-boolean))
Attribute.GetCustomAttributes(Assembly)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-

- ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serializ
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- PropertyItem (Cobilas.GodotEditor.Utility.Serializ
- SNInfo (Cobilas.GodotEditor.Utility.Serializ
- SerializationCache (Cobilas.GodotEditor.Utility.Serializ
- SerializeFieldAttribute (Cobilas.GodotEditor.Utility.Serializ
- ShowPropertyAttribute (Cobilas.GodotEditor.Utility.Serializ
- ShowRangePropertyAttribute (Cobilas.GodotEditor.Utility.Serializ

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+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se

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+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In

+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N

getcustomattributes(system-reflection-assembly))
Attribute.GetCustomAttributes(Assembly, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-boolean))
Attribute.IsDefined(Assembly, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-assembly-system-type))
Attribute.IsDefined(Assembly, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-assembly-system-type-system-boolean))
Attribute.GetCustomAttribute(Assembly, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-assembly-system-type))
Attribute.GetCustomAttribute(Assembly, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-assembly-system-type-system-boolean))
Attribute.Equals(object) (https://learn.microsoft.com/dotnet/api/system.attribute.equals)
Attribute.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.attribute.gethashcode)
Attribute.Match(object) (https://learn.microsoft.com/dotnet/api/system.attribute.match)
Attribute.IsDefaultAttribute() (https://learn.microsoft.com/dotnet/api/system.attribute.isdefaultattribute)
Attribute.TypeId (https://learn.microsoft.com/dotnet/api/system.attribute.typeid)
object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas.GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html)

Assembly: Cobilas.GodotEditor.dll

Syntax

```
[AttributeUsage(AttributeTargets.Property|AttributeTargets.Field, AllowMultiple = false, Inherited = true)]
public class ShowPropertyAttribute : SerializeFieldAttribute, _Attribute
```

Constructors

ShowPropertyAttribute()

Creates a new instance of this object.

Declaration

```
public ShowPropertyAttribute()
```

- ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serializ
- MemberItem (Cobilas.GodotEditor.Utility.Serializ
- PropertyItem (Cobilas.GodotEditor.Utility.Serializ
- SNInfo (Cobilas.GodotEditor.Utility.Serializ
- SerializationCache (Cobilas.GodotEditor.Utility.Serializ
- SerializeFieldAttribute (Cobilas.GodotEditor.Utility.Serializ
- ShowPropertyAttribute (Cobilas.GodotEditor.Utility.Serializ
- ShowRangePropertyAttribute (Cobilas.GodotEditor.Utility.Serializ

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+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N

ShowPropertyAttribute(CustomHint)

Creates a new instance of this object.

Declaration

```
public ShowPropertyAttribute(CustomHint hint)
```

Parameters

Type	Name	Description
CustomHint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html)	*hint*	You can receive a customized hint.

ShowPropertyAttribute(bool)

Creates a new instance of this object.

Declaration

```
public ShowPropertyAttribute(bool saveInCache)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*saveInCache*	Allows fields and properties that are not normally serialized.

ShowPropertyAttribute(bool, CustomHint)

Creates a new instance of this object.

Declaration

```
public ShowPropertyAttribute(bool saveInCache, CustomHint hint)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*saveInCache*	Allows fields and properties that are not normally serialized.

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serializa
MemberItem (Cobilas.GodotEditor.Utility.Serializa
PropertyItem (Cobilas.GodotEditor.Utility.Serializa
SNInfo (Cobilas.GodotEditor.Utility.Serializa
SerializeFieldAttribute (Cobilas.GodotEditor.Utility.Serializa
ShowPropertyAttribute (Cobilas.GodotEditor.Utility.Serializa
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+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N

Type	Name	Description
CustomHint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html)	*hint*	You can receive a customized hint.

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serializa
MemberItem (Cobilas.GodotEditor.Utility.Serializa
PropertyItem (Cobilas.GodotEditor.Utility.Serializ
SNInfo (Cobilas.GodotEditor.Utility.Serializa
SerializationCache (Cobilas.GodotEditor.Utility.Serializa
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Properties

Flags

The flags that will be used to serialize fields and properties.

Declaration

```
public override PropertyUsageFlags Flags { get; protected set; }
```

Property Value

Type	Description
PropertyUsageFlags	Returns the flags that will be used to serialize fields and properties.

Overrides

SerializeFieldAttribute.Flags (Cobilas.GodotEditor.Utility.Serialization.SerializeFieldAttribute.html#Cobilas_GodotEditor_Utility_Serialization_SerializeFieldAttribute_Flags)

Hint

Custom property custom hint.

Declaration

```
public override CustomHint Hint { get; protected set; }
```

Property Value

Type	Description
CustomHint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html)	Returns a custom hint for the custom property.

Overrides

SerializeFieldAttribute.Hint (Cobilas.GodotEditor.Utility.Serialization.SerializeFieldAttribute.html#Cobilas_GodotEditor_Utility_Serialization_SerializeFieldAttribute_Hint)

SaveInCache

Indicates whether fields and properties are cached.

Declaration

```
public override bool SaveInCache { get; protected set; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	`true` if fields and properties are cached.

Overrides

SerializeFieldAttribute.SaveInCache (Cobilas.GodotEditor.Utility.Serialization.SerializeFieldAttribute.html#Cobilas_GodotEditor_Utility_Serialization_SerializeFieldAttribute_SaveInCache)

Implements

_Attribute (https://learn.microsoft.com/dotnet/api/system.runtime.interopservices._attribute)

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SNInfo (Cobilas.GodotEditor.Utility.Serializa

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+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N

Class ShowRangePropertyAttribute

The attribute allows you to display a field or property in the editor in range form.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Attribute (https://learn.microsoft.com/dotnet/api/system.attribute)
↳ SerializeFieldAttribute (Cobilas.GodotEditor.Utility.Serialization.SerializeFieldAttribute.html)
↳ ShowPropertyAttribute (Cobilas.GodotEditor.Utility.Serialization.ShowPropertyAttribute.html)
↳ ShowRangePropertyAttribute

Implements

_Attribute (https://learn.microsoft.com/dotnet/api/system.runtime.interopservices._attribute)

Inherited Members

ShowPropertyAttribute.IsVisibleCache
(Cobilas.GodotEditor.Utility.Serialization.ShowPropertyAttribute.html#Cobilas_GodotEditor_Utility_Serialization_ShowPropertyAttribute_IsVisibleCache)
ShowPropertyAttribute.Flags
(Cobilas.GodotEditor.Utility.Serialization.ShowPropertyAttribute.html#Cobilas_GodotEditor_Utility_Serialization_ShowPropertyAttribute_Flags)
ShowPropertyAttribute.Hint
(Cobilas.GodotEditor.Utility.Serialization.ShowPropertyAttribute.html#Cobilas_GodotEditor_Utility_Serialization_ShowPropertyAttribute_Hint)
Attribute.GetCustomAttributes(MemberInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-type))
Attribute.GetCustomAttributes(MemberInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(MemberInfo)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo))
Attribute.GetCustomAttributes(MemberInfo, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-boolean))
Attribute.IsDefined(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-memberinfo-system-type))
Attribute.IsDefined(MemberInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttribute(MemberInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-memberinfo-system-type))
Attribute.GetCustomAttribute(MemberInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-

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+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N

getcustomattribute(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(ParameterInfo)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
getcustomattributes(system-reflection-parameterinfo))
Attribute.GetCustomAttributes(ParameterInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
getcustomattributes(system-reflection-parameterinfo-system-type))
Attribute.GetCustomAttributes(ParameterInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
getcustomattributes(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(ParameterInfo, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
getcustomattributes(system-reflection-parameterinfo-system-boolean))
Attribute.IsDefined(ParameterInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-
parameterinfo-system-type))
Attribute.IsDefined(ParameterInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-
parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttribute(ParameterInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-
getcustomattribute(system-reflection-parameterinfo-system-type))
Attribute.GetCustomAttribute(ParameterInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-
getcustomattribute(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(Module, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
getcustomattributes(system-reflection-module-system-type))
Attribute.GetCustomAttributes(Module)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
getcustomattributes(system-reflection-module))
Attribute.GetCustomAttributes(Module, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
getcustomattributes(system-reflection-module-system-boolean))
Attribute.GetCustomAttributes(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
getcustomattributes(system-reflection-module-system-type-system-boolean))
Attribute.IsDefined(Module, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-
attribute-isdefined(system-reflection-module-system-type))
Attribute.IsDefined(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-
module-system-type-system-boolean))
Attribute.GetCustomAttribute(Module, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-
getcustomattribute(system-reflection-module-system-type))
Attribute.GetCustomAttribute(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-
getcustomattribute(system-reflection-module-system-type-system-boolean))

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Attribute.GetCustomAttributes(Assembly, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-type))
Attribute.GetCustomAttributes(Assembly, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-type-system-boolean))
Attribute.GetCustomAttributes(Assembly) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly))
Attribute.GetCustomAttributes(Assembly, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-boolean))
Attribute.IsDefined(Assembly, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-assembly-system-type))
Attribute.IsDefined(Assembly, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-assembly-system-type-system-boolean))
Attribute.GetCustomAttribute(Assembly, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-assembly-system-type))
Attribute.GetCustomAttribute(Assembly, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-assembly-system-type-system-boolean))
Attribute.Equals(object) (https://learn.microsoft.com/dotnet/api/system.attribute.equals)
Attribute.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.attribute.gethashcode)
Attribute.Match(object) (https://learn.microsoft.com/dotnet/api/system.attribute.match)
Attribute.IsDefaultAttribute() (https://learn.microsoft.com/dotnet/api/system.attribute.isdefaultattribute)
Attribute.TypeId() (https://learn.microsoft.com/dotnet/api/system.attribute.typeid)
object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html)

Assembly: Cobilas.GodotEditor.Utility.dll

Syntax

```
public class ShowRangePropertyAttribute : ShowPropertyAttribute, _Attribute
```

Constructors

ShowRangePropertyAttribute(bool, int, int)

Creates a new instance of this object.

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Declaration

```
public ShowRangePropertyAttribute(bool saveInCache, int min, int max)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*saveInCache*	Allows fields and properties that are not normally serialized.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*min*	The minimum value of the range.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*max*	The maximum value of the range.

ShowRangePropertyAttribute(bool, int, int, int)

Creates a new instance of this object.

Declaration

```
public ShowRangePropertyAttribute(bool saveInCache, int min, int max, int step)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*saveInCache*	Allows fields and properties that are not normally serialized.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*min*	The minimum value of the range.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*max*	The maximum value of the range.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*step*	The increment value of the range.

ShowRangePropertyAttribute(bool, float, float)

Creates a new instance of this object.

Declaration

```
public ShowRangePropertyAttribute(bool saveInCache, float min, float max)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*saveInCache*	Allows fields and properties that are not normally serialized.
float (https://learn.microsoft.com/dotnet/api/system.single)	*min*	The minimum value of the range.
float (https://learn.microsoft.com/dotnet/api/system.single)	*max*	The maximum value of the range.

ShowRangePropertyAttribute(bool, float, float, float)

Creates a new instance of this object.

Declaration

```
public ShowRangePropertyAttribute(bool saveInCache, float min, float max, float step)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*saveInCache*	Allows fields and properties that are not normally serialized.
float (https://learn.microsoft.com/dotnet/api/system.single)	*min*	The minimum value of the range.
float (https://learn.microsoft.com/dotnet/api/system.single)	*max*	The maximum value of the range.
float (https://learn.microsoft.com/dotnet/api/system.single)	*step*	The increment value of the range.

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ShowRangePropertyAttribute(int, int)

Creates a new instance of this object.

Declaration

```
public ShowRangePropertyAttribute(int min, int max)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*min*	The minimum value of the range.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*max*	The maximum value of the range.

ShowRangePropertyAttribute(int, int, int)

Creates a new instance of this object.

Declaration

```
public ShowRangePropertyAttribute(int min, int max, int step)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*min*	The minimum value of the range.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*max*	The maximum value of the range.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*step*	The increment value of the range.

ShowRangePropertyAttribute(float, float)

Creates a new instance of this object.

Declaration

```
public ShowRangePropertyAttribute(float min, float max)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*min*	The minimum value of the range.
float (https://learn.microsoft.com/dotnet/api/system.single)	*max*	The maximum value of the range.

(Cobilas.GodotEditor.Utility.Serializa
MemberItem
(Cobilas.GodotEditor.Utility.Serializa
PropertyItem
(Cobilas.GodotEditor.Utility.Serializa
SNInfo
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SerializationCache
(Cobilas.GodotEditor.Utility.Serializa
SerializeFieldAttribute
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ShowPropertyAttribute
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ShowRangePropertyAttribute
(Cobilas.GodotEditor.Utility.Serializa

+ Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In

+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N

ShowRangePropertyAttribute(float, float, float)

Creates a new instance of this object.

Declaration

```
public ShowRangePropertyAttribute(float min, float max, float step)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*min*	The minimum value of the range.
float (https://learn.microsoft.com/dotnet/api/system.single)	*max*	The maximum value of the range.
float (https://learn.microsoft.com/dotnet/api/system.single)	*step*	The increment value of the range.

Implements

_Attribute (https://learn.microsoft.com/dotnet/api/system.runtime.interopservices._attribute)

(Cobilas.GodotEditor.Utility.Serializa
MemberItem
(Cobilas.GodotEditor.Utility.Serializa
PropertyItem
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SNInfo
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+ Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In

+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N

Namespace Cobilas.GodotEditor.Utility.Serialization.Hints

Filter by title

Classes

+ Cobilas.GodotEditor.Utility.Serialization (Cobilas.GodotEditor.Utility.Ser

- Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser

CustomHint (Cobilas.GodotEditor.Utility.Serializa

NoneHint (Cobilas.GodotEditor.Utility.Serializa

RangeHint (Cobilas.GodotEditor.Utility.Serializa

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In

+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N

+ Cobilas.GodotEngine.Utility.Physics

CustomHint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html)

Base class for generating custom hints.

NoneHint (Cobilas.GodotEditor.Utility.Serialization.Hints.NoneHint.html)

The NoneHint (Cobilas.GodotEditor.Utility.Serialization.Hints.NoneHint.html) class is an empty representation of a CustomHint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html).

RangeHint (Cobilas.GodotEditor.Utility.Serialization.Hints.RangeHint.html)

Represents custom hint range.

Class CustomHint

Base class for generating custom hints.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)

↳ CustomHint

↳ NoneHint (Cobilas.GodotEditor.Utility.Serialization.Hints.NoneHint.html)

↳ RangeHint (Cobilas.GodotEditor.Utility.Serialization.Hints.RangeHint.html)

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)

object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html).Hints (Cobilas.GodotEditor.Utility.Serialization.Hints.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public abstract class CustomHint
```

Constructors

CustomHint(PropertyHint, string)

Creates a new instance of this object.

Declaration

```
protected CustomHint(PropertyHint hint, string hintString)
```

Parameters

Type	Name	Description
PropertyHint	*hint*	The type of hint of the property.

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*hintString*	Additional information for the property hint.

Properties

Hint

The type of hint of the property.

Declaration

```
public abstract PropertyHint Hint { get; protected set; }
```

Property Value

Type	Description
PropertyHint	Returns the hint type of the property.

HintString

Additional information for the property hint.

Declaration

```
public abstract string HintString { get; protected set; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns additional information for the property hint.

- Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser
  - CustomHint (Cobilas.GodotEditor.Utility.Serializa
  - NoneHint (Cobilas.GodotEditor.Utility.Serializa
  - RangeHint (Cobilas.GodotEditor.Utility.Serializa
- + Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
- + Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
- + Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- + Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
- + Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- + Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
- + Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
- + Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru

Class NoneHint

The NoneHint (Cobilas.GodotEditor.Utility.Serialization.Hints.NoneHint.html) class is an empty representation of a CustomHint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html).

Inheritance

↳ Object (https://learn.microsoft.com/dotnet/api/system.object)
↳ CustomHint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html)
↳ NoneHint

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object,system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html).Hints (Cobilas.GodotEditor.Utility.Serialization.Hints.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public sealed class NoneHint : CustomHint
```

Constructors

NoneHint()

Creates a new instance of this object.

Declaration

```
public NoneHint()
```

Properties

Hint

The type of hint of the property.

Declaration

```
public override PropertyHint Hint { get; protected set; }
```

Property Value

Type	Description
PropertyHint	Returns the hint type of the property.

Overrides

CustomHint.Hint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html#Cobilas_GodotEditor_Utility_Serialization_Hints_CustomHint_Hint)

HintString

Additional information for the property hint.

Declaration

```
public override string HintString { get; protected set; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns additional information for the property hint.

Overrides

CustomHint.HintString (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html#Cobilas_GodotEditor_Utility_Serialization_Hints_CustomHint_HintString)

- **Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser**
  - CustomHint (Cobilas.GodotEditor.Utility.Serializa
  - NoneHint (Cobilas.GodotEditor.Utility.Serializa
  - RangeHint (Cobilas.GodotEditor.Utility.Serializa
- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
- **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
- **Cobilas.GodotEngine.Utility.**

Class RangeHint

Represents custom hint range.

Filter by title

Inheritance

↳ Object (https://learn.microsoft.com/dotnet/api/system.object)

↳ CustomHint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html)

↳ RangeHint

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)

object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object,-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html).Hints (Cobilas.GodotEditor.Utility.Serialization.Hints.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public sealed class RangeHint : CustomHint
```

Constructors

RangeHint(int, int, int)

Creates a new instance of this object.

Declaration

```
public RangeHint(int min, int max, int step)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*min*	The minimum value of the range.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*max*	The maximum value of the range.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*step*	The increment value of the range.

- Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Serialization.Hints.html)
  - CustomHint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html)
  - RangeHint
  - NoneHint (Cobilas.GodotEditor.Utility.Serializa
  - RangeHint (Cobilas.GodotEditor.Utility.Serializa
- Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
- Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
- Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
- Cobilas.GodotEngine.Utility.Scene

RangeHint(float, float, float)

Creates a new instance of this object.

Declaration

```
public RangeHint(float min, float max, float step)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*min*	The minimum value of the range.
float (https://learn.microsoft.com/dotnet/api/system.single)	*max*	The maximum value of the range.
float (https://learn.microsoft.com/dotnet/api/system.single)	*step*	The increment value of the range.

Properties

Hint

The type of hint of the property.

Declaration

```
public override PropertyHint Hint { get; protected set; }
```

Property Value

Type	Description
PropertyHint	Returns the hint type of the property.

Overrides

CustomHint.Hint (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html#Cobilas_GodotEditor_Utility_Serialization_Hints_CustomHint_Hint)

HintString

Additional information for the property hint.

Declaration

```
public override string HintString { get; protected set; }
```

Property Value

- Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Serialization.Hints.html)
  - CustomHint (Cobilas.GodotEditor.Utility.Serializa
  - NoneHint (Cobilas.GodotEditor.Utility.Serializa
  - RangeHint (Cobilas.GodotEditor.Utility.Serializa
- + Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
- + Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
- + Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- + Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
- + Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- + Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
- + Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl
- + Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
- + Cobilas.GodotEngine.Utility.Scene

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns additional information for the property hint.

Overrides

CustomHint.HintString (Cobilas.GodotEditor.Utility.Serialization.Hints.CustomHint.html#Cobilas_GodotEditor_Utility_Serialization_Hints_CustomHint_HintString)

- **Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser**
  - CustomHint (Cobilas.GodotEditor.Utility.Serializa
  - NoneHint (Cobilas.GodotEditor.Utility.Serializa
  - RangeHint (Cobilas.GodotEditor.Utility.Serializa
- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
- **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
- **Cobilas.GodotEngine.Utility.Scene**

Namespace Cobilas.GodotEditor.Utility.Serialization.Properties

Filter by title

Classes

EnumCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.EnumCustom.html)

Provides a customizable class for Enum (https://learn.microsoft.com/dotnet/api/system.enum).

PrimitiveTypeCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PrimitiveTypeCustom.html)

Allows customization of a primitive type in the inspector.

PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html)

Base class for custom properties.

PropertyCustomAttribute (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustomAttribute.html)

Indicates that the Serialization (Cobilas.GodotEditor.Utility.Serialization.BuildSerialization.html) that the PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html) class belongs to a certain type.

SPCNull (Cobilas.GodotEditor.Utility.Serialization.Properties.SPCNull.html)

Null representation of PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html).

Class EnumCustom

Provides a customizable class for Enum (https://learn.microsoft.com/dotnet/api/system.enum).

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html)
↳ EnumCustom

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

Inherited Members

PropertyCustom.Attribute (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_Attribute)
object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object,system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html).Properties (Cobilas.GodotEditor.Utility.Serialization.Properties.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
[PropertyCustom(typeof(Enum), true)]
public sealed class EnumCustom : PropertyCustom, ISerializedPropertyManipulation
```

Properties

IsHide

Check if the member is hidden from the editor.

Declaration

```
public override bool IsHide { get; }
```

- Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Serialization.Hints.html)
- Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Serialization.Properties.html)
  - EnumCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.EnumCustom.html)
  - PrimitiveTypeCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PrimitiveTypeCustom.html)
  - PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html)
  - PropertyCustomAttribute (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustomAttribute.html)
  - SPCNull (Cobilas.GodotEditor.Utility.Serialization.Properties.SPCNull.html)
- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.html)
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.html)
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO.html)
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.Input.html)
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.Numerics.html)
- Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Physics.html)
- Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Runtime.html)

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	returns `true` when the member is hidden from the editor.

Overrides

PropertyCustom.IsHide (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_IsHide)

Member

The property to be manipulated.

Declaration

```
public override MemberItem Member { get; set; }
```

Property Value

Type	Description
MemberItem (Cobilas.GodotEditor.Utility.Serialization.MemberItem.html)	Defines a new member.

Overrides

PropertyCustom.Member (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_Member)

PropertyPath

The path of the property.

Declaration

```
public override string PropertyPath { get; set; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Sets the path of the property.

Overrides

PropertyCustom.PropertyPath (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_PropertyPath)

- **Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
  - EnumCustom (Cobilas.GodotEditor.Utility.Serializa
  - PrimitiveTypeCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustomAttribute (Cobilas.GodotEditor.Utility.Serializa
  - SPCNull (Cobilas.GodotEditor.Utility.Serializa
- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
- **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.R**

Methods

CacheValueToObject(string?, string?)

Converts the value obtained from the cache to a specific value.

Declaration

```
public override object? CacheValueToObject(string? propertyName, string? value)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
string (https://learn.microsoft.com/dotnet/api/system.string)	*value*	The value to be converted.

Returns

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the already converted value.

Overrides

PropertyCustom.CacheValueToObject(string?, string?)
(Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_CacheValueToObject_System_String_System_String_)

Get(string?)

The method allows you to get the value of the property.

Declaration

```
public override object? Get(string? propertyName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.

Returns

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the value of the property.

Overrides

- Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Se
- Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se
  - EnumCustom (Cobilas.GodotEditor.Utility.Serializa
  - PrimitiveTypeCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustomAttribute (Cobilas.GodotEditor.Utility.Serializ
  - SPCNull (Cobilas.GodotEditor.Utility.Serializa
- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
- Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
- Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.R

PropertyCustom.Get(string?)
(Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_Get_System_String_)

GetPropertyList()

The method allows you to create a property serialization list.

Declaration

```
public override Cobilas.GodotEditor.Utility.Serialization.PropertyItem[] GetPropertyList()
```

Returns

Type	Description
PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html)[]	Returns a property serialization list.

Overrides

PropertyCustom.GetPropertyList()
(Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_GetPropertyList)

Set(string?, object?)

The method allows you to set the property value.

Declaration

```
public override bool Set(string? propertyName, object? value)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	The value that will be set in the property.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the property is changed.

Overrides

PropertyCustom.Set(string?, object?)
(Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization

_Properties_PropertyCustom_Set_System_String_System_Object_)

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

Serialization.Hints (Cobilas.GodotEditor.Utility.Ser

- **Cobilas.GodotEditor.Utility. Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
  - EnumCustom (Cobilas.GodotEditor.Utility.Serializa
  - PrimitiveTypeCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustomAttribute (Cobilas.GodotEditor.Utility.Serializa
  - SPCNull (Cobilas.GodotEditor.Utility.Serializa
- **Cobilas.GodotEditor.Utility. Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility. IO (Cobilas.GodotEngine.Utility.IO**
- **Cobilas.GodotEngine.Utility. Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility. Numerics (Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility. Physics (Cobilas.GodotEngine.Utility.Ph**
- **Cobilas.GodotEngine.Utility. Runtime (Cobilas.GodotEngine.Utility.R**

Class PrimitiveTypeCustom

Allows customization of a primitive type in the inspector.

Filter by title

Inheritance

object (https://learn.microsoft.com/dotnet/api/system.object)

↳ PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html)

↳ PrimitiveTypeCustom

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

Inherited Members

PropertyCustom.Attribute (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_Attribute)

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)

object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html).Properties (Cobilas.GodotEditor.Utility.Serialization.Properties.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public sealed class PrimitiveTypeCustom : PropertyCustom, ISerializedPropertyManipulation
```

Properties

IsHide

Check if the member is hidden from the editor.

Declaration

```
public override bool IsHide { get; }
```

Property Value

- Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Serialization.Properties.html)
  - (Cobilas.GodotEditor.Utility.Serialization.Properties.EnumCustom.html)
  - (Cobilas.GodotEditor.Utility.Serialization.Properties.PrimitiveTypeCustom.html)
  - (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html)
  - (Cobilas.GodotEditor.Utility.Serialization.Properties.SPCNull.html)
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.html)
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.html)
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO.html)
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.Input.html)
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.Numerics.html)
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Physics.html)
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Runtime.html)

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	returns `true` when the member is hidden from the editor.

Overrides

PropertyCustom.IsHide (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_IsHide)

Member

The property to be manipulated.

Declaration

```
public override MemberItem Member { get; set; }
```

Property Value

Type	Description
MemberItem (Cobilas.GodotEditor.Utility.Serialization.MemberItem.html)	Defines a new member.

Overrides

PropertyCustom.Member (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_Member)

PropertyPath

The path of the property.

Declaration

```
public override string PropertyPath { get; set; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Sets the path of the property.

Overrides

PropertyCustom.PropertyPath (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_PropertyPath)

- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
  - EnumCustom (Cobilas.GodotEditor.Utility.Serializa
  - PrimitiveTypeCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustomAttribute (Cobilas.GodotEditor.Utility.Serializa
  - SPCNull (Cobilas.GodotEditor.Utility.Serializa
- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
- **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**

Methods

CacheValueToObject(string?, string?)

Converts the value obtained from the cache to a specific value.

Declaration

```
public override object? CacheValueToObject(string? propertyName, string? value)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
string (https://learn.microsoft.com/dotnet/api/system.string)	*value*	The value to be converted.

Returns

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the already converted value.

Overrides

PropertyCustom.CacheValueToObject(string?, string?) (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_CacheValueToObject_System_String_System_String_)

Get(string?)

The method allows you to get the value of the property.

Declaration

```
public override object? Get(string? propertyName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.

Returns

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the value of the property.

Overrides

- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
  - EnumCustom (Cobilas.GodotEditor.Utility.Serializ
  - PrimitiveTypeCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustomAttribute (Cobilas.GodotEditor.Utility.Serializa
  - SPCNull (Cobilas.GodotEditor.Utility.Serializa
- **+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
- **+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
- **+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- **+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
- **+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**

PropertyCustom.Get(string?)
(Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_Get_System_String_)

GetPropertyList()

The method allows you to create a property serialization list.

Declaration

```
public override PropertyItem[] GetPropertyList()
```

Returns

Type	Description
PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html)[]	Returns a property serialization list.

Overrides

PropertyCustom.GetPropertyList()
(Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_GetPropertyList)

IsPrimitiveType(Type)

Declaration

```
public static bool IsPrimitiveType(Type type)
```

Parameters

Type	Name	Description
Type (https://learn.microsoft.com/dotnet/api/system.type)	*type*	

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

Set(string?, object?)

The method allows you to set the property value.

Declaration

```
public override bool Set(string? propertyName, object? value)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	The value that will be set in the property.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the property is changed.

Overrides

PropertyCustomTmpSet(string?, object?) (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_Set_System_String_System_Object_)

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**

Class PropertyCustom

Base class for custom properties.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ PropertyCustom
↳ EnumCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.EnumCustom.html)
↳ PrimitiveTypeCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PrimitiveTypeCustom.html)
↳ SPCNull (Cobilas.GodotEditor.Utility.Serialization.Properties.SPCNull.html)

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html).Properties (Cobilas.GodotEditor.Utility.Serialization.Properties.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public abstract class PropertyCustom : ISerializedPropertyManipulation
```

Properties

Attribute

The serialization attribute of the property.

Declaration

```
public SerializeFieldAttribute Attribute { get; }
```

Property Value

Type	Description
SerializeFieldAttribute (Cobilas.GodotEditor.Utility.Serialization.SerializeFieldAttribute.html)	Returns the serialization attribute that tells the editor how to display the property.

IsHide

Check if the member is hidden from the editor.

Declaration

```
public bool IsHide { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	returns `true` when the member is hidden from the editor.

Member

The property to be manipulated.

Declaration

```
public abstract MemberItem Member { get; set; }
```

Property Value

Type	Description
MemberItem (Cobilas.GodotEditor.Utility.Serialization.MemberItem.html)	Defines a new member.

PropertyPath

The path of the property.

Declaration

```
public abstract string PropertyPath { get; set; }
```

Property Value

- Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
  - EnumCustom (Cobilas.GodotEditor.Utility.Serializ
  - PrimitiveTypeCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustomAttribute (Cobilas.GodotEditor.Utility.Serializa
  - SPCNull (Cobilas.GodotEditor.Utility.Serializa
- + Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
- + Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- + Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
- + Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- + Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
- + Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
- + Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
- + Cobilas.GodotEngine.Utility.

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Sets the path of the property.

Methods

CacheValueToObject(string?, string?)

Converts the value obtained from the cache to a specific value.

Declaration

```
public abstract object? CacheValueToObject(string? propertyName, string? value)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
string (https://learn.microsoft.com/dotnet/api/system.string)	*value*	The value to be converted.

Returns

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the already converted value.

Get(string?)

The method allows you to get the value of the property.

Declaration

```
public abstract object? Get(string? propertyName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.

Returns

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the value of the property.

GetPropertyList()

The method allows you to create a property serialization list.

Declaration

```
public abstract PropertyItem[] GetPropertyList()
```

Returns

Type	Description
PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html)[]	Returns a property serialization list.

Set(string?, object?)

The method allows you to set the property value.

Declaration

```
public abstract bool Set(string? propertyName, object? value)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	The value that will be set in the property.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the property is changed.

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se**
  - EnumCustom (Cobilas.GodotEditor.Utility.Serializa
  - PrimitiveTypeCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustomAttribute (Cobilas.GodotEditor.Utility.Serializa
  - SPCNull (Cobilas.GodotEditor.Utility.Serializa
- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
- **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
- **Cobilas.GodotEngine.Utility.**

Class PropertyCustomAttribute

This attribute indicates to BuildSerialization (Cobilas.GodotEditor.Utility.Serialization.BuildSerialization.html) that the PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html) class belongs to a certain type.

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Attribute (https://learn.microsoft.com/dotnet/api/system.attribute)
↳ PropertyCustomAttribute (Cobilas.GodotEditor.Utility.Serializa

Implements

_Attribute (https://learn.microsoft.com/dotnet/api/system.runtime.interopservices._attribute)

Inherited Members

Attribute.GetCustomAttributes(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-type))
Attribute.GetCustomAttributes(MemberInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(MemberInfo) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo))
Attribute.GetCustomAttributes(MemberInfo, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-boolean))
Attribute.IsDefined(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-memberinfo-system-type))
Attribute.IsDefined(MemberInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttribute(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-memberinfo-system-type))
Attribute.GetCustomAttribute(MemberInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(ParameterInfo) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo))
Attribute.GetCustomAttributes(ParameterInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo-system-type))
Attribute.GetCustomAttributes(ParameterInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-

getcustomattributes(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(ParameterInfo, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
getcustomattributes(system-reflection-parameterinfo-system-boolean))
Attribute.IsDefined(ParameterInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-
parameterinfo-system-type))
Attribute.IsDefined(ParameterInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-
parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttribute(ParameterInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-
getcustomattribute(system-reflection-parameterinfo-system-type))
Attribute.GetCustomAttribute(ParameterInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-
getcustomattribute(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(Module, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
getcustomattributes(system-reflection-module-system-type))
Attribute.GetCustomAttributes(Module)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
getcustomattributes(system-reflection-module))
Attribute.GetCustomAttributes(Module, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
getcustomattributes(system-reflection-module-system-boolean))
Attribute.GetCustomAttributes(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
getcustomattributes(system-reflection-module-system-type-system-boolean))
Attribute.IsDefined(Module, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-
attribute-isdefined(system-reflection-module-system-type))
Attribute.IsDefined(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-
module-system-type-system-boolean))
Attribute.GetCustomAttribute(Module, Type)
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Attribute.GetCustomAttribute(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-
getcustomattribute(system-reflection-module-system-type-system-boolean))
Attribute.GetCustomAttributes(Assembly, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
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Attribute.GetCustomAttributes(Assembly, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
getcustomattributes(system-reflection-assembly-system-type-system-boolean))
Attribute.GetCustomAttributes(Assembly)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-
getcustomattributes(system-reflection-assembly))

+ Cobilas.GodotEditor.Utility.
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+ Cobilas.GodotEngine.Utility.

Attribute.GetCustomAttributes(Assembly, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-boolean))
Attribute.IsDefined(Assembly, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-assembly-system-type))
Attribute.IsDefined(Assembly, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-assembly-system-type-system-boolean))
Attribute.GetCustomAttribute(Assembly, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-assembly-system-type))
Attribute.GetCustomAttribute(Assembly, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-assembly-system-type-system-boolean))
Attribute.Equals(object) (https://learn.microsoft.com/dotnet/api/system.attribute.equals)
Attribute.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.attribute.gethashcode)
Attribute.Match(object) (https://learn.microsoft.com/dotnet/api/system.attribute.match)
Attribute.IsDefaultAttribute() (https://learn.microsoft.com/dotnet/api/system.attribute.isdefaultattribute)
Attribute.TypeId (https://learn.microsoft.com/dotnet/api/system.attribute.typeid)
object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas.GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html).Properties (Cobilas.GodotEditor.Utility.Serialization.Properties.html)

Assembly: Cobilas.GodotEngine.Utility.dll

Syntax

```
[AttributeUsage(AttributeTargets.Class, Inherited = false, AllowMultiple = true)]
public sealed class PropertyCustomAttribute : Attribute, _Attribute
```

Constructors

PropertyCustomAttribute(Type)

Creates a new instance of this object.

Declaration

```
public PropertyCustomAttribute(Type target)
```

Parameters

Type	Name	Description
Type (https://learn.microsoft.com/dotnet/api/system.type)	*target*	

PropertyCustomAttribute(Type, bool)

Creates a new instance of this object.

Declaration

```
public PropertyCustomAttribute(Type target, bool useForChildren)
```

Parameters

Type	Name	Description
Type (https://learn.microsoft.com/dotnet/api/system.type)	*target*	
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*useForChildren*	

Properties

Target

The target type to be customized.

Declaration

```
public Type Target { get; }
```

Property Value

Type	Description
Type (https://learn.microsoft.com/dotnet/api/system.type)	Returns the target type.

UseForChildren

Allows child classes to use this PropertyCustom.

Declaration

```
public bool UseForChildren { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when child classes use this PropertyCustom.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
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PrimitiveTypeCustom (Cobilas.GodotEditor.Utility.Serializa
PropertyCustom (Cobilas.GodotEditor.Utility.Serializa
PropertyCustomAttribute (Cobilas.GodotEditor.Utility.Serializa
SRCNull (Cobilas.GodotEditor.Utility.Serializa
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
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+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
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+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Implements

_Attribute (https://learn.microsoft.com/dotnet/api/system.runtime.interopservices._attribute)

- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se**
  - EnumCustom (Cobilas.GodotEditor.Utility.Serializa
  - PrimitiveTypeCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustomAttribute (Cobilas.GodotEditor.Utility.Serializa
  - SPCNull (Cobilas.GodotEditor.Utility.Serializa
- + **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**
- + **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- + **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
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- + **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- + **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
- + **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
- + **Cobilas.GodotEngine.Utility.**

Class SPCNull

Null representation of PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html).

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)

↳ PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html)

↳ SPCNull

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

INullObject (../com.cobilas.cs.lib.core.net4x.api/Cobilas.INullObject.html)

Inherited Members

PropertyCustom.Attribute (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_Attribute)

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)

object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html).Properties (Cobilas.GodotEditor.Utility.Serialization.Properties.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public sealed class SPCNull : PropertyCustom, ISerializedPropertyManipulation, INullObject
```

Properties

IsHide

Check if the member is hidden from the editor.

Declaration

```
public override bool IsHide { get; }
```


+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Serialization.Properties.html)

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+ Cobilas.GodotEngine.Utility.N

+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru

+ Cobilas.GodotEngine.Utility.

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	returns `true` when the member is hidden from the editor.

Overrides

PropertyCustom.IsHide (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_IsHide)

Member

The property to be manipulated.

Declaration

```
public override MemberItem Member { get; set; }
```

Property Value

Type	Description
MemberItem (Cobilas.GodotEditor.Utility.Serialization.MemberItem.html)	Defines a new member.

Overrides

PropertyCustom.Member (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_Member)

Null

Null representation of PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html).

Declaration

```
public static SPCNull Null { get; }
```

Property Value

Type	Description
SPCNull (Cobilas.GodotEditor.Utility.Serialization.Properties.SPCNull.html)	Returns a null representation of PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html) .

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser

EnumCustom (Cobilas.GodotEditor.Utility.Serializa

PrimitiveTypeCustom (Cobilas.GodotEditor.Utility.Serializa

PropertyCustom (Cobilas.GodotEditor.Utility.Serializa

PropertyCustomAttribute (Cobilas.GodotEditor.Utility.Serializa

SPCNull (Cobilas.GodotEditor.Utility.Serializa

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser

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+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N

+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru

+ Cobilas.GodotEngine.Utility.

PropertyPath

The path of the property.

Declaration

```
public override string PropertyPath { get; set; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Sets the path of the property.

Overrides

PropertyCustom.PropertyPath (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_PropertyPath)

Methods

CacheValueToObject(string?, string?)

Converts the value stored in the cache to a specific value.

Declaration

```
public override object? CacheValueToObject(string? propertyName, string? value)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
string (https://learn.microsoft.com/dotnet/api/system.string)	*value*	The value to be converted.

Returns

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the already converted value.

Overrides

PropertyCustom.CacheValueToObject(string?, string?) (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_CacheValueToObject_System_String_System_String_)

Get(string?)

The method allows you to get the value of the property.

Declaration

```
public override object? Get(string? propertyName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.

Returns

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the value of the property.

Overrides

PropertyCustom.Get(string) (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_Get_System_String_)

GetPropertyList()

The method allows you to create a property serialization list.

Declaration

```
public override PropertyItem[] GetPropertyList()
```

Returns

Type	Description
PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html)[]	Returns a property serialization list.

Overrides

PropertyCustom.GetPropertyList() (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_GetPropertyList)

Set(string?, object?)

The method allows you to set the property value.

Declaration

```
public override bool Set(string? propertyName, object? value)
```


- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
  - EnumCustom (Cobilas.GodotEditor.Utility.Serializa
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  - PropertyCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustomAttribute (Cobilas.GodotEditor.Utility.Serializ
  - SPCNull (Cobilas.GodotEditor.Utility.Serializa
- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl**
- **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
- **Cobilas.GodotEngine.Utility.**

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	The value that will be set in the property.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the property is changed.

Overrides

PropertyCustom.Set(string?, object?) (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html#Cobilas_GodotEditor_Utility_Serialization_Properties_PropertyCustom_Set_System_String_System_Object_)

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)
INullObject (/cam.cobilas.oslibcore.net4x.api/Cobilas.INullObject.html)

- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
  - EnumCustom (Cobilas.GodotEditor.Utility.Serializa
  - PrimitiveTypeCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustom (Cobilas.GodotEditor.Utility.Serializa
  - PropertyCustomAttribute (Cobilas.GodotEditor.Utility.Serializa
  - SPCNull (Cobilas.GodotEditor.Utility.Serializa
- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
- **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
- **Cobilas.GodotEngine.Utility.**

Namespace Cobilas.GodotEditor.Utility.Serialization.RenderObjects

Filter by title

Classes

NoSerializedProperty (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.NoSerializedProperty.html)

Represents a property that does not have a PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html).

SONull (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SONull.html)

SerializedObjectNull; Represents a null SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html).

SerializedNode (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedNode.html)

The class is a serialization representation of a node.

SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)

Base class for serialization properties.

SerializedProperty (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedProperty.html)

Property serialization class in inspector.

- **Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser**
- **+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
- **- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
  - NoSerializedProperty (Cobilas.GodotEditor.Utility.Serializa
  - SONull (Cobilas.GodotEditor.Utility.Serializa
  - SerializedNode (Cobilas.GodotEditor.Utility.Serializa
  - SerializedObject (Cobilas.GodotEditor.Utility.Serializa
  - SerializedProperty (Cobilas.GodotEditor.Utility.Serializa
- **+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
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- **+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- **+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
- **+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**

Class NoSerializedProperty

Represents a property that does not have a PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html).

Inheritance

object (https://learn.microsoft.com/dotnet/api/system.object)
↳ SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)
↳ NoSerializedProperty

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)
IEnumerable (https://learn.microsoft.com/dotnet/api/system.collections.generic.ienumerable-1)<SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)>
IEnumerable (https://learn.microsoft.com/dotnet/api/system.collections.ienumerable)

Inherited Members

SerializedObject.RootNodeId (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_RootNodeId)
SerializedObject.GetPath(SerializedObject) (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_GetPath_Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject.)
object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html).RenderObjects (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.html)

Assembly: cobilas.godot.utility.dll

Syntax

```
public class NoSerializedProperty : SerializedObject, ISerializedPropertyManipulation, IEnumerable<SerializedObject>, IEnumerable
```

Constructors

Filter by title
+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se
- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
NoSerializedProperty
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SONull (Cobilas.GodotEditor.Utility.Serializa
SerializedNode (Cobilas.GodotEditor.Utility.Serializ
SerializedObject (Cobilas.GodotEditor.Utility.Serializ
SerializedProperty (Cobilas.GodotEditor.Utility.Serializ
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

NoSerializedProperty(string, SerializedObject, SNInfo)

Creates a new instance of this object.

Declaration

```
public NoSerializedProperty(string name, SerializedObject parent, SNInfo info)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	
SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)	*parent*	
SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html)	*info*	

NoSerializedProperty(string, SerializedObject, string)

Creates a new instance of this object.

Declaration

```
[Obsolete("Use SerializedProperty(string, SerializedObject, SOInfo) constructor!")]
public NoSerializedProperty(string name, SerializedObject parent, string rootNodeId)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	
SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)	*parent*	
string (https://learn.microsoft.com/dotnet/api/system.string)	*rootNodeId*	

Properties

Member

The custom class member.

Declaration

```
public override MemberItem Member { get; set; }
```

Property Value

Type	Description
MemberItem (Cobilas.GodotEditor.Utility.Serialization.MemberItem.html)	Returns the custom class member.

Overrides

SerializedObject.Member (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_Member)

Name

The name of the object.

Declaration

```
public override string Name { get; protected set; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns the name of the object.

Overrides

SerializedObject.Name (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_Name)

Parent

The parent object of the SerializedObject.

Declaration

```
public override SerializedObject Parent { get; protected set; }
```

Property Value

Type	Description
SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)	Returns the parent object of the SerializedObject.

Overrides

SerializedObject.Parent (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_Parent)

PropertyPath

The custom property path.

Declaration

```
public override string PropertyPath { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns the path of the custom property.

Overrides

SerializedObject.PropertyPath (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_PropertyPath)

RootInfo

Contains information about the root object.

Declaration

```
public Cobilas.GodotEditor.Utility.Serializa { get; protected set; }
```

Property Value

Type	Description
SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html)	Returns information about the root object.

Overrides

SerializedObject.RootInfo (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_RootInfo)

Methods

AddSerializedObject()

Allows you to add a new SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html) object.

Declaration

- Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
  - NoSerializedProperty (Cobilas.GodotEditor.Utility.Serializa
  - SONull (Cobilas.GodotEditor.Utility.Serializa
  - SerializedNode (Cobilas.GodotEditor.Utility.Serializ
  - SerializedObject (Cobilas.GodotEditor.Utility.Serializa
  - SerializedProperty (Cobilas.GodotEditor.Utility.Serializa
- Cobilas.GodotEditor.Utility.Serialization (Cobilas.GodotEditor.Utility.ht
- Cobilas.GodotEditor.Utility.IO (Cobilas.GodotEditor.Utility.IO
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
- Cobilas.GodotEngine.Utility.Plugin (Cobilas.GodotEngine.Utility.Pl
- Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
- Cobilas.GodotEngine.Utility.

```
public void Add(SerializedObject obj)
```

Parameters

Type	Name	Description
SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)	*obj*	The SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html) object to be added.

Add(IEnumerable<SerializedObject>)

Allows you to add a new SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html) object.

Declaration

```
public void Add(IEnumerable<SerializedObject> objs)
```

Parameters

Type	Name	Description
IEnumerable<SerializedObject> (https://learn.microsoft.com/dotnet/api/system.collections.generic.ienumerable-1)	*objs*	The list of SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html) objects to add.

Get(string?)

The method allows you to get the value of the property.

Declaration

```
public override object? Get(string? propertyName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.

Returns

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the value of the property.

Overrides

SerializedObject.Get(string?)
(Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_Get_System_String_)

GetEnumerator()

Returns an enumerator that iterates through the collection.

Declaration

```
public IEnumerator<SerializedObject> GetEnumerator()
```

Returns

Type	Description
IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.generic.ienumerator-1) < SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html) >	An enumerator that can be used to iterate through the collection.

GetPropertyList()

The method allows you to create a property serialization list.

Declaration

```
public override PropertyItem[] GetPropertyList()
```

Returns

Type	Description
PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html)[]	Returns a property serialization list.

Overrides

SerializedObject.GetPropertyList()
(Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_GetPropertyList)

Set(string?, object?)

The method allows you to set the property value.

Declaration

```
public override bool Set(string? propertyName, object? value)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	The value that will be set in the property.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the property is changed.

Overrides

SerializedObject.Set(string?, object?) (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_Set_System_String_System_Object_)

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)
IEnumerable<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.ienumerable-1)
IEnumerable (https://learn.microsoft.com/dotnet/api/system.collections.ienumerable)

- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
  - NoSerializedProperty (Cobilas.GodotEditor.Utility.Serializa
  - SONull (Cobilas.GodotEditor.Utility.Serializa
  - SerializedNode (Cobilas.GodotEditor.Utility.Serializa
  - SerializedObject (Cobilas.GodotEditor.Utility.Serializa
  - SerializedProperty (Cobilas.GodotEditor.Utility.Serializa
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
- **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
- **Cobilas.GodotEngine.Utility.**

Class SONull

SerializedObjectNull; Represents a null SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html).

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)

↳ SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)

↳ SONull

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

INullObject (../com.cobilas.cs.lib.core.net4x.api/Cobilas.INullObject.html)

Inherited Members

SerializedObject.RootNodeId (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_RootNodeId)

SerializedObject.GetPath(SerializedObject) (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_GetPath_Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_)

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)

object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object,system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html).RenderObjects (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public sealed class SONull : SerializedObject, ISerializedPropertyManipulation, INullObject
```

Constructors

SONull(string, SerializedObject, SNInfo)

Creates a new instance of this object.

Declaration

```
public SONull(string name, SerializedObject parent, SNInfo info)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	
SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)	*parent*	
SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html)	*info*	

SONull(string, SerializedObject, string)

Creates a new instance of this object.

Declaration

```
[obsolete("Use SONull(string, SerializedObject, SOInfo) constructor!")]
public SONull(string name, SerializedObject parent, string rootNodeId)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	
SerializedObject (Cobilas.GodotEngine.Utility.Serialization.RenderObjects.SerializedObject.html)	*parent*	
string (https://learn.microsoft.com/dotnet/api/system.string)	*rootNodeId*	

Properties

Member

The custom class member.

Declaration

```
public Cobilas.GodotEngine.Utility.Member { get; set; }
```

Property Value

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se
- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
  - NoSerializedProperty (Cobilas.GodotEditor.Utility.Serializa
  - SONull (Cobilas.GodotEditor.Utility.Serializa
  - SerializedNode (Cobilas.GodotEditor.Utility.Serializ
  - SerializedObject (Cobilas.GodotEditor.Utility.Serializa
  - SerializedProperty (Cobilas.GodotEditor.Utility.Serializa
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Description
MemberItem (Cobilas.GodotEditor.Utility.Serialization.MemberItem.html)	Returns the custom class member.

Overrides

SerializedObject.Member (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_Member)

Name

The name of the object.

Declaration

```
public override string Name { get; protected set; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns the name of the object.

Overrides

SerializedObject.Name (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_Name)

Null

Represents a null representation of SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html).

Declaration

```
public static SONull Null { get; }
```

Property Value

Type	Description
SONull (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)	Returns a null representation of SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html).

Parent

- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
  - **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
    - NoSerializedProperty (Cobilas.GodotEditor.Utility.Serializa
    - SONull (Cobilas.GodotEditor.Utility.Serializa
    - SerializedNode (Cobilas.GodotEditor.Utility.Serializa
    - SerializedObject (Cobilas.GodotEditor.Utility.Serializa
    - SerializedProperty (Cobilas.GodotEditor.Utility.Serializa
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
  - **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
  - **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
  - **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
  - **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl**
  - **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**

The parent object of the SerializedObject.

Declaration

```
public override SerializedObject Parent { get; protected set; }
```

Property Value

Type	Description
SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)	Returns the parent object of the SerializedObject.

Overrides

SerializedObject.Parent (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_Parent)

PropertyPath

The custom property path.

Declaration

```
public override string PropertyPath { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns the path of the custom property.

Overrides

SerializedObject.PropertyPath (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_PropertyPath)

RootInfo

Contains information about the root object.

Declaration

```
public override SNInfo RootInfo { get; protected set; }
```

Property Value

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se
- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
  - NoSerializeProperty (Cobilas.GodotEditor.Utility.S
  - SONull (Cobilas.GodotEditor.Utility.Serializa
  - SerializedNode (Cobilas.GodotEditor.Utility.Serializa
  - SerializedObject (Cobilas.GodotEditor.Utility.Serializa
  - SerializedProperty (Cobilas.GodotEditor.Utility.Serializ
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Description
SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html)	Returns information about the root object.

Overrides

SerializedObject.RootInfo (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_RootInfo)

Methods

Get(string?)

The method allows you to get the value of the property.

Declaration

```
public override object? Get(string? propertyName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.

Returns

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the value of the property.

Overrides

SerializedObject.Get(string?) (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_Get_System_String_)

GetPropertyList()

The method allows you to create a property serialization list.

Declaration

```
public override PPropertyItem[] GetPropertyList()
```

Returns

Type	Description
PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html)[]	Returns a property serialization list.

Overrides

SerializedObject.GetPropertyList() (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_GetPropertyList)

Set(string?, object?)

The method allows you to set the property value.

Declaration

```
public override bool Set(string? propertyName, object? value)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	The value that will be set in the property.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the property is changed.

Overrides

SerializedObject.Set(string?, object?) (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_Set_System_String_System_Object_)

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)
INullObject (../com.cobilas.cs.lib.core.net4x.api/Cobilas.INullObject.html)

Class SerializedNode

The class is a serialization representation of a node.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ SerializedNode

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

Inherited Members

object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html).RenderObjects (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public class SerializedNode : ISerializedPropertyManipulation
```

Constructors

SerializedNode(string)

Creates a new instance of this object.

Declaration

```
public SerializedNode(string id)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*id*	

Properties

Id

The id of the node object.

Declaration

```
public string Id { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns the id of the node object.

Methods

Add(SerializedObject)

Allows you to add a new SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html) object.

Declaration

```
public void Add(SerializedObject obj)
```

Parameters

Type	Name	Description
SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)	*obj*	The SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html) object to be added.

Add(IEnumerable<SerializedObject>)

Allows you to add a new SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html) object.

Declaration

```
public void Add(IEnumerable<SerializedObject> objs)
```

Parameters

Type	Name	Description
IEnumerable (https://learn.microsoft.com/dotnet/api/system.collections.generic.ienumerable-1)<SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)>	*objs*	The list of SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html) objects to add.

+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**

- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
  - NoSerializedProperty (Cobilas.GodotEditor.Utility.Serializa
  - SONull (Cobilas.GodotEditor.Utility.Serializa
  - SerializedNode (Cobilas.GodotEditor.Utility.Serializa
  - SerializedObject (Cobilas.GodotEditor.Utility.Serializa
  - SerializedProperty (Cobilas.GodotEditor.Utility.Serializa

+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**

+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**

+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**

+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**

+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**

Get(string?)

The method allows you to get the value of the property.

Declaration

```
public object? Get(string? propertyName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.

Returns

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the value of the property.

GetPropertyList()

The method allows you to create a property serialization list.

Declaration

```
public PropertyItem[] GetPropertyList()
```

Returns

Type	Description
PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html)[]	Returns a property serialization list.

GetPropertyList(PropertyItem[])

The method converts a list of PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html) to an Godot.Collections.Array

Declaration

```
public static Array GetPropertyList(PropertyItem[] list)
```

Parameters

Type	Name	Description
PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html)[]	*list*	The list to be converted.

Returns

Type	Description
Array	Returns an Godot.Collections.Array containing the serialization information for the properties.

GetPropertyList(SerializedNode)

The method converts a list of PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html) to an Godot.Collections.Array

Declaration

```
public static Array GetPropertyList(SerializedNode node)
```

Parameters

Type	Name	Description
SerializedNode (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedNode.html)	*node*	The SerializedNode (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedNode.html) that will get the list of PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html) to be converted.

Returns

Type	Description
Array	Returns an Godot.Collections.Array containing the serialization information for the properties.

Set(string?, object?)

The method allows you to set this property value.

Declaration

```
public bool Set(string? propertyName, object? value)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	The value that will be set in the property.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the property is changed.

ToString()

Returns a string that represents the current object.

Declaration

```
public override string ToString()
```

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	A string that represents the current object.

Overrides

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

Class SerializedObject

Base class for serialization properties.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ SerializedObject
↳ NoSerializedProperty (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.NoSerializedProperty.html)
↳ SONull (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SONull.html)
↳ SerializedProperty (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedProperty.html)

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html).RenderObjects (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.html)

Assembly: Cobilas.GodotEditor.dll

Syntax

```
public abstract class SerializedObject : ISerializedPropertyManipulation
```

Constructors

SerializedObject(string, SerializedObject, SNInfo)

Creates a new instance of this object.

Declaration

```
protected SerializedObject(string name, SerializedObject parent, SNInfo info)
```

Parameters

+ Cobilas.GodotEditor.Utility.Serialization.Properties
(Cobilas.GodotEditor.Utility.Se
- Cobilas.GodotEditor.Utility.Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
NoSerializedProperty (Cobilas.GodotEditor.Utility.Serializa
SONull (Cobilas.GodotEditor.Utility.Serializ
SerializedNode (Cobilas.GodotEditor.Utility.Serializ
SerializedObject (Cobilas.GodotEditor.Utility.Serializ
SerializedProperty (Cobilas.GodotEditor.Utility.Serializ
+ Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ni
+ Cobilas.GodotEngine.Utility.IO
(Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input
(Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics
(Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics
(Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime
(Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	
SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)	*parent*	
SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html)	*info*	

SerializedObject(string, SerializedObject, string)

Creates a new instance of this object.

Declaration

```
[Obsolete("Use SerializedObject(string, SerializedObject, SOInfo) constructor!")]
protected SerializedObject(string name, SerializedObject parent, string rootNodeId)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	
SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)	*parent*	
string (https://learn.microsoft.com/dotnet/api/system.string)	*rootNodeId*	

Properties

Member

The custom class member.

Declaration

```
public abstract MemberItem Member { get; set; }
```

Property Value

Type	Description
MemberItem (Cobilas.GodotEditor.Utility.Serialization.MemberItem.html)	Returns the custom class member.

Name

The name of the object.

Declaration

```
public abstract string Name { get; protected set; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns the name of the object.

Parent

The parent object of the SerializedObject.

Declaration

```
public abstract SerializedObject Parent { get; protected set; }
```

Property Value

Type	Description
SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)	Returns the parent object of the SerializedObject.

PropertyPath

The custom property path.

Declaration

```
public abstract string PropertyPath { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns the path of the custom property.

RootInfo

Contains information about the root object.

Declaration

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
  - NoSerializedProperty (Cobilas.GodotEditor.Utility.Serializa
  - SONull (Cobilas.GodotEditor.Utility.Serializa
  - SerializedNode (Cobilas.GodotEditor.Utility.Serializa
  - SerializedObject (Cobilas.GodotEditor.Utility.Serializa
  - SerializedProperty (Cobilas.GodotEditor.Utility.Serializ
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

```
public abstract SNInfo RootInfo { get; protected set; }
```

Property Value

Type	Description
SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html)	Returns information about the root object.

RootNodeId

The id of the root object.

Declaration

```
public string RootNodeId { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns a string (https://learn.microsoft.com/dotnet/api/system.string) with the id of the node object.

Methods

Get(string?)

The method allows you to get the value of the property.

Declaration

```
public abstract object? Get(string? propertyName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.

Returns

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the value of the property.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
  NoSerializedProperty (Cobilas.GodotEditor.Utility.Serializa
  SONull (Cobilas.GodotEditor.Utility.Serializa
  SerializedNode (Cobilas.GodotEditor.Utility.Serializa
  SerializedObject (Cobilas.GodotEditor.Utility.Serializa
  SerializedProperty (Cobilas.GodotEditor.Utility.Serializa
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

GetPath(SerializedObject)

Allows you to get the path of the SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html).

Declaration

```
public static string GetPath(SerializedObject obj)
```

Parameters

Type	Name	Description
SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)	*obj*	The SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html) that will be used to generate the path.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns a string (https://learn.microsoft.com/dotnet/api/system.string) containing the path of the SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html).

GetPropertyList()

The method allows you to create a property serialization list.

Declaration

```
public abstract PropertyItem[] GetPropertyList()
```

Returns

Type	Description
PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html)[]	Returns a property serialization list.

Set(string?, object?)

The method allows you to set the property value.

Declaration

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
  - NoSerializedProperty (Cobilas.GodotEditor.Utility.Serializa
  - SONull (Cobilas.GodotEditor.Utility.Serializa
  - SerializedNode (Cobilas.GodotEditor.Utility.Serializa
  - SerializedObject (Cobilas.GodotEditor.Utility.Serializa
  - SerializedProperty (Cobilas.GodotEditor.Utility.Serializa
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

```
public abstract bool Set(string? propertyName, object? value)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	The value that will be set in the property.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the property is changed.

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
  - **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
    - NoSerializedProperty (Cobilas.GodotEditor.Utility.Serializa
    - SONull (Cobilas.GodotEditor.Utility.Serializa
    - SerializedNode (Cobilas.GodotEditor.Utility.Serializa
    - SerializedObject (Cobilas.GodotEditor.Utility.Serializa
    - SerializedProperty (Cobilas.GodotEditor.Utility.Serializa
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
+ **Cobilas.GodotEngine.Utility.**

Class SerializedProperty

Property serialization class in inspector.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)

↳ SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)

↳ SerializedProperty

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

Inherited Members

SerializedObject.RootNodeId (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_RootNodeId)

SerializedObject.GetPath(SerializedObject) (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_GetPath_Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_)

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)

object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEditor (Cobilas.GodotEditor.html).Utility (Cobilas.GodotEditor.Utility.html).Serialization (Cobilas.GodotEditor.Utility.Serialization.html).RenderObjects (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public class SerializedProperty : SerializedObject, ISerializedPropertyManipulation
```

Constructors

SerializedProperty(string, SerializedObject, SNInfo)

Creates a new instance of this object.

Declaration

```
public SerializedProperty(string name, SerializedObject parent, SNInfo info)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	
SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)	*parent*	
SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html)	*info*	

SerializedProperty(string, SerializedObject, string)

Creates a new instance of this object.

Declaration

```
[obsolete("Use SerializedProperty(string, SerializedObject, SOInfo) constructor!")]
public SerializedProperty(string name, SerializedObject parent, string rootNodeId)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	
SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)	*parent*	
string (https://learn.microsoft.com/dotnet/api/system.string)	*rootNodeId*	

Properties

Custom

Property customization object.

Declaration

```
Cobilas.Properties.Custom { get; set; }
```

Property Value

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se
- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.
  - NoSerializedProperty (Cobilas.GodotEditor.Utility.Serializa
  - SONull (Cobilas.GodotEditor.Utility.Serializa
  - SerializedNode (Cobilas.GodotEditor.Utility.Serializ
  - SerializedObject (Cobilas.GodotEditor.Utility.Serializa
  - SerializedProperty (Cobilas.GodotEditor.Utility.Serializa
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Description
PropertyCustom (Cobilas.GodotEditor.Utility.Serialization.Properties.PropertyCustom.html)	Allows you to define a property customization object.

Member

The serialized member.

Declaration

```
public override MemberItem Member { get; set; }
```

Property Value

Type	Description
MemberItem (Cobilas.GodotEditor.Utility.Serialization.MemberItem.html)	Returns the custom class member.

Overrides

SerializedObject.Member (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_Member)

Name

The name of the object.

Declaration

```
public override string Name { get; protected set; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns the name of the object.

Overrides

SerializedObject.Name (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_Name)

Parent

The parent object of the SerializedObject.

Declaration

```
public override SerializedObject Parent { get; protected set; }
```

Property Value

Type	Description
SerializedObject (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html)	Returns the parent object of the SerializedObject.

Overrides

SerializedObject.Parent (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_Parent)

PropertyPath

The custom property path.

Declaration

```
public override string PropertyPath { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns the path of the custom property.

Overrides

SerializedObject.PropertyPath (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_PropertyPath)

RootInfo

Contains information about the root object.

Declaration

```
public override SNInfo RootInfo { get; protected set; }
```

Property Value

Type	Description
SNInfo (Cobilas.GodotEditor.Utility.Serialization.SNInfo.html)	Returns information about the root object.

Overrides

SerializedObject.RootInfo (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_RootInfo)

Methods

Get(string?)

The method allows you to get the value of the property.

Declaration

```
public override object? Get(string? propertyName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.

Returns

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the value of the property.

Overrides

SerializedObject.Get(string) (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_Get_System_String_)

GetPropertyList()

The method allows you to create a property serialization list.

Declaration

```
public override PropertyItem[] GetPropertyList()
```

Returns

Type	Description
PropertyItem (Cobilas.GodotEditor.Utility.Serialization.PropertyItem.html)[]	Returns a property serialization list.

Overrides

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
  - NoSerializedProperty (Cobilas.GodotEditor.Utility.Serializa
  - SONull (Cobilas.GodotEditor.Utility.Serializa
  - SerializedNode (Cobilas.GodotEditor.Utility.Serializa
  - SerializedObject (Cobilas.GodotEditor.Utility.Serializa
  - SerializedProperty (Cobilas.GodotEditor.Utility.Serializa
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

SerializedObject.GetPropertyList()
(Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_GetPropertyList)

Set(string?, object?)

The method allows you to set the property value.

Declaration

```
Cobilas.Godot.Utility.Serialization.Properties.IProperty? Set(string? propertyName, object? value)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*propertyName*	The name of the property.
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	The value that will be set in the property.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the property is changed.

Overrides

SerializedObject.Set(string?, object?)
(Cobilas.GodotEditor.Utility.Serialization.RenderObjects.SerializedObject.html#Cobilas_GodotEditor_Utility_Serialization_RenderObjects_SerializedObject_Set_System_String_System_Object_)

Implements

ISerializedPropertyManipulation (Cobilas.GodotEditor.Utility.Serialization.ISerializedPropertyManipulation.html)

- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se**
- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
  - NoSerializedProperty (Cobilas.GodotEditor.Utility.Serializ
  - SONull (Cobilas.GodotEditor.Utility.Serializa
  - SerializedNode (Cobilas.GodotEditor.Utility.Serializa
  - SerializedObject (Cobilas.GodotEditor.Utility.Serializa
  - SerializedProperty (Cobilas.GodotEditor.Utility.Serializ
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
- **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
- **Cobilas.GodotEngine.Utility.**

Namespace Cobilas.GodotEngine.Utility

Classes

Filter by title

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser

- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.hl

- Color32 (Cobilas.GodotEngine.Utility.Color3
- ColorF (Cobilas.GodotEngine.Utility.ColorF
- Coroutine (Cobilas.GodotEngine.Utility.Corout
- CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
- DebugLog (Cobilas.GodotEngine.Utility.Debug
- DisplayInfo (Cobilas.GodotEngine.Utility.Display
- FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
- GDFeature (Cobilas.GodotEngine.Utility.GDFea
- Gizmos (Cobilas.GodotEngine.Utility.Gizmo
- IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
- IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
- IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
- IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
- LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
- LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
- NullNode (Cobilas.GodotEngine.Utility.NullNo

DebugLog (Cobilas.GodotEngine.Utility.DebugLog.html)

Static class to print messages to the console.

GDFeature (Cobilas.GodotEngine.Utility.GDFeature.html)

This class contains some Features pre-defined by the engine.

Gizmos (Cobilas.GodotEngine.Utility.Gizmos.html)

Gizmos are used to give visual debugging or setup aids in the Scene view.

NullNode (Cobilas.GodotEngine.Utility.NullNode.html)

A null representation of the Godot.Node class.

Randomico (Cobilas.GodotEngine.Utility.Randomico.html)

The class allows the creation of pseudo random numbers.

Screen (Cobilas.GodotEngine.Utility.Screen.html)

Gets or changes game screen information.

Structs

Color32 (Cobilas.GodotEngine.Utility.Color32.html)

Represents an ARGB value between (0 and 255).

ColorF (Cobilas.GodotEngine.Utility.ColorF.html)

Represents a normalized ARGB value between (0 and 1).

CustonResolutionList (Cobilas.GodotEngine.Utility.CustonResolutionList.html)

Stores custom resolutions.

DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html)

Contains information from a specific screen.

FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedRunTimeSecond.html)

This class represents a delay in seconds to methods that return IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.ienumerator) and use the keyword Yield.

This class is performed in the _PhysicsProcess(float) (https://learn.microsoft.com/dotnet/api/system.single).

LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFixedRunTimeSecond.html)

This class represents a delay in seconds to methods that return IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.ienumerator) and use the keyword Yield.

This class is performed in the _PhysicsProcess(float) (https://learn.microsoft.com/dotnet/api/system.single).

This class allows the corrotine to be called after the methods of updating the current scene.

LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRunTimeSecond.html)

This class represents a delay in seconds to methods that return IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.ienumerator) and use the keyword Yield.

This class is performed in the _Process(float) (https://learn.microsoft.com/dotnet/api/system.single).

This class allows the corrotine to be called after the methods of updating the current scene.

Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)

Represents a 2D rectangle with advanced properties for geometric transformations.

Resolution (Cobilas.GodotEngine.Utility.Resolution.html)

Stores information about a screen resolution.

RunTimeSecond (Cobilas.GodotEngine.Utility.RunTimeSecond.html)

This class represents a delay in seconds to methods that return IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.ienumerator) and use the keyword Yield.

This class is performed in the _Process(float) (https://learn.microsoft.com/dotnet/api/system.single).

Interfaces

IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldCoroutine.html)

A base interface for all Yield class.

IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldFixedUpdate.html)

Yield Class to be excited in the _PhysicsProcess(float) (https://learn.microsoft.com/dotnet/api/system.single)

IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldUpdate.html)

Yield Class to be excited in the _Process(float) (https://learn.microsoft.com/dotnet/api/system.single)

IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldVolatile.html)

The IyieldVolatile interface allows the Yield class to change the type of process.

This interface allows you to change the type of update if the object will use the _Process(float) (https://learn.microsoft.com/dotnet/api/system.single) or _PhysicsProcess(float) (https://learn.microsoft.com/dotnet/api/system.single) Coroutine (Cobilas.GodotEngine.Utility.Coroutine.html) process.

Enums

ScreenMode (Cobilas.GodotEngine.Utility.ScreenMode.html)

Represents screen modes.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
  - Color32 (Cobilas.GodotEngine.Utility.Color3
  - ColorF (Cobilas.GodotEngine.Utility.ColorF
  - Coroutine (Cobilas.GodotEngine.Utility.Corout
  - CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
  - DebugLog (Cobilas.GodotEngine.Utility.Debug
  - DisplayInfo (Cobilas.GodotEngine.Utility.Display
  - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
  - GDFeature (Cobilas.GodotEngine.Utility.GDFea
  - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
  - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
  - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
  - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
  - IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
  - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
  - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
  - NullNode (Cobilas.GodotEngine.Utility.NullNo

Struct Color32

Represents an ARGB value between (0 and 255).

Filter by title

Implements

IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<Color32 (Cobilas.GodotEngine.Utility.Color32.html)>

Inherited Members

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system.object,system.object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
[Serializable]
public struct Color32 : IEquatable<Color32>
```

Constructors

Color32(ColorF)

Creates a new instance of this object.

Declaration

```
public Color32(ColorF color)
```

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*color*	

Color32(Vector4D)

Creates a new instance of this object.

Declaration

```
public Color32(Vector4D color)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*color*	

Color32(Color)

Creates a new instance of this object.

Declaration

```
public Color32(Color color)
```

Parameters

Type	Name	Description
Color	*color*	

Color32(byte, byte, byte, byte)

Creates a new instance of this object.

Declaration

```
public Color32(byte r, byte g, byte b, byte a)
```

Parameters

Type	Name	Description
byte (https://learn.microsoft.com/dotnet/api/system.byte)	*r*	
byte (https://learn.microsoft.com/dotnet/api/system.byte)	*g*	
byte (https://learn.microsoft.com/dotnet/api/system.byte)	*b*	
byte (https://learn.microsoft.com/dotnet/api/system.byte)	*a*	

Properties

A

- **Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEditor.Utility. Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
  - Color32 (Cobilas.GodotEngine.Utility.Color3
  - Color (Cobilas.GodotEngine.Utility.ColorF
  - Coroutine (Cobilas.GodotEngine.Utility.Corout
  - CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
  - DebugLog (Cobilas.GodotEngine.Utility.Debug
  - DisplayInfo (Cobilas.GodotEngine.Utility.Display
  - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
  - GDFeature (Cobilas.GodotEngine.Utility.GDFea
  - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
  - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
  - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
  - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
  - IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
  - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
  - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
  - NullNode (Cobilas.GodotEngine.Utility.NullNo
  - Randomico (Cobilas.GodotEngine.Utility.Rand

Represents the alpha value.

Declaration

```
public byte A { readonly get; set; }
```

Property Value

Type	Description
byte (https://learn.microsoft.com/dotnet/api/system.byte)	Allows you to set the alpha value.

B

Represents the value blue.

Declaration

```
public byte B { readonly get; set; }
```

Property Value

Type	Description
byte (https://learn.microsoft.com/dotnet/api/system.byte)	Allows you to set the value blue.

G

Represents the value green.

Declaration

```
public byte G { readonly get; set; }
```

Property Value

Type	Description
byte (https://learn.microsoft.com/dotnet/api/system.byte)	Allows you to set the value green.

R

Represents the value red.

Declaration

```
public byte R { readonly get; set; }
```

Property Value

Type	Description
byte (https://learn.microsoft.com/dotnet/api/system.byte)	Allows you to set the value red.

Methods

Color32ToHex(Color32)

Converts a Color32 (Cobilas.GodotEngine.Utility.Color32.html) value to hexadecimal.

Declaration

```
public static string Color32ToHex(Color32 color)
```

Parameters

Type	Name	Description
Color32 (Cobilas.GodotEngine.Utility.Color32.html)	*color*	The Color32 (Cobilas.GodotEngine.Utility.Color32.html) value to convert.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns a string (https://learn.microsoft.com/dotnet/api/system.string) containing the hexadecimal value.

Equals(Color32)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(Color32 other)
```

Parameters

Type	Name	Description
Color32 (Cobilas.GodotEngine.Utility.Color32.html)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

HexToColor32(string)

Converts a Hexadecimal value to a Color32 (Cobilas.GodotEngine.Utility.Color32.html) value.

Declaration

```
public static Cobilas.GodotEngine.Utility.Color32 HexToColor32(string hex)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*hex*	The hexadecimal value to convert.

Returns

Type	Description
Color32 (Cobilas.GodotEngine.Utility.Color32.html)	Returns a hexadecimal value converted to Color32 (Cobilas.GodotEngine.Utility.Color32.html).

ToString()

Returns the fully qualified type name of this instance.

Declaration

```
public override readonly string ToString()
```

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The fully qualified type name.

Overrides

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)

Operators

explicit operator string(Color32)

Explicit conversion operator.(Color32 (Cobilas.GodotEngine.Utility.Color32.html) to string (https://learn.microsoft.com/dotnet/api/system.string))

Declaration

```
public static explicit operator string(Color32 c)
```

Parameters

Type	Name	Description
Color32 (Cobilas.GodotEngine.Utility.Color32.html)	*c*	Object to be converted.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	

explicit operator Color32(string)

Explicit conversion operator.(string (https://learn.microsoft.com/dotnet/api/system.string) to Color32 (Cobilas.GodotEngine.Utility.Color32.html))

Declaration

```
public static explicit operator Color32(string stg)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*stg*	Object to be converted.

Returns

Type	Description
Color32 (Cobilas.GodotEngine.Utility.Color32.html)	

implicit operator Color32(ColorF)

Implicit conversion operator.(ColorF (Cobilas.GodotEngine.Utility.ColorF.html) to Color32 (Cobilas.GodotEngine.Utility.Color32.html))

Declaration

Serialization.Properties
(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
Color32
(Cobilas.GodotEngine.Utility.Colors
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustomResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico

```
public static implicit operator Color32(ColorF c)
```

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*c*	Object to be converted.

Returns

Type	Description
Color32 (Cobilas.GodotEngine.Utility.Color32.html)	

implicit operator Color32(Vector4D)

Implicit conversion operator (Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) to Color32 (Cobilas.GodotEngine.Utility.Color32.html))

Declaration

```
public static implicit operator Color32(Vector4D c)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*c*	Object to be converted.

Returns

Type	Description
Color32 (Cobilas.GodotEngine.Utility.Color32.html)	

implicit operator Color32(Color)

Implicit conversion operator (Godot.Color to Color32 (Cobilas.GodotEngine.Utility.Color32.html))

Declaration

```
public static implicit operator Color32(Color c)
```

Parameters

Type	Name	Description
Color	*c*	Object to be converted.

- **Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEditor.Utility. Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
  - Color32 (Cobilas.GodotEngine.Utility.Color3
  - ColorF (Cobilas.GodotEngine.Utility.ColorF
  - Coroutine (Cobilas.GodotEngine.Utility.Corout
  - CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
  - DebugLog (Cobilas.GodotEngine.Utility.Debug
  - DisplayInfo (Cobilas.GodotEngine.Utility.Display
  - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
  - GDFeature (Cobilas.GodotEngine.Utility.GDFea
  - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
  - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
  - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
  - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
  - IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
  - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
  - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
  - NullNode (Cobilas.GodotEngine.Utility.NullNo
  - Randomico

Returns

Type	Description
Color32 (Cobilas.GodotEngine.Utility.Color32.html)	

Implements

IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)

Serialization.Properties (Cobilas.GodotEditor.Utility.Ser

+ **Cobilas.GodotEditor.Utility. Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**

- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**

  Color32 (Cobilas.GodotEngine.Utility.Color3
  ColorF (Cobilas.GodotEngine.Utility.ColorF
  Coroutine (Cobilas.GodotEngine.Utility.Corout
  CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
  DebugLog (Cobilas.GodotEngine.Utility.Debug
  DisplayInfo (Cobilas.GodotEngine.Utility.Display
  FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
  GDFeature (Cobilas.GodotEngine.Utility.GDFea
  Gizmos (Cobilas.GodotEngine.Utility.Gizmo
  IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
  IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
  IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
  IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
  LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
  LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
  NullNode (Cobilas.GodotEngine.Utility.NullNo
  Randomico

Struct ColorF

Represents a normalized ARGB value between (0 and 1).

Filter by title

Implements

IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<ColorF (Cobilas.GodotEngine.Utility.ColorF.html)>

IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<Vector4D (Cobilas.GodotEngine.Utility.Vector4D.html)>

Inherited Members

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
[Serializable]
public struct ColorF : IEquatable<ColorF>, IEquatable<Vector4D>
```

Constructors

ColorF(Color32)

Creates a new instance of this object.

Declaration

```
public ColorF(Color32 color)
```

Parameters

Type	Name	Description
Color32 (Cobilas.GodotEngine.Utility.Color32.html)	*color*	

ColorF(Vector4D)

Creates a new instance of this object.

Cobilas.GodotEditor.Utility.Ser

Cobilas.GodotEditor.Utility.

Serialization.RenderObjects

Cobilas.GodotEditor.Utility.Ser

Cobilas.GodotEngine.Utility

Cobilas.GodotEngine.Utility.ht

Color32 (Cobilas.GodotEngine.Utility.Color3

ColorF (Cobilas.GodotEngine.Utility.ColorF

Coroutine (Cobilas.GodotEngine.Utility.Coroutine

CustomResolutionList (Cobilas.GodotEngine.Utility.Custor

DebugLog (Cobilas.GodotEngine.Utility.Debug

DisplayInfo (Cobilas.GodotEngine.Utility.Display

FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR

GDFeature (Cobilas.GodotEngine.Utility.GDFea

Gizmos (Cobilas.GodotEngine.Utility.Gizmo

IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC

IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF

IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU

IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV

LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix

LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu

NullNode (Cobilas.GodotEngine.Utility.NullNo

Randomico (Cobilas.GodotEngine.Utility.Rando

Rect3D

Declaration

```
public ColorF(Vector4D color)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*color*	

ColorF(Color)

Creates a new instance of this object.

Declaration

```
public ColorF(Color color)
```

Parameters

Type	Name	Description
Color	*color*	

ColorF(float, float, float, float)

Creates a new instance of this object.

Declaration

```
public ColorF(float r, float g, float b, float a)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*r*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*g*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*b*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*a*	

Properties

A

Represents the alpha value.

Declaration

```
public float A { readonly get; set; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Allows you to set the alpha value.

AliceBlue

Gets a pre-defined AliceBlue color (R:0.94, G:0.97, B:1, A:1).

Declaration

```
public static ColorF AliceBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing AliceBlue color.

AntiqueWhite

Gets a pre-defined AntiqueWhite color (R:0.98, G:0.92, B:0.84, A:1).

Declaration

```
public static ColorF AntiqueWhite { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing AntiqueWhite color.

Aqua

Gets a pre-defined Aqua color (R:0, G:1, B:1, A:1).

Declaration

```
public static ColorF Aqua { get; }
```


(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Aqua color.

Aquamarine

Gets a pre-defined Aquamarine color (R:0.5, G:1, B:0.83, A:1).

Declaration

```
public static ColorF Aquamarine { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Aquamarine color.

Azure

Gets a pre-defined Azure color (R:0.94, G:1, B:1, A:1).

Declaration

```
public static ColorF Azure { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Azure color.

B

Represents the value blue.

Declaration

```
public float B { readonly get; set; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Allows you to set the value blue.

Beige

Gets a pre-defined Beige color (R:0.96, G:0.96, B:0.86, A:1).

Declaration

```
public static ColorF Beige { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Beige color.

Bisque

Gets a pre-defined Bisque color (R:1, G:0.89, B:0.77, A:1).

Declaration

```
public static ColorF Bisque { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Bisque color.

Black

Gets a pre-defined black color (R:0, G:0, B:0, A:1).

Declaration

```
public static ColorF Black { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing black color.

BlanchedAlmond

Gets a pre-defined BlanchedAlmond color (R:1, G:0.92, B:0.8, A:1).

Declaration

```
public static ColorF BlanchedAlmond { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing BlanchedAlmond color.

- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
  - Color32 (Cobilas.GodotEngine.Utility.Color
  - ColorF (Cobilas.GodotEngine.Utility.ColorF
  - Coroutine (Cobilas.GodotEngine.Utility.Coroul
  - CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
  - DebugLog (Cobilas.GodotEngine.Utility.Debug
  - DisplayInfo (Cobilas.GodotEngine.Utility.Display
  - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
  - GDFeature (Cobilas.GodotEngine.Utility.GDFea
  - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
  - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
  - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
  - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
  - IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
  - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
  - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
  - NullNode (Cobilas.GodotEngine.Utility.NullNo
  - Randomico (Cobilas.GodotEngine.Utility.Rando
  - Rect2D

```
public static ColorF BlanchedAlmond { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing BlanchedAlmond color.

Blue

Gets a pre-defined blue color (R:0, G:0, B:1, A:1).

Declaration

```
public static ColorF Blue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing blue color.

BlueViolet

Gets a pre-defined BlueViolet color (R:0.54, G:0.17, B:0.89, A:1).

Declaration

```
public static ColorF BlueViolet { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing BlueViolet color.

Brown

Gets a pre-defined Brown color (R:0.65, G:0.16, B:0.16, A:1).

Declaration

```
public static ColorF Brown { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Brown color.

BurlyWood

Gets a pre-defined BurlyWood color (R:0.87, G:0.72, B:0.53, A:1).

Declaration

```
public static ColorF BurlyWood { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing BurlyWood color.

CadetBlue

Gets a pre-defined CadetBlue color (R:0.37, G:0.62, B:0.63, A:1).

Declaration

```
public static ColorF CadetBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing CadetBlue color.

Chartreuse

Gets a pre-defined Chartreuse color (R:0.5, G:1, B:0, A:1).

Declaration

```
public static ColorF Chartreuse { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Chartreuse color.

Chocolate

Gets a pre-defined Chocolate color (R:0.82, G:0.41, B:0.12, A:1).

Declaration

```
public static ColorF Chocolate { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Chocolate color.

Clear

Gets a pre-defined transparent color (R:0, G:0, B:0, A:0).

Declaration

```
public static ColorF Clear { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing fully transparent color.

Coral

Gets a pre-defined Coral color (R:1, G:0.5, B:0.31, A:1).

Declaration

```
public static ColorF Coral { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Coral color.

Cornflower

Gets a pre-defined Cornflower color (R:0.39, G:0.58, B:0.93, A:1).

Declaration

(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
Color32
(Cobilas.GodotEngine.Utility.Color
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Coroui
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando

```
public static ColorF Cornflower { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Cornflower color.

Cornsilk

Gets a pre-defined Cornsilk color (R:1, G:0.97, B:0.86, A:1).

Declaration

```
public static ColorF Cornsilk { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Cornsilk color.

Crimson

Gets a pre-defined Crimson color (R:0.86, G:0.08, B:0.24, A:1).

Declaration

```
public static ColorF Crimson { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Crimson color.

Cyan

Gets a pre-defined cyan color (R:0, G:1, B:1, A:1).

Declaration

```
public static ColorF Cyan { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing cyan color.

DarkBlue

Gets a pre-defined DarkBlue color (R:0, G:0, B:0.55, A:1).

Declaration

```
public static ColorF DarkBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkBlue color.

DarkCyan

Gets a pre-defined DarkCyan color (R:0, G:0.55, B:0.55, A:1).

Declaration

```
public static ColorF DarkCyan { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkCyan color.

DarkGoldenRod

Gets a pre-defined DarkGoldenRod color (R:0.72, G:0.53, B:0.04, A:1).

Declaration

```
public static ColorF DarkGoldenRod { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkGoldenRod color.

DarkGray

Gets a pre-defined DarkGray color (R:0.66, G:0.66, B:0.66, A:1).

Declaration

```
public static ColorF DarkGray { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkGray color.

DarkGreen

Gets a pre-defined DarkGreen color (R:0.3, G:0.39, B:0, A:1).

Declaration

```
public static ColorF DarkGreen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkGreen color.

DarkKhaki

Gets a pre-defined DarkKhaki color (R:0.74, G:0.72, B:0.42, A:1).

Declaration

```
public static ColorF Darkkhaki { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkKhaki color.

DarkMagenta

Gets a pre-defined DarkMagenta color (R:0.55, G:0, B:0.55, A:1).

Declaration

```
public static ColorF DarkMagenta { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkMagenta color.

DarkOliveGreen

Gets a pre-defined DarkOliveGreen color (R:0.33, G:0.42, B:0.18, A:1).

Declaration

```
public static ColorF DarkOliveGreen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkOliveGreen color.

DarkOrange

Gets a pre-defined DarkOrange color (R:1, G:0.55, B:0, A:1).

Declaration

```
public static ColorF DarkOrange { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkOrange color.

DarkOrchid

Gets a pre-defined DarkOrchid color (R:0.6, G:0.2, B:0.8, A:1).

Declaration

```
public static ColorF DarkOrchid { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkOrchid color.

DarkRed

Gets a pre-defined DarkRed color (R:0.55, G:0, B:0, A:1).

Declaration

```
public static ColorF DarkRed { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkRed color.

DarkSalmon

Gets a pre-defined DarkSalmon color (R:0.91, G:0.59, B:0.48, A:1).

Declaration

```
public static ColorF DarkSalmon { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkSalmon color.

DarkSeaGreen

Gets a pre-defined DarkSeaGreen color (R:0.56, G:0.74, B:0.56, A:1).

Declaration

```
public static ColorF DarkSeaGreen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkSeaGreen color.

DarkSlateBlue

Gets a pre-defined DarkSlateBlue color (R:0.28, G:0.24, B:0.55, A:1).

Declaration

```
public static ColorF DarkSlateBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkSlateBlue color.

DarkSlateGray

Gets a pre-defined DarkSlateGray color (R:0.18, G:0.31, B:0.31, A:1).

Declaration

```
public static ColorF DarkSlateGray { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkSlateGray color.

DarkTurquoise

Gets a pre-defined DarkTurquoise color (R:0, G:0.81, B:0.82, A:1).

Declaration

```
public static ColorF DarkTurquoise { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkTurquoise color.

DarkViolet

Gets a pre-defined DarkViolet color (R:0.58, G:0, B:0.83, A:1).

Declaration

```
public static ColorF DarkViolet { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkViolet color.

- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
  - Color32 (Cobilas.GodotEngine.Utility.Color3
  - ColorF (Cobilas.GodotEngine.Utility.ColorF
  - Coroutine (Cobilas.GodotEngine.Utility.Coroutl
  - CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
  - DebugLog (Cobilas.GodotEngine.Utility.Debug
  - DisplayInfo (Cobilas.GodotEngine.Utility.Display
  - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
  - GDFeature (Cobilas.GodotEngine.Utility.GDFea
  - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
  - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
  - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
  - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
  - IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
  - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
  - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
  - NullNode (Cobilas.GodotEngine.Utility.NullNo
  - Randomico (Cobilas.GodotEngine.Utility.Rando
  - Rect2D

```
public static ColorF DarkViolet { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DarkViolet color.

DeepPink

Gets a pre-defined DeepPink color (R:1, G:0.08, B:0.58, A:1).

Declaration

```
public static ColorF DeepPink { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DeepPink color.

DeepSkyBlue

Gets a pre-defined DeepSkyBlue color (R:0, G:0.75, B:1, A:1).

Declaration

```
public static ColorF DeepSkyBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DeepSkyBlue color.

DimGray

Gets a pre-defined DimGray color (R:0.41, G:0.41, B:0.41, A:1).

Declaration

```
public static ColorF DimGray { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DimGray color.

DodgerBlue

Gets a pre-defined DodgerBlue color (R:0.12, G:0.56, B:1, A:1).

Declaration

```
public static ColorF DodgerBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing DodgerBlue color.

FireBrick

Gets a pre-defined FireBrick color (R:0.7, G:0.13, B:0.13, A:1).

Declaration

```
public static ColorF FireBrick { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing FireBrick color.

FloralWhite

Gets a pre-defined FloralWhite color (R:1, G:0.98, B:0.94, A:1).

Declaration

```
public static ColorF FloralWhite { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing FloralWhite color.

ForestGreen

Gets a pre-defined ForestGreen color (R:0.13, G:0.55, B:0.13, A:1).

Declaration

```
public static ColorF ForestGreen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing ForestGreen color.

Fuchsia

Gets a pre-defined Fuchsia color (R:1, G:0, B:1, A:1).

Declaration

```
public static ColorF Fuchsia { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Fuchsia color.

G

Represents the value green.

Declaration

```
public float G {readonly get; set; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Allows you to set the value green.

Gainsboro

Gets a pre-defined Gainsboro color (R:0.86, G:0.86, B:0.86, A:1).

Declaration

(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando

```
public static ColorF Gainsboro { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Gainsboro color.

GhostWhite

Gets a pre-defined GhostWhite color (R:0.97, G:0.97, B:1, A:1).

Declaration

```
public static ColorF GhostWhite { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing GhostWhite color.

Gold

Gets a pre-defined Gold color (R:1, G:0.84, B:0, A:1).

Declaration

```
public static ColorF Gold { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Gold color.

GoldenRod

Gets a pre-defined GoldenRod color (R:0.85, G:0.65, B:0.13, A:1).

Declaration

```
public static ColorF GoldenRod { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing GoldenRod color.

Gray

Gets a pre-defined gray color (R:0.5, G:0.5, B:0.5, A:1).

Declaration

```
public static ColorF Gray { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing gray color.

Green

Gets a pre-defined green color (R:0, G:1, B:0, A:1).

Declaration

```
public static ColorF Green { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing green color.

GreenYellow

Gets a pre-defined GreenYellow color (R:0.68, G:1, B:0.18, A:1).

Declaration

```
public static ColorF GreenYellow { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing GreenYellow color.

HoneyDew

Gets a pre-defined HoneyDew color (R:0.94, G:1, B:0.94, A:1).

Declaration

```
public static ColorF HoneyDew { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing HoneyDew color.

HotPink

Gets a pre-defined HotPink color (R:1, G:0.41, B:0.71, A:1).

Declaration

```
public static ColorF HotPink { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing HotPink color.

IndianRed

Gets a pre-defined IndianRed color (R:0.8, G:0.36, B:0.36, A:1).

Declaration

```
public static ColorF IndianRed { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing IndianRed color.

Indigo

Gets a pre-defined Indigo color (R:0.29, G:0, B:0.51, A:1).

Declaration

```
```


(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
Color32
(Cobilas.GodotEngine.Utility.Color
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando

```
public static ColorF Indigo { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Indigo color.

Ivory

Gets a pre-defined Ivory color (R:1, G:1, B:0.94, A:1).

Declaration

```
public static ColorF Ivory { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Ivory color.

Khaki

Gets a pre-defined Khaki color (R:0.94, G:0.9, B:0.55, A:1).

Declaration

```
public static ColorF Khaki { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Khaki color.

Lavender

Gets a pre-defined Lavender color (R:0.9, G:0.9, B:0.98, A:1).

Declaration

```
public static ColorF Lavender { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Lavender color.

LavenderBlush

Gets a pre-defined LavenderBlush color (R:1, G:0.94, B:0.96, A:1).

Declaration

```
public static ColorF LavenderBlush { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LavenderBlush color.

LawnGreen

Gets a pre-defined LawnGreen color (R:0.49, G:0.99, B:0, A:1).

Declaration

```
public static ColorF LawnGreen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LawnGreen color.

LemonChiffon

Gets a pre-defined LemonChiffon color (R:1, G:0.98, B:0.8, A:1).

Declaration

```
public static ColorF LemonChiffon { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LemonChiffon color.

LightBlue

Gets a pre-defined LightBlue color (R:0.68, G:0.85, B:0.9, A:1).

Declaration

```
public static ColorF LightBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LightBlue color.

LightCoral

Gets a pre-defined LightCoral color (R:0.94, G:0.5, B:0.5, A:1).

Declaration

```
public static ColorF LightCoral { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LightCoral color.

LightCyan

Gets a pre-defined LightCyan color (R:0.88, G:1, B:1, A:1).

Declaration

```
public static ColorF LightCyan { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LightCyan color.

LightGoldenRod

Gets a pre-defined LightGoldenRod color (R:0.98, G:0.98, B:0.82, A:1).

Declaration

```
public static ColorF LightGoldenRod { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LightGoldenRod color.

LightGray

Gets a pre-defined LightGray color (R:0.83, G:0.83, B:0.83, A:1).

Declaration

```
public static ColorF LightGray { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LightGray color.

LightGreen

Gets a pre-defined LightGreen color (R:0.56, G:0.93, B:0.56, A:1).

Declaration

```
public static ColorF LightGreen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LightGreen color.

LightPink

Gets a pre-defined LightPink color (R:1, G:0.71, B:0.76, A:1).

Declaration

```
public static ColorF LightPink { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LightPink color.

LightSalmon

Gets a pre-defined LightSalmon color (R:1, G:0.63, B:0.48, A:1).

Declaration

```
public static ColorF LightSalmon { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LightSalmon color.

LightSeaGreen

Gets a pre-defined LightSeaGreen color (R:0.13, G:0.7, B:0.67, A:1).

Declaration

```
public static ColorF LightSeaGreen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LightSeaGreen color.

LightSkyBlue

Gets a pre-defined LightSkyBlue color (R:0.53, G:0.81, B:0.98, A:1).

Declaration

```
public static ColorF LightSkyBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LightSkyBlue color.

LightSlateGray

Gets a pre-defined LightSlateGray color (R:0.47, G:0.53, B:0.6, A:1).

Declaration

```
public static ColorF LightSlateGray { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LightSlateGray color.

LightSteelBlue

Gets a pre-defined LightSteelBlue color (R:0.69, G:0.77, B:0.87, A:1).

Declaration

```
public static ColorF LightSteelBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LightSteelBlue color.

LightYellow

Gets a pre-defined LightYellow color (R:1, G:1, B:0.88, A:1).

Declaration

```
public static ColorF LightYellow { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LightYellow color.

Lime

Gets a pre-defined Lime color (R:0, G:1, B:0, A:1).

Declaration

(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando

```
public static ColorF Lime { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Lime color.

LimeGreen

Gets a pre-defined LimeGreen color (R:0.2, G:0.8, B:0.2, A:1).

Declaration

```
public static ColorF LimeGreen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing LimeGreen color.

Linen

Gets a pre-defined Linen color (R:0.98, G:0.94, B:0.9, A:1).

Declaration

```
public static ColorF Linen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Linen color.

Magenta

Gets a pre-defined magenta color (R:1, G:0, B:1, A:1).

Declaration

```
public static ColorF Magenta { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing magenta color.

Maroon

Gets a pre-defined Maroon color (R:0.69, G:0.19, B:0.38, A:1).

Declaration

```
public static ColorF Maroon { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Maroon color.

MediumAquaMarine

Gets a pre-defined MediumAquaMarine color (R:0.4, G:0.8, B:0.67, A:1).

Declaration

```
public static ColorF MediumAquaMarine { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing MediumAquaMarine color.

MediumBlue

Gets a pre-defined MediumBlue color (R:0, G:0, B:0.8, A:1).

Declaration

```
public static ColorF MediumBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing MediumBlue color.

MediumOrchid

Gets a pre-defined MediumOrchid color (R:0.73, G:0.33, B:0.83, A:1).

Declaration

```
public static ColorF MediumOrchid { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing MediumOrchid color.

MediumPurple

Gets a pre-defined MediumPurple color (R:0.58, G:0.44, B:0.86, A:1).

Declaration

```
public static ColorF MediumPurple { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing MediumPurple color.

MediumSeaGreen

Gets a pre-defined MediumSeaGreen color (R:0.24, G:0.7, B:0.44, A:1).

Declaration

```
public static ColorF MediumSeaGreen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing MediumSeaGreen color.

MediumSlateBlue

Gets a pre-defined MediumSlateBlue color (R:0.48, G:0.41, B:0.93, A:1).

Declaration

```
public static ColorF MediumSlateBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing MediumSlateBlue color.

MediumSpringGreen

Gets a pre-defined MediumSpringGreen color (R:0, G:0.98, B:0.6, A:1).

Declaration

```
public static ColorF MediumSpringGreen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing MediumSpringGreen color.

MediumTurquoise

Gets a pre-defined MediumTurquoise color (R:0.28, G:0.82, B:0.8, A:1).

Declaration

```
public static ColorF MediumTurquoise { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing MediumTurquoise color.

MediumVioletRed

Gets a pre-defined MediumVioletRed color (R:0.78, G:0.08, B:0.52, A:1).

Declaration

```
public static ColorF MediumVioletRed { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing MediumVioletRed color.

MidnightBlue

Gets a pre-defined MidnightBlue color (R:0.1, G:0.1, B:0.44, A:1).

Declaration

```
public static ColorF MidnightBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing MidnightBlue color.

MintCream

Gets a pre-defined MintCream color (R:0.96, G:1, B:0.98, A:1).

Declaration

```
public static ColorF MintCream { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing MintCream color.

MistyRose

Gets a pre-defined MistyRose color (R:1, G:0.89, B:0.88, A:1).

Declaration

```
public static ColorF MistyRose { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing MistyRose color.

Moccasin

Gets a pre-defined Moccasin color (R:1, G:0.89, B:0.71, A:1).

Declaration

```
public static ColorF Moccasin { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Moccasin color.

NavajoWhite

Gets a pre-defined NavajoWhite color (R:1, G:0.87, B:0.68, A:1).

Declaration

```
public static ColorF NavajoWhite { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing NavajoWhite color.

NavyBlue

Gets a pre-defined NavyBlue color (R:0, G:0, B:0.5, A:1).

Declaration

```
public static ColorF NavyBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing NavyBlue color.

OldLace

Gets a pre-defined OldLace color (R:0.99, G:0.96, B:0.9, A:1).

Declaration

```
public static ColorF OldLace { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing OldLace color.

Olive

Gets a pre-defined Olive color (R:0.5, G:0.5, B:0, A:1).

Declaration

```
public static ColorF Olive { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Olive color.

OliveDrab

Gets a pre-defined OliveDrab color (R:0.42, G:0.56, B:0.14, A:1).

Declaration

```
public static ColorF OliveDrab { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing OliveDrab color.

Orange

Gets a pre-defined Orange color (R:1, G:0.65, B:0, A:1).

Declaration

```
public static ColorF Orange { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Orange color.

OrangeRed

Gets a pre-defined OrangeRed color (R:1, G:0.27, B:0, A:1).

Declaration

```
public static ColorF OrangeRed { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing OrangeRed color.

Orchid

Gets a pre-defined Orchid color (R:0.85, G:0.44, B:0.84, A:1).

Declaration

```
public static ColorF Orchid { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Orchid color.

PaleGoldenRod

Gets a pre-defined PaleGoldenRod color (R:0.93, G:0.91, B:0.67, A:1).

Declaration

```
public static ColorF PaleGoldenRod { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing PaleGoldenRod color.

PaleGreen

Gets a pre-defined PaleGreen color (R:0.6, G:0.98, B:0.6, A:1).

Declaration

```
public static ColorF PaleGreen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing PaleGreen color.

PaleTurquoise

Gets a pre-defined PaleTurquoise color (R:0.69, G:0.93, B:0.93, A:1).

Declaration

```
public static ColorF PaleTurquoise { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing PaleTurquoise color.

PaleVioletRed

Gets a pre-defined PaleVioletRed color (R:0.86, G:0.44, B:0.58, A:1).

Declaration

```
public static ColorF PaleVioletRed { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing PaleVioletRed color.

PapayaWhip

Gets a pre-defined PapayaWhip color (R:1, G:0.94, B:0.84, A:1).

Declaration

(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Coroul
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando

```
public static ColorF PapayaWhip { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing PapayaWhip color.

PeachPuff

Gets a pre-defined PeachPuff color (R:1, G:0.85, B:0.73, A:1).

Declaration

```
public static ColorF PeachPuff { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing PeachPuff color.

Peru

Gets a pre-defined Peru color (R:0.8, G:0.52, B:0.25, A:1).

Declaration

```
public static ColorF Peru { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Peru color.

Pink

Gets a pre-defined Pink color (R:1, G:0.75, B:0.8, A:1).

Declaration

```
public static ColorF Pink { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Pink color.

Plum

Gets a pre-defined Plum color (R:0.87, G:0.63, B:0.87, A:1).

Declaration

```
public static ColorF Plum { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Plum color.

PowderBlue

Gets a pre-defined PowderBlue color (R:0.69, G:0.88, B:0.9, A:1).

Declaration

```
public static ColorF PowderBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing PowderBlue color.

Purple

Gets a pre-defined Purple color (R:0.63, G:0.13, B:0.94, A:1).

Declaration

```
public static ColorF Purple { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Purple color.

R

Represents the value red.

Declaration

```
public float R { readonly get; set; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Allows you to set the value red.

RebeccaPurple

Gets a pre-defined RebeccaPurple color (R:0.4, G:0.2, B:0.6, A:1).

Declaration

```
public static ColorF RebeccaPurple { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing RebeccaPurple color.

Red

Gets a pre-defined red color (R:1, G:0, B:0, A:1).

Declaration

```
public static ColorF Red { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing red color.

RosyBrown

Gets a pre-defined RosyBrown color (R:0.74, G:0.56, B:0.56, A:1).

Declaration

```
public static ColorF RosyBrown { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing RosyBrown color.

RoyalBlue

Gets a pre-defined RoyalBlue color (R:0.25, G:0.41, B:0.88, A:1).

Declaration

```
public static ColorF RoyalBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing RoyalBlue color.

SaddleBrown

Gets a pre-defined SaddleBrown color (R:0.55, G:0.27, B:0.07, A:1).

Declaration

```
public static ColorF SaddleBrown { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing SaddleBrown color.

Salmon

Gets a pre-defined Salmon color (R:0.98, G:0.5, B:0.45, A:1).

Declaration

```
public static ColorF Salmon { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Salmon color.

SandyBrown

Gets a pre-defined SandyBrown color (R:0.96, G:0.64, B:0.38, A:1).

Declaration

```
public static ColorF SandyBrown { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing SandyBrown color.

SeaGreen

Gets a pre-defined SeaGreen color (R:0.18, G:0.55, B:0.34, A:1).

Declaration

```
public static ColorF SeaGreen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing SeaGreen color.

SeaShell

Gets a pre-defined SeaShell color (R:1, G:0.96, B:0.93, A:1).

Declaration

```
public static ColorF SeaShell { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing SeaShell color.

Sienna

Gets a pre-defined Sienna color (R:0.63, G:0.32, B:0.18, A:1).

Declaration

```
public static ColorF Sienna { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Sienna color.

Silver

Gets a pre-defined Silver color (R:0.75, G:0.75, B:0.75, A:1).

Declaration

```
public static ColorF Silver { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Silver color.

SkyBlue

Gets a pre-defined SkyBlue color (R:0.53, G:0.81, B:0.92, A:1).

Declaration

```
public static ColorF SkyBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing SkyBlue color.

SlateBlue

Gets a pre-defined SlateBlue color (R:0.42, G:0.35, B:0.8, A:1).

Declaration

```
```

(Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser

- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht

Color32 (Cobilas.GodotEngine.Utility.Color3

ColorF (Cobilas.GodotEngine.Utility.ColorF

Coroutine (Cobilas.GodotEngine.Utility.Coroutl

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor

DebugLog (Cobilas.GodotEngine.Utility.Debug

DisplayInfo (Cobilas.GodotEngine.Utility.Display

FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR

GDFeature (Cobilas.GodotEngine.Utility.GDFea

Gizmos (Cobilas.GodotEngine.Utility.Gizmo

IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC

IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF

IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU

IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV

LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix

LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu

NullNode (Cobilas.GodotEngine.Utility.NullNo

Randomico (Cobilas.GodotEngine.Utility.Rando

```
public static ColorF SlateBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing SlateBlue color.

SlateGray

Gets a pre-defined SlateGray color (R:0.44, G:0.5, B:0.56, A:1).

Declaration

```
public static ColorF SlateGray { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing SlateGray color.

Snow

Gets a pre-defined Snow color (R:1, G:0.98, B:0.98, A:1).

Declaration

```
public static ColorF Snow { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Snow color.

SpringGreen

Gets a pre-defined SpringGreen color (R:0, G:1, B:0.5, A:1).

Declaration

```
public static ColorF SpringGreen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing SpringGreen color.

SteelBlue

Gets a pre-defined SteelBlue color (R:0.27, G:0.51, B:0.71, A:1).

Declaration

```
public static ColorF SteelBlue { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing SteelBlue color.

Tan

Gets a pre-defined Tan color (R:0.82, G:0.71, B:0.55, A:1).

Declaration

```
public static ColorF Tan { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Tan color.

Teal

Gets a pre-defined Teal color (R:0.0, G:0.5, B:0.5, A:1).

Declaration

```
public static ColorF Teal { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Teal color.

- Cobilas.GodotEditor.Utility (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
  - Color32 (Cobilas.GodotEngine.Utility.Color3
  - ColorF (Cobilas.GodotEngine.Utility.ColorF
  - Coroutine (Cobilas.GodotEngine.Utility.Corout
  - CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
  - DebugLog (Cobilas.GodotEngine.Utility.Debug
  - DisplayInfo (Cobilas.GodotEngine.Utility.Display
  - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
  - GDFeature (Cobilas.GodotEngine.Utility.GDFea
  - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
  - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
  - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
  - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
  - IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
  - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
  - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
  - NullNode (Cobilas.GodotEngine.Utility.NullNo
  - Randomico (Cobilas.GodotEngine.Utility.Rando
  - Rect2D

Thistle

Gets a pre-defined Thistle color (R:0.85, G:0.75, B:0.85, A:1).

Declaration

```
public static ColorF Thistle { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Thistle color.

Tomato

Gets a pre-defined Tomato color (R:1, G:0.39, B:0.28, A:1).

Declaration

```
public static ColorF Tomato { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Tomato color.

Turquoise

Gets a pre-defined Turquoise color (R:0.25, G:0.88, B:0.82, A:1).

Declaration

```
public static ColorF Turquoise { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Turquoise color.

Violet

Gets a pre-defined Violet color (R:0.93, G:0.51, B:0.93, A:1).

Declaration

(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
Color32
(Cobilas.GodotEngine.Utility.Color
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Coroul
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando

```
public static ColorF Violet { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Violet color.

WebGray

Gets a pre-defined WebGray color (R:0.5, G:0.5, B:0.5, A:1).

Declaration

```
public static ColorF WebGray { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing WebGray color.

WebGreen

Gets a pre-defined WebGreen color (R:0, G:0.5, B:0, A:1).

Declaration

```
public static ColorF WebGreen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing WebGreen color.

WebMaroon

Gets a pre-defined WebMaroon color (R:0.5, G:0, B:0, A:1).

Declaration

```
public static ColorF WebMaroon { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing WebMaroon color.

WebPurple

Gets a pre-defined WebPurple color (R:0.5, G:0, B:0.5, A:1).

Declaration

```
public static ColorF WebPurple { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing WebPurple color.

Wheat

Gets a pre-defined Wheat color (R:0.96, G:0.87, B:0.7, A:1).

Declaration

```
public static ColorF Wheat { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing Wheat color.

White

Gets a pre-defined White color (R:1, G:1, B:1, A:1).

Declaration

```
public static ColorF White { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing white color.

WhiteSmoke

Gets a pre-defined WhiteSmoke color (R:0.96, G:0.96, B:0.96, A:1).

Declaration

```
public static ColorF WhiteSmoke { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing WhiteSmoke color.

Yellow

Gets a pre-defined Yellow color (R:1, G:0.92, B:0.016, A:1).

Declaration

```
public static ColorF Yellow { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing yellow color.

YellowGreen

Gets a pre-defined YellowGreen color (R:0.6, G:0.8, B:0.2, A:1).

Declaration

```
public static ColorF YellowGreen { get; }
```

Property Value

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A ColorF representing YellowGreen color.

Methods

ColorFToHSV(ColorF)

(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
Color32
(Cobilas.GodotEngine.Utility.Color
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Coroul
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Random
(Cobilas.GodotEngine.Utility.Rando
Rect2D

Converts a ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value to HSV.

Declaration

```
public static Vector4D ColorFToHSV(ColorF c)
```

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*c*	The value to convert.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	Returns a Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) value with HSV values.(`x:h / y:s / z:v`)

Equals(ColorF)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(ColorF other)
```

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(Vector4D)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(Vector4D other)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

HSVToColorF(float, float, float, float)

Constructs a color from an HSV profile, with values on the range of 0 to 1. This is equivalent to using each of the `h` / `s` / `v` properties but much more efficient.

Declaration

```
public static ColorF HSVToColorF(float h, float s, float v, float a = 1)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*h*	Hue value.
float (https://learn.microsoft.com/dotnet/api/system.single)	*s*	Saturation value.
float (https://learn.microsoft.com/dotnet/api/system.single)	*v*	Value.
float (https://learn.microsoft.com/dotnet/api/system.single)	*a*	Alpha value.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	The constructed color.

ToString()

Returns the fully qualified type name of this instance.

Declaration

(Cobilas.GodotEditor.Utility.Se
(Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Se
(Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.Hi
Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustomResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmo
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando

```
public override readonly string ToString()
```

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The fully qualified type name.

Overrides

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)

Operators

operator +(ColorF, ColorF)

Adds two ColorF (Cobilas.GodotEngine.Utility.ColorF.html) values component-wise.

Declaration

```
public static ColorF operator +(ColorF A, ColorF B)
```

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*A*	The first ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value.
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*B*	The second ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value to add.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with the sum of each component.

operator +(ColorF, Color)

Adds a ColorF (Cobilas.GodotEngine.Utility.ColorF.html) and a Godot.Color value component-wise.

Declaration

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
  - Color32 (Cobilas.GodotEngine.Utility.Color3
  - ColorF (Cobilas.GodotEngine.Utility.ColorF
  - Coroutine (Cobilas.GodotEngine.Utility.Corout
  - CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
  - DebugLog (Cobilas.GodotEngine.Utility.Debug
  - DisplayInfo (Cobilas.GodotEngine.Utility.Display
  - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
  - GDFeature (Cobilas.GodotEngine.Utility.GDFea
  - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
  - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
  - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
  - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
  - IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
  - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
  - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
  - NullNode (Cobilas.GodotEngine.Utility.NullNo
  - Randomico (Cobilas.GodotEngine.Utility.Rando

```
public static ColorF operator +(ColorF A, Color B)
```

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*A*	The first ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value.
Color	*B*	The second Godot.Color value to add.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with the sum of each component.

operator +(Color, ColorF)

Adds a Godot.Color and a ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value component-wise.

Declaration

```
public static ColorF operator +(Color A, ColorF B)
```

Parameters

Type	Name	Description
Color	*A*	The first Godot.Color value.
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*B*	The second ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value to add.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with the sum of each component.

operator /(ColorF, ColorF)

Divides two ColorF (Cobilas.GodotEngine.Utility.ColorF.html) values component-wise.

Declaration

```
public static ColorF operator /(ColorF A, ColorF B)
```

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*A*	The first ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value.
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*B*	The second ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value to divide by.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with the quotient of each component.

operator /(ColorF, Color)

Divides a ColorF (Cobilas.GodotEngine.Utility.ColorF.html) by a Godot.Color value component-wise.

Declaration

```
public static ColorF operator /(ColorF A, Color B)
```

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*A*	The first ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value.
Color	*B*	The second Godot.Color value to divide by.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with the quotient of each component.

operator /(ColorF, float)

Divides a ColorF (Cobilas.GodotEngine.Utility.ColorF.html) by a scalar value component-wise.

Declaration

```
public static ColorF operator /(ColorF A, float scale)
```

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*A*	The ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value to divide.
float (https://learn.microsoft.com/dotnet/api/system.single)	*scale*	The scalar value to divide by.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with each component divided by the scalar.

operator /(Color, ColorF)

Divides a Godot.Color by a ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value component-wise.

Declaration

```
public static ColorF operator /(Color A, ColorF B)
```

Parameters

Type	Name	Description
Color	*A*	The first Godot.Color value.
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*B*	The second ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value to divide by.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with the quotient of each component.

operator /(float, ColorF)

Divides a scalar value by a ColorF (Cobilas.GodotEngine.Utility.ColorF.html) component-wise.

Declaration

```
public static ColorF operator /(float scale, ColorF A)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*scale*	The scalar value to divide.
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*A*	The ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value to divide by.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with the scalar divided by each component.

explicit operator string(ColorF)

Explicit conversion operator (ColorF (Cobilas.GodotEngine.Utility.ColorF.html) to string (https://learn.microsoft.com/dotnet/api/system.string))

Declaration

```
public static explicit operator string(ColorF c)
```

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*c*	Object to be converted.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	

explicit operator ColorF(string)

(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustomResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.DisplayI
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Random
(Cobilas.GodotEngine.Utility.Rando

Explicit conversion operator.(string (https://learn.microsoft.com/dotnet/api/system.string) to ColorF (Cobilas.GodotEngine.Utility.ColorF.html))

Declaration

```
public static explicit operator ColorF(string stg)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*stg*	Object to be converted.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	

implicit operator ColorF(Color32)

Implicit conversion operator.(Color32 (Cobilas.GodotEngine.Utility.Color32.html) to ColorF (Cobilas.GodotEngine.Utility.ColorF.html))

Declaration

```
public static implicit operator ColorF(Color32 c)
```

Parameters

Type	Name	Description
Color32 (Cobilas.GodotEngine.Utility.Color32.html)	*c*	Object to be converted.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	

implicit operator ColorF(Vector4D)

Implicit conversion operator.(Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) to ColorF (Cobilas.GodotEngine.Utility.ColorF.html))

Declaration

```
public static implicit operator ColorF(Vector4D c)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*c*	Object to be converted.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	

implicit operator ColorF(Color)

Implicit conversion operator (Godot.Color to ColorF (Cobilas.GodotEngine.Utility.ColorF.html))

Declaration

```
public static implicit operator ColorF(Color c)
```

Parameters

Type	Name	Description
Color	*c*	Object to be converted.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	

operator *(ColorF, ColorF)

Multiplies two ColorF (Cobilas.GodotEngine.Utility.ColorF.html) values component-wise.

Declaration

```
public static ColorF operator *(ColorF A, ColorF B)
```

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*A*	The first ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value.
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*B*	The second ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value to multiply.

(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with the product of each component.

operator *(ColorF, Color)

Multiplies a ColorF (Cobilas.GodotEngine.Utility.ColorF.html) and a Godot.Color value component-wise.

Declaration

```
public static ColorF operator *(ColorF A, Color B)
```

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*A*	The first ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value.
Color	*B*	The second Godot.Color value to multiply.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with the product of each component.

operator *(ColorF, float)

Multiplies a ColorF (Cobilas.GodotEngine.Utility.ColorF.html) by a scalar value.

Declaration

```
public static ColorF operator *(ColorF A, float scale)
```

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*A*	The ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value to scale.
float (https/learn.microsoft.com/dotnet/api/system.single)	*scale*	The scalar value to multiply.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with each component multiplied by the scalar.

- **(Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects**
- **(Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
  - Color32 (Cobilas.GodotEngine.Utility.Color3
  - ColorF (Cobilas.GodotEngine.Utility.ColorF
  - Coroutine (Cobilas.GodotEngine.Utility.Corout
  - CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
  - DebugLog (Cobilas.GodotEngine.Utility.Debug
  - DisplayInfo (Cobilas.GodotEngine.Utility.Display
  - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
  - GDFeature (Cobilas.GodotEngine.Utility.GDFea
  - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
  - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
  - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
  - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
  - IYieldVoid (Cobilas.GodotEngine.Utility.IYieldV
  - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
  - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
  - NullNode (Cobilas.GodotEngine.Utility.NullNo
  - Randomico (Cobilas.GodotEngine.Utility.Rando

operator *(Color, ColorF)

Multiplies a Godot.Color and a ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value component-wise.

Declaration

```
public static ColorF operator *(Color A, ColorF B)
```

Parameters

Type	Name	Description
Color	*A*	The first Godot.Color value.
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*B*	The second ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value to multiply.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with the product of each component.

operator *(float, ColorF)

Multiplies a ColorF (Cobilas.GodotEngine.Utility.ColorF.html) by a scalar value.

Declaration

```
public static ColorF operator *(float scale, ColorF A)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*scale*	The scalar value to multiply.

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*A*	The ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value to scale.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with each component multiplied by the scalar.

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser

- Cobilas.GodotEngine.Utility.ColorF (Cobilas.GodotEngine.Utility.ht

operator -(ColorF, ColorF)

Subtracts two ColorF (Cobilas.GodotEngine.Utility.ColorF.html) values component-wise.

Declaration

```
public static ColorF operator -(ColorF A, ColorF B)
```

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*A*	The first ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value.
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*B*	The second ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value to subtract.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with the difference of each component.

operator -(ColorF, Color)

Subtracts a Godot.Color from a ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value component-wise.

Declaration

```
public static ColorF operator -(ColorF A, Color B)
```

Color32 (Cobilas.GodotEngine.Utility.Color3
ColorF (Cobilas.GodotEngine.Utility.ColorF
Coroutine (Cobilas.GodotEngine.Utility.Corout
CustomResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNo
Randomico (Cobilas.GodotEngine.Utility.Rando

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*A*	The first ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value.
Color	*B*	The second Godot.Color value to subtract.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with the difference of each component.

operator -(Color, ColorF)

Subtracts a ColorF (Cobilas.GodotEngine.Utility.ColorF.html) from a Godot.Color value component-wise.

Declaration

```
public static ColorF operator -(Color A, ColorF B)
```

Parameters

Type	Name	Description
Color	*A*	The first Godot.Color value.
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*B*	The second ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value to subtract.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with the difference of each component.

operator -(ColorF)

Negates all components of a ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value.

Declaration

```
public static ColorF operator -(ColorF A)
```

Parameters

Type	Name	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	*A*	The ColorF (Cobilas.GodotEngine.Utility.ColorF.html) value to negate.

Returns

Type	Description
ColorF (Cobilas.GodotEngine.Utility.ColorF.html)	A new ColorF (Cobilas.GodotEngine.Utility.ColorF.html) with negated components.

Implements

IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)

Class Coroutine

This class represents a corrotine process.

Filter by title

Inheritance

object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Coroutine

Implements

IEnumerable (https://learn.microsoft.com/dotnet/api/system.collections.ienumerable)
IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: Cobilas.godot.utility.dll

Syntax

```
public sealed class Coroutine : IEnumerable, IDisposable
```

Constructors

Coroutine(IEnumerator?, string?)

Creates a new instance of this object.

Declaration

```
public Coroutine(IEnumerator? enumerator, string? iD)
```

Parameters

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se

+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht

Color3D
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
HistoryCount
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D

Type	Name	Description
IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.ienumerator)	*enumerator*	The IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.ienumerator) object that will be used.
string (https://learn.microsoft.com/dotnet/api/system.string)	*iD*	The ID of this Coroutine (Cobilas.GodotEngine.Utility.Coroutine.html) object.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	It occurs when the enumerator parameter is null.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	It occurs when the ID parameter is null.

Properties

ID

The process id.

Declaration

```
public string ID { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns a string (https://learn.microsoft.com/dotnet/api/system.string) with process ID.

IsCancellationRequested

Gets whether cancellation has been requested for this CancellationTokenSource (https://learn.microsoft.com/dotnet/api/system.threading.cancellationtokensource).

Declaration

+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
  - Color32 (Cobilas.GodotEngine.Utility.Color3
  - ColorF (Cobilas.GodotEngine.Utility.ColorF
  - Coroutine (Cobilas.GodotEngine.Utility.Corout
  - CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
  - DebugLog (Cobilas.GodotEngine.Utility.Debug
  - DisplayInfo (Cobilas.GodotEngine.Utility.Display
  - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
  - GDFeature (Cobilas.GodotEngine.Utility.GDFea
  - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
  - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
  - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
  - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
  - IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
  - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
  - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
  - NullNode (Cobilas.GodotEngine.Utility.NullNo
  - Randomico (Cobilas.GodotEngine.Utility.Rando
  - Rect2D (Cobilas.GodotEngine.Utility.Rect2D

```
public bool IsCancellationRequested { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if cancellation has been requested for this CancellationTokenSource (https://learn.microsoft.com/dotnet/api/system.threading.cancellationtokensource) ; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

IsRunning

Indicates if the process is running.

Declaration

```
public bool IsRunning { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the process is ongoing. Returns `false` when the process is completed.

Methods

Cancel()

Emits the cancellation signal for the Coroutine (Cobilas.GodotEngine.Utility.Coroutine.html) process.

Declaration

```
public void Cancel()
```

Exceptions

Type	Condition
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)	This CancellationTokenSource (https://learn.microsoft.com/dotnet/api/system.threading.cancellationtokensource) has been disposed.
AggregateException (https://learn.microsoft.com/dotnet/api/system.aggregateexception)	An aggregate exception containing all the exceptions thrown by the registered callbacks on the associated CancellationToken (https://learn.microsoft.com/dotnet/api/system.threading.cancellationtoken)

+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**

- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.hi**
  - Color32 (Cobilas.GodotEngine.Utility.Color3
  - Color (Cobilas.GodotEngine.Utility.ColorF
  - Coroutine (Cobilas.GodotEngine.Utility.Corout
  - CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
  - DebugLog (Cobilas.GodotEngine.Utility.Debug
  - DisplayInfo (Cobilas.GodotEngine.Utility.Display
  - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
  - GDFeature (Cobilas.GodotEngine.Utility.GDFea
  - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
  - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
  - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
  - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
  - IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
  - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
  - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
  - NullNode (Cobilas.GodotEngine.Utility.NullNo
  - Randomico (Cobilas.GodotEngine.Utility.Rando
  - Rect2D (Cobilas.GodotEngine.Utility.Rect2D

CancelAfter(int)

Emits a delayed cancellation signal for the Coroutine (Cobilas.GodotEngine.Utility.Coroutine.html) process.

Declaration

```
public void CancelAfter(int millisecondsDelay)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*millisecondsDelay*	Defines the delay in milliseconds where the cancellation signal will be issued.

Exceptions

Type	Condition
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)	The exception thrown when this CancellationTokenSource (https://learn.microsoft.com/dotnet/api/system.threading.cancellationtokensource) has been disposed.
ArgumentOutOfRangeException (https://learn.microsoft.com/dotnet/api/system.argumentoutofrangeexception)	The exception that is thrown when `delay` is less than -1 or greater than Int32.MaxValue.

CancelAfter(TimeSpan)

Emits a delayed cancellation signal for the Coroutine (Cobilas.GodotEngine.Utility.Coroutine.html) process.

Declaration

```
public void CancelAfter(TimeSpan delay)
```

Parameters

Type		Name	Description
TimeSpan (https://learn.microsoft.com/dotnet/api/system.timespan)		*delay*	Defines the delay where the cancellation signal will be issued.

Exceptions

Type	Condition
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)	The exception thrown when this CancellationTokenSource (https://learn.microsoft.com/dotnet/api/system.threading.cancellationtokensource) has been disposed.
ArgumentOutOfRangeException (https://learn.microsoft.com/dotnet/api/system.argumentoutofrangeexception)	The exception that is thrown when `delay` is less than -1 or greater than Int32.MaxValue.

Dispose()

Performs application-defined tasks associated with freeing, releasing, or resetting unmanaged resources.

Declaration

```
public void Dispose()
```

~Coroutine()

The destructor is responsible for discarding unmanaged resources.

Declaration

```
protected ~Coroutine()
```

GenID()

Generates an ID to be used in a coroutine (Cobilas.GodotEngine.Utility.Coroutine.html).

Declaration

```
public static string GenID()
```

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns in string (https://learn.microsoft.com/dotnet/api/system.string) form the ID generated.

StartCoroutine(IEnumerator?)

Starts a collating process from an IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.ienumerator).

Declaration

```
public static Coroutine StartCoroutine(IEnumerator? enumerator)
```

Parameters

Type	Name	Description
IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.ienumerator)	*enumerator*	The IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.ienumerator) that will be used to start the Coroutine (Cobilas.GodotEngine.Utility.Coroutine.html).

Returns

Type	Description
Coroutine (Cobilas.GodotEngine.Utility.Coroutine.html)	Returns the Coroutine (Cobilas.GodotEngine.Utility.Coroutine.html) process that was started.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	When the object is null.

StopAllCoroutines()

Ends all open Coroutines.

Declaration

```
public static void StopAllCoroutines()
```

StopCoroutine(Coroutine?)

Ends all open Coroutines.

Declaration

```
public static void StopCoroutine(Coroutine? Coroutine)
```

Parameters

Type	Name	Description
Coroutine (Cobilas.GodotEngine.Utility.Coroutine.html)	*Coroutine*	The Coroutine (Cobilas.GodotEngine.Utility.Coroutine.html) that will be closed.

Implements

IEnumerable (https://learn.microsoft.com/dotnet/api/system.collections.ienumerable)

IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)

Struct CustonResolutionList

Stores custom resolutions.

Filter by title

Implements

IEnumerable (https://learn.microsoft.com/dotnet/api/system.collections.generic.ienumerable-1)<Resolution (Cobilas.GodotEngine.Utility.Resolution.html)>

IEnumerable (https://learn.microsoft.com/dotnet/api/system.collections.ienumerable)

Inherited Members

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
[Serializable]
[JsonObject]
public readonly struct CustonResolutionList : IEnumerable<Resolution>, IEnumerable
```

Remarks

Stores custom resolutions that can be used in the application to be used.

Constructors

CustonResolutionList(in int, in Resolution[])

Starts a new instance of the object.

Declaration

```
public CustonResolutionList(in int hash, in Resolution[] resolutions)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*hash*	
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)[]	*resolutions*	

CustonResolutionList(in int, in IEnumerable<Resolution>)

Starts a new instance of the object.

Declaration

```
public CustonResolutionList(in int hash, in IEnumerable<Resolution> resolutions)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*hash*	
IEnumerable (https://learn.microsoft.com/dotnet/api/system.collections.generic.ienumerable-1) <Resolution (Cobilas.GodotEngine.Utility.Resolution.html)>	*resolutions*	

Methods

Deserialize(Stream?)

Deserializes a list of objects from a specified file.

Declaration

```
public static CustonResolutionList[] Deserialize(Stream? stream)
```

Parameters

Type	Name	Description
Stream (https://learn.microsoft.com/dotnet/api/system.io.stream)	*stream*	The file where the list is.

Returns

Type	Description
CustonResolutionList (Cobilas.GodotEngine.Utility.CustonResolutionList.html)[]	Returns a custom resolution list.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	An exception will be thrown if the parameters are null.

- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
  - Color32 (Cobilas.GodotEngine.Utility.Color3
  - ColorF (Cobilas.GodotEngine.Utility.ColorF
  - Coroutine (Cobilas.GodotEngine.Utility.Corout
  - CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
  - DebugLog (Cobilas.GodotEngine.Utility.Debug
  - DisplayInfo (Cobilas.GodotEngine.Utility.Display
  - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
  - GDFeature (Cobilas.GodotEngine.Utility.GDFea
  - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
  - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
  - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
  - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
  - IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
  - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
  - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
  - NullNode (Cobilas.GodotEngine.Utility.NullNo
  - Randomico (Cobilas.GodotEngine.Utility.Rando
  - Rect2D (Cobilas.GodotEngine.Utility.Rect2D

GetEnumerator()

Returns an enumerator that iterates through the collection.

Declaration

```
public IEnumerator<Resolution> GetEnumerator()
```

Returns

Type	Description
IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.generic.ienumerator-1) <Resolution (Cobilas.GodotEngine.Utility.Resolution.html)>	An enumerator that can be used to iterate through the collection.

Serialize(in CustonResolutionList[], Stream?)

Serializes a list of objects to a specified file.

Declaration

```
public static void Serialize(in CustonResolutionList[] list, Stream? stream)
```

Parameters

Type	Name	Description
CustonResolutionList (Cobilas.GodotEngine.Utility.CustonResolutionList.html) []	*list*	The list to be serialized.
Stream (https://learn.microsoft.com/dotnet/api/system.io.stream)	*stream*	The file that will receive the list.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	An exception will be thrown if the parameters are null.

Operators

explicit operator int(CustonResolutionList)

- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
  - Color32 (Cobilas.GodotEngine.Utility.Color3
  - ColorF (Cobilas.GodotEngine.Utility.ColorF
  - Coroutine (Cobilas.GodotEngine.Utility.Corout
  - CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
  - DebugLog (Cobilas.GodotEngine.Utility.Debug
  - DisplayInfo (Cobilas.GodotEngine.Utility.Display
  - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
  - GDFeature (Cobilas.GodotEngine.Utility.GDFea
  - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
  - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
  - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
  - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
  - IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
  - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
  - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
  - NullNode (Cobilas.GodotEngine.Utility.NullNo
  - Randomico (Cobilas.GodotEngine.Utility.Rand
  - Rect2D (Cobilas.GodotEngine.Utility.Rect2D
  - Resolution

Explicit conversion operator.(CustonResolutionList (Cobilas.GodotEngine.Utility.CustonResolutionList.html) to int (https://learn.microsoft.com/dotnet/api/system.int32))

Declaration

```
public static explicit operator int(CustonResolutionList R)
```

Parameters

Type	Name	Description
CustonResolutionList (Cobilas.GodotEngine.Utility.CustonResolutionList.html)	*R*	Object to be converted.

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	

Implements

IEnumerable<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.ienumerable-1)
IEnumerable (https://learn.microsoft.com/dotnet/api/system.collections.ienumerable)

Class DebugLog

Static class to print messages to the console.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)

↳ DebugLog

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class DebugLog
```

Fields

PrintTrace

Allows you to print the complete log trace.

Declaration

```
public static bool PrintTrace
```

Field Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

Methods

CloseStream()

Allows the termination of a log stream.

Declaration

```
public static void CloseStream()
```

Exceptions

Type	Condition
InvalidOperationException (https://learn.microsoft.com/dotnet/api/system.invalidoperationexception)	Occurs when the flow is already closed.

ErroLog(params object[])

Allows you to print an error log to the console.

Declaration

```
public static void ErroLog(params object[] message)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object) []	*message*	The message that will be printed to the console.

ExceptionLog(Exception)

Allows you to print an exception log to the console.

Declaration

```
public static void ExceptionLog(Exception ex)
```

Parameters

Type	Name	Description
Exception (https://learn.microsoft.com/dotnet/api/system.exception)	*ex*	The exception that will be printed to the console.

Log(params object[])

Allows you to print a log to the console.

Declaration

```
public static void Log(params object[] message)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object) []	*message*	The message that will be printed to the console.

LogToStream(string?, bool)

Allows you to redirect logs to a log file.

Declaration

```
public static void LogToStream(string? filePath, bool clear = false)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*filePath*	The path of the log file.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*clear*	`true` to have the log file cleared.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	When the FilePath parameter is null.
InvalidOperationException (https://learn.microsoft.com/dotnet/api/system.invalidoperationexception)	Occurs when the flow is still open.

- (Cobilas.GodotEditor.Utility.SerializationRenderObjects
- (Cobilas.GodotEngine.Utility
- (Cobilas.GodotEngine.Utility.ht
- Color32 (Cobilas.GodotEngine.Utility.Color3
- ColorF (Cobilas.GodotEngine.Utility.ColorF
- Coroutine (Cobilas.GodotEngine.Utility.Corout
- CustomResolutionLog (Cobilas.GodotEngine.Utility.Custor
- DebugLog (Cobilas.GodotEngine.Utility.Debug
- DisplayInfo (Cobilas.GodotEngine.Utility.Display
- FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
- GDFeature (Cobilas.GodotEngine.Utility.GDFea
- Gizmos (Cobilas.GodotEngine.Utility.Gizmo
- IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
- IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
- IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
- IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
- LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
- LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
- NullNode (Cobilas.GodotEngine.Utility.NullNo
- Randomico (Cobilas.GodotEngine.Utility.Rando
- Rect2D (Cobilas.GodotEngine.Utility.Rect2D
- Resolution

Struct DisplayInfo

Contains information from a specific screen.

Filter by title

Implements

IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html)>

Inherited Members

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public readonly struct DisplayInfo : IEquatable<DisplayInfo>
```

Constructors

DisplayInfo(in int, in DisplayDevice?)

Starts a new instance of the object.

Declaration

```
public DisplayInfo(in int index, in DisplayDevice? device)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	The monitor index.
DisplayDevice	*device*	The OpenTK.DisplayDevice that contains the screen information.

Properties

CurrentResolution

Current screen resolution.

Declaration

```
public Resolution CurrentResolution { get; }
```

Property Value

Type	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	Returns the current resolution of this OpenTK.Display Device.

CustonResolutions

The list of custom resolutions.

Declaration

```
public CustonResolutionList CustonResolutions { get; }
```

Property Value

Type	Description
CustonResolutionList (Cobilas.GodotEngine.Utility.CustonResolutionList.html)	Returns a list of custom resolutions from DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html).

Index

Screen index.

Declaration

```
public int Index { get; }
```

Property Value

Type	Description
int (https://docs.microsoft.com/dotnet/api/system.int32)	Returns the screen index.

(Cobilas.GodotEditor.Utility.Ser

- Cobilas.GodotEngine.Utility

(Cobilas.GodotEngine.Utility.ht

Color32

(Cobilas.GodotEngine.Utility.Color3

ColorF

(Cobilas.GodotEngine.Utility.ColorF

Coroutine

(Cobilas.GodotEngine.Utility.Corout

CustonResolutionList

(Cobilas.GodotEngine.Utility.Custor

DebugLog

(Cobilas.GodotEngine.Utility.Debug

DisplayInfo

(Cobilas.GodotEngine.Utility.Display

FixedRunTimeSecond

(Cobilas.GodotEngine.Utility.FixedR

GDFeature

(Cobilas.GodotEngine.Utility.GDFea

Gizmos

(Cobilas.GodotEngine.Utility.Gizmo

IYieldCoroutine

(Cobilas.GodotEngine.Utility.IYieldC

IYieldFixedUpdate

(Cobilas.GodotEngine.Utility.IYieldF

IYieldUpdate

(Cobilas.GodotEngine.Utility.IYieldU

IYieldVolatile

(Cobilas.GodotEngine.Utility.IYieldV

LastFixedRunTimeSecond

(Cobilas.GodotEngine.Utility.LastFix

LastRunTimeSecond

(Cobilas.GodotEngine.Utility.LastRu

NullNode

(Cobilas.GodotEngine.Utility.NullNo

RandomNo

(Cobilas.GodotEngine.Utility.Rando

Rect2D

(Cobilas.GodotEngine.Utility.Rect2D

Resolution

(Cobilas.GodotEngine.Utility.Resolu

None

Empty display.

Declaration

```
public static DisplayInfo None { get; }
```

Property Value

Type	Description
DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html)	Returns an empty instance of DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html).

Resolutions

Screen resolutions.

Declaration

```
public Resolution[] Resolutions { get; }
```

Property Value

Type	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)[]	Returns all resolutions supported by the display.

Methods

AddCustonResolution(in Resolution, in DisplayInfo)

Adds a custom resolution to DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html).

Declaration

```
public static DisplayInfo AddCustonResolution(in Resolution resolution, in DisplayInfo displ
ay);
```

Parameters

(Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastR
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu

Type	Name	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	*resolution*	The resolution to be added.
DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html)	*display*	The target DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html) .

Returns

Type	Description
DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html)	Returns a new, modified instance of DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html).

ChangeCurrentResolution(in Resolution, in DisplayInfo)

Allows you to change the current resolution of this display.

Declaration

```
public static DisplayInfo ChangeCurrentResolution(in Resolution resolution, in DisplayInfo d
isplay)
```

Parameters

Type	Name	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	*resolution*	The new resolution.
DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html)	*display*	The target DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html) .

Returns

Type	Description
DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html)	Returns a new, modified instance of DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html).

Contains(in Resolution, in bool)

Allows you to check whether a certain resolution exists on this display.

Declaration

```
public bool Contains(in Resolution resolution, in bool includeCustomResolution = false)
```

Parameters

Type	Name	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	*resolution*	Target resolution.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*includeCustomResolution*	Tells the method whether to compare with the custom resolution list.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	If the resolution exists, it will return `true`.

Equals(DisplayInfo)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public bool Equals(DisplayInfo other)
```

Parameters

Type	Name	Description
DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(object)

Indicates whether this instance and a specified object are equal.

Declaration

```
public override bool Equals(object obj)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*obj*	The object to compare with the current instance.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if *obj* and this instance are the same type and represent the same value; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Overrides

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

GetHash(in DisplayInfo)

Generates a hash from DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html).

Declaration

```
public static int GetHash(in DisplayInfo display)
```

Parameters

Type	Name	Description
DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html)	*display*	The object that will be used.

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns a hash generated from the DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html) index and resolution list.

GetHashCode()

Returns the hash code for this instance.

Declaration

```
public override int GetHashCode()
```

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A 32-bit signed integer that is the hash code for this instance.

Overrides

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

Operators

operator ==(DisplayInfo, DisplayInfo)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(DisplayInfo A, DisplayInfo B)
```

Parameters

Type	Name	Description
DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html)	*A*	Object to be compared.
DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator !=(DisplayInfo, DisplayInfo)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(DisplayInfo A, DisplayInfo B)
```


(Cobilas.GodotEditor.Utility.Se
Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustomResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debugl
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu

Parameters

Type	Name	Description
DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html)	*A*	Object to be compared.
DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

Implements

IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)

Struct FixedRunTimeSecond

This class represents a delay in seconds to methods that return IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.ienumerator) and use the keyword Yield.

This class is performed in the _PhysicsProcess(float) (https://learn.microsoft.com/dotnet/api/system.single).

Implements

IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldFixedUpdate.html)
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldCoroutine.html)

Inherited Members

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)
ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)
ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)
Assembly: com.cobilas.godot.utility.dll

Syntax

```
public readonly struct FixedRunTimeSecond : IYieldFixedUpdate, IYieldCoroutine
```

Constructors

FixedRunTimeSecond(double)

Creates a new instance of this object.

Declaration

```
public FixedRunTimeSecond(double second)
```

Parameters

Type	Name	Description
double (https://learn.microsoft.com/dotnet/api/system.double)	*second*	

Implements

IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldFixedUpdate.html)

- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
  - Color32 (Cobilas.GodotEngine.Utility.Color3
  - ColorF (Cobilas.GodotEngine.Utility.ColorF
  - Coroutine (Cobilas.GodotEngine.Utility.Corout
  - CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
  - DebugLog (Cobilas.GodotEngine.Utility.Debug
  - DisplayInfo (Cobilas.GodotEngine.Utility.Display
  - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
  - GDFeature (Cobilas.GodotEngine.Utility.GDFea
  - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
  - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
  - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
  - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
  - IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
  - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
  - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
  - NullNode (Cobilas.GodotEngine.Utility.NullNo
  - Randomico (Cobilas.GodotEngine.Utility.Rando
  - Rect2D (Cobilas.GodotEngine.Utility.Rect2D
  - Resolution (Cobilas.GodotEngine.Utility.Resolu
  - RunTimeSecond

Class GDFeature

This class contains some Features pre-defined by the engine.

Filter by title

Inheritance **Godot.Utility (Cobilas.GodotEngine.Utility.html)**

↳ object (https://learn.microsoft.com/dotnet/api/system.object)

↳ GDFeature

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)

object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object,system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class GDFeature
```

Remarks

Features are an alternative to the .Net preprocessing definitions as Godot 3.5's GDScript does not support preprocessing definitions.

Properties

HasARM32

Running on a 32-bit ARM build.

Declaration

```
public static bool HasARM32 { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

Color32 (Cobilas.GodotEngine.Utility.Color3
ColorF (Cobilas.GodotEngine.Utility.ColorF
Coroutine (Cobilas.GodotEngine.Utility.Corout
CustomSelectionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Displa
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNo
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTi

HasARM64

Running on a 64-bit ARM build.

Declaration

```
public static bool HasARM64 { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasAndroid

Running on a Android build.

Declaration

```
public static bool HasAndroid { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasDebug

Running on a debug build (including the editor).

Declaration

```
public static bool HasDebug { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasETC1

Textures using ETC1 compression are supported.

Declaration

```
public static bool HasETC1 { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasETC2

Textures using ETC2 compression are supported.

Declaration

```
public static bool HasETC2 { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasEditor

Running on an editor build.

Declaration

```
public static bool HasEditor { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasHTML5

Running on HTML5.

Declaration

```
public static bool HasHTML5 { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasIOS

Running on iOS.

Declaration

```
public static bool HasIOS { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasJavaScript

JavaScript singleton is available.

Declaration

```
public static bool HasJavaScript { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasMobile

Host OS is a mobile platform.

Declaration

```
public static bool HasMobile { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasOSX

Running on macOS.

Declaration

```
public static bool HasOSX { get; }
```

Property Value

Type	Description
bool (https://learn microsoft.com/dotnet/api/system.boolean)	

HasPC

Host OS is a PC platform (desktop/laptop).

Declaration

```
public static bool HasPC { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasPVRTC

Textures using PVRTC compression are supported.

Declaration

```
public static bool HasPVRTC { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasRelease

Running on a release build.

Declaration

```
```

Cobilas.GodotEngine.Utility

(Cobilas.GodotEngine.Utility.ht

Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.CustomR
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTim

```
public static bool HasRelease { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasS3TC

Textures using S3TC (DXT/BC) compression are supported.

Declaration

```
public static bool HasS3TC { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasServer

Running on the headless server platform.

Declaration

```
public static bool HasServer { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasStandalone

Running on a non-editor build.

Declaration

```
public static bool HasStandalone { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasUWP

Running on UWP.

Declaration

```
public static bool HasUWP { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasWeb

Host OS is a Web browser.

Declaration

```
public static bool HasWeb { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasWindows

Running on Windows.

Declaration

```
public static bool HasWindows { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasX11

Running on X11 (Linux/BSD desktop).

Declaration

```
public static bool HasX11 { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasX32

Running on a 32-bit build (any architecture).

Declaration

```
public static bool HasX32 { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasX64

Running on a 64-bit build (any architecture).

Declaration

```
public static bool HasX64 { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasX86_32

Running on a 32-bit x86 build.

Declaration

(Cobilas.GodotEngine.Utility.ht

Color32
(Cobilas.GodotEngine.Utility.Color3
Color
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custon
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTim

```
public static bool HasX86_32 { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

HasX86_64

Running on a 64-bit x86 build.

Declaration

```
public static bool HasX86_64 { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

Methods

HasFeature(string?)

Can be used to check whether you're currently running a debug build, on a certain platform or arch, etc. Refer to the Feature Tags (https://docs.godotengine.org/en/3.5/tutorials/export/feature_tags.html) documentation for more details.

Declaration

```
public static bool HasFeature(string? tagName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*tagName*	Tag names are case-sensitive.

Returns

(Cobilas.GodotEngine.Utility.ht

Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYield
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	]Returns `true` if the feature for the given feature tag is supported in the currently running instance, depending on the platform, build etc.

(Cobilas.GodotEngine.Utility.ht

Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir

Class Gizmos

Gizmos are used to give visual debugging or setup aids in the Scene view.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)

↳ Gizmos

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)

object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class Gizmos
```

Properties

Color

Sets the Color of the gizmos that are drawn next.

Declaration

```
public static Color Color { get; set; }
```

Property Value

Type	Description
Color	Returns or sets the color of the next gizmo.

Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Coroutine
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custom
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTim
Screen

Methods

DrawArc(Vector2, float, float, float, int)

Draws a unfilled arc between the given angles. The larger the value of `point_count` , the smoother the curve. See also DrawCircle(Vector2, float, Color) (https://learn.microsoft.com/dotnet/api/system.single).

Note: Line drawing is not accelerated by batching if `antialiased` is `true` .

Note: Due to how it works, built-in antialiasing will not look correct for translucent lines and may not work on certain platforms. As a workaround, install the Antialiased Line2D (https://github.com/godot-extended-libraries/godot-antialiased-line2d) add-on then create an AntialiasedRegularPolygon2D node. That node relies on a texture with custom mipmaps to perform antialiasing. 2D batching is also still supported with those antialiased lines.

Declaration

```
public static void DrawArc(Vector2 center, float radius, float startAngle, float endAngle, i
nt pointCount)
```

Parameters

Type	Name	Description
Vector2	*center*	The central position of the arc.
float (https://learn.microsoft.com/dotnet/api/system.single)	*radius*	The radius of the arc.
float (https://learn.microsoft.com/dotnet/api/system.single)	*startAngle*	The angle at which the arc will be drawn.
float (https://learn.microsoft.com/dotnet/api/system.single)	*endAngle*	The angle where the arc will finish being drawn.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*pointCount*	The number of stitches used in the arc. This parameter will define the visual aspect of the bow, whether it will have a smoother or more serrated curve.

DrawArc(Vector2, float, float, float, int, float)

Draws a unfilled arc between the given angles. The larger the value of `point_count` , the smoother the curve. See also DrawCircle(Vector2, float, Color) (https://learn.microsoft.com/dotnet/api/system.single).

Note: Line drawing is not accelerated by batching if `antialiased` is `true` .

Note: Due to how it works, built-in antialiasing will not look correct for translucent lines and may not work on certain platforms. As a workaround, install the Antialiased Line2D (https://github.com/godot-extended-libraries/godot-antialiased-line2d) add-on then create an AntialiasedRegularPolygon2D node. That node relies on

a texture with custom mipmaps to perform antialiasing. 2D batching is also still supported with those antialiased lines.

Declaration

```
public static void DrawArc(Vector2 center, float radius, float startAngle, float endAngle, int pointCount, float width)
```

Parameters

Type	Name	Description
Vector2 (https://learn.microsoft.com/dotnet/api/system.single)	*center*	The central position of the arc.
float (https://learn.microsoft.com/dotnet/api/system.single)	*radius*	The radius of the arc.
float (https://learn.microsoft.com/dotnet/api/system.single)	*startAngle*	The angle at which the arc will be drawn.
float (https://learn.microsoft.com/dotnet/api/system.single)	*endAngle*	The angle where the arc will finish being drawn.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*pointCount*	The number of stitches used in the arc. This parameter will define the visual aspect of the bow, whether it will have a smoother or more serrated curve.
float (https://learn.microsoft.com/dotnet/api/system.single)	*width*	The thickness of the line.

DrawCircle(Vector2, float)

Draws a filled, antialiased circle. See also DrawArc(Vector2, float, float, float, int, Color, float, bool) (https://learn.microsoft.com/dotnet/api/system.single), DrawPolyline(Vector2[], Color, float, bool) (https://learn.microsoft.com/dotnet/api/system.single) and DrawPolygon(Vector2[], Color[], Vector2[], Texture, Texture, bool) (https://learn.microsoft.com/dotnet/api/system.boolean).

Note: Built-in antialiasing is not provided for DrawCircle(Vector2, float, Color) (https://learn.microsoft.com/dotnet/api/system.single). As a workaround, install the Antialiased Line2D (https://github.com/godot-extended-libraries/godot-antialiased-line2d) add-on then create an AntialiasedRegularPolygon2D node. That node relies on a texture with custom mipmaps to perform antialiasing.

Declaration

```
public static void DrawCircle(Vector2 position, float radius)
```

Parameters

Type	Name	Description
Vector2	*position*	The central position of the circle.
float (https://learn.microsoft.com/dotnet/api/system.single)	*radius*	The radius of the circle.

Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustomResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNc
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir
Screen

DrawLine(Vector2, Vector2)

Draws a line from a 2D point to another, with a given color and width. It can be optionally antialiased. See also DrawMultiline(Vector2[], Color, float, bool) (https://learn.microsoft.com/dotnet/api/system.single) and DrawPolyline(Vector2[], Color, float, bool) (https://learn.microsoft.com/dotnet/api/system.single).

Note: Line drawing is not accelerated by batching if `antialiased` is `true`.

Note: Due to how it works, built-in antialiasing will not look correct for translucent lines and may not work on certain platforms. As a workaround, install the Antialiased Line2D (https://github.com/godot-extended-libraries/godot-antialiased-line2d) add-on then create an AntialiasedLine2D node. That node relies on a texture with custom mipmaps to perform antialiasing. 2D batching is also still supported with those antialiased lines.

Declaration

```
public static void DrawLine(Vector2 start, Vector2 end)
```

Parameters

Type	Name	Description
Vector2	*start*	The beginning of the line.
Vector2	*end*	The end of the line.

DrawLine(Vector2, Vector2, float)

Draws a line from a 2D point to another, with a given color and width. It can be optionally antialiased. See also DrawMultiline(Vector2[], Color, float, bool) (https://learn.microsoft.com/dotnet/api/system.single) and DrawPolyline(Vector2[], Color, float, bool) (https://learn.microsoft.com/dotnet/api/system.single).

Note: Line drawing is not accelerated by batching if `antialiased` is `true`.

Note: Due to how it works, built-in antialiasing will not look correct for translucent lines and may not work on certain platforms. As a workaround, install the Antialiased Line2D (https://github.com/godot-extended-libraries/godot-antialiased-line2d) add-on then create an AntialiasedLine2D node. That node relies on a texture with custom mipmaps to perform antialiasing. 2D batching is also still supported with those antialiased lines.

Declaration

```
public static void DrawLine(Vector2 start, Vector2 end, float width)
```

Parameters

Type	Name	Description
Vector2	*start*	The beginning of the line.
Vector2	*end*	The end of the line.
float (https://learn.microsoft.com/dotnet/api/system.single)	*width*	The thickness of the line.

(Cobilas.GodotEngine.Utility.In

Color32
(Cobilas.GodotEngine.Utility.Color3

Color5
(Cobilas.GodotEngine.Utility.ColorF

Coroutine
(Cobilas.GodotEngine.Utility.Corout

CustomResolutionList
(Cobilas.GodotEngine.Utility.Custor

DebugLog
(Cobilas.GodotEngine.Utility.Debug

DisplayInfo
(Cobilas.GodotEngine.Utility.Display

FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR

GDFeature
(Cobilas.GodotEngine.Utility.GDFea

Gizmos
(Cobilas.GodotEngine.Utility.Gizmo

IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC

IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF

IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU

IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV

LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix

LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu

NullNode
(Cobilas.GodotEngine.Utility.NullNo

Randomico
(Cobilas.GodotEngine.Utility.Rando

Rect2D
(Cobilas.GodotEngine.Utility.Rect2D

Resolution
(Cobilas.GodotEngine.Utility.Resolu

RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir

Screen
(Cobilas.GodotEngine.Utility.S

DrawMesh(Mesh, Texture, Texture?, Transform2D?)

Draws a Godot.Mesh in 2D, using the provided texture. See Godot.MeshInstance2D for related documentation.

Declaration

```
public static void DrawMesh(Mesh mesh, Texture texture, Texture? normalMap = null, Transform
2D? transform = null)
```

Parameters

Type	Name	Description
Mesh	*mesh*	The mesh that will be used to shape the design.
Texture	*texture*	The texture that will be used to draw on the mesh.
Texture	*normalMap*	The texture normal map.
Transform2D?	*transform*	If the parameter is null, then the default value is Transform2D.Identity

DrawMultiline(Vector2[])

Draws multiple disconnected lines with a uniform `color`. When drawing large amounts of lines, this is faster than using individual DrawLine(Vector2, Vector2, Color, float, bool) (https://learn.microsoft.com/dotnet/api/system.single) calls. To draw interconnected lines, use DrawPolyline(Vector2[], Color, float, bool) (https://learn.microsoft.com/dotnet/api/system.single) instead.

Note: `width` and `antialiased` are currently not implemented and have no effect. As a workaround, install the Antialiased Line2D (https://github.com/godot-extended-libraries/godot-antialiased-line2d) add-on then create an AntialiasedLine2D node. That node relies on a texture with custom mipmaps to perform antialiasing. 2D batching is also still supported with those antialiased lines.

Declaration

```
public static void DrawMultiline(Vector2[] points)
```

Parameters

Type	Name	Description
Vector2[]	*points*	The points that form the line.

DrawMultiline(Vector2[], float)

Draws multiple disconnected lines with a uniform `color`. When drawing large amounts of lines, this is faster than using individual DrawLine(Vector2, Vector2, Color, float, bool) (https://learn.microsoft.com/dotnet/api/system.single) calls. To draw interconnected lines, use DrawPolyline(Vector2[], Color, float, bool) (https://learn.microsoft.com/dotnet/api/system.single) instead.

Note: `width` and `antialiased` are currently not implemented and have no effect. As a workaround, install the Antialiased Line2D (https://github.com/godot-extended-libraries/godot-antialiased-line2d) add-on then create an AntialiasedLine2D node. That node relies on a texture with custom mipmaps to perform antialiasing. 2D batching is also still supported with those antialiased lines.

Declaration

```
public static void DrawMultiline(Vector2[] points, float width)
```

Parameters

Type	Name	Description
Vector2[]	*points*	The points that form the line.
float (https://learn.microsoft.com/dotnet/api/system.single)	*width*	The thickness of the line.

DrawMultiline(List<Vector2>)

Draws multiple disconnected lines with a uniform `color`. When drawing large amounts of lines, this is faster than using individual DrawLine(Vector2, Vector2, Color, float, bool) (https://learn.microsoft.com/dotnet/api/system.single) calls. To draw interconnected lines, use DrawPolyline(Vector2[], Color, float, bool) (https://learn.microsoft.com/dotnet/api/system.single) instead.

Note: `width` and `antialiased` are currently not implemented and have no effect. As a workaround, install the Antialiased Line2D (https://github.com/godot-extended-libraries/godot-antialiased-line2d) add-on then create an AntialiasedLine2D node. That node relies on a texture with custom mipmaps to perform antialiasing. 2D batching is also still supported with those antialiased lines.

Declaration

```
public static void DrawMultiline(List<Vector2> points)
```

Parameters

Type	Name	Description
List (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) <Vector2>	*points*	The points that form the line.

DrawMultiline(List<Vector2>, float)

Draws multiple disconnected lines with a uniform `color`. When drawing large amounts of lines, this is faster than using individual DrawLine(Vector2, Vector2, Color, float, bool) (https://learn.microsoft.com/dotnet/api/system.single) calls. To draw interconnected lines, use DrawPolyline(Vector2[], Color, float, bool) (https://learn.microsoft.com/dotnet/api/system.single) instead.

Note: `width` and `antialiased` are currently not implemented and have no effect. As a workaround, install the Antialiased Line2D (https://github.com/godot-extended-libraries/godot-antialiased-line2d) add-on then create an AntialiasedLine2D node. That node relies on a texture with custom mipmaps to perform antialiasing. 2D batching is also still supported with those antialiased lines.

Declaration

```
public static void DrawMultiLine(List<Vector2> points, float width)
```

Parameters

Type	Name	Description
List (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) <Vector2>	*points*	The points that form the line.
float (https://learn.microsoft.com/dotnet/api/system.single)	*width*	The thickness of the line.

DrawRect(Rect2)

Draws a solid body rectangle.

Note: Due to how it works, built-in antialiasing will not look correct for translucent polygons and may not work on certain platforms. As a workaround, install the Antialiased Line2D (https://github.com/godot-extended-libraries/godot-antialiased-line2d) add-on then create an AntialiasedPolygon2D node. That node relies on a texture with custom mipmaps to perform antialiasing.

Declaration

```
public static void DrawRect(Rect2 rect)
```

Parameters

Type	Name	Description
Rect2	*rect*	The dimensions of the rectangle.

DrawTexture(Texture, Vector2, Texture?)

Draws a texture at a given position.

Declaration

T
(Cobilas.GodotEngine.Utility.Ir
Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir
Screen

```
public static void DrawTexture(Texture texture, Vector2 position, Texture? normalMap = null)
```

Parameters

Type	Name		Description
Texture (Cobilas.GodotEngine.Utility.Ima	*texture*		
Vector2	*position*		
Texture	*normalMap*		

DrawTextureRect(Texture, Rect2, bool, bool, Texture?)

Draws a textured rectangle at a given position, optionally modulated by a color. If `transpose` is `true`, the texture will have its X and Y coordinates swapped.

Declaration

```
public static void DrawTextureRect(Texture texture, Rect2 rect, bool tile, bool transpose =
false, Texture? normalMap = null)
```

Parameters

Type	Name	Description
Texture	*texture*	
Rect2	*rect*	
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*tile*	
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*transpose*	
Texture	*normalMap*	

DrawWireRect(Rect2)

Draw a rectangle of a skeletonized body.

Note: Due to how it works, built-in antialiasing will not look correct for translucent polygons and may not work on certain platforms. As a workaround, install the Antialiased Line2D (https://github.com/godot-extended-libraries/godot-antialiased-line2d) add-on then create an AntialiasedPolygon2D node. That node relies on a texture with custom mipmaps to perform antialiasing.

Declaration

```
public static void DrawWireRect(Rect2 rect)
```

Parameters

Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Coroutine
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNe
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir
Screen
(Cobilas.GodotEngine.Utility.Scre

Type	Name	Description
Rect2	*rect*	The dimensions of the rectangle.

DrawWireRect(Rect2, float)

Draw a rectangle of a skeletonized body.

Note: Due to how it works, built-in antialiasing will not look correct for translucent polygons and may not work on certain platforms. As a workaround, install the Antialiased Line2D (https://github.com/godot-extended-libraries/godot-antialiased-line2d) add-on then create an AntialiasedPolygon2D node. That node relies on a texture with custom mipmaps to perform antialiasing.

Declaration

```
public static void DrawWireRect(Rect2 rect, float width)
```

Parameters

Type	Name	Description
Rect2	*rect*	The dimensions of the rectangle.
float (https://learn.microsoft.com/dotnet/api/system.single)	*width*	The thickness of the line.

Type
Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir
Screen

Interface IYieldCoroutine

A base interface for all Yield class.

Filter by title

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public interface IYieldCoroutine
```

Properties

Delay

The delay of the Yield class.

Declaration

```
TimeSpan Delay { get; }
```

Property Value

Type	Description
TimeSpan (https://learn.microsoft.com/dotnet/api/system.timespan)	Returns a delay value in the form of TimeSpan (https://learn.microsoft.com/dotnet/api/system.timespan) .

IsLastCoroutine

Indicates that it is the last to be executed.

Declaration

```
bool IsLastCoroutine { get; }
```

Property Value

Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir
Screen
(Cobilas.GodotEngine.Utility.Screen

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when class Yield is marked to run last.

Color32
(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNc
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir
Screen
(Cobilas.GodotEngine.Utility.Screen

Interface IYieldFixedUpdate

Yield Class to be excited in the _PhysicsProcess(float) (https://learn.microsoft.com/dotnet/api/system.single)

Filter by title

Inherited Members

IYieldCoroutine.Delay
(Cobilas.GodotEngine.Utility.IYieldCoroutine.html#Cobilas_GodotEngine_Utility_IYieldCoroutine_Delay)
IYieldCoroutine.IsLastCoroutine
(Cobilas.GodotEngine.Utility.IYieldCoroutine.html#Cobilas_GodotEngine_Utility_IYieldCoroutine_IsLastCoroutine)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)
Assembly: com.cobilas.godot.utility.dll

Syntax

```
public interface IYieldFixedUpdate : IYieldCoroutine
```

(Cobilas.GodotEngine.Utility.Color3
ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Coroutine
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custon
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir

Interface IYieldUpdate

Yield Class to be excited in the _Process(float) (https://learn.microsoft.com/dotnet/api/system.single)

Filter by title

Inherited Members

IYieldCoroutine.Delay
(Cobilas.GodotEngine.Utility.IYieldCoroutine.html#Cobilas_GodotEngine_Utility_IYieldCoroutine_Delay)
IYieldCoroutine.IsLastCoroutine
(Cobilas.GodotEngine.Utility.IYieldCoroutine.html#Cobilas_GodotEngine_Utility_IYieldCoroutine_IsLastCoroutine)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)
Assembly: com.cobilas.godot.utility.dll

Syntax

```
public interface IYieldUpdate : IYieldCoroutine
```


ColorF
(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustomResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir
Screen

Interface IYieldVolatile

The IyieldVolatile interface allows the Yield class to change the type of process.

This interface allows you to change the type of update if the object will use the _Process(float) (https://learn.microsoft.com/dotnet/api/system.single) or _PhysicsProcess(float) (https://learn.microsoft.com/dotnet/api/system.single) Coroutine (Cobilas.GodotEngine.Utility.Coroutine.html) process.

Inherited Members

IYieldCoroutine.Delay (Cobilas.GodotEngine.Utility.IYieldCoroutine.html#Cobilas_GodotEngine_Utility_IYieldCoroutine_Delay)

IYieldCoroutine.IsLastCoroutine (Cobilas.GodotEngine.Utility.IYieldCoroutine.html#Cobilas_GodotEngine_Utility_IYieldCoroutine_IsLastCoroutine)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public interface IYieldVolatile : IYieldCoroutine
```

Properties

IsPhysicsProcess

Indicates which process of updating the Coroutine (Cobilas.GodotEngine.Utility.Coroutine.html) is using.

Declaration

```
bool IsPhysicsProcess { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	`true` when the corrotine is using _PhysicsProcess(float) (https://learn.microsoft.com/dotnet/api/system.single). `false` when the corrotine is using _Process(float) (https://learn.microsoft.com/dotnet/api/system.single).

+ Cobilas.GodotEngine.Utility.

Filter by title

- Cobilas.GodotEngine.Utility.ColorH
- Coroutine (Cobilas.GodotEngine.Utility.Corout
- CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
- DebugLog (Cobilas.GodotEngine.Utility.Debug
- DisplayInfo (Cobilas.GodotEngine.Utility.Display
- FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedRs
- GDFeature (Cobilas.GodotEngine.Utility.GDFea
- Gizmos (Cobilas.GodotEngine.Utility.Gizmo
- IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
- IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
- IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
- IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
- LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
- LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
- NullNode (Cobilas.GodotEngine.Utility.NullNo
- Randomico (Cobilas.GodotEngine.Utility.Rando
- Rect2D (Cobilas.GodotEngine.Utility.Rect2D
- Resolution (Cobilas.GodotEngine.Utility.Resolu
- RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
- Screen (Cobilas.GodotEngine.Utility.Screen
- ScreenMode (Cobilas.GodotEngine.Utility.Screen

(Cobilas.GodotEngine.Utility.ColorF
Coroutine
(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir
Screen
(Cobilas.GodotEngine.Utility.Screen
ScreenMode
(Cobilas.GodotEngine.Utility.Screen

+ Cobilas.GodotEngine.Utility.

Struct LastFixedRunTimeSecond

This class represents a delay in seconds to methods that return IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.ienumerator) and use the keyword Yield.

This class is performed in the _PhysicsProcess(float) (https://learn.microsoft.com/dotnet/api/system.single).

This class allows the corrotine to be called after the methods of updating the current scene.

Implements

IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldFixedUpdate.html)
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldCoroutine.html)

Inherited Members

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)
ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)
ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public readonly struct LastFixedRunTimeSecond : IYieldFixedUpdate, IYieldCoroutine
```

Constructors

LastFixedRunTimeSecond(double)

Creates a new instance of this object.

Declaration

```
public LastFixedRunTimeSecond(double second)
```

Parameters

Type	Name	Description
double (https://learn.microsoft.com/dotnet/api/system.double)	*second*	

Implements

IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldFixedUpdate.html)
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldCoroutine.html)

Coroutine
(Cobilas.GodotEngine.Utility.Corout
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(Cobilas.GodotEngine.Utility.Custor
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(Cobilas.GodotEngine.Utility.Debug
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Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
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(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
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RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir
Screen
(Cobilas.GodotEngine.Utility.Screen
ScreenMode
(Cobilas.GodotEngine.Utility.Screen

+ Cobilas.GodotEngine.Utility.IO

Struct LastRunTimeSecond

This class represents a delay in seconds to methods that return IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.ienumerator) and use the keyword Yield.

This class is performed in the Process(float) (https://learn.microsoft.com/dotnet/api/system.single).

This class allows the corrotine to be called after the methods of updating the current scene.

Implements

IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldUpdate.html)

IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldCoroutine.html)

Inherited Members

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas.GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public readonly struct LastRunTimeSecond : IYieldUpdate, IYieldCoroutine
```

Constructors

LastRunTimeSecond(double)

Creates a new instance of this object.

Declaration

```
public LastRunTimeSecond(double second)
```

Parameters

Type	Name	Description
double (https://learn.microsoft.com/dotnet/api/system.double)	*second*	

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

Implements

IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldUpdate.html)
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldCoroutine.html)

(Cobilas.GodotEngine.Utility.Corout
CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
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(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
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ScreenMode
(Cobilas.GodotEngine.Utility.Screen

+ **Cobilas.GodotEngine.Utility.IO**
(Cobilas.GodotEngine.Utility.IO

Class NullNode

A null representation of the Godot.Node class.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)

↳ Object

↳ Node

↳ NullNode

Implements

IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)

Inherited Members

Node.NotificationEnterTree

Node.NotificationExitTree

Node.NotificationMovedInParent

Node.NotificationReady

Node.NotificationPaused

Node.NotificationUnpaused

Node.NotificationPhysicsProcess

Node.NotificationProcess

Node.NotificationParented

Node.NotificationUnparented

Node.NotificationInstanced

Node.NotificationDragBegin

Node.NotificationDragEnd

Node.NotificationPathChanged

Node.NotificationInternalProcess

Node.NotificationInternalPhysicsProcess

Node.NotificationPostEnterTree

Node.NotificationResetPhysicsInterpolation

Node.NotificationWmMouseEnter

Node.NotificationWmMouseExit

Node.NotificationWmFocusIn

Node.NotificationWmFocusOut

Node.NotificationWmQuitRequest

Node.NotificationWmGoBackRequest

Node.NotificationWmUnfocusRequest

Node.NotificationOsMemoryWarning

Node.NotificationTranslationChanged

Node.NotificationWmAbout

Node.NotificationCrash

Node.NotificationOsImeUpdate

Node.NotificationApplicationFocusIn

Node.NotificationApplicationFocusOut

Node.NotificationApplicationPaused

Node.NotificationApplicationResumed

Node.NotificationAppPaused

Node.NotificationAppResumed

Node.NotificationOrphan

Node.NotificationWmCloseRequest

Node.NotificationWmSizeChanged

Node.NotificationWmDpiChange

Node.NotificationVisibilityChanged

Node.NotificationEditorPreSave

Node.NotificationEditorPostSave

Node.NotificationWorldreposition

Node.NotificationUpdateCfgBuffer

Node.NotificationSceneInstantiated

Node.NotificationPreprocessor

Node.NotificationPostprocessor

Node.NotificationPostinitialize

Node.NotificationPredelete

Node.NotificationExtension

Node.NotificationExtensionReloaded

Node.NotificationSceneUnloaded

Node.NotificationPrerenderedRemoved

Node.NotificationDestroyed

Node.NotificationPostNotification

Node.NotificationPreNotification

Node.NotificationPostNotification

Node.NotificationPreNotification

Node.NotificationPostNotification

Node.NotificationPreNotification

Node.GetNode<T>(NodePath)
Node.GetNodeOrNull<T>(NodePath)
Node.GetChild<T>(int) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.GetChildOrNull<T>(int) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.GetOwner<T>()
Node.GetOwnerOrNull<T>()
Node.GetParent<T>()
Node.GetParentOrNull<T>()
Node._EnterTree()
Node._ExitTree()
Node._GetConfigurationWarning()
Node._Input(InputEvent)
Node._PhysicsProcess(float) (https://learn.microsoft.com/dotnet/api/system.single)
Node._Process(float) (https://learn.microsoft.com/dotnet/api/system.single)
Node._Ready()
Node._UnhandledInput(InputEvent)
Node._UnhandledKeyInput(InputEventKey)
Node.AddChildBelowNode(Node, Node, bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.SetName(string) (https://learn.microsoft.com/dotnet/api/system.string)
Node.GetName()
Node.AddChild(Node, bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.RemoveChild(Node)
Node.GetChildCount()
Node.GetChildren()
Node.GetChild(int) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.HasNode(NodePath)
Node.GetNode(NodePath)
Node.GetNodeOrNull(NodePath)
Node.GetParent()
Node.FindNode(string, bool, bool) (https://learn.microsoft.com/dotnet/api/system.string)
Node.FindParent(string) (https://learn.microsoft.com/dotnet/api/system.string)
Node.HasNodeAndResource(NodePath)
Node.GetNodeAndResource(NodePath)
Node.IsInsideTree()
Node.IsAParentOf(Node)
Node.IsGreaterThan(Node)
Node.GetPath()
Node.GetPathTo(Node)
Node.AddToGroup(string, bool) (https://learn.microsoft.com/dotnet/api/system.string)
Node.RemoveFromGroup(string) (https://learn.microsoft.com/dotnet/api/system.string)
Node.IsInGroup(string) (https://learn.microsoft.com/dotnet/api/system.string)
Node.MoveChild(Node, int) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.GetGroups()
Node.Raise()
Node.SetOwner(Node)
Node.GetOwner()
Node.RemoveAllChild
Node.GetIndex()
Node.PrintTree()

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IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
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(Cobilas.GodotEngine.Utility.IO

Node.PrintTreePretty()
Node.SetFilename(string) (https://learn.microsoft.com/dotnet/api/system.string)
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Node.PropagateNotification(int) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.PropagateCall(string, Array, bool) (https://learn.microsoft.com/dotnet/api/system.string)
Node.SetPhysicsProcess(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.GetPhysicsProcessDeltaTime()
Node.IsPhysicsProcessing()
Node.GetProcessDeltaTime()
Node.SetProcess(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.SetProcessPriority(int) (https://learn.microsoft.com/dotnet/api/system.int32)
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Node.SetProcessInput(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.IsProcessingInput()
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Node.SetProcessUnhandledKeyInput(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.IsProcessingUnhandledKeyInput()
Node.SetPauseMode(Node.PauseModeEnum)
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Node.CanProcess()
Node.PrintStrayNodes()
Node.GetPositionInParent()
Node.SetDisplayFolded(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.IsDisplayedFolded()
Node.SetProcessInternal(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.IsProcessingInternal()
Node.SetPhysicsProcessInternal(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.IsPhysicsProcessingInternal()
Node.SetPhysicsInterpolationMode(Node.PhysicsInterpolationModeEnum)
Node.GetPhysicsInterpolationMode()
Node.IsPhysicsInterpolated()
Node.IsPhysicsInterpolatedAndEnabled()
Node.ResetPhysicsInterpolation()
Node.GetTree()
Node.CreateTween()
Node.Duplicate(int) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.ReplaceBy(Node, bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.SetSceneInstanceLoadPlaceholder(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.GetSceneInstanceLoadPlaceholder()
Node.GetViewport()
Node.QueueFree()
Node.RequestReady()
Node.SetNetworkMaster(int, bool) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.GetNetworkMaster()
Node.IsNetworkMaster()
Node.GetMultiplayer()
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Node.SetCustomMultiplayer(MultiplayerAPI)
Node.RpcConfig(string, MultiplayerAPI.RPCMode) (https://learn.microsoft.com/dotnet/api/system.string)
Node.RsetConfig(string, MultiplayerAPI.RPCMode) (https://learn.microsoft.com/dotnet/api/system.string)
Node.SetUniqueNameInOwner(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.IsUniqueNameInOwner()
Node.Rpc(string, params object[]) (https://learn.microsoft.com/dotnet/api/system.string)
Node.RpcUnreliable(string, params object[]) (https://learn.microsoft.com/dotnet/api/system.string)
Node.RpcId(int, string, params object[]) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.RpcUnreliableId(int, string, params object[]) (https://learn.microsoft.com/dotnet/api/system.int32)
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Node.RsetId(int, string, object) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.RsetUnreliable(string, object) (https://learn.microsoft.com/dotnet/api/system.string)
Node.RsetUnreliableId(int, string, object) (https://learn.microsoft.com/dotnet/api/system.int32)
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Node.EditorDescription
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Node.CustomMultiplayer
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Object.IsInstanceValid(Object)
Object.WeakRef(Object)
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Object.Dispose(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Object.ToString()
Object.ToSignal(Object, string) (https://learn.microsoft.com/dotnet/api/system.string)
Object._Get(string) (https://learn.microsoft.com/dotnet/api/system.string)
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Object._Notification(int) (https://learn.microsoft.com/dotnet/api/system.int32)
Object._Set(string, object) (https://learn.microsoft.com/dotnet/api/system.string)
Object.Free()
Object.GetClass()
Object.IsClass(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.Set(string, object) (https://learn.microsoft.com/dotnet/api/system.string)
Object.Get(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.SetIndexed(NodePath, object) (https://learn.microsoft.com/dotnet/api/system.object)
Object.GetIndexed(NodePath)
Object.GetPropertyList()
Object.GetMethodList()
Object.GetMethodArgumentCount(StringName) (https://learn.microsoft.com/dotnet/api/system.int32)
Object.GetInstanceId()
Object.SetScript(Reference)

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Object.GetScript()
Object.SetMeta(string, object) (https://learn.microsoft.com/dotnet/api/system.string)
Object.RemoveMeta(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.GetMeta(string, object) (https://learn.microsoft.com/dotnet/api/system.string)
Object.HasMeta(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.GetMetaList()
Object.AddUserSignal(string, Array) (https://learn.microsoft.com/dotnet/api/system.string)
Object.HasUserSignal(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.EmitSignal(string, params object[]) (https://learn.microsoft.com/dotnet/api/system.string)
Object.Call(string, params object[]) (https://learn.microsoft.com/dotnet/api/system.string)
Object.CallDeferred(string, params object[]) (https://learn.microsoft.com/dotnet/api/system.string)
Object.SetDeferred(string, object) (https://learn.microsoft.com/dotnet/api/system.string)
Object.Callv(string, Array) (https://learn.microsoft.com/dotnet/api/system.string)
Object.HasMethod(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.HasSignal(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.GetSignalList()
Object.GetSignalConnectionList(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.GetIncomingConnections()
Object.Connect(string, Object, string, Array, uint) (https://learn.microsoft.com/dotnet/api/system.string)
Object.Disconnect(string, Object, string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.IsConnected(string, Object, string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.SetBlockSignals(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Object.IsBlockingSignals()
Object.PropertyListChangedNotify()
Object.SetMessageTranslation(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Object.CanTranslateMessages()
Object.Tr(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.IsQueuedForDeletion()
Object.NativeInstance
Object.DynamicObject
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas.GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public class NullNode : Node, IDisposable
```

+ Cobilas.GodotEngine.Utility.

Properties

CustomResolutionList
(Cobilas.GodotEngine.Utility.Custom
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IO
(Cobilas.GodotEngine.Utility.IO

Null

Null Godot.Node object.

Declaration

```
public static NullNode Null { get; }
```

Property Value

Type	Description
NullNode (Cobilas.GodotEngine.Utility.NullNode.html)	This property will return a null representation of Godot. Node.

Implements

IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)

Extension Methods

Node_GD_CB_Extension.ContainsNode(Node, Node)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_ContainsNode_Godot_Node_Godot_Node_)
Node_GD_CB_Extension.Duplicate<T>(Node, int)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_Duplicate__1_Godot_Node_System_Int32_)
Node_GD_CB_Extension.FindNodeByName(Node, string)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodeByName_Godot_Node_System_String_)
Node_GD_CB_Extension.FindNodeByName(Node, string, bool)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodeByName_Godot_Node_System_String_System_Boolean_)
Node_GD_CB_Extension.FindNodeByName(Node, string, Type, bool)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodeByName_Godot_Node_System_String_System_Type_System_Boolean_)
Node_GD_CB_Extension.FindNodeByName<T>(Node, string)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodeByName__1_Godot_Node_System_String_)
Node_GD_CB_Extension.FindNodeByName<T>(Node, string, bool)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodeByName__1_Godot_Node_System_String_System_Boolean_)
Node_GD_CB_Extension.FindNodes(Node, Type)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodes_Godot_Node_System_Type_)
Node_GD_CB_Extension.FindNodes(Node, Type, bool)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodes_Godot_Node_System_Type_System_Boolean_)
Node_GD_CB_Extension.FindNodes<T>(Node)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodes__1_Godot_Node_)
Node_GD_CB_Extension.FindNodes<T>(Node, bool)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodes__1_Godot_Node_System_Boolea

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n_)
Node_GD_CB_Extension.GetNodePosition(Node)
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Node_GD_CB_Extension.GetNodeRotation(Node)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_GetNodeRotation_Godot_Node_)
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(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_GetNodeScale_Godot_Node_)
Node_GD_CB_Extension.SetNodePosition(Node, Vector3D)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_SetNodePosition_Godot_Node_Cobilas_GodotEngine_Utility_Numerics_Vector3D_)
Node_GD_CB_Extension.SetNodeRotation(Node, Vector3D)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_SetNodeRotation_Godot_Node_Cobilas_GodotEngine_Utility_Numerics_Vector3D_)
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(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_SetNodeScale_Godot_Node_Cobilas_GodotEngine_Utility_Numerics_Vector3D_)
Node_GD_CB_Extension.SetParent(Node?, Node?)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_SetParent_Godot_Node_Godot_Node_)
Object_CB_GD_Extension.Print(Object, params object[])
(Godot.Object_CB_GD_Extension.html#Godot_Object_CB_GD_Extension_Print_Godot_Object_System_Object___)
Object_CB_GD_Extension.SafelySetScript<T>(Object, Resource)
(Godot.Object_CB_GD_Extension.html#Godot_Object_CB_GD_Extension_SafelySetScript__1_Godot_Object_Godot_Resource_)
Object_CB_GD_Extension.SafelySetScript<T>(Object, string)
(Godot.Object_CB_GD_Extension.html#Godot_Object_CB_GD_Extension_SafelySetScript__1_Godot_Object_System_String_)

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Class Randomico

The class allows the creation of pseudo random numbers.

Filter by title

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Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Randomico

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)
Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class Randomico
```

Properties

BooleanRandom

Less than `0.5f` is false, greater than `0.5f` is true.(`Randomico` (Cobilas.GodotEngine.Utility.Randomico.html).`value > 0.5f`)

Declaration

```
public static bool BooleanRandom { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns a bool (https://learn.microsoft.com/dotnet/api/system.boolean) value in a pseudo-random manner.

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value

Returns a random number between 0.0 [inclusive] and 1.0 [inclusive] (Read Only).

Declaration

```
public static double value { get; }
```

Property Value

Type	Description
double (https://learn.microsoft.com/dotnet/api/system.double)	Returns a pseudo-random floating-point number between `0.0` and `1.0`.

Methods

ByteList(byte[])

Fills the elements of a specified array of bytes with random numbers.

Declaration

```
public static void ByteList(byte[] buffer)
```

Parameters

Type	Name	Description
byte (https://learn.microsoft.com/dotnet/api/system.byte) []	*buffer*	An array of bytes to contain random numbers.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	buffer is null.

ByteRange()

Return a random integer number between min [0] and max [255] (ReadOnly).

Declaration

```
public static byte ByteRange()
```

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Returns

Type	Description
byte (https://learn.microsoft.com/dotnet/api/system.byte)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

ByteRange(byte)

Return a random integer number between min [0] and max [exclusive] (ReadOnly).

Declaration

```
public static byte ByteRange(byte max)
```

Parameters

Type	Name	Description
byte (https://learn.microsoft.com/dotnet/api/system.byte)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
byte (https://learn.microsoft.com/dotnet/api/system.byte)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

ByteRange(byte, byte)

Return a random integer number between min [inclusive] and max [exclusive] (ReadOnly).

Declaration

```
public static byte ByteRange(byte min, byte max)
```

Parameters

Type	Name	Description
byte (https://learn.microsoft.com/dotnet/api/system.byte)	*min*	Sets the minimum range of the pseudo-random number.

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IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
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Type	Name	Description
byte (https://learn.microsoft.com/dotnet/api/system.byte)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
byte (https://learn.microsoft.com/dotnet/api/system.byte)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

DecimalRange()

Return a random float number between min [-79228162514264337593543950335M] and max [79228162514264337593543950335M] (ReadOnly).

Declaration

```
public static decimal DecimalRange()
```

Returns

Type	Description
decimal (https://learn.microsoft.com/dotnet/api/system.decimal)	Returns a pseudo-random floating-point number according to the range defined in the parameters.

DecimalRange(decimal)

Return a random float number between min [-79228162514264337593543950335M] and max [exclusive] (ReadOnly).

Declaration

```
public static decimal DecimalRange(decimal max)
```

Parameters

Type	Name	Description
decimal (https://learn.microsoft.com/dotnet/api/system.decimal)	*max*	Defines the maximum range of the pseudo-random number.

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Returns

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Type	Description
decimal (https://learn.microsoft.com/dotnet/api/system.decimal)	Returns a pseudo-random floating-point number according to the range defined in the parameters.

DecimalRange(decimal, decimal)

Return a random float number between min [inclusive] and max [exclusive] (ReadOnly).

Declaration

```
public static decimal DecimalRange(decimal min, decimal max)
```

Parameters

Type	Name	Description
decimal (https://learn.microsoft.com/dotnet/api/system.decimal)	*min*	Sets the minimum range of the pseudo-random number.
decimal (https://learn.microsoft.com/dotnet/api/system.decimal)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
decimal (https://learn.microsoft.com/dotnet/api/system.decimal)	Returns a pseudo-random floating-point number according to the range defined in the parameters.

DoubleRange()

Return a random float number between min [-1.7976931348623157E+308] and max [1.7976931348623157E+308] (ReadOnly).

Declaration

```
public static double DoubleRange()
```

Returns

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Screen
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ScreenMode
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Type	Description
double (https://learn.microsoft.com/dotnet/api/system.double)	Returns a pseudo-random floating-point number according to the range defined in the parameters.

DoubleRange(double)

Return a random float number between min [-1.7976931348623157E+308] and max [exclusive] (ReadOnly).

Declaration

```
public static double DoubleRange(double max)
```

Parameters

Type	Name	Description
double (https://learn.microsoft.com/dotnet/api/system.double)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
double (https://learn.microsoft.com/dotnet/api/system.double)	Returns a pseudo-random floating-point number according to the range defined in the parameters.

DoubleRange(double, double)

Return a random float number between min [inclusive] and max [exclusive] (ReadOnly).

Declaration

```
public static double DoubleRange(double min, double max)
```

Parameters

Type	Name	Description
double (https://learn.microsoft.com/dotnet/api/system.double)	*min*	Sets the minimum range of the pseudo-random number.
double (https://learn.microsoft.com/dotnet/api/system.double)	*max*	Defines the maximum range of the pseudo-random number.

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Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

Returns

Type	Description
double (https://learn.microsoft.com/dotnet/api/system.double)	Returns a pseudo-random floating-point number according to the range defined in the parameters.

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FloatRange()

Return a random float number between min [-3.4028235E+38F] and max [3.4028235E+38F] (ReadOnly).

Declaration

```
public static float FloatRange()
```

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Returns a pseudo-random floating-point number according to the range defined in the parameters.

FloatRange(float)

Return a random float number between min [-3.4028235E+38F] and max [exclusive] (ReadOnly).

Declaration

```
public static float FloatRange(float max)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Returns a pseudo-random floating-point number according to the range defined in the parameters.

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FloatRange(float, float)

Return a random float number between min [inclusive] and max [exclusive] (ReadOnly).

Declaration

```
public static float FloatRange(float min, float max)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*min*	Sets the minimum range of the pseudo-random number.
float (https://learn.microsoft.com/dotnet/api/system.single)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Returns a pseudo-random floating-point number according to the range defined in the parameters.

InitSeed(in int)

Starts a new seed in the pseudo-random number generator.

Declaration

```
public static void InitSeed(in int seed)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*seed*	A number used to calculate a starting value for the pseudo-random number sequence. If a negative number is specified, the absolute value of the number is used.

IntRange()

Return a random integer number between min [-2147483648] and max [2147483647] (ReadOnly).

Declaration

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- GDFeature (Cobilas.GodotEngine.Utility.GDFea
- Gizmos (Cobilas.GodotEngine.Utility.Gizmo
- IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
- IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
- IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
- IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
- LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
- LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
- NullNode (Cobilas.GodotEngine.Utility.NullNc
- Randomico (Cobilas.GodotEngine.Utility.Rando
- Rect2D (Cobilas.GodotEngine.Utility.Rect2D
- Resolution (Cobilas.GodotEngine.Utility.Resolu
- RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
- Screen (Cobilas.GodotEngine.Utility.Screen
- ScreenMode (Cobilas.GodotEngine.Utility.Screen

```
public static int IntRange()
```

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

IntRange(int)

Return a random integer number between min [-2147483648] and max [exclusive] (ReadOnly).

Declaration

```
public static int IntRange(int max)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

IntRange(int, int)

Return a random integer number between min [inclusive] and max [exclusive] (ReadOnly).

Declaration

```
public static int IntRange(int min, int max)
```

Parameters

CustomResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNo
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*min*	Sets the minimum range of the pseudo-random number.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

LongRange()

Return a random integer number between min [-9223372036854775808] and max [9223372036854775807] (ReadOnly).

Declaration

```
public static long LongRange()
```

Returns

Type	Description
long (https://learn.microsoft.com/dotnet/api/system.int64)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

LongRange(long)

Return a random integer number between min [-9223372036854775808] and max [exclusive] (ReadOnly).

Declaration

```
public static long LongRange(long max)
```

Parameters

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

- CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
- DebugLog (Cobilas.GodotEngine.Utility.Debug
- DisplayInfo (Cobilas.GodotEngine.Utility.Display
- FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
- GDFeature (Cobilas.GodotEngine.Utility.GDFea
- Gizmos (Cobilas.GodotEngine.Utility.Gizmo
- IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
- IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
- IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
- IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
- LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
- LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
- NullNode (Cobilas.GodotEngine.Utility.NullNc
- Randomico (Cobilas.GodotEngine.Utility.Rando
- Rect2D (Cobilas.GodotEngine.Utility.Rect2D
- Resolution (Cobilas.GodotEngine.Utility.Resolu
- RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
- Screen (Cobilas.GodotEngine.Utility.Screen
- ScreenMode (Cobilas.GodotEngine.Utility.Screen

Type	Name	Description
long (https://learn.microsoft.com/dotnet/api/system.int64)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
long (https://learn.microsoft.com/dotnet/api/system.int64)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

LongRange(long, long)

Return a random integer number between min [inclusive] and max [exclusive] (ReadOnly).

Declaration

```
public static long LongRange(long min, long max)
```

Parameters

Type	Name	Description
long (https://learn.microsoft.com/dotnet/api/system.int64)	*min*	Sets the minimum range of the pseudo-random number.
long (https://learn.microsoft.com/dotnet/api/system.int64)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
long (https://learn.microsoft.com/dotnet/api/system.int64)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

SByteRange()

Return a random integer number between min [-128] and max [127] (ReadOnly).

Declaration

```
public static sbyte SByteRange()
```


CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNc
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

Returns

Type	Description
sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNo
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

SByteRange(sbyte)

Return a random integer number between min [-128] and max [exclusive] (ReadOnly).

Declaration

```
public static sbyte SByteRange(sbyte max)
```

Parameters

Type	Name	Description
sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

SByteRange(sbyte, sbyte)

Return a random integer number between min [inclusive] and max [exclusive] (ReadOnly).

Declaration

```
public static sbyte SByteRange(sbyte min, sbyte max)
```

Parameters

Type	Name	Description
sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte)	*min*	Sets the minimum range of the pseudo-random number.

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

Type	Name	Description
sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

ShortRange()

Return a random integer number between min [-32768] and max [32767] (ReadOnly).

Declaration

```
public static short ShortRange()
```

Returns

Type	Description
short (https://learn.microsoft.com/dotnet/api/system.int16)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

ShortRange(short)

Return a random integer number between min [-32768] and max [exclusive] (ReadOnly).

Declaration

```
public static short ShortRange(short max)
```

Parameters

Type	Name	Description
short (https://learn.microsoft.com/dotnet/api/system.int16)	*max*	Defines the maximum range of the pseudo-random number.

Returns

+ Cobilas.GodotEngine.Utility.IO

(Cobilas.GodotEngine.Utility.IO

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNc
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

Type	Description
short (https://learn.microsoft.com/dotnet/api/system.int16)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

CustomResourceLoaded
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNc
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTi
Screen
(Cobilas.GodotEngine.Utility.Screen
ScreenMode
(Cobilas.GodotEngine.Utility.Screen

ShortRange(short, short)

Return a random integer number between min [inclusive] and max [exclusive] (ReadOnly).

Declaration

```
public static short ShortRange(short min, short max)
```

Parameters

Type	Name	Description
short (https://learn.microsoft.com/dotnet/api/system.int16)	*min*	Sets the minimum range of the pseudo-random number.
short (https://learn.microsoft.com/dotnet/api/system.int16)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
short (https://learn.microsoft.com/dotnet/api/system.int16)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

ULongRange()

Return a random integer number between min [0] and max [18446744073709551615] (ReadOnly).

Declaration

```
public static ulong ULongRange()
```

Returns

Type	Description
ulong (https://learn.microsoft.com/dotnet/api/system.uint64)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IO

ULongRange(ulong)

Return a random integer number between min [0] and max [exclusive] (ReadOnly).

Declaration

```
public static ulong ULongRange(ulong max)
```

Parameters

Type	Name	Description
ulong (https://learn.microsoft.com/dotnet/api/system.uint64)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
ulong (https://learn.microsoft.com/dotnet/api/system.uint64)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

ULongRange(ulong, ulong)

Return a random integer number between min [inclusive] and max [exclusive] (ReadOnly).

Declaration

```
public static ulong ULongRange(ulong min, ulong max)
```

Parameters

Type	Name	Description
ulong (https://learn.microsoft.com/dotnet/api/system.uint64)	*min*	Sets the minimum range of the pseudo-random number.
ulong (https://learn.microsoft.com/dotnet/api/system.uint64)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
ulong (https://learn.microsoft.com/dotnet/api/system.uint64)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

+ Cobilas.GodotEngine.Utility.IO

- CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
- DebugLog (Cobilas.GodotEngine.Utility.Debug
- DisplayInfo (Cobilas.GodotEngine.Utility.Display
- FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
- GDFeature (Cobilas.GodotEngine.Utility.GDFea
- Gizmos (Cobilas.GodotEngine.Utility.Gizmo
- IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
- IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
- IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
- IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
- LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
- LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
- NullNode (Cobilas.GodotEngine.Utility.NullNc
- Randomico (Cobilas.GodotEngine.Utility.Rando
- Rect2D (Cobilas.GodotEngine.Utility.Rect2D
- Resolution (Cobilas.GodotEngine.Utility.Resolu
- RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
- Screen (Cobilas.GodotEngine.Utility.Screen
- ScreenMode (Cobilas.GodotEngine.Utility.Screen

UShortRange()

Return a random integer number between min [0] and max [65535] (ReadOnly).

Declaration

```
public static ushort UShortRange()
```

Returns

Type	Description
ushort (https://learn.microsoft.com/dotnet/api/system.uint16)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

UShortRange(ushort)

Return a random integer number between min [0] and max [exclusive] (ReadOnly).

Declaration

```
public static ushort UShortRange(ushort max)
```

Parameters

Type	Name	Description
ushort (https://learn.microsoft.com/dotnet/api/system.uint16)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
ushort (https://learn.microsoft.com/dotnet/api/system.uint16)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

UShortRange(ushort, ushort)

Return a random integer number between min [inclusive] and max [exclusive] (ReadOnly).

Declaration

```
public static ushort UShortRange(ushort min, ushort max)
```

Parameters

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

- CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
- DebugLog (Cobilas.GodotEngine.Utility.Debug
- DisplayInfo (Cobilas.GodotEngine.Utility.Display
- FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
- GDFeature (Cobilas.GodotEngine.Utility.GDFea
- Gizmos (Cobilas.GodotEngine.Utility.Gizmo
- IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
- IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
- IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
- IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
- LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
- LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
- NullNode (Cobilas.GodotEngine.Utility.NullNo
- Randomico (Cobilas.GodotEngine.Utility.Rando
- Rect2D (Cobilas.GodotEngine.Utility.Rect2D
- Resolution (Cobilas.GodotEngine.Utility.Resolu
- RunTimeSecond (Cobilas.GodotEngine.Utility.RunT
- Screen (Cobilas.GodotEngine.Utility.Screen
- ScreenMode (Cobilas.GodotEngine.Utility.Screen

Type	Name	Description
ushort (https://learn.microsoft.com/dotnet/api/system.uint16)	*min*	Sets the minimum range of the pseudo-random number.
ushort (https://learn.microsoft.com/dotnet/api/system.uint16)	*max*	Defines the maximum range of the pseudo-random number.

Returns

Type	Description
ushort (https://learn.microsoft.com/dotnet/api/system.uint16)	Returns a pseudo-random number of integer type according to the range defined in the parameters.

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNc
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**

Struct Rect2D

Represents a 2D rectangle with advanced properties for geometric transformations.

Filter by title

Implements

IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)>

IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

Inherited Members

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: cobilas.godot.utility.dll

Syntax

```
[Serializable]
public struct Rect2D : IEquatable<Rect2D>, IFormattable
```

Remarks

This structure extends the functionality of a traditional rectangle, including rotation, scale, pivot, and minimum size, making it useful for advanced UI and sprite operations in the Godot Engine.

Constructors

Rect2D(Vector2D, Vector2D, Vector2D, float, Vector2D, Vector2D)

Initializes a new instance of the Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) structure using vectors.

Declaration

```
public Rect2D(Vector2D position, Vector2D size, Vector2D minSize, float rotation, Vector2D s
cale, Vector2D pivot)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*position*	Position of the rectangle.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*size*	Size of the rectangle.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*minSize*	Minimum size of the rectangle.

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor

DebugLog (Cobilas.GodotEngine.Utility.Debug

DisplayInfo (Cobilas.GodotEngine.Utility.Display

FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR

GDFeature (Cobilas.GodotEngine.Utility.GDFea

Gizmos (Cobilas.GodotEngine.Utility.IGizmo

IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC

IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF

IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU

IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV

LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix

LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu

NullNode (Cobilas.GodotEngine.Utility.NullNo

Randomico (Cobilas.GodotEngine.Utility.Random

Rect2D (Cobilas.GodotEngine.Utility.Rect2D

Resolution (Cobilas.GodotEngine.Utility.Resolu

RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir

Screen (Cobilas.GodotEngine.Utility.Screen

ScreenMode (Cobilas.GodotEngine.Utility.Screen

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*rotation*	Rotation in degrees.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*scale*	Scale of the rectangle.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*pivot*	Pivot point of the rectangle.

CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
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LastFixedRunTimeSecond
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NullNode
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Rect2D
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Resolution
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RunTimeSecond
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Screen
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ScreenMode
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Rect2D(Rect2D)

Initializes a new instance of the Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) structure by copying another instance.

Declaration

```
public Rect2D(Rect2D rect)
```

Parameters

Type	Name	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	*rect*	Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) to be copied.

Rect2D(Rect2, Vector2D, float, Vector2D, Vector2D)

Initializes a new instance of the Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) structure from a Godot Godot. Rect2.

Declaration

```
public Rect2D(Rect2 rect, Vector2D minSize, float rotation, Vector2D scale, Vector2D pivot)
```

Parameters

Type	Name	Description
Rect2	*rect*	Godot's base rectangle.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*minSize*	Minimum size of the rectangle.
float (https://learn.microsoft.com/dotnet/api/system.single)	*rotation*	Rotation in degrees.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*scale*	Rectangle scale.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*pivot*	Rectangle pivot point.

+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IO

Rect2D(float, float, float, float, float, float, float, float, float, float, float)

Represents a 2D rectangle with advanced properties for geometric transformations.

Declaration

```
public Rect2D(float x, float y, float width, float height, float minWidth, float minHeight,
float rotation, float scaleX, float scaleY, float pivotX, float pivotY)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*x*	X coordinate of the rectangle's position.
float (https://learn.microsoft.com/dotnet/api/system.single)	*y*	Y coordinate of the rectangle's position.
float (https://learn.microsoft.com/dotnet/api/system.single)	*width*	Width of the rectangle.
float (https://learn.microsoft.com/dotnet/api/system.single)	*height*	Height of the rectangle.
float (https://learn.microsoft.com/dotnet/api/system.single)	*minWidth*	Minimum width of the rectangle.
float (https://learn.microsoft.com/dotnet/api/system.single)	*minHeight*	Minimum height of the rectangle.
float (https://learn.microsoft.com/dotnet/api/system.single)	*rotation*	Rotation of the rectangle in degrees.
float (https://learn.microsoft.com/dotnet/api/system.single)	*scaleX*	Scale of the rectangle on the X axis.
float (https://learn.microsoft.com/dotnet/api/system.single)	*scaleY*	Scale of the rectangle on the Y axis.
float (https://learn.microsoft.com/dotnet/api/system.single)	*pivotX*	X coordinate of the pivot point of the rectangle.
float (https://learn.microsoft.com/dotnet/api/system.single)	*pivotY*	Y coordinate of the rectangle's pivot point.

Cobilas.GodotEngine.Utility.IO

Returns

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
YieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNc
Randomico (Cobilas.GodotEngine.Utility.Ran
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

This structure extends the functionality of a traditional rectangle, including rotation, scale, pivot, and minimum size, making it useful for advanced UI and sprite operations in the Godot Engine.

Properties

Bottom

Gets the Y coordinate of the rectangle's base.

Declaration

```
public readonly float Bottom { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Y coordinate of the base.

Empty

Gets an empty Rect2D instance.

Declaration

```
public static Rect2D Empty { get; }
```

Property Value

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	An empty instance of Rect2D.

Left

Gets the X coordinate of the left side of the rectangle.

Declaration

```
public readonly float Left { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	X coordinate on the left side.

MinSize

Gets the minimum size of the rectangle.

Declaration

```
public readonly Vector2D MinSize { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	A Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) representing the minimum size of the rectangle.

MinSizeScale

Gets the minimum size of the rectangle applied to the scale.

Declaration

```
public readonly Vector2D MinSizeScale { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	A Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) representing the minimum scaled size of the rectangle.

Pivot

Gets the pivot point of the rectangle.

Declaration

```
public readonly Vector2D Pivot { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	A Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) representing the pivot point of the rectangle.

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNo
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

PivotScale

Gets the pivot of the rectangle applied to the scale.

Declaration

```
public readonly Vector2D PivotScale { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	A Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) representing the scaled pivot of the rectangle.

Position

Gets the position of the top-left corner of the rectangle.

Declaration

```
public readonly Vector2D Position { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	A Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) representing the position of the rectangle.

RadianRotation

Gets the rotation of the rectangle in radians.

Declaration

```
public readonly float RadianRotation { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Angle of rotation in radians.

+ Cobilas.GodotEngine.Utility.IO

Right

(Cobilas.GodotEngine.Utility.IO

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNc
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

Gets the X coordinate of the right side of the rectangle.

Declaration

```
public readonly float Right { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	X coordinate on the right side.

Rotation

Gets the rotation of the rectangle in degrees.

Declaration

```
public readonly float Rotation { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Rotation angle in degrees.

Scale

Gets the scale of the rectangle.

Declaration

```
public readonly Vector2D Scale { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	A Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) representing the scale of the rectangle.

Size

Gets the size of the rectangle.

Declaration

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
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IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
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IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
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Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
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+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC

```
public readonly Vector2D Size { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	A Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) representing the size of the rectangle.

SizeScale

Gets the size of the rectangle applied to the scale.

Declaration

```
public readonly Vector2D SizeScale { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	A Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) representing the scaled size of the rectangle.

Top

Gets the Y coordinate of the top of the rectangle.

Declaration

```
public readonly float Top { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Y coordinate of the top.

Methods

+ Cobilas.GodotEngine.Utility.Equals(Rect2D)

(Cobilas.GodotEngine.Utility.IC

CustomResolutionList
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DisplayInfo
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RunTimeSecond
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Screen
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ScreenMode
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Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(Rect2D other)
```

Parameters

Type	Name	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(object)

Indicates whether this instance and a specified object are equal.

Declaration

```
public override readonly bool Equals(object obj)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*obj*	The object to compare with the current instance.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if `obj` and this instance are the same type and represent the same value; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Overrides

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

+ Cobilas.GodotEngine.Utility.IO

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DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
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IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
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NullNode (Cobilas.GodotEngine.Utility.NullNc
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTi
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

GetHashCode()

Returns the hash code for this instance.

Declaration

```
public override readonly int GetHashCode()
```

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A 32-bit signed integer that is the hash code for this instance.

Overrides

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

HasPoint(Vector2D)

Checks if a point is inside the rectangle, considering rotation and transformations.

Declaration

```
public readonly bool HasPoint(Vector2D point)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*point*	The point to be checked.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true if the point is inside the rectangle; otherwise, false.

SetMinSize(Vector2D)

Sets the minimum size of the rectangle using a Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html).

Declaration

```
public Rect2D SetMinSize(Vector2D minSize)
```

Parameters

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CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
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NullNode (Cobilas.GodotEngine.Utility.NullNc
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Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*minSize*	Vector containing the minimum size.

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

SetMinSize(Vector2DInt)

Sets the minimum size of the rectangle using a Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html).

Declaration

```
public Rect2D SetMinSize(Vector2DInt minSize)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*minSize*	Integer vector containing the minimum size.

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

SetMinSize(float, float)

Sets the minimum size of the rectangle using individual values.

Declaration

```
public Rect2D SetMinSize(float minWidth, float minHeight)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*minWidth*	Minimum width of the rectangle.
float (https://learn.microsoft.com/dotnet/api/system.single)	*minHeight*	Minimum height of the rectangle.

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CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNc
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2L
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

SetPivot(Vector2D)

Sets the rectangle's pivot point using Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html).

Declaration

```
public Rect2D SetPivot(Vector2D pivot)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*pivot*	Vector containing the pivot.

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

SetPivot(Vector2DInt)

Sets the rectangle's pivot point using Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html).

Declaration

```
public Rect2D SetPivot(Vector2DInt pivot)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*pivot*	Integer vector containing the pivot.

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

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- CustomResolution2D (Cobilas.GodotEngine.Utility.Custom
- DebugLog (Cobilas.GodotEngine.Utility.Debug
- DisplayInfo (Cobilas.GodotEngine.Utility.Display
- FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
- GDFeature (Cobilas.GodotEngine.Utility.GDFea
- Gizmos (Cobilas.GodotEngine.Utility.Gizmo
- IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
- IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
- IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
- IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
- LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
- LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
- NullNode (Cobilas.GodotEngine.Utility.NullNo
- Randomico (Cobilas.GodotEngine.Utility.Rando
- Rect2D (Cobilas.GodotEngine.Utility.Rect2D
- Resolution (Cobilas.GodotEngine.Utility.Resolu
- RunTimeSecond (Cobilas.GodotEngine.Utility.RunTi
- Screen (Cobilas.GodotEngine.Utility.Screen
- ScreenMode (Cobilas.GodotEngine.Utility.Screen

SetPivot(float, float)

Sets the rectangle's pivot point using individual values.

Declaration

```
public Rect2D SetPivot(float pivotX, float pivotY)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*pivotX*	X coordinate of the pivot.
float (https://learn.microsoft.com/dotnet/api/system.single)	*pivotY*	Y coordinate of the pivot.

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

SetPosition(Vector2D)

Sets the rectangle's position using a Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html).

Declaration

```
public Rect2D SetPosition(Vector2D position)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*position*	Vector containing the position.

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

SetPosition(Vector2DInt)

Sets the rectangle's position using a Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html).

Declaration

+ Cobilas.GodotEngine.Utility.

IO

(Cobilas.GodotEngine.Utility.IO

CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Displa
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir
Screen
(Cobilas.GodotEngine.Utility.Screen
ScreenMode
(Cobilas.GodotEngine.Utility.Screen

```
public Rect2D SetPosition(Vector2DInt position)
```

Parameters

Type		Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)		*position*	Integer vector containing the position.

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

SetPosition(float, float)

Defines the rectangle's position using individual coordinates.

Declaration

```
public Rect2D SetPosition(float x, float y)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*x*	X coordinate of the position.
float (https://learn.microsoft.com/dotnet/api/system.single)	*y*	Y coordinate of the position.

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

SetRotation(float)

Defines the rotation of the rectangle in degrees.

Declaration

```
public Rect2D SetRotation(float rotation)
```

Parameters

+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
  - CustomResolutionList (Cobilas.GodotEngine.Utility.Custor
  - DebugLog (Cobilas.GodotEngine.Utility.Debug
  - DisplayInfo (Cobilas.GodotEngine.Utility.Display
  - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
  - GDFeature (Cobilas.GodotEngine.Utility.GDFea
  - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
  - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
  - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
  - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
  - IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
  - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
  - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
  - NullNode (Cobilas.GodotEngine.Utility.NullNo
  - Randomico (Cobilas.GodotEngine.Utility.Rando
  - Rect2D (Cobilas.GodotEngine.Utility.Rect2D
  - Resolution (Cobilas.GodotEngine.Utility.Resolu
  - RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
  - Screen (Cobilas.GodotEngine.Utility.Screen
  - ScreenMode (Cobilas.GodotEngine.Utility.Screen

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*rotation*	Rotation angle in degrees.

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

SetScale(Vector2D)

Define a escala do retângulo usando Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html).

Declaration

```
public Rect2D SetScale(Vector2D scale)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*scale*	Vetor contendo a escala.

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

SetScale(Vector2DInt)

Sets the rectangle's scale using Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html).

Declaration

```
public Rect2D SetScale(Vector2DInt scale)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*scale*	Integer vector containing the scale.

Returns

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedDeltaTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNo
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

SetScale(float, float)

Sets the rectangle's scale using individual values.

Declaration

```
public Rect2D SetScale(float scaleX, float scaleY)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*scaleX*	Scale on the X axis.
float (https://learn.microsoft.com/dotnet/api/system.single)	*scaleY*	Scale on the Y axis.

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

SetSize(Vector2D)

Sets the size of the rectangle using a Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html).

Declaration

```
publin Rect2D SetSize(Vector2D size)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*size*	Vector containing the size.

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

+Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNc
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

SetSize(Vector2DInt)

Sets the size of the rectangle using a Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html).

Declaration

```
public Rect2D SetSize(Vector2DInt size)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*size*	Integer vector containing the size.

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

SetSize(float, float)

Sets the size of the rectangle using individual values.

Declaration

```
public Rect2D SetSize(float width, float height)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*width*	Width of the rectangle.
float (https://learn.microsoft.com/dotnet/api/system.single)	*height*	Height of the rectangle.

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) itself to allow chained calls.

ToString()

Returns a string (https://learn.microsoft.com/dotnet/api/system.string) representing the current object.

Declaration

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNo
RandomNode (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

```
public override readonly string ToString()
```

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	A string (https://learn.microsoft.com/dotnet/api/system.string) representing the current object.

Overrides

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)

ToString(string)

Returns a string (https://learn.microsoft.com/dotnet/api/system.string) representing the current object (https://learn.microsoft.com/dotnet/api/system.object) using the specified format.

Declaration

```
public readonly string ToString(string format)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	A string (https://learn.microsoft.com/dotnet/api/system.string) representing the current object (https://learn.microsoft.com/dotnet/api/system.object).

ToString(string, IFormatProvider)

Returns a string (https://learn.microsoft.com/dotnet/api/system.string) that represents the current object (https://learn.microsoft.com/dotnet/api/system.object) using the specified format and format provider.

Declaration

```
public readonly string ToString(string format, IFormatProvider formatProvider)
```

Parameters

+ Cobilas.GodotEngine.Utility.IO

(Cobilas.GodotEngine.Utility.IO

CustomResolutionList
(Cobilas.GodotEngine.Utility.Custom
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTi
Screen
(Cobilas.GodotEngine.Utility.Screen
ScreenMode
(Cobilas.GodotEngine.Utility.Screen

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*formatProvider*	The provider to use to format the value.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	A string (https://learn.microsoft.com/dotnet/api/system.string) that represents the current object (https://learn.microsoft.com/dotnet/api/system.object).

Operators

operator ==(Rect2D, Rect2D)

Determines whether two structures Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) are equal.

Declaration

```
public static bool operator ==(Rect2D A, Rect2D B)
```

Parameters

Type	Name	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	*A*	The first structure to compare.
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	*B*	The second structure to compare.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true if A and B are equal; otherwise, false.

explicit operator Rect2(Rect2D)

Explicitly converts a Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) to a Godot Godot.Rect2.

Declaration

```
public static explicit operator Rect2(Rect2D R)
```

Parameters

+ **Cobilas.GodotEngine.Utility.IO**
  - **(Cobilas.GodotEngine.Utility.IO**
    - CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
    - DebugLog (Cobilas.GodotEngine.Utility.Debug
    - DisplayInfo (Cobilas.GodotEngine.Utility.Display
    - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
    - GDFeature (Cobilas.GodotEngine.Utility.GDFea
    - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
    - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
    - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
    - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
    - IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
    - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
    - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
    - NullNode (Cobilas.GodotEngine.Utility.NullNo
    - Randomico (Cobilas.GodotEngine.Utility.Rando
    - Rect2D (Cobilas.GodotEngine.Utility.Rect2D
    - Resolution (Cobilas.GodotEngine.Utility.Resolu
    - RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
    - Screen (Cobilas.GodotEngine.Utility.Screen
    - ScreenMode (Cobilas.GodotEngine.Utility.Screen

Type	Name	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	*R*	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) to convert.

Returns

Type	Description
Rect2	A Rect2 containing only position and size.

explicit operator float(Rect2D)

Explicitly converts Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) to a float (https://learn.microsoft.com/dotnet/api/system.single) value representing its rotation.

Declaration

```
public static explicit operator float(Rect2D R)
```

Parameters

Type	Name	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	*R*	The Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) to convert.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The rotation of the Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) as a float (https://learn.microsoft.com/dotnet/api/system.single).

operator !=(Rect2D, Rect2D)

Determines whether two structures Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) are different.

Declaration

```
public static bool operator !=(Rect2D A, Rect2D B)
```

Parameters

Type	Name	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	*A*	The first structure to compare.
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	*B*	The second structure to compare.

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

- CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
- DebugLog (Cobilas.GodotEngine.Utility.Debug
- DisplayInfo (Cobilas.GodotEngine.Utility.Display
- FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
- GDFeature (Cobilas.GodotEngine.Utility.GDFea
- Gizmos (Cobilas.GodotEngine.Utility.Gizmo
- IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
- IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
- IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
- IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
- LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
- LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
- NullNode (Cobilas.GodotEngine.Utility.NullNo
- Randomico (Cobilas.GodotEngine.Utility.Rando
- Rect2D (Cobilas.GodotEngine.Utility.Rect2D
- Resolution (Cobilas.GodotEngine.Utility.Resolu
- RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
- Screen (Cobilas.GodotEngine.Utility.Screen
- ScreenMode (Cobilas.GodotEngine.Utility.Screen

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true if A and B are different; otherwise, false.

Implements

IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

CustomResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNc
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir
Screen
(Cobilas.GodotEngine.Utility.Screen
ScreenMode
(Cobilas.GodotEngine.Utility.Screen

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC

Struct Resolution

Stores information about a screen resolution.

Filter by title

Implements

IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<Resolution (Cobilas.GodotEngine.Utility.Resolution.html)>
IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)>
IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)>
IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<Vector2>
IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<int (https://learn.microsoft.com/dotnet/api/system.int32)>

Inherited Members

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: cobilas.godot.utility.dll

Syntax

```
[Serializable]
public readonly struct Resolution : IEquatable<Resolution>, IEquatable<Vector2D>, IEquatable<Vector2DInt>, IEquatable<Vector2>, IEquatable<int>
```

Constructors

Resolution(in Vector2D, in int)

Starts a new instance of the object.

Declaration

```
public Resolution(in Vector2D resolution, in int frequency)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*resolution*	Screen resolution.

+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Displa
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmo (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNo
Random (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*frequency*	Screen frequency.

Resolution(in Vector2DInt, in int)

Starts a new instance of the object.

Declaration

```
public Resolution(in Vector2DInt resolution, in int frequency)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*resolution*	Screen resolution.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*frequency*	Screen frequency.

Resolution(in Vector2, in int)

Starts a new instance of the object.

Declaration

```
public Resolution(in Vector2 resolution, in int frequency)
```

Parameters

Type	Name	Description
Vector2	*resolution*	Screen resolution.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*frequency*	Screen frequency.

Resolution(in int, in int, in int)

Starts a new instance of the object.

Declaration

```
public Resolution(in int width, in int height, in int frequency)
```

Parameters

+ Cobilas.GodotEngine.Utility.

IO

(Cobilas.GodotEngine.Utility.IO

CustomResolutionList
(Cobilas.GodotEngine.Utility.Custom
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTim
Screen
(Cobilas.GodotEngine.Utility.Screen
ScreenMode
(Cobilas.GodotEngine.Utility.Screen

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*width*	The width of the screen.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*height*	The height of the screen.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*frequency*	Screen frequency.

Resolution(in float, in float, in int)

Starts a new instance of the object.

Declaration

```
public Resolution(in float width, in float height, in int frequency)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*width*	The width of the screen.
float (https://learn.microsoft.com/dotnet/api/system.single)	*height*	The height of the screen.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*frequency*	Screen frequency.

Properties

Frequency

Screen frequency.

Declaration

```
public int Frequency { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns the frequency of this resolution.

Height

The height of the screen.

Declaration

CustonResolutionList
(Cobilas.GodotEngine.Utility.Custo
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
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NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTim
Screen
(Cobilas.GodotEngine.Utility.Screen
ScreenMode
(Cobilas.GodotEngine.Utility.Screen

+ Cobilas.GodotEngine.Utility.IO

(Cobilas.GodotEngine.Utility.IO

```
public float Height { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Returns the width of this resolution.

Width

The width of the screen.

Declaration

```
public float Width { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Returns the height of this resolution.

Methods

Equals(Vector2D)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public bool Equals(Vector2D other)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*other*	An object to compare with this object.

Returns

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNc
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSeiton (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugInfo
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir
Screen
(Cobilas.GodotEngine.Utility.Screen
ScreenMode
(Cobilas.GodotEngine.Utility.Screen

Equals(Vector2DInt)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public bool Equals(Vector2DInt other)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(Resolution)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public bool Equals(Resolution other)
```

Parameters

Type	Name	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	*other*	An object to compare with this object.

Returns

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(Vector2)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public bool Equals(Vector2 other)
```

Parameters

Type	Name	Description
Vector2	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(int)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public bool Equals(int other)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*other*	An object to compare with this object.

Returns

+ Cobilas.GodotEngine.Utility.IO

(Cobilas.GodotEngine.Utility.IO

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
Debug (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNo
Random (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(object)

Indicates whether this instance and a specified object are equal.

Declaration

```
public override bool Equals(object obj)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*obj*	The object to compare with the current instance.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if `obj` and this instance are the same type and represent the same value; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Overrides

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

GetHashCode()

Returns the hash code for this instance.

Declaration

```
public override int GetHashCode()
```

Returns

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CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
Debug (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNc
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A 32-bit signed integer that is the hash code for this instance.

Overrides

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

ToString()

Returns the fully qualified type name of this instance.

Declaration

```
public override string ToString()
```

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The fully qualified type name.

Overrides

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)

Operators

operator ==(Resolution, Resolution)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(Resolution A, Resolution B)
```

Parameters

Type	Name	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	*A*	Object to be compared.
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

+(Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

- CustomResolutionList (Cobilas.GodotEngine.Utility.Custor
- DebugLog (Cobilas.GodotEngine.Utility.Debug
- DisplayInfo (Cobilas.GodotEngine.Utility.Display
- FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
- GDFeature (Cobilas.GodotEngine.Utility.GDFea
- Gizmos (Cobilas.GodotEngine.Utility.Gizmo
- IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
- IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
- IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
- IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
- LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
- LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
- NullNode (Cobilas.GodotEngine.Utility.NullNo
- Randomico (Cobilas.GodotEngine.Utility.Rando
- Rect2D (Cobilas.GodotEngine.Utility.Rect2D
- Resolution (Cobilas.GodotEngine.Utility.Resolu
- RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
- Screen (Cobilas.GodotEngine.Utility.Screen
- ScreenMode (Cobilas.GodotEngine.Utility.Screen

explicit operator Vector2D(Resolution)

Explicit conversion operator.(Resolution (Cobilas.GodotEngine.Utility.Resolution.html) to Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static explicit operator Vector2D(Resolution R)
```

Parameters

Type	Name	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	*R*	Object to be converted.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	

explicit operator Vector2DInt(Resolution)

Explicit conversion operator.(Resolution (Cobilas.GodotEngine.Utility.Resolution.html) to Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html))

Declaration

```
public static explicit operator Vector2DInt(Resolution R)
```

Parameters

Type	Name	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	*R*	Object to be converted.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	

explicit operator Vector2(Resolution)

Explicit conversion operator.(Resolution (Cobilas.GodotEngine.Utility.Resolution.html) to Godot.Vector2)

Declaration

```
public static explicit operator Vector2(Resolution R)
```

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNo
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

Parameters

Type	Name	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	*R*	Object to be converted.

Returns

Type	Description
Vector2	

explicit operator int(Resolution)

Explicit conversion operator (Resolution (Cobilas.GodotEngine.Utility.Resolution.html) to int (https://learn.microsoft.com/dotnet/api/system.int32))

Declaration

```
public static explicit operator int(Resolution R)
```

Parameters

Type	Name	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	*R*	Object to be converted.

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	

operator != (Resolution, Resolution)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(Resolution A, Resolution B)
```

Parameters

Type	Name	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	*A*	Object to be compared.
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	*B*	Object of comparison.

Returns

(Cobilas.GodotEngine.Utility.IC

- CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
- DebugLog (Cobilas.GodotEngine.Utility.Debug
- DisplayInfo (Cobilas.GodotEngine.Utility.Display
- FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
- GDFeature (Cobilas.GodotEngine.Utility.GDFea
- Gizmos (Cobilas.GodotEngine.Utility.Gizmo
- IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
- IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
- IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
- IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
- LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
- LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
- NullNode (Cobilas.GodotEngine.Utility.NullNo
- Randomico (Cobilas.GodotEngine.Utility.Rando
- Rect2D (Cobilas.GodotEngine.Utility.Rect2D
- Resolution (Cobilas.GodotEngine.Utility.Resolu
- RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
- Screen (Cobilas.GodotEngine.Utility.Screen
- ScreenMode (Cobilas.GodotEngine.Utility.Screen

+ Cobilas.GodotEngine.Utility.

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

Implements

IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)

CustomResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
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LastFixedRunTimeSecond
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LastRunTimeSecond
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NullNode
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Randomico
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Rect2D
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RunTimeSecond
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Screen
(Cobilas.GodotEngine.Utility.Screen
ScreenMode
(Cobilas.GodotEngine.Utility.Screen

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC

Struct RunTimeSecond

This class represents a delay in seconds to methods that return IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.ienumerator) and use the keyword Yield.

This class is performed in the _Process(float) (https://learn.microsoft.com/dotnet/api/system.single).

Implements

IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldUpdate.html)
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldCoroutine.html)

Inherited Members

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)
ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)
ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)
Assembly: com.cobilas.godot.utility.dll

Syntax

```
public readonly struct RunTimeSecond : IYieldUpdate, IYieldCoroutine
```

Constructors

RunTimeSecond(double)

Creates a new instance of this object.

Declaration

```
public RunTimeSecond(double second)
```

Parameters

Type	Name	Description
double (https://learn.microsoft.com/dotnet/api/system.double)	*second*	

+ Cobilas.GodotEngine.Utility.

Implements

(Cobilas.GodotEngine.Utility.IC

IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldUpdate.html)

Filter by title
CustomResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.Fixed
GDFeature (Cobilas.GodotEngine.Utility.GDFea
GizmoEx (Cobilas.GodotEngine.Utility.GizmoEx)
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYield
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYield
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNo
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNc
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir
Screen
(Cobilas.GodotEngine.Utility.Screen
ScreenMode
(Cobilas.GodotEngine.Utility.Screen

+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**

Class Screen

Gets or changes game screen information.

Filter by title

CustomResolutionList
(Cobilas.GodotEngine.Utility.Cus
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNo
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTim
Screen
(Cobilas.GodotEngine.Utility.Screen
ScreenMode
(Cobilas.GodotEngine.Utility.Screen
+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IO

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Screen

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class Screen
```

Properties

CurrentDisplay

The current screen.

Declaration

```
public static DisplayInfo CurrentDisplay { get; }
```

Property Value

Type	Description
DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html)	Returns a DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html) with the information of the current screen.

CurrentResolution

The current resolution of the game screen.

Declaration

```
public static Resolution CurrentResolution { get; }
```

Property Value

Type	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	Returns the current resolution of the game screen as Vector2D.

DisplayCount

Number of screens detected.

Declaration

```
public static int DisplayCount { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns the number of screens detected when starting the application.

Displays

Gets all detected screens.

Declaration

```
public static DisplayInfo[] Displays { get; }
```

Property Value

Type	Description
DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html)[]	Returns all screens that were detected.

Remarks

This property will only return all screens that were detected from the start of the application, if another screen is connected during the execution of the application it will not be detected.

- Cobilas.GodotEngine.Utility.
  - IO
    - (Cobilas.GodotEngine.Utility.IO
    - CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
    - DebugLog (Cobilas.GodotEngine.Utility.Debug
    - DisplayInfo (Cobilas.GodotEngine.Utility.Display
    - FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
    - GDFeature (Cobilas.GodotEngine.Utility.GDFea
    - Gizmos (Cobilas.GodotEngine.Utility.Gizmo
    - IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
    - IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
    - IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
    - IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
    - LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
    - LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
    - NullNode (Cobilas.GodotEngine.Utility.NullNo
    - Randomico (Cobilas.GodotEngine.Utility.Rando
    - Rect2D (Cobilas.GodotEngine.Utility.Rect2D
    - Resolution (Cobilas.GodotEngine.Utility.Resolu
    - RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
    - Screen (Cobilas.GodotEngine.Utility.Screen
    - ScreenMode (Cobilas.GodotEngine.Utility.Screen

Mode

Represents current game screen mode.

Declaration

```
public static ScreenMode Mode { get; set; }
```

Property Value

Type	Description
ScreenMode (Cobilas.GodotEngine.Utility.ScreenMode.html)	The current game screen mode.

OrphanList

This property contains all custom resolution lists that are not tied to a DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html).

Declaration

```
public static CustonResolutionList[] OrphanList { get; }
```

Property Value

Type	Description
CustonResolutionList (Cobilas.GodotEngine.Utility.CustonResolutionList.html)[]	Returns lists of custom resolutions that are not tied to a DisplayInfo (Cobilas.GodotEngine.Utility.DisplayInfo.html).

Resolutions

Represents the game screen resolutions.

Declaration

```
public static Resolution[] Resolutions { get; }
```

Property Value

Type	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)[]	Returns all stored resolutions.

ScreenRefreshRate

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNo
RandomIco (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

The current frequency of the game screen.

Declaration

```
public static float ScreenRefreshRate { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Returns the current game screen frequency as a floating point.

Methods

AddResolution(in float, in float)

Add a custom resolution

Declaration

```
public static void AddResolution(in float width, in float height)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*width*	The width of the screen.
float (https://learn.microsoft.com/dotnet/api/system.single)	*height*	The height of the screen.

AddResolution(in float, in float, in int)

Add a custom resolution

Declaration

```
public static void AddResolution(in float width, in float height, in int refreshRate)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*width*	The width of the screen.
float (https://learn.microsoft.com/dotnet/api/system.single)	*height*	The height of the screen.

+ Cobilas.GodotEngine.Utility.IO

(Cobilas.GodotEngine.Utility.IO

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNo
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTi
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*refreshRate*	The refresh rate of the monitor.

SetCurrentDisplay(in int)

Defines which screen will be used.

Declaration

```
public static void SetCurrentDisplay(in int index)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	The target index of the screen.

SetResolution(in Resolution)

sets the current screen resolution.

Declaration

```
public static void SetResolution(in Resolution resolution)
```

Parameters

Type	Name	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	*resolution*	The new screen resolution.

SetResolution(in Resolution, in ScreenMode)

sets the current screen resolution.

Declaration

```
public static void SetResolution(in Resolution resolution, in ScreenMode mode)
```

Parameters

Type	Name	Description
Resolution (Cobilas.GodotEngine.Utility.Resolution.html)	*resolution*	The new screen resolution.
ScreenMode (Cobilas.GodotEngine.Utility.ScreenMode.html)	*mode*	Screen display mode.

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

- CustomResolutionList (Cobilas.GodotEngine.Utility.Custor
- DebugLog (Cobilas.GodotEngine.Utility.Debug
- DisplayInfo (Cobilas.GodotEngine.Utility.Display
- FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
- GDFeature (Cobilas.GodotEngine.Utility.GDFea
- Gizmos (Cobilas.GodotEngine.Utility.Gizmo
- IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
- IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
- IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
- IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
- LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
- LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
- NullNode (Cobilas.GodotEngine.Utility.NullNc
- Randomico (Cobilas.GodotEngine.Utility.Rando
- Rect2D (Cobilas.GodotEngine.Utility.Rect2D
- Resolution (Cobilas.GodotEngine.Utility.Resolu
- RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
- Screen (Cobilas.GodotEngine.Utility.Screen
- ScreenMode (Cobilas.GodotEngine.Utility.Screen

SetResolution(in Vector2)

sets the current screen resolution.

Declaration

```
public static void SetResolution(in Vector2 size)
```

Parameters

Type	Name	Description
Vector2	*size*	The size of the screen.

SetResolution(in Vector2, in ScreenMode)

sets the current screen resolution.

Declaration

```
public static void SetResolution(in Vector2 size, in ScreenMode mode)
```

Parameters

Type	Name	Description
Vector2	*size*	The size of the screen.
ScreenMode (Cobilas.GodotEngine.Utility.ScreenMode.html)	*mode*	Screen display mode.

SetResolution(in Vector2, in int)

sets the current screen resolution.

Declaration

```
public static void SetResolution(in Vector2 size, in int refreshRate)
```

Parameters

Type	Name	Description
Vector2	*size*	The size of the screen.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*refreshRate*	The refresh rate of the monitor.

SetResolution(in Vector2, in int, in ScreenMode)

sets the current screen resolution.

CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
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NullNode
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Randomico
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Rect2D
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Resolution
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RunTimeSecond
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Screen
(Cobilas.GodotEngine.Utility.Screen
ScreenMode
(Cobilas.GodotEngine.Utility.Screen

+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IO

Declaration

```
public static void SetResolution(in Vector2 size, in int refreshRate, in ScreenMode mode)
```

Parameters

Type	Name	Description
Vector2	*size*	The size of the screen.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*refreshRate*	The refresh rate of the monitor.
ScreenMode (Cobilas.GodotEngine.Utility.ScreenMode.html)	*mode*	Screen display mode.

Exceptions

Type	Condition
ArgumentException (https://learn.microsoft.com/dotnet/api/system.argumentexception)	description

SetResolution(in float, in float)

sets the current screen resolution.

Declaration

```
public static void SetResolution(in float width, in float height)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*width*	The width of the screen.
float (https://learn.microsoft.com/dotnet/api/system.single)	*height*	The height of the screen.

SetResolution(in float, in float, in ScreenMode)

sets the current screen resolution.

Declaration

```
public static void SetResolution(in float width, in float height, in ScreenMode mode)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*width*	The width of the screen.
float (https://learn.microsoft.com/dotnet/api/system.single)	*height*	The height of the screen.

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

CustonResolutionList (Cobilas.GodotEngine.Utility.Custor
DebugLog (Cobilas.GodotEngine.Utility.Debug
DisplayInfo (Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond (Cobilas.GodotEngine.Utility.FixedR
GDFeature (Cobilas.GodotEngine.Utility.GDFea
Gizmos (Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine (Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate (Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate (Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile (Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond (Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond (Cobilas.GodotEngine.Utility.LastRu
NullNode (Cobilas.GodotEngine.Utility.NullNc
Randomico (Cobilas.GodotEngine.Utility.Rando
Rect2D (Cobilas.GodotEngine.Utility.Rect2D
Resolution (Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond (Cobilas.GodotEngine.Utility.RunTir
Screen (Cobilas.GodotEngine.Utility.Screen
ScreenMode (Cobilas.GodotEngine.Utility.Screen

Type	Name	Description
ScreenMode (Cobilas.GodotEngine.Utility.ScreenMode.html)	*mode*	Screen display mode.

SetResolution(in float, in float, in int)

sets the current screen resolution.

Declaration

```
public static void SetResolution(in float width, in float height, in int refreshRate)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*width*	The width of the screen.
float (https://learn.microsoft.com/dotnet/api/system.single)	*height*	The height of the screen.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*refreshRate*	The refresh rate of the monitor.

SetResolution(in float, in float, in int, in ScreenMode)

sets the current screen resolution.

Declaration

```
public static void SetResolution(in float width, in float height, in int refreshRate, in Scr
eenMode mode)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*width*	The width of the screen.
float (https://learn.microsoft.com/dotnet/api/system.single)	*height*	The height of the screen.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*refreshRate*	The refresh rate of the monitor.
ScreenMode (Cobilas.GodotEngine.Utility.ScreenMode.html)	*mode*	Screen display mode.

CustomResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNc
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
RunTimeSecond
(Cobilas.GodotEngine.Utility.RunTir
Screen
(Cobilas.GodotEngine.Utility.Screen
ScreenMode
(Cobilas.GodotEngine.Utility.Screen

+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**

Enum ScreenMode

Represents screen modes.

Filter by title

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public enum ScreenMode : byte
```

Fields

Name	Description
Borderless	This mode will maintain a borderless, non-resizable window.
Fullscreen	This mode will make the screen exclusively for the application.
Resizable	This mode enables the screen in resizable windowed mode.

CustonResolutionList
(Cobilas.GodotEngine.Utility.Custor
DebugLog
(Cobilas.GodotEngine.Utility.Debug
DisplayInfo
(Cobilas.GodotEngine.Utility.Display
FixedRunTimeSecond
(Cobilas.GodotEngine.Utility.FixedR
GDFeature
(Cobilas.GodotEngine.Utility.GDFea
Gizmos
(Cobilas.GodotEngine.Utility.Gizmo
IYieldCoroutine
(Cobilas.GodotEngine.Utility.IYieldC
IYieldFixedUpdate
(Cobilas.GodotEngine.Utility.IYieldF
IYieldUpdate
(Cobilas.GodotEngine.Utility.IYieldU
IYieldVolatile
(Cobilas.GodotEngine.Utility.IYieldV
LastFixedRunTimeSecond
(Cobilas.GodotEngine.Utility.LastFix
LastRunTimeSecond
(Cobilas.GodotEngine.Utility.LastRu
NullNode
(Cobilas.GodotEngine.Utility.NullNc
Randomico
(Cobilas.GodotEngine.Utility.Rando
Rect2D
(Cobilas.GodotEngine.Utility.Rect2D
Resolution
(Cobilas.GodotEngine.Utility.Resolu
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Namespace Cobilas.GodotEngine.Utility.IO

Classes

Filter by title

Archive (Cobilas.GodotEngine.Utility.IO.Archive.html)

Represents a system file.

DataBase (Cobilas.GodotEngine.Utility.IO.DataBase.html)

Serialization manager for persistent system data files.

Folder (Cobilas.GodotEngine.Utility.IO.Folder.html)

A representation of a system folder.

GodotPath (Cobilas.GodotEngine.Utility.IO.GodotPath.html)

The class allows manipulation of system paths in godot.

Enums

ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.ArchiveAttributes.html)

Represents the attributes of a file or folder.

+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**
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+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
+ **Cobilas.GodotEngine.Utility.**

Class Archive

Represents a system file.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ DataBase (Cobilas.GodotEngine.Utility.IO.DataBase.html)
↳ Archive

Implements

IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)
IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

Inherited Members

DataBase.GetDataPath(DataBase) (Cobilas.GodotEngine.Utility.IO.DataBase.html#Cobilas_GodotEngine_Utility_IO_DataBase_GetDataPath_Cobilas_GodotEngine_Utility_IO_DataBase_)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).IO (Cobilas.GodotEngine.Utility.IO.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public class Archive : DataBase, IDisposable, IFormattable
```

Constructors

Archive(DataBase?, string?, ArchiveAttributes)

Creates a new instance of this object.

Declaration

```
public Archive(DataBase? parent, string? dataName, ArchiveAttributes attributes)
```

Parameters

Type	Name	Description
DataBase (Cobilas.GodotEngine.Utility.IO.DataBase.html)	*parent*	
string (https://learn.microsoft.com/dotnet/api/system.string)	*dataName*	
ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.ArchiveAttributes.html)	*attributes*	

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+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser

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Runtime
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+ Cobilas.GodotEngine.Utility.

Properties

ArchiveExtension

Allows you to get the system file extension.

Declaration

```
public string ArchiveExtension { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns a string containing the system file extension.

Attributes

The attributes of the data file.

Declaration

```
public override ArchiveAttributes Attributes { get; protected set; }
```

Property Value

Type	Description
ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.ArchiveAttributes.html)	Returns the attributes of the data file.

Overrides

DataBase.Attributes (Cobilas.GodotEngine.Utility.IO.DataBase.html#Cobilas_GodotEngine_Utility_IO_DataBase_Attributes)

GetGuid

Allows you to generate a guid from the allocated buffer.

Declaration

```
public Guid GetGuid { get; }
```

Property Value

Type	Description
Guid (https://learn.microsoft.com/dotnet/api/system.guid)	Returns a guid generated from the allocated buffer.

IsNull

Determines whether the object is a null representation.

Declaration

```
public bool IsNull { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the object is a null representation.

Name

Data file name.

Declaration

```
public override string? Name { get; protected set; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns a string containing the name of the data file.

Overrides

DataBase.Name (Cobilas.GodotEngine.Utility.IO.DataBase.html#Cobilas_GodotEngine_Utility_IO_DataBase_Name)

NameWithoutExtension

Allows you to get the name of the system file without its extension.

Declaration

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
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+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

```
public string NameWithoutExtension { get; }
```

Property Value

Type		Description
string (https://learn.microsoft.com/dotnet/api/system.string)		Returns a string with the name of the system file without its extension.

Null

A null representation of the Archive (Cobilas.GodotEngine.Utility.IO.Archive.html) object.

Declaration

```
public static Archive Null { get; }
```

Property Value

Type	Description
Archive (Cobilas.GodotEngine.Utility.IO.Archive.html)	Returns a null representation of the Archive (Cobilas.GodotEngine.Utility.IO.Archive.html) object.

Parent

The parent element of the data file.

Declaration

```
public override DataBase? Parent { get; protected set; }
```

Property Value

Type		Description
DataBase (Cobilas.GodotEngine.Utility.IO.DataBase.html)		Returns parent element of data file.

Overrides

DataBase.Parent (Cobilas.GodotEngine.Utility.IO.DataBase.html#Cobilas_GodotEngine_Utility_IO_DataBase_Parent)

Path

The full path of the data file.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
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+ Cobilas.GodotEngine.Utility.

Declaration

```
public override string Path { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns a string containing the full path of the data file.

Overrides

DataBase.Path (Cobilas.GodotEngine.Utility.IO.DataBase.html#Cobilas_GodotEngine_Utility_IO_DataBase_Path)

bufferLength

Allows you to check the length of the allocated buffer.

Declaration

```
public long bufferLength { get; }
```

Property Value

Type	Description
long (https://learn.microsoft.com/dotnet/api/system.int64)	Returns the length of the allocated buffer.

Methods

Dispose()

Performs application-defined tasks associated with freeing, releasing, or resetting unmanaged resources.

Declaration

```
public override void Dispose()
```

Overrides

DataBase.Dispose() (Cobilas.GodotEngine.Utility.IO.DataBase.html#Cobilas_GodotEngine_Utility_IO_DataBase_Dispose)

Flush()

Allows you to flush the object's buffer to the system file that this object represents.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
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Declaration

```
public void Flush()
```

Exceptions

Type		Condition
ReadOnlyException (https://learn.microsoft.com/dotnet/api/system.data.readonlyexception)		Will occur if the method is called on an object that is marked as read-only.
InvalidOperationException (https://learn.microsoft.com/dotnet/api/system.invalidoperationexception)		It will occur when there is another invalid operation.
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)		Will occur when the method is called after the object has been disposed.
FileNotFoundException (https://learn.microsoft.com/dotnet/api/system.io.filenotfoundexception)		It will occur when the path of the file that this object represents does not exist.

Read()

This method allows reading the system file loaded in this object.

Declaration

```
public byte[] Read();
```

Returns

Type		Description
byte (https://learn.microsoft.com/dotnet/api/system.byte)[]		Returns a copy of the buffer loaded into this object.

Read(out char[])

This method allows reading the system file loaded in this object.

Declaration

```
public void Read(out char[] chars)
```

Parameters

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+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
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  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Data
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+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
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+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Name	Description
char (https://learn.microsoft.com/dotnet/api/system.char) []	*chars*	Returns the buffer already converted to char (https://learn.microsoft.com/dotnet/api/system.char)[].

Exceptions

Type		Condition
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)		Will occur when the method is called after the object has been disposed.

Read(out string)

This method allows reading the system file loaded in this object.

Declaration

```
public void Read(out string text)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*text*	Returns the buffer already converted to string (https://learn.microsoft.com/dotnet/api/system.string).

Exceptions

Type		Condition
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)		Will occur when the method is called after the object has been disposed.

Read(Encoding, out char[])

This method allows reading the system file loaded in this object.

Declaration

```
public void Read(Encoding encoding, out char[] chars)
```

Parameters

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
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+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Name	Description
Encoding (https://learn.microsoft.com/dotnet/api/system.text.encoding)	*encoding*	The Encoding (https://learn.microsoft.com/dotnet/api/system.text.encoding) that will be used to convert the object buffer to a char (https://learn.microsoft.com/dotnet/api/system.char)[].
char (https://learn.microsoft.com/dotnet/api/system.char)[]	*chars*	Returns the buffer already converted to char (https://learn.microsoft.com/dotnet/api/system.char)[].

Exceptions

Type	Condition
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)	Will occur when the method is called after the object has been disposed.

Read(Encoding, out string)

This method allows reading the system file loaded in this object.

Declaration

```
public void Read(Encoding encoding, out string text)
```

Parameters

Type	Name	Description
Encoding (https://learn.microsoft.com/dotnet/api/system.text.encoding)	*encoding*	The Encoding (https://learn.microsoft.com/dotnet/api/system.text.encoding) that will be used to convert the object buffer to a string (https://learn.microsoft.com/dotnet/api/system.string).
string (https://learn.microsoft.com/dotnet/api/system.string)	*text*	Returns the buffer already converted to string (https://learn.microsoft.com/dotnet/api/system.string).

Exceptions

Type	Condition
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)	Will occur when the method is called after the object has been disposed.

Read(Encoding, out StringBuilder)

This method allows reading the system file loaded in this object.

Declaration

```
public void Read(Encoding encoding, out StringBuilder builder)
```

Parameters

Type	Name	Description
Encoding (https://learn.microsoft.com/dotnet/api/system.text.encoding)	*encoding*	The Encoding (https://learn.microsoft.com/dotnet/api/system.text.encoding) that will be used to convert the object buffer to a StringBuilder (https://learn.microsoft.com/dotnet/api/system.text.stringbuilder).
StringBuilder (https://learn.microsoft.com/dotnet/api/system.text.stringbuilder)	*builder*	Returns the buffer already converted to StringBuilder (https://learn.microsoft.com/dotnet/api/system.text.stringbuilder).

Exceptions

Type	Condition
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)	Will occur when the method is called after the object has been disposed.

Read(out StringBuilder)

This method allows reading the system file loaded in this object.

Declaration

```
public void Read(out StringBuilder builder)
```

Parameters

Type	Name	Description
StringBuilder (https://learn.microsoft.com/dotnet/api/system.text.stringbuilder)	*builder*	Returns the buffer already converted to StringBuilder (https://learn.microsoft.com/dotnet/api/system.text.stringbuilder).

Exceptions

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  Archive (Cobilas.GodotEngine.Utility.IO.Arch
  ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
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Type	Condition
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)	Will occur when the method is called after the object has been disposed.

RefreshBuffer()

This method allows you to refresh the buffer if the file is changed.

Declaration

```
public void RefreshBuffer()
```

Exceptions

Type	Condition
InvalidOperationException (https://learn.microsoft.com/dotnet/api/system.invalidoperationexception)	It will occur when there is another invalid operation.
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)	Will occur when the method is called after the object has been disposed.
FileNotFoundException (https://learn.microsoft.com/dotnet/api/system.io.filenotfoundexception)	It will occur when the path of the file that this object represents does not exist.

RenameArchive(Archive?, string?)

Allows you to rename the specified file.

Declaration

```
public static bool RenameArchive(Archive? archive, string? newName)
```

Parameters

Type	Name	Description
Archive (Cobilas.GodotEngine.Utility.IO.Archive.html)	*archive*	The representation of the file that will be renamed.
string (https://learn.microsoft.com/dotnet/api/system.string)	*newName*	The new name that will be given to the object.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  - Archive (Cobilas.GodotEngine.Utility.IO.Arc
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Dat
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+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the operation is performed successfully.

Exceptions

Type	Condition
InvalidOperationException (https://learn.microsoft.com/dotnet/api/system.invalidoperationexception)	Occurs when the name of the new file has an invalid character.
ReadOnlyException (https://learn.microsoft.com/dotnet/api/system.data.readonlyexception)	Will occur if the method is called on an object that is marked as read-only.

ReplaceBuffer(byte[]?)

The method allows replacing this object's current buffer with another one.

Declaration

```
public void ReplaceBuffer(byte[]? newBuffer)
```

Parameters

Type	Name	Description
byte (https://learn.microsoft.com/dotnet/api/system.byte)[]	*newBuffer*	The new buffer that will be allocated in this object.

Exceptions

Type	Condition
ReadOnlyException (https://learn.microsoft.com/dotnet/api/system.data.readonlyexception)	Will occur if the method is called on an object that is marked as read-only.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs if the `newBuffer` parameter is null.
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)	Will occur when the method is called after the object has been disposed.

ToString()

Returns a string that represents the current object.

Declaration

```
public override string ToString()
```

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	A string that represents the current object.

Overrides

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)

ToString(string, IFormatProvider)

Formats the value of the current instance using the specified format.

Declaration

```
public override string ToString(string format, IFormatProvider formatProvider)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*formatProvider*	The provider to use to format the value.-or- A null reference (`Nothing` in Visual Basic) to obtain the numeric format information from the current locale setting of the operating system.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

Overrides

DataBase.ToString(string, IFormatProvider) (Cobilas.GodotEngine.Utility.IO.DataBase.html#Cobilas_GodotEngine_Utility_IO_DataBase_ToString_System_String_System.IFormatProvider.)

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ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
DataBase (Cobilas.GodotEngine.Utility.IO.Data
Folder (Cobilas.GodotEngine.Utility.IO.Fold
GodotPath (Cobilas.GodotEngine.Utility.IO.God
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Write(byte[])

The method allows writing to the object's buffer.

Declaration

```
public void Write(byte[] buffer)
```

Parameters

Type	Name	Description
byte[] (https://learn.microsoft.com/dotnet/api/system.byte)	*buffer*	The value that will be written to the object buffer.

Exceptions

Type	Condition
ReadOnlyException (https://learn.microsoft.com/dotnet/api/system.data.readonlyexception)	Will occur if the method is called on an object that is marked as read-only.
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)	Will occur when the method is called after the object has been disposed.

Write(byte[], Encoding)

The method allows writing to the object's buffer.

Declaration

```
public void Write(byte[] buffer, Encoding encoding)
```

Parameters

Type	Name	Description
byte[] (https://learn.microsoft.com/dotnet/api/system.byte)	*buffer*	The value that will be written to the object buffer.
Encoding (https://learn.microsoft.com/dotnet/api/system.text.encoding)	*encoding*	The Encoding that will be used to write to the object buffer.

Exceptions

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  - Archive (Cobilas.GodotEngine.Utility.IO.Arch
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Data
  - Folder (Cobilas.GodotEngine.Utility.IO.Folc
  - GodotPath (Cobilas.GodotEngine.Utility.IO.Goc
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Condition
ReadOnlyException (https://learn.microsoft.com/dotnet/api/system.data.readonlyexception)	Will occur if the method is called on an object that is marked as read-only.
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)	Will occur when the method is called after the object has been disposed.

Write(char[])

The method allows writing to the object's buffer.

Declaration

```
public void Write(char[] chars)
```

Parameters

Type	Name	Description
char[] (https://learn.microsoft.com/dotnet/api/system.char)	*chars*	The value that will be written to the object buffer.

Exceptions

Type	Condition
ReadOnlyException (https://learn.microsoft.com/dotnet/api/system.data.readonlyexception)	Will occur if the method is called on an object that is marked as read-only.
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)	Will occur when the method is called after the object has been disposed.

Write(char[], Encoding)

The method allows writing to the object's buffer.

Declaration

```
public void Write(char[] chars, Encoding encoding)
```

Parameters

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  - Archive (Cobilas.GodotEngine.Utility.IO.Arch
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - Database (Cobilas.GodotEngine.Utility.IO.Data
  - Folder (Cobilas.GodotEngine.Utility.IO.Folc
  - GodotPath (Cobilas.GodotEngine.Utility.IO.Goc
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Name	Description
char (https://learn.microsoft.com/dotnet/api/system.char) []	*chars*	The value that will be written to the object buffer.
Encoding (https://learn.microsoft.com/dotnet/api/system.text.encoding)	*encoding*	The Encoding that will be used to write to the object buffer.

Exceptions

Type	Condition
ReadOnlyException (https://learn.microsoft.com/dotnet/api/system.data.readonlyexception)	Will occur if the method is called on an object that is marked as read-only.
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)	Will occur when the method is called after the object has been disposed.

Write(string)

The method allows writing to the object's buffer.

Declaration

```
public void Write(string text)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*text*	The value that will be written to the object buffer.

Exceptions

Type	Condition
ReadOnlyException (https://learn.microsoft.com/dotnet/api/system.data.readonlyexception)	Will occur if the method is called on an object that is marked as read-only.
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)	Will occur when the method is called after the object has been disposed.

Write(string, Encoding)

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  - Archive (Cobilas.GodotEngine.Utility.IO.Arch
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Data
  - Folder (Cobilas.GodotEngine.Utility.IO.Folc
  - GodotPath (Cobilas.GodotEngine.Utility.IO.Goc
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

The method allows writing to the object's buffer.

Declaration

```
public void Write(string text, Encoding encoding)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*text*	The value that will be written to the object buffer.
Encoding (https://learn.microsoft.com/dotnet/api/system.text.encoding)	*encoding*	The Encoding that will be used to write to the object buffer.

Exceptions

Type	Condition
ReadOnlyException (https://learn.microsoft.com/dotnet/api/system.data.readonlyexception)	Will occur if the method is called on an object that is marked as read-only.
ObjectDisposedException (https://learn.microsoft.com/dotnet/api/system.objectdisposedexception)	Will occur when the method is called after the object has been disposed.

Implements

IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)
IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se**
+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
  - Archive (Cobilas.GodotEngine.Utility.IO.Arch
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Data
  - Folder (Cobilas.GodotEngine.Utility.IO.Folc
  - GodotPath (Cobilas.GodotEngine.Utility.IO.God
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
+ **Cobilas.GodotEngine.Utility.**

Enum ArchiveAttributes

Represents the attributes of a file or folder.

Filter by title

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.Utility.html).IO (Cobilas.GodotEngine.Utility.IO.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
[Flags]
public enum ArchiveAttributes : uint
```

Fields

Name	Description
Directory	Indicates that it is a directory file.
File	Indicates that it is a file.
Hidden	Indicates whether the file or folder is hidden on the system.
Null	Indicates whether the file or folder is null.
ReadOnly	Indicates whether the file or folder is read-only.

+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
  - Archive (Cobilas.GodotEngine.Utility.IO.Arch
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Dat
  - Folder (Cobilas.GodotEngine.Utility.IO.Fold
  - GodotPath (Cobilas.GodotEngine.Utility.IO.God
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
+ **Cobilas.GodotEngine.Utility.**

Class DataBase

Base class for classes that represent system data files.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ DataBase
↳ Archive (Cobilas.GodotEngine.Utility.IO.Archive.html)
↳ Folder (Cobilas.GodotEngine.Utility.IO.Folder.html)

Implements

IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)
IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).IO (Cobilas.GodotEngine.Utility.IO.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public abstract class DataBase : IDisposable, IFormattable
```

Constructors

DataBase(DataBase?, string?, ArchiveAttributes)

Creates a new instance of this object.

Declaration

```
protected DataBase(DataBase? parent, string? dataName, ArchiveAttributes attributes)
```

Parameters

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  - Archive (Cobilas.GodotEngine.Utility.IO.Arch
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Dat
  - Folder (Cobilas.GodotEngine.Utility.IO.Fold
  - GodotPath (Cobilas.GodotEngine.Utility.IO.God
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Name	Description
DataBase (Cobilas.GodotEngine.Utility.IO.DataBase.html)	*parent*	
string (https://learn.microsoft.com/dotnet/api/system.string)	*dataName*	
ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.ArchiveAttributes.html)	*attributes*	

Properties

Attributes

The attributes of the data file.

Declaration

```
public abstract ArchiveAttributes Attributes { get; protected set; }
```

Property Value

Type	Description
ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.ArchiveAttributes.html)	Returns the attributes of the data file.

Name

Data file name.

Declaration

```
public abstract string? Name { get; protected set; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns a string containing the name of the data file.

Parent

The parent element of the data file.

Declaration

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  - Archive (Cobilas.GodotEngine.Utility.IO.Arch
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Data
  - Folder (Cobilas.GodotEngine.Utility.IO.Folc
  - GodotPath (Cobilas.GodotEngine.Utility.IO.Goc
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

```
public abstract DataBase? Parent { get; protected set; }
```

Property Value

Type	Description
DataBase (Cobilas.GodotEngine.Utility.IO.DataBase.html)	Returns parent element of data file.

Path

The full path of the data file.

Declaration

```
public abstract string Path { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns a string containing the full path of the data file.

Methods

Dispose()

Performs application-defined tasks associated with freeing, releasing, or resetting unmanaged resources.

Declaration

```
public abstract void Dispose()
```

GetDataPath(DataBase?)

Gets the full path of a data file.

Declaration

```
public static string GetDataPath(DataBase? data)
```

Parameters

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  - Archive (Cobilas.GodotEngine.Utility.IO.Arch
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Data
  - Folder (Cobilas.GodotEngine.Utility.IO.Folc
  - GodotPath (Cobilas.GodotEngine.Utility.IO.God
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Name	Description
DataBase (Cobilas.GodotEngine.Utility.IO.DataBase.html)	*data*	The data file to be obtained is the full path.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	It will return a string containing the full path of the data file.

ToString(string, IFormatProvider)

Formats the value of the current instance using the specified format.

Declaration

```
public override string ToString(string format, IFormatProvider formatProvider)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*formatProvider*	The provider to use to format the value.-or- A null reference (`Nothing` in Visual Basic) to obtain the numeric format information from the current locale setting of the operating system.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

Implements

IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)
IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.h
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  Archive (Cobilas.GodotEngine.Utility.IO.Arch
  ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  DataBase (Cobilas.GodotEngine.Utility.IO.Dat
  Folder (Cobilas.GodotEngine.Utility.IO.Fold
  GodotPath (Cobilas.GodotEngine.Utility.IO.God
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se**

+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**

+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**

- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**

  Archive (Cobilas.GodotEngine.Utility.IO.Arch
  ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  DataBase (Cobilas.GodotEngine.Utility.IO.Data
  Folder (Cobilas.GodotEngine.Utility.IO.Folc
  GodotPath (Cobilas.GodotEngine.Utility.IO.Goc

+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**

+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**

+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**

+ **Cobilas.GodotEngine.Utility.**

Class Folder

A representation of a system folder.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ DataBase (Cobilas.GodotEngine.Utility.IO.DataBase.html)
↳ Folder

Implements

IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)
IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)
IEnumerable (https://learn.microsoft.com/dotnet/api/system.collections.generic.ienumerable-1)<DataBase (Cobilas.GodotEngine.Utility.IO.DataBase.html)>
IEnumerable (https://learn.microsoft.com/dotnet/api/system.collections.ienumerable)

Inherited Members

DataBase.GetDataPath(DataBase) (Cobilas.GodotEngine.Utility.IO.DataBase.html#Cobilas_GodotEngine_Utility_IO_DataBase_GetDataPath_Cobilas_GodotEngine_Utility_IO_DataBase_)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).IO (Cobilas.GodotEngine.Utility.IO.html)

Assembly: Cobilas.GodotEngine.dll

Syntax

```
public class Folder : DataBase, IDisposable, IFormattable, IEnumerable<DataBase>, IEnumerable
```

Constructors

Folder(DataBase?, string?, ArchiveAttributes)

Creates a new instance of this object.

Declaration

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

- Cobilas.GodotEngine.Utility.IO.Archive (Cobilas.GodotEngine.Utility.IO.Arch

- Cobilas.GodotEngine.Utility.IO.ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch

- Cobilas.GodotEngine.Utility.IO.DataBase (Cobilas.GodotEngine.Utility.IO.Dat

- Cobilas.GodotEngine.Utility.IO.Folder (Cobilas.GodotEngine.Utility.IO.Fold

- Cobilas.GodotEngine.Utility.IO.GodotPath (Cobilas.GodotEngine.Utility.IO.Godo

+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In

+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N

+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru

+ Cobilas.GodotEngine.Utility.

```
public Folder(DataBase? parent, string? dataName, ArchiveAttributes attributes)
```

Parameters

Type	Name	Description
DataBase (Cobilas.GodotEngine.Utility.IO.DataBase.html)	*parent*	
string (https://learn.microsoft.com/dotnet/api/system.string)	*dataName*	
ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.ArchiveAttributes.html)	*attributes*	

Properties

Attributes

The attributes of the data file.

Declaration

```
public override ArchiveAttributes Attributes { get; protected set; }
```

Property Value

Type	Description
ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.ArchiveAttributes.html)	Returns the attributes of the data file.

Overrides

DataBase.Attributes (Cobilas.GodotEngine.Utility.IO.DataBase.html#Cobilas_GodotEngine_Utility_IO_DataBase_Attributes)

Name

Data file name.

Declaration

```
public override string? Name { get; protected set; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns a string containing the name of the data file.

Overrides

DataBase.Name (Cobilas.GodotEngine.Utility.IO.DataBase.html#Cobilas_GodotEngine_Utility_IO_DataBase_Name)

Null

A null representation of the Folder (Cobilas.GodotEngine.Utility.IO.Folder.html) object.

Declaration

```
public static Folder Null { get; }
```

Property Value

Type	Description
Folder (Cobilas.GodotEngine.Utility.IO.Folder.html)	Returns a null representation of the Folder (Cobilas.GodotEngine.Utility.IO.Folder.html) object.

Parent

The parent element of the data file.

Declaration

```
public override DataBase? Parent { get; protected set; }
```

Property Value

Type	Description
DataBase (Cobilas.GodotEngine.Utility.IO.DataBase.html)	Returns parent element of data file.

Overrides

DataBase.Parent (Cobilas.GodotEngine.Utility.IO.DataBase.html#Cobilas_GodotEngine_Utility_IO_DataBase_Parent)

Path

The full path of the data file.

Declaration

```
public override string Path { get; }
```

Property Value

+ **Cobilas.GodotEngine.Utility.**
  Input
  (Cobilas.GodotEngine.Utility.In
+ **Cobilas.GodotEngine.Utility.**
  Numerics
  (Cobilas.GodotEngine.Utility.N
+ **Cobilas.GodotEngine.Utility.**
  Physics
  (Cobilas.GodotEngine.Utility.Ph
+ **Cobilas.GodotEngine.Utility.**
  Runtime
  (Cobilas.GodotEngine.Utility.Ru
+ **Cobilas.GodotEngine.Utility.**

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns a string containing the full path of the data file.

Overrides

DataBase.Path (Cobilas.GodotEngine.Utility.IO.DataBase.html#Cobilas_GodotEngine_Utility_IO_DataBase_Path)

Methods

ArchiveExists(string)

Checks if a file exists.

Declaration

```
public bool ArchiveExists(string archiveName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*archiveName*	The name of the archive.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the specified element exists.

Create(string?)

Creates a new instance containing a specified directory.

Declaration

```
public static Folder Create(string? path)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*path*	The path that will be instantiated.

Returns

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  - Archive (Cobilas.GodotEngine.Utility.IO.Arch
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Data
  - Folder (Cobilas.GodotEngine.Utility.IO.Folc
  - GodotPath (Cobilas.GodotEngine.Utility.IO.Goc
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Description
Folder (Cobilas.GodotEngine.Utility.IO.Folder.html)	Returns the representation of a folder.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs if the `path` parameter is null.

CreateArchive(string?)

Allows you to create a new file in the current folder.

Declaration

```
(Cobilas.GodotEngine.Utility.IO.Archive? CreateArchive(string? fileName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*fileName*	The name of this new file.

Returns

Type	Description
Archive (Cobilas.GodotEngine.Utility.IO.Archive.html)	Returns the new file that was created in the current folder.

Exceptions

Type	Condition
ReadOnlyException (https://learn.microsoft.com/dotnet/api/system.data.readonlyexception)	Will occur if the method is called on an object that is marked as read-only.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs if the `fileName` parameter is null.
InvalidOperationException (https://learn.microsoft.com/dotnet/api/system.invalidoperationexception)	Occurs when the name of the new file has an invalid character.

CreateFolder(string?, bool)

Allows the creation of a new folder in the current folder.

+ Cobilas.GodotEditor.Utility
  Serialization.Properties
  (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
  Serialization.RenderObjects
  (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility
  (Cobilas.GodotEngine.Utility.hi
- Cobilas.GodotEngine.Utility.
  IO
  (Cobilas.GodotEngine.Utility.IO
  Archive
  (Cobilas.GodotEngine.Utility.IO.Arch
  ArchiveAttributes
  (Cobilas.GodotEngine.Utility.IO.Arch
  DataBase
  (Cobilas.GodotEngine.Utility.IO.Dat
  Folder
  (Cobilas.GodotEngine.Utility.IO.Fold
  GodotPath
  (Cobilas.GodotEngine.Utility.IO.God
+ Cobilas.GodotEngine.Utility.
  Input
  (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.
  Numerics
  (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
  Physics
  (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.
  Runtime
  (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Declaration

```
public Folder CreateFolder(string? folderName, bool recursive = false)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*folderName*	The name of the new folder.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*recursive*	Allows the creation of a folder within another in a cascade fashion. `(exp: Folder1/Folder2/Folder3/Folder4)`

Returns

Type	Description
Folder (Cobilas.GodotEngine.Utility.IO.Folder.html)	Returns the newly created folder.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs if the `folderName` parameter is null.

CreateRes()

Creates a new instance containing a representation of the `res://` folder.

Declaration

```
public static Folder CreateRes()
```

Returns

Type	Description
Folder (Cobilas.GodotEngine.Utility.IO.Folder.html)	Returns the representation of a folder.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs if the `path` parameter is null.

CreateUser()

Creates a new instance containing a representation of the `user://` folder.

Declaration

```
public static Folder CreateUser()
```

Returns

Type	Description
Folder (Cobilas.GodotEngine.Utility.IO.Folder.html)	Returns the representation of a folder.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs if the `path` parameter is null.

Dispose()

Performs application-defined tasks associated with freeing, releasing, or resetting unmanaged resources.

Declaration

```
public override void Dispose()
```

Overrides

DataBase.Dispose() (Cobilas.GodotEngine.Utility.IO.DataBase.html#Cobilas_GodotEngine_Utility_IO_DataBase_Dispose)

FolderExists(string)

Checks if a folder exists.

Declaration

```
public static bool FolderExists(string folderName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*folderName*	The name of the folder.

Returns

- Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  - Archive (Cobilas.GodotEngine.Utility.IO.Arch
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Dat
  - Folder (Cobilas.GodotEngine.Utility.IO.Fold
  - GodotPath (Cobilas.GodotEngine.Utility.IO.God
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the specified element exists.

GetArchive(string?, bool)

Gets the target archive from the current folder.

Declaration

```
public Archive GetArchive(string? fileName, bool recursive = false)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*fileName*	The name of the archive.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*recursive*	Allows you to get a specified archive in the current folder or its subfolders

Returns

Type	Description
Archive (Cobilas.GodotEngine.Utility.IO.Archive.html)	Returns the specified archive. If not found, a null representation will be returned.

GetArchives(bool)

Gets the target archive from the current folder.

Declaration

```
public Archive[]? GetArchives(bool recursive = false)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*recursive*	Allows you to get a specified archive in the current folder or its subfolders

Returns

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  - Archive (Cobilas.GodotEngine.Utility.IO.Arch
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Data
  - Folder (Cobilas.GodotEngine.Utility.IO.Folc
  - GodotPath (Cobilas.GodotEngine.Utility.IO.Goc
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Description
Archive (Cobilas.GodotEngine.Utility.IO.Archive.html) []	Returns the specified archive. If not found, a null representation will be returned.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
Archive (Cobilas.GodotEngine.Utility.IO.Arch
ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
DataBase (Cobilas.GodotEngine.Utility.IO.Dat
Folder (Cobilas.GodotEngine.Utility.IO.Folc
GodotPath (Cobilas.GodotEngine.Utility.IO.Goc
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

GetArchives(string?, bool)

Get all archives in the current folder.

Declaration

```
public Archive[]? GetArchives(string? search, bool recursive = false)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*search*	Allows you to collect specific files. Use '|' to separate search conditions. (exp:".jpeg|.png|.txt")
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*recursive*	Allows you to get a specified archives in the current folder or its subfolders.

Returns

Type	Description
Archive (Cobilas.GodotEngine.Utility.IO.Archive.html)[]	Returns a list of all archives in the current folder.

GetEnumerator()

Returns an enumerator that iterates through the collection.

Declaration

```
public IEnumerator<DataBase> GetEnumerator()
```

Returns

Type	Description
IEnumerator (https://learn.microsoft.com/dotnet/api/system.collections.generic.ienumerator-1) <DataBase (Cobilas.GodotEngine.Utility.IO.DataBase.html)>	An enumerator that can be used to iterate through the collection.

GetFolder(string?, bool)

Gets the target folder from the current folder.

Declaration

```
public Folder GetFolder(string? folderName, bool recursive = false)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*folderName*	The name of the folder.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*recursive*	Allows you to get a specified folder in the current folder or its subfolders.

Returns

Type	Description
Folder (Cobilas.GodotEngine.Utility.IO.Folder.html)	Returns the specified folder. If not found, a null representation will be returned.

GetFolders()

Gets all folders in the current folder.

Declaration

```
public Folder[] GetFolders()
```

Returns

Type	Description
Folder (Cobilas.GodotEngine.Utility.IO.Folder.html)[]	Returns a list of all folders in the current folder.

RemoveArchive(string?)

Allows you to remove a file in the current folder.

Declaration

```
public bool RemoveArchive(string? archiveName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*archiveName*	The name of the archive.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the remove operation is successful.

Exceptions

Type	Condition
ReadOnlyException (https://learn.microsoft.com/dotnet/api/system.data.readonlyexception)	Will occur if the method is called on an object that is marked as read-only.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs if the `archiveName` parameter is null.

RemoveFolder(string?)

Allows the removal of a folder.

Declaration

```
public bool RemoveFolder(string? folderName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*folderName*	The name of the folder.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the remove operation is successful.

Exceptions

Type	Condition
ReadOnlyException (https://learn.microsoft.com/dotnet/api/system.data.readonlyexception)	Will occur if the method is called on an object that is marked as read-only.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  Archive (Cobilas.GodotEngine.Utility.IO.Arch
  ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  DataBase (Cobilas.GodotEngine.Utility.IO.Data
  Folder (Cobilas.GodotEngine.Utility.IO.Folc
  GodotPath (Cobilas.GodotEngine.Utility.IO.Goc
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs if the `folderName` parameter is null.

RenameArchive(string?, string?)

Allows renaming an archive in the current folder.

Declaration

```
public bool RenameArchive(string? oldName, string? newName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*oldName*	The name of the archive.
string (https://learn.microsoft.com/dotnet/api/system.string)	*newName*	The new name of the archive.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the rename operation was successful.

Exceptions

Type	Condition
ReadOnlyException (https://learn.microsoft.com/dotnet/api/system.data.readonlyexception)	Will occur if the method is called on an object that is marked as read-only.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs if the `oldName` parameter is null.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs if the `newName` parameter is null.
InvalidOperationException (https://learn.microsoft.com/dotnet/api/system.invalidoperationexception)	Occurs when the name of the new file has an invalid character.

RenameFolder(string?, string?)

+ Cobilas.GodotEditor.Utility.
  Serialization.Properties
  (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
  Serialization.RenderObjects
  (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility
  (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.
  IO
  (Cobilas.GodotEngine.Utility.IO
  Archive
  (Cobilas.GodotEngine.Utility.IO.Arch
  ArchiveAttributes
  (Cobilas.GodotEngine.Utility.IO.Arch
  DataBase
  (Cobilas.GodotEngine.Utility.IO.Dat
  Folder
  (Cobilas.GodotEngine.Utility.IO.Fold
  GodotPath
  (Cobilas.GodotEngine.Utility.IO.God
+ Cobilas.GodotEngine.Utility.
  Input
  (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.
  Numerics
  (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
  Physics
  (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.
  Runtime
  (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Allows you to rename the folder.

Declaration

```
public bool RenameFolder(string? oldName, string? newName)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*oldName*	The name of the folder.
string (https://learn.microsoft.com/dotnet/api/system.string)	*newName*	The new name of the folder.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the rename operation was successful.

Exceptions

Type	Condition
ReadOnlyException (https://learn.microsoft.com/dotnet/api/system.data.readonlyexception)	Will occur if the method is called on an object that is marked as read-only.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs if the `oldName` parameter is null.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs if the `newName` parameter is null.
InvalidOperationException (https://learn.microsoft.com/dotnet/api/system.invalidoperationexception)	Occurs when the name of the new file has an invalid character.

ToString()

Returns a string that represents the current object.

Declaration

```
public override string ToString()
```

Returns

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.Ut
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  - Archive (Cobilas.GodotEngine.Utility.IO.Arc
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Dat
  - Folder (Cobilas.GodotEngine.Utility.IO.Fold
  - GoDotPath (Cobilas.GodotEngine.Utility.IO.God
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	A string that represents the current object.

Overrides

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)

ToString(bool)

Returns a string that represents the current object.

Declaration

```
public string ToString(bool recursive)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*recursive*	

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	A string that represents the current object.

ToString(string, IFormatProvider)

Formats the value of the current instance using the specified format.

Declaration

```
public override string ToString(string format, IFormatProvider formatProvider)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*formatProvider*	The provider to use to format the value.-or- A null reference (`Nothing` in Visual Basic) to obtain the numeric format information from the current locale setting of the operating system.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  - Archive (Cobilas.GodotEngine.Utility.IO.Arch
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Dat
  - Folder (Cobilas.GodotEngine.Utility.IO.Fol
  - GodotPath (Cobilas.GodotEngine.Utility.IO.God
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

Overrides

DataBase.ToString(string, IFormatProvider) (Cobilas.GodotEngine.Utility.IO.DataBase.html#Cobilas_GodotEngine_Utility_IO_DataBase_ToString_System_String_System_IFormatProvider)

Implements

IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)
IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)
IEnumerable<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.ienumerable-1)
IEnumerable (https://learn.microsoft.com/dotnet/api/system.collections.ienumerable)

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se

+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht

- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC

Archive (Cobilas.GodotEngine.Utility.IO.Arch
ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
DataBase (Cobilas.GodotEngine.Utility.IO.Dat
Folder (Cobilas.GodotEngine.Utility.IO.Folc
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+ Cobilas.GodotEngine.Utility.

Class GodotPath

The class allows manipulation of system paths in godot.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ GodotPath

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).IO (Cobilas.GodotEngine.Utility.IO.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class GodotPath
```

Fields

DirectorySeparatorChar

Contains the directory separator used in godot.

Declaration

```
public const char DirectorySeparatorChar = '/'
```

Field Value

Type	Description
char (https://learn.microsoft.com/dotnet/api/system.char)	

Properties

CurrentDirectory

Gets or sets the fully qualified path of the current working directory.

Declaration

```
public static string CurrentDirectory { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	A string containing a directory path.

Exceptions

Type	Condition
ArgumentException (https://learn.microsoft.com/dotnet/api/system.argumentexception)	Attempted to set to an empty string ("").
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Attempted to set to `null`.
IOException (https://learn.microsoft.com/dotnet/api/system.io.ioexception)	An I/O error occurred.
DirectoryNotFoundException (https://learn.microsoft.com/dotnet/api/system.io.directorynotfoundexception)	Attempted to set a local path that cannot be found.
SecurityException (https://learn.microsoft.com/dotnet/api/system.security.securityexception)	The caller does not have the appropriate permission.

PersistentFilePath

The path to the project's persistent files directory.

Declaration

```
public static string PersistentFilePath { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns a string containing the path to the project's persistent files directory.

ProjectPath

This path is relative to the root folder.

Declaration

```
public static string ProjectPath { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns the root path of the project folder. When the project is compiled the property will use the CurrentDirectory (Cobilas.GodotEngine.Utility.IO.GodotPath.html#Cobilas_GodotEngine_Utility_IO_GodotPath_CurrentDirectory) property.

Methods

Combine(string, string)

Combines two strings into a path.

Declaration

```
public static string Combine(string path1, string path2)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*path1*	The first path to combine.
string (https://learn.microsoft.com/dotnet/api/system.string)	*path2*	The second path to combine.

Returns

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  - Archive (Cobilas.GodotEngine.Utility.IO.Arch
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Data
  - Folder (Cobilas.GodotEngine.Utility.IO.Folc
  - GodotPath (Cobilas.GodotEngine.Utility.IO.Goc
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+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The combined paths. If one of the specified paths is a zero-length string, this method returns the other path. If `path2` contains an absolute path, this method returns `path2` .

Exceptions

Type	Condition
ArgumentException (https://learn.microsoft.com/dotnet/api/system.argumentexception)	`path1` or `path2` contains one or more of the invalid characters defined in GetInvalidPathChars() (https://learn.microsoft.com/dotnet/api/system.io.path.getinvalidpathchars)
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	`path1` or `path2` is null (https://learn.microsoft.com/dotnet/csharp/language-reference/keywords/null)

Combine(string, string, string)

Combines three strings into a path.

Declaration

```
public static string Combine(string path1, string path2, string path3)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*path1*	The first path to combine.
string (https://learn.microsoft.com/dotnet/api/system.string)	*path2*	The second path to combine.
string (https://learn.microsoft.com/dotnet/api/system.string)	*path3*	The third path to combine.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The combined paths.

Exceptions

Type	Condition
ArgumentException (https://learn.microsoft.com/dotnet/api/system.argumentexception)	`path1` , `path2` , or `path3` contains one or more of the invalid characters defined in GetInvalidPathChars() (https://learn.microsoft.com/dotnet/api/system.io.path.getinvalidpathchars) .

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	`path1`, `path2`, or `path3` is null (https://learn.microsoft.com/dotnet/csharp/language-reference/keywords/null).

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
  - Archive (Cobilas.GodotEngine.Utility.IO.Arch
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+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Combine(string, string, string, string)

Combines four strings into a path.

Declaration

```
public static string Combine(string path1, string path2, string path3, string path4)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*path1*	The first path to combine.
string (https://learn.microsoft.com/dotnet/api/system.string)	*path2*	The second path to combine.
string (https://learn.microsoft.com/dotnet/api/system.string)	*path3*	The third path to combine.
string (https://learn.microsoft.com/dotnet/api/system.string)	*path4*	The fourth path to combine.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The combined paths.

Exceptions

Type	Condition
ArgumentException (https://learn.microsoft.com/dotnet/api/system.argumentexception)	`path1`, `path2`, `path3`, or `path4` contains one or more of the invalid characters defined in GetInvalidPathChars() (https://learn.microsoft.com/dotnet/api/system.io.path.getinvalidpathchars).
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	`path1`, `path2`, `path3`, or `path4` is null (https://learn.microsoft.com/dotnet/csharp/language-reference/keywords/null).

Combine(params string[])

Combines an array of strings into a path.

Declaration

```
public static string Combine(params string[] paths)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)[]	*paths*	An array of parts of the path.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The combined paths.

Exceptions

Type	Condition
ArgumentException (https://learn.microsoft.com/dotnet/api/system.argumentException)	One of the strings in the array contains one or more of the invalid characters defined in GetInvalidPathChars() (https://learn.microsoft.com/dotnet/api/system.io.path.getinvalidpathchars).
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullException)	One of the strings in the array is null (https://learn.microsoft.com/dotnet/csharp/language-reference/keywords/null).

GetDirectoryName(string)

Returns the directory information for the specified path string.

Declaration

```
public static string GetDirectoryName(string path)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*path*	The path of a file or directory.

Returns

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
  - Archive (Cobilas.GodotEngine.Utility.IO.Arch
  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Data
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  - GodotPath (Cobilas.GodotEngine.Utility.IO.Goc
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+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Directory information for `path`, or null (https://learn.microsoft.com/dotnet/csharp/language-reference/keywords/null) if `path` denotes a root directory or is null. Returns Empty (https://learn.microsoft.com/dotnet/api/system.string.empty) if `path` does not contain directory information.

Exceptions

Type	Condition
ArgumentException (https://learn.microsoft.com/dotnet/api/system.argumentexception)	The `path` parameter contains invalid characters, is empty, or contains only white spaces.
PathTooLongException (https://learn.microsoft.com/dotnet/api/system.io.pathtoolongexception)	In the .NET for Windows Store apps or the Portable Class Library, catch the base class exception, IOException (https://learn.microsoft.com/dotnet/api/system.io.ioexception), instead.The `path` parameter is longer than the system-defined maximum length.

GetExtension(string)

Returns the extension of the specified path string.

Declaration

```
public static string GetExtension(string path)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*path*	The path string from which to get the extension.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The extension of the specified path (including the period "."), or null (https://learn.microsoft.com/dotnet/csharp/language-reference/keywords/null), or Empty (https://learn.microsoft.com/dotnet/api/system.string.empty). If `path` is null (https://learn.microsoft.com/dotnet/csharp/language-reference/keywords/null), GetExtension(string) (https://learn.microsoft.com/dotnet/api/system.io.path.getextension) returns null (https://learn.microsoft.com/dotnet/csharp/language-reference/keywords/null). If `path` does not have extension information, GetExtension(string) (https://learn.microsoft.com/dotnet/api/system.io.path.getextension) returns Empty (https://learn.microsoft.com/dotnet/api/system.string.empty).

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  Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.
  Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Exceptions

Type	Condition
ArgumentException (https://learn.microsoft.com/dotnet/api/system.argumentexception)	`path` contains one or more of the invalid characters defined in GetInvalidPathChars() (https://learn.microsoft.com/dotnet/api/system.io.path.getinvalidpathchars).

GetFileName(string)

Returns the file name and extension of the specified path string.

Declaration

```
public static string GetFileName(string path)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*path*	The path string from which to obtain the file name and extension.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The characters after the last directory character in `path`. If the last character of `path` is a directory or volume separator character, this method returns Empty (https://learn.microsoft.com/dotnet/api/system.string.empty). If `path` is null (https://learn.microsoft.com/dotnet/csharp/language-reference/keywords/null), this method returns null (https://learn.microsoft.com/dotnet/csharp/language-reference/keywords/null).

Exceptions

Type	Condition
ArgumentException (https://learn.microsoft.com/dotnet/api/system.argumentexception)	`path` contains one or more of the invalid characters defined in GetInvalidPathChars() (https://learn.microsoft.com/dotnet/api/system.io.path.getinvalidpathchars).

GetFileNameWithoutExtension(string)

Returns the file name of the specified path string without the extension.

Declaration

```
public static string GetFileNameWithoutExtension(string path)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*path*	The path of the file.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The string returned by GetFileName(string) (https://learn.microsoft.com/dotnet/api/system.io.path.getfilename) minus the last period (.) and all characters following it.

Exceptions

Type	Condition
ArgumentException (https://learn.microsoft.com/dotnet/api/system.argumentexception)	`path` contains one or more of the invalid characters defined in GetInvalidPathChars() (https://learn.microsoft.com/dotnet/api/system.io.path.getinvalidpathchars).

GetInvalidFileNameChars()

Gets an array containing the characters that are not allowed in file names.

Declaration

```
public static char[] GetInvalidFileNameChars()
```

Returns

Type	Description
char (https://learn.microsoft.com/dotnet/api/system.char)[]	An array containing the characters that are not allowed in file names.

GetInvalidPathChars()

Gets an array containing the characters that are not allowed in path names.

Declaration

```
public static char[] GetInvalidPathChars()
```

Returns

Type	Description
char (https://learn.microsoft.com/dotnet/api/system.char) []	An array containing the characters that are not allowed in path names.

GetPathRoot(string)

Gets the root directory information of the specified path.

Declaration

```
public static string GetPathRoot(string path)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*path*	The path from which to obtain root directory information.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The root directory of `path`, such as "C:", or null (https://learn.microsoft.com/dotnet/csharp/language-reference/keywords/null) if `path` is null (https://learn.microsoft.com/dotnet/csharp/language-reference/keywords/null), or an empty string if `path` does not contain root directory information.

Exceptions

Type	Condition
ArgumentException (https://learn.microsoft.com/dotnet/api/system.argumentexception)	`path` contains one or more of the invalid characters defined in GetInvalidPathChars() (https://learn.microsoft.com/dotnet/api/system.io.path.getinvalidpathchars) or Empty (https://learn.microsoft.com/dotnet/api/system.string.empty) was passed to `path`.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
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  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
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  - Folder (Cobilas.GodotEngine.Utility.IO.Fold
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+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

GlobalizePath(string)

Returns the absolute, native OS path corresponding to the localized `path` (starting with `res://` or `user://`). The returned path will vary depending on the operating system and user preferences. See File paths in Godot projects ($DOCS_URL/tutorials/io/data_paths.html) to see what those paths convert to. See also Localize Path(string) (https://learn.microsoft.com/dotnet/api/system.string).

Note: GlobalizePath(string) (https://learn.microsoft.com/dotnet/api/system.string) with `res://` will not work in an exported project. Instead, prepend the executable's base directory to the path when running from an exported project.

```
var path = "";
if OS.has_feature("editor"):
    # Running from an editor binary.
    #  path  will contain the absolute path to `hello.txt` located in the project root.
    path = ProjectSettings.globalize_path("res://hello.txt")
else:
    # Running from an exported project.
    #  path  will contain the absolute path to `hello.txt` next to the executable.
    # This is *not* identical to using `ProjectSettings.globalize_path()` with a `res://`
    # but is close enough in spirit.
    path = OS.get_executable_path().get_base_dir().plus_file("hello.txt");
```

Declaration

```
public static string GlobalizePath(string path)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*path*	

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	

HasExtension(string)

Determines whether a path includes a file name extension.

Declaration

```
public static bool HasExtension(string path)
```

Parameters

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.h
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+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*path*	The path to search for an extension.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the path does not allow the last directory separator (\ or /) or volume separator (:) in the path include a period (.) followed by one or more characters; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Exceptions

Type	Condition
ArgumentException (https://learn.microsoft.com/dotnet/api/system.argumentexception)	`path` contains one or more of the invalid characters defined in GetInvalidPathChars() (https://learn.microsoft.com/dotnet/api/system.io.path.getinvalidpathchars).

IsInvalidFileName(string, out char)

Allows you to check if the system file name contains an invalid character.

Declaration

```
public static bool IsInvalidFileName(string name, out char invalidChar)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	The name to be checked.
char (https://learn.microsoft.com/dotnet/api/system.char)	*invalidChar*	Returns the invalid character.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when an invalid character is encountered.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
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  - ArchiveAttributes (Cobilas.GodotEngine.Utility.IO.Arch
  - DataBase (Cobilas.GodotEngine.Utility.IO.Dat
  - Folder (Cobilas.GodotEngine.Utility.IO.Fold
  - GodotPath (Cobilas.GodotEngine.Utility.IO.God
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se**

+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**

+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**

- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**

  Archive (Cobilas.GodotEngine.Utility.IO.Arch
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  Folder (Cobilas.GodotEngine.Utility.IO.Folc
  GodotPath (Cobilas.GodotEngine.Utility.IO.Goc

+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**

+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**

+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**

+ **Cobilas.GodotEngine.Utility.**

Namespace Cobilas.GodotEngine.Utility.Input

Filter by title

Classes

InputKeyBoard (Cobilas.GodotEngine.Utility.Input.InputKeyBoard.html)

This class has methods and properties that get information from keyboard and mouse inputs.

Structs

PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)

Responsible for maintaining the status information of a peripheral.

Enums

KeyCode (Cobilas.GodotEngine.Utility.Input.KeyCode.html)

Represents a list of peripheral input key codes.

KeyStatus (Cobilas.GodotEngine.Utility.Input.KeyStatus.html)

represents the state of a key.

MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html)

Represents mouse triggers.

+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
  - InputKeyBoard (Cobilas.GodotEngine.Utility.Input.
  - KeyCode (Cobilas.GodotEngine.Utility.Input.K
  - KeyStatus (Cobilas.GodotEngine.Utility.Input.
  - MouseButton (Cobilas.GodotEngine.Utility.Input.M
  - PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl**
+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
+ **Cobilas.GodotEngine.Utility.**

Class InputKeyBoard

This class has methods and properties that get information from keyboard and mouse inputs.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ InputKeyBoard

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Input (Cobilas.GodotEngine.Utility.Input.html)
Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class InputKeyBoard
```

Properties

DeltaScroll

Indicates a change in mouse scroll.

Declaration

```
public static float DeltaScroll { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Returns a floating-point value when the mouse scroll is changed.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
InputKeyBoard (Cobilas.GodotEngine.Utility.Input.I
KeyCode (Cobilas.GodotEngine.Utility.Input.K
KeyStatus (Cobilas.GodotEngine.Utility.Input.K
MouseButton (Cobilas.GodotEngine.Utility.Input.M
PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

DoubleClick

Detects a double mouse click.

Declaration

```
public static bool DoubleClick { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns true when a double mouse click is detected.

MouseGlobalPosition

The current global mouse position.

Declaration

```
public static Vector2D MouseGlobalPosition { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	Returns the mouse position based on a root Godot. Viewport.

MouseIndex

The mouse trigger index.

Declaration

```
public static int MouseIndex { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns an int (https://learn.microsoft.com/dotnet/api/system.int32) containing the index of the mouse trigger.

MousePosition

+ Cobilas.GodotEditor.Utility.
  Serialization.Properties
  (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
  Serialization.RenderObjects
  (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility
  (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.
  IO
  (Cobilas.GodotEngine.Utility.IO
- Cobilas.GodotEngine.Utility.
  Input
  (Cobilas.GodotEngine.Utility.In
  InputKeyBoard
  (Cobilas.GodotEngine.Utility.Input.I
  KeyCode
  (Cobilas.GodotEngine.Utility.Input.K
  KeyStatus
  (Cobilas.GodotEngine.Utility.Input.K
  MouseButton
  (Cobilas.GodotEngine.Utility.Input.M
  PeripheralItem
  (Cobilas.GodotEngine.Utility.Input.P
+ Cobilas.GodotEngine.Utility.
  Numerics
  (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
  Physics
  (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.
  Runtime
  (Cobilas.GodotEngine.Utility.Ru

The current mouse position.

Declaration

```
public static Vector2D MousePosition { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Mathematics.Vector2D.html)	Returns the mouse position based on the defined Godot. Viewport.

Methods

GetKeyDown(KeyCode)

Determines whether the key was pressed.

Declaration

```
public static bool GetKeyDown(KeyCode key)
```

Parameters

Type	Name	Description
KeyCode (Cobilas.GodotEngine.Utility.Input.KeyCode.html)	*key*	The target key to be verified.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the key was pressed.

Remarks

The method has overloads that allow the use of the Godot.KeyList, MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html) and Godot.ButtonList enumerators.

Examples

```
using Godot;
using Cobilas.GodotEngine.Utility.Input;

public override void _Process(float delta) {
    if (InputKeyBoard.GetKeyDown(KeyCode.A))
        GD.Print("This instruction will only be called each time the key is pressed.");
}
```

GetKeyDown(MouseButton)

Determines whether the key was pressed.

Declaration

```
public static bool GetKeyDown(MouseButton key)
```

Parameters

Type	Name	Description
MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html)	*key*	The target key to be verified.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the key was pressed.

Remarks

The method has overloads that allow the use of the Godot.KeyList, MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html) and Godot.ButtonList enumerators.

Examples

```
using Godot;
using Cobilas.GodotEngine.Utility.Input;

public override void _Process(float delta) {
    if (InputKeyBoard.GetKeyDown(KeyCode.A))
        GD.Print("This instruction will only be called each time the key is pressed.");
}
```

GetKeyDown(KeyList)

Determines whether the key was pressed.

Declaration

```
public static bool GetKeyDown(KeyList key)
```

Parameters

Type	Name	Description
KeyList	*key*	The target key to be verified.

Returns

- Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
  - InputKeyBoard (Cobilas.GodotEngine.Utility.Input.I
  - KeyCode (Cobilas.GodotEngine.Utility.Input.K
  - KeyStatus (Cobilas.GodotEngine.Utility.Input.K
  - MouseButton (Cobilas.GodotEngine.Utility.Input.M
  - PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
- Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
- Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
- Cobilas.GodotEngine.Utility.

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the key was pressed.

Remarks

The method has overloads that allow the use of the Godot.KeyList, MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html) and Godot.ButtonList enumerators.

Examples

```
using Godot;
using Cobilas.GodotEngine.Utility.Input;

public override void _Process(float delta) {
    if (InputKeyBoard.GetKeyDown(KeyCode.A))
        GD.Print("This instruction will only be called each time the key is pressed.");
}
```

GetKeyPress(KeyCode)

Determines whether the specified key is pressed.

Declaration

```
public static bool GetKeyPress(KeyCode key)
```

Parameters

Type	Name	Description
KeyCode (Cobilas.GodotEngine.Utility.Input.KeyCode.html)	*key*	The target key to be verified.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the key is being pressed.

Remarks

The method has overloads that allow the use of the Godot.KeyList, MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html) and Godot.ButtonList enumerators.

Examples

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
  InputKeyBoard (Cobilas.GodotEngine.Utility.Input.I
  KeyCode (Cobilas.GodotEngine.Utility.Input.K
  KeyStatus (Cobilas.GodotEngine.Utility.Input.K
  MouseButton (Cobilas.GodotEngine.Utility.Input.M
  PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

```
using Godot;
using Cobilas.GodotEngine.Utility.Input;

public override void _Process(float delta) {
    if (InputKeyBoard.GetKeyPress(KeyCode.A))
        GD.Print("The instruction will be called constantly as long as the key is presse
d.");
}
```

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser

GetKeyPress(MouseButton)

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser

Determines whether the key is being pressed.

+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.In

Declaration

```
public static bool GetKeyPress(MouseButton key)
```

+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO

Parameters

Type	Name	Description
MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html)	*key*	The target key to be verified.

- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the key is being pressed.

InputKeyBoard (Cobilas.GodotEngine.Utility.Input.I

KeyCode (Cobilas.GodotEngine.Utility.Input.K

KeyStatus (Cobilas.GodotEngine.Utility.Input.K

MouseButton (Cobilas.GodotEngine.Utility.Input.M

PeripheralItem (Cobilas.GodotEngine.Utility.Input.P

Remarks

The method has overloads that allow the use of the Godot.KeyList, MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html) and Godot.ButtonList enumerators.

Examples

```
using Godot;
using Cobilas.GodotEngine.Utility.Input;

public override void _Process(float delta) {
    if (InputKeyBoard.GetKeyPress(KeyCode.A))
        GD.Print("The instruction will be called constantly as long as the key is presse
d.");
}
```

+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N

+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru

GetKeyPress(KeyList)

Determines whether the key is being pressed.

+ Cobilas.GodotEngine.Utility.

Declaration

```
public static bool GetKeyPress(KeyList key)
```

Parameters

Type	Name	Description
KeyList	*key*	The target key to be verified.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the key is being pressed.

Remarks

The method has overloads that allow the use of the Godot.KeyList, MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html) and Godot.ButtonList enumerators.

Examples

```
using Godot;
using Cobilas.GodotEngine.Utility.Input;

public override void _Process(float delta) {
    if (InputKeyBoard.GetKeyPress(KeyCode.A))
        GD.Print("The instruction will be called constantly as long as the key is presse
d.");
}
```

GetKeyUp(KeyCode)

Determines whether the key has been released.

Declaration

```
public static bool GetKeyUp(KeyCode key)
```

Parameters

Type	Name	Description
KeyCode (Cobilas.GodotEngine.Utility.Input.KeyCode.html)	*key*	The target key to be verified.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the key was released.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
  - InputKeyBoard (Cobilas.GodotEngine.Utility.Input.I
  - KeyCode (Cobilas.GodotEngine.Utility.Input.K
  - KeyStatus (Cobilas.GodotEngine.Utility.Input.K
  - MouseButton (Cobilas.GodotEngine.Utility.Input.M
  - PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Remarks

The method has overloads that allow the use of the Godot.KeyList, MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html) and Godot.ButtonList enumerators.

Examples

```
using Godot;
using Cobilas.GodotEngine.Utility.Input;

public override void _Process(float delta) {
    if (InputKeyBoard.GetKeyUp(KeyCode.A))
        GD.Print("This instruction will only be called whenever the key is released.");
}
```

GetKeyUp(MouseButton)

Determines whether the key has been released.

Declaration

```
public static bool GetKeyUp(MouseButton key)
```

Parameters

Type	Name	Description
MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html)	*key*	The target key to be verified.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the key was released.

Remarks

The method has overloads that allow the use of the Godot.KeyList, MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html) and Godot.ButtonList enumerators.

Examples

```
using Godot;
using Cobilas.GodotEngine.Utility.Input;

public override void _Process(float delta) {
    if (InputKeyBoard.GetKeyUp(KeyCode.A))
        GD.Print("This instruction will only be called whenever the key is released.");
}
```

GetKeyUp(KeyList)

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
  InputKeyBoard (Cobilas.GodotEngine.Utility.Input.I
  KeyCode (Cobilas.GodotEngine.Utility.Input.K
  KeyStatus (Cobilas.GodotEngine.Utility.Input.K
  MouseButton (Cobilas.GodotEngine.Utility.Input.M
  PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Determines whether the key has been released.

Declaration

```
public static bool GetKeyUp(KeyList key)
```

Parameters

Type	Name	Description
KeyList (Cobilas.GodotEngine.Utility.Input.KeyList.html)	*key*	The target key to be verified.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the key was released.

Remarks

The method has overloads that allow the use of the Godot.KeyList, MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html) and Godot.ButtonList enumerators.

Examples

```
using Godot;
using Cobilas.GodotEngine.Utility.Input;

public override void _Process(float delta) {
    if (InputKeyBoard.GetKeyUp(KeyCode.A))
        GD.Print("This instruction will only be called whenever the key is released.");
}
```

GetMouseDown(MouseButton)

Determines whether the mouse trigger was pressed.

Declaration

```
public static bool GetMouseDown(MouseButton button)
```

Parameters

Type	Name	Description
MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html)	*button*	The target mouse trigger to be checked.

Returns

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
  InputKeyBoard (Cobilas.GodotEngine.Utility.Input.I
  KeyCode (Cobilas.GodotEngine.Utility.Input.K
  KeyStatus (Cobilas.GodotEngine.Utility.Input.K
  MouseButton (Cobilas.GodotEngine.Utility.Input.M
  PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the mouse trigger was pressed.

GetMouseDown(int)

Determines whether the mouse trigger was pressed.

Declaration

```
public static bool GetMouseDown(int buttonIndex)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*buttonIndex*	The target index to be checked.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the mouse trigger was pressed.

GetMousePress(MouseButton)

Determines whether the mouse trigger is being pressed.

Declaration

```
public static bool GetMousePress(MouseButton button)
```

Parameters

Type	Name	Description
MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html)	*button*	The target mouse trigger to be checked.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the mouse trigger is being pressed.

GetMousePress(int)

Determines whether the mouse trigger is being pressed.

Declaration

```
public static bool GetMousePress(int buttonIndex)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*buttonIndex*	The target index to be checked.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the mouse trigger is being pressed.

GetMouseUp(MouseButton)

Determines whether the mouse trigger has been drop by the user.

Declaration

```
public static bool GetMouseUp(MouseButton button)
```

Parameters

Type	Name	Description
MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html)	*button*	The target mouse trigger to be checked.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the mouse trigger was released by the user.

GetMouseUp(int)

Determines whether the mouse trigger has been drop by the user.

Declaration

```
public static bool GetMouseUp(int buttonIndex)
```

Parameters

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
  - InputKeyBoard (Cobilas.GodotEngine.Utility.Input.I
  - KeyCode (Cobilas.GodotEngine.Utility.Input.K
  - KeyStatus (Cobilas.GodotEngine.Utility.Input.K
  - MouseButton (Cobilas.GodotEngine.Utility.Input.M
  - PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*buttonIndex*	The target index to be checked.

Returns

Type		Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)		Returns `true` if the mouse trigger was released by the user.

+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
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  - KeyCode (Cobilas.GodotEngine.Utility.Input.K
  - KeyStatus (Cobilas.GodotEngine.Utility.Input.K
  - MouseButton (Cobilas.GodotEngine.Utility.Input.M
  - PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
+ **Cobilas.GodotEngine.Utility.**

Enum KeyCode

Represents a list of peripheral input key codes.

Filter by title

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Input (Cobilas.GodotEngine.Utility.Input.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public enum KeyCode : ulong
```

Fields

Name	Description
A	A key.
Aacute	Á key.
Acircumflex	Â key.
Acute	key.
Adiaeresis	Ä key.
Ae	Æ key.
Agrave	À key.
Alt	Alt key.
Ampersand	& key.
Apostrophe	' key.
Aring	Å key.
Asciicircum	^ key.
Asciitilde	~ key.
Asterisk	* key.
At	@ key.
Atilde	Ã key.
B	B key.
Back	Media back key. Not to be confused with the Back button on an Android device.
Backslash	\ key.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
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  - InputKeyBoard (Cobilas.GodotEngine.Utility.Input.I
  - KeyCode (Cobilas.GodotEngine.Utility.Input.K
  - KeyStatus (Cobilas.GodotEngine.Utility.Input.K
  - MouseButton (Cobilas.GodotEngine.Utility.Input.M
  - PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Name	Description
Backspace	Backspace key.
Backtab	Shift+Tab key.
Bar	| key.
Bassboost	Bass Boost key.
Bassdown	Bass Down key.
Bassup	Bass up key.
Braceleft	{ key.
Braceright	} key.
Bracketleft	[key.
Bracketright	] key.
Brokenbar	¦ key.
C	C key.
Capslock	Caps Lock key.
Ccedilla	Ç key.
Cedilla	ÿ key.
Cent	¢ key.
Clear	Clear key.
Colon	: key.
Comma	, key.
Control	Control key.
Copyright	© key.
Currency	¤ key.
D	D key.
Degree	° key.
Delete	Delete key.
Diaeresis	¨ key.
DirectionL	Left Direction key.
DirectionR	Right Direction key.
Division	÷ key.
Dollar	$ key.
Down	Down arrow key.

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+ Cobilas.GodotEngine.Utility.

Name	Description
E	E key.
Eacute	É key.
Ecircumflex	Ê key.
Ediaeresis	Ë key.
Egrave	È key.
End	End key.
Enter	Return key (on the main keyboard).
Equal	= key.
Escape	Escape key.
Etc	D key.
Exclam	! key.
Exclamdown	¡ key.
F	F key.
F1	F1 key.
F10	F10 key.
F11	F11 key.
F12	F12 key.
F13	F13 key.
F14	F14 key.
F15	F15 key.
F16	F16 key.
F2	F2 key.
F3	F3 key.
F4	F4 key.
F5	F5 key.
F6	F6 key.
F7	F7 key.
F8	F8 key.
F9	F9 key.
Favorites	Favorites key.
Forward	Media forward key.

+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
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+ **Cobilas.GodotEngine.Utility.**

Name	Description
G	G key.
Greater	> key.
Guillemotleft	« key.
Guillemotright	» key.
H	H key.
Help	Help key.
Home	F16 key.
Homepage	Home page key.
Hyphen	Hyphen key.
Hyphen	Soft hyphen key.
I	I key.
Iacute	Í key.
Icircumflex	Î key.
Idiaeresis	Ï key.
Igrave	J key.
Insert	Insert key.
J	J key.
K	K key.
Key0	Number 0.
Key1	Number 1.
Key2	Number 2.
Key3	Number 3.
Key4	Number 4.
Key5	Number 5.
Key6	Number 6.
Key7	Number 7.
Key8	Number 8.
Key9	Number 9.
KpC	Number 0 on the numeric keypad.
Kp1	Number 1 on the numeric keypad.

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Name	Description
Kp2	Number 2 on the numeric keypad.
Kp3	Number 3 on the numeric keypad.
Kp4	Number 4 on the numeric keypad.
Kp5	Number 5 on the numeric keypad.
Kp6	Number 6 on the numeric keypad.
Kp7	Number 7 on the numeric keypad.
Kp8	Number 8 on the numeric keypad.
Kp9	Number 9 on the numeric keypad.
KpDecimal	Decimal key on the numeric keypad.
KpDivide	Divide (/) key on the numeric keypad.
KpEnter	Enter key on the numeric keypad.
KpMultiply	Multiply (*) key on the numeric keypad.
KpPeriod	Period (.) key on the numeric keypad.
KpSubtract	Subtract (-) key on the numeric keypad.
L	L key.
Launch0	Launch Shortcut 0 key.
Launch1	Launch Shortcut 1 key.
Launch2	Launch Shortcut 2 key.
Launch3	Launch Shortcut 3 key.
Launch4	Launch Shortcut 4 key.
Launch5	Launch Shortcut 5 key.
Launch6	Launch Shortcut 6 key.
Launch7	Launch Shortcut 7 key.
Launch8	Launch Shortcut 8 key.
Launch9	Launch Shortcut 9 key.
LaunchA	Launch Shortcut A key.
LaunchB	Launch Shortcut B key.
Launchc	Launch Shortcut C key.
Launchd	Launch Shortcut D key.
LaunchE	Launch Shortcut E key.
Launchf	Launch Shortcut F key.

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+ **Cobilas.GodotEngine.Utility.**

Name	Description
Launchmail	Launch Mail key.
Launchmedia	Launch Media key.
Left	Left arrow key.
Less	< key.
M	M key.
Macron	¯ key.
Masculine	º key.
Medianext	Next song key.
Mediaplay	Media play key.
Mediaprevious	Previous song key.
Mediarecord	Media record key.
Mediastop	Media stop key.
Menu	Context menu key.
Meta	Meta key.
Minus	- key.
MouseLeft	Left mouse button.
MouseMiddle	Middle mouse button.
MouseRight	Right mouse button.
MouseWheelDown	Mouse wheel down.
MouseWheelLeft	Mouse wheel left button (only present on some mice).
MouseWheelRight	Mouse wheel right button (only present on some mice).
MouseWheelUp	Mouse wheel up.
MouseXB1	Extra mouse button 1 (only present on some mice).
MouseXB2	Extra mouse button 2 (only present on some mice).
MouseXB3	Extra mouse button 3 (only present on some mice).
MouseXB4	Extra mouse button 4 (only present on some mice).
MouseXB5	Extra mouse button 5 (only present on some mice).
MouseXB6	Extra mouse button 6 (only present on some mice).
Mu	µ key.
Multiply	* key.
N	N key.

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+ **Cobilas.GodotEngine.Utility.**

Name	Description
Nobreakspace	Non-breakable space key.
None	None key.
Notsign	¬ key.
Ntilde	Ñ key.
Numbersign	# key.
Numlock	Num Lock key.
O	O key.
Oacute	Ó key.
Ocircumflex	Ô key.
Odiaeresis	Ö key.
Ograve	Ò key.
Onehalf	½ key.
Onequarter	¼ key.
Onesuperior	¹ key.
Oslash	Ø key.
Openurl	Open URL / Launch Browser key.
Ordfeminine	ª key.
Otilde	Õ key.
P	P key.
Pagedown	Page Down key.
Pageup	Page Up key.
Paragraph	¶ key.
Parenleft	(key.
Parenright	) key.
Percent	% key.
Period	. key.
Periodcentered	· key.
Plus	+ key.
Plusminus	± key.
Print	Print Screen key.

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+ Cobilas.GodotEngine.Utility.

Name	Description
Q	Q key.
Question	? key.
Questiondown	¿ key.
Quotedbl	" key.
Quotesingle	' key.
R	R key.
Refresh	Media refresh key.
Registered	® key.
RightBracket	Right bracket key.
S	S key.
Scrollock	Scroll Lock key.
Search	Search key.
Section	§ key.
Semicolon	; key.
Shift	Shift key.
Slash	/ key.
Space	Space key.
Sshaped	ß key.
Standby	Standby key.
Sterling	£ key.
Stop	Media stop key.
SuperL	Left Super key (Windows key).
SuperR	Right Super key (Windows key).
Sysreq	System Request key.
T	T key.
Tab	Tab key.
Thorn	Þ key.
Threequarters	¾ key.
Threesuperior	³ key.
Trebledown	Treble Down key.
Trebleup	Treble Up key.

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+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
+ **Cobilas.GodotEngine.Utility.**

Name	Description
Twosuperior	² key.
U	U key.
Uacute	Ú key.
Ucircumflex	Û key.
Udiaeresis	Ü key.
Ugrave	U key.
Underscore	_ key.
Unknown	Unknown key.
Up	Up arrow key.
V	V key.
Volumedown	Volume down key.
Volumemute	Mute volume key.
Volumeup	Volume up key.
W	W key.
X	X key.
Y	Y key.
Yacute	Ý key.
Ydiaeresis	ÿ key.
Yen	¥ key.
Z	Z key.

+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
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Enum KeyStatus

represents the state of a key.

Filter by title

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Input (Cobilas.GodotEngine.Utility.Input.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
[Flags]
public enum KeyStatus : byte
```

Fields

Name	Description
Down	Occurs when the key has been pressed.
None	No status detected.
Press	Occurs when the key is being pressed.
Up	Occurs when the key has been released.

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Enum MouseButton

Represents mouse triggers.

Filter by title

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Input (Cobilas.GodotEngine.Utility.Input.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public enum MouseButton : byte
```

Fields

Name	Description
MouseLeft	Left mouse button.
MouseMiddle	Middle mouse button.
MouseRight	Right mouse button.
MouseWheelDown	Mouse wheel down.
MouseWheelLeft	Mouse wheel left button (only present on some mice).
MouseWheelRight	Mouse wheel right button (only present on some mice).
MouseWheelUp	Mouse wheel up.
MouseXB1	Extra mouse button 1 (only present on some mice).
MouseXB2	Extra mouse button 2 (only present on some mice).
MouseXB3	Extra mouse button 3 (only present on some mice).
MouseXB4	Extra mouse button 4 (only present on some mice).
MouseXB5	Extra mouse button 5 (only present on some mice).
MouseXB6	Extra mouse button 6 (only present on some mice).
Unknown	Unidentified trigger.

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Struct PeripheralItem

Responsible for maintaining the status information of a peripheral.

Filter by title

Implements

IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)>
IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<KeyCode (Cobilas.GodotEngine.Utility.Input.KeyCode.html)>
IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<KeyList>
IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html)>
IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<KeyStatus (Cobilas.GodotEngine.Utility.Input.KeyStatus.html)>
IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<ulong (https://learn.microsoft.com/dotnet/api/system.uint64)>

Inherited Members

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Input (Cobilas.GodotEngine.Utility.Input.html)

Assembly: com.cobilas.godot.utility.dll

Syntax:

```
public struct PeripheralItem : IEquatable<PeripheralItem>, IEquatable<KeyCode>, IEquatable<KeyList>, IEquatable<MouseButton>, IEquatable<KeyStatus>, IEquatable<ulong>
```

Constructors

PeripheralItem(KeyCode)

Starts a new instance of the object.

Declaration

```
public PeripheralItem(KeyCode keyCode)
```

Parameters

Type	Name	Description
KeyCode (Cobilas.GodotEngine.Utility.Input.KeyCode.html)	*keyCode*	

PeripheralItem(KeyCode, KeyStatus)

Starts a new instance of the object.

Declaration

```
public PeripheralItem(KeyCode keyCode, KeyStatus keyStatus)
```

Parameters

Type	Name	Description
KeyCode (Cobilas.GodotEngine.Utility.Input.KeyCode.html)	*keyCode*	
KeyStatus (Cobilas.GodotEngine.Utility.Input.KeyStatus.html)	*keyStatus*	

Properties

Empty

Represents an empty PeripheralItem.

Declaration

```
public static PeripheralItem Empty { get; }
```

Property Value

Type	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	Returns an empty representation of PeripheralItem.

IsMouseButton

Indicates whether it is a mouse trigger.

Declaration

```
public readonly bool IsMouseButton { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the object is a mouse trigger.

KeyCode

Representation of a peripheral input.

Declaration

```
public readonly KeyCode KeyCode { get; }
```

Property Value

Type	Description
KeyCode (Cobilas.GodotEngine.Utility.Input.KeyCode.html)	Returns a representation of a peripheral input.

ScanCode

This ScanCode is a representation of the KeyCode (Cobilas.GodotEngine.Utility.Input.KeyCode.html).

Declaration

```
public readonly ulong ScanCode { get; }
```

Property Value

Type	Description
ulong (https://learn.microsoft.com/dotnet/api/system.uint64)	Returns a code representing a KeyCode (Cobilas.GodotEngine.Utility.Input.KeyCode.html) key.

Status

Represents the status of a peripheral input.

Declaration

```
public KeyStatus Status { readonly get; set; }
```

Property Value

Type	Description
KeyStatus (Cobilas.GodotEngine.Utility.Input.KeyStatus.html)	Allows you to change the status of the object.

Methods

Equals(KeyCode)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(KeyCode other)
```

Parameters

Type	Name	Description
KeyCode (Cobilas.GodotEngine.Utility.Input.KeyCode.html)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(KeyStatus)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(KeyStatus other)
```

Parameters

Type	Name	Description
KeyStatus (Cobilas.GodotEngine.Utility.Input.KeyStatus.html)	*other*	An object to compare with this object.

Returns

+ Cobilas.GodotEditor.Utility.
  Properties
  (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEditor.Utility.
  Serialization.RenderObjects
  (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility
  (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.
  IO
  (Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.
  Input
  (Cobilas.GodotEngine.Utility.In
  InputKeyBoard
  (Cobilas.GodotEngine.Utility.Input.I
  KeyCode
  (Cobilas.GodotEngine.Utility.Input.K
  KeyStatus
  (Cobilas.GodotEngine.Utility.Input.K
  MouseButton
  (Cobilas.GodotEngine.Utility.Input.M
  PeripheralItem
  (Cobilas.GodotEngine.Utility.Input.P
+ Cobilas.GodotEngine.Utility.
  Numerics
  (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
  Physics
  (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.
  Runtime
  (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Description
bool (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(MouseButton)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(MouseButton other)
```

Parameters

Type	Name	Description
MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(PeripheralItem)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(PeripheralItem other)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(KeyList)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(KeyList other)
```

Parameters

Type	Name	Description
KeyList	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(object)

Indicates whether this instance and a specified object are equal.

Declaration

```
public override readonly bool Equals(object obj)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*obj*	The object to compare with the current instance.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if `obj` and this instance are the same type and represent the same value; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Overrides

ValueTuple.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

Equals(ulong)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(ulong other)
```

Parameters

Type	Name	Description
ulong (https://learn.microsoft.com/dotnet/api/system.uint64)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

GetHashCode()

Returns the hash code for this instance.

Declaration

```
public override readonly int GetHashCode()
```

Returns

+ Cobilas.GodotEditor.Utility.
  Serialization.Properties
  (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
  Serialization.RenderObjects
  (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility
  (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.
  IO
  (Cobilas.GodotEngine.Utility.IO
- Cobilas.GodotEngine.Utility.
  Input
  (Cobilas.GodotEngine.Utility.In
  InputKeyBoard
  (Cobilas.GodotEngine.Utility.Input.I
  KeyCode
  (Cobilas.GodotEngine.Utility.Input.K
  KeyStatus
  (Cobilas.GodotEngine.Utility.Input.K
  MouseButton
  (Cobilas.GodotEngine.Utility.Input.M
  PeripheralItem
  (Cobilas.GodotEngine.Utility.Input.P
+ Cobilas.GodotEngine.Utility.
  Numerics
  (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
  Physics
  (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.
  Runtime
  (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A 32-bit signed integer that is the hash code for this instance.

Overrides

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

ToString()

Returns the fully qualified type name of this instance.

Declaration

```
public override readonly string ToString()
```

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The fully qualified type name.

Overrides

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)

Operators

operator ==(PeripheralItem, KeyCode)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(PeripheralItem A, KeyCode B)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be compared.
KeyCode (Cobilas.GodotEngine.Utility.Input.KeyCode.html)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator ==(PeripheralItem, KeyStatus)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(PeripheralItem A, KeyStatus B)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be compared.
KeyStatus (Cobilas.GodotEngine.Utility.Input.KeyStatus.html)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator ==(PeripheralItem, MouseButton)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(PeripheralItem A, MouseButton B)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be compared.
MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator ==(PeripheralItem, PeripheralItem)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(PeripheralItem A, PeripheralItem B)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be compared.
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
  - InputKeyBoard (Cobilas.GodotEngine.Utility.Input.I
  - KeyCode (Cobilas.GodotEngine.Utility.Input.K
  - KeyStatus (Cobilas.GodotEngine.Utility.Input.K
  - MouseButton (Cobilas.GodotEngine.Utility.Input.M
  - PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

```
public static bool operator ==(PeripheralItem A, PeripheralItem B)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be compared.
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator ==(PeripheralItem, KeyList)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(PeripheralItem A, KeyList B)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be compared.
KeyList	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator ==(PeripheralItem, ulong)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(PeripheralItem A, ulong B)
```

Parameters

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
  - InputKeyBoard (Cobilas.GodotEngine.Utility.Input.I
  - KeyCode (Cobilas.GodotEngine.Utility.Input.K
  - KeyStatus (Cobilas.GodotEngine.Utility.Input.K
  - MouseButton (Cobilas.GodotEngine.Utility.Input.M
  - PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be compared.
ulong (https://learn.microsoft.com/dotnet/api/system.uint64)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

explicit operator KeyCode(PeripheralItem)

Explicit conversion operator.(PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html) to KeyCode (Cobilas.GodotEngine.Utility.Input.KeyCode.html))

Declaration

```
public static explicit operator KeyCode(PeripheralItem A)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be converted.

Returns

Type	Description
KeyCode (Cobilas.GodotEngine.Utility.Input.KeyCode.html)	

explicit operator KeyStatus(PeripheralItem)

Explicit conversion operator.(PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html) to KeyStatus (Cobilas.GodotEngine.Utility.Input.KeyStatus.html))

Declaration

```
public static explicit operator KeyStatus(PeripheralItem A)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be converted.

Returns

Type	Description
KeyStatus (Cobilas.GodotEngine.Utility.Input.KeyStatus.html)	

explicit operator MouseButton(PeripheralItem)

Explicit conversion operator.(PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html) to Mouse Button (Cobilas.GodotEngine.Utility.Input.MouseButton.html))

Declaration

```
public static explicit operator MouseButton(PeripheralItem A)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be converted.

Returns

Type	Description
MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html)	

explicit operator KeyList(PeripheralItem)

Explicit conversion operator.(PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html) to Godot.KeyList)

Declaration

```
public static explicit operator KeyList(PeripheralItem A)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be converted.

Returns

Type	Description
KeyList	

explicit operator string(PeripheralItem)

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
  - InputKeyParam (Cobilas.GodotEngine.Utility.Input.I
  - KeyCode (Cobilas.GodotEngine.Utility.Input.K
  - KeyStatus (Cobilas.GodotEngine.Utility.Input.K
  - MouseButton (Cobilas.GodotEngine.Utility.Input.M
  - PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Explicit conversion operator.(PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html) to ulong (https://learn.microsoft.com/dotnet/api/system.uint64))

Declaration

```
public static explicit operator ulong(PeripheralItem A)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be converted.

Returns

Type	Description
ulong (https://learn.microsoft.com/dotnet/api/system.uint64)	

operator !=(PeripheralItem, KeyCode)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(PeripheralItem A, KeyCode B)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be compared.
KeyCode (Cobilas.GodotEngine.Utility.Input.KeyCode.html)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator !=(PeripheralItem, KeyStatus)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(PeripheralItem A, KeyStatus B)
```

Parameters

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
  InputKeyBoard (Cobilas.GodotEngine.Utility.Input.I
  KeyCode (Cobilas.GodotEngine.Utility.Input.K
  KeyStatus (Cobilas.GodotEngine.Utility.Input.K
  MouseButton (Cobilas.GodotEngine.Utility.Input.M
  PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be compared.
KeyStatus (Cobilas.GodotEngine.Utility.Input.KeyStatus.html)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator !=(PeripheralItem, MouseButton)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(PeripheralItem A, MouseButton B)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be compared.
MouseButton (Cobilas.GodotEngine.Utility.Input.MouseButton.html)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator !=(PeripheralItem, PeripheralItem)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(PeripheralItem A, PeripheralItem B)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be compared.
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator !=(PeripheralItem, KeyList)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(PeripheralItem A, KeyList B)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be compared.
KeyList	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator !=(PeripheralItem, ulong)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(PeripheralItem A, ulong B)
```

Parameters

Type	Name	Description
PeripheralItem (Cobilas.GodotEngine.Utility.Input.PeripheralItem.html)	*A*	Object to be compared.
ulong (https://learn.microsoft.com/dotnet/api/system.uint64)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
  - InputKeyBoard (Cobilas.GodotEngine.Utility.Input.I
  - KeyCode (Cobilas.GodotEngine.Utility.Input.K
  - KeyStatus (Cobilas.GodotEngine.Utility.Input.K
  - MouseButton (Cobilas.GodotEngine.Utility.Input.M
  - PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.

Implements

IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)

+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se**
+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
  - InputKeyBoard (Cobilas.GodotEngine.Utility.Input.I
  - KeyCode (Cobilas.GodotEngine.Utility.Input.K
  - KeyStatus (Cobilas.GodotEngine.Utility.Input.K
  - MouseButton (Cobilas.GodotEngine.Utility.Input.M
  - PeripheralItem (Cobilas.GodotEngine.Utility.Input.P
+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
+ **Cobilas.GodotEngine.Utility.**

Namespace Cobilas.GodotEngine.Utility.Numerics

Filter by title

- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
  - Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
  - Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
  - Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
    - IIntVector (Cobilas.GodotEngine.Utility.Numer
    - IVector (Cobilas.GodotEngine.Utility.Numer
    - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
    - Quaternion (Cobilas.GodotEngine.Utility.Numer
    - Vector4D (Cobilas.GodotEngine.Utility.Numer
    - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
    - Vector3D (Cobilas.GodotEngine.Utility.Numer
    - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
    - Vector4D (Cobilas.GodotEngine.Utility.Numer
    - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
  - Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Structs

Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)

Quaternions are used to represent rotations.

Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)

Represents a two-dimensional vector

Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)

Representation of a two-dimensional vector using integers.

Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)

Represents a three-dimensional vector.

Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)

Representation of a three-dimensional vector using integers.

Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)

Represents a four-dimensional vector.(Four-axis vector)

VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numerics.VectorEqualityComparer.html)

Defines methods to support comparing vectors for equality.

Interfaces

IIntVector (Cobilas.GodotEngine.Utility.Numerics.IIntVector.html)

Standardization interface for vectors.

IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html)

Standardization interface for vectors.

IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numerics.IVectorGeneric-1.html)

Standardization interface for vectors.

+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**

+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**

+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**

+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**

- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**

  IIntVector (Cobilas.GodotEngine.Utility.Numer
  IVector (Cobilas.GodotEngine.Utility.Numer
  IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  Quaternion (Cobilas.GodotEngine.Utility.Numer
  Vector2D (Cobilas.GodotEngine.Utility.Numer
  Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  Vector3D (Cobilas.GodotEngine.Utility.Numer
  Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  Vector4D (Cobilas.GodotEngine.Utility.Numer
  VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer

+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

Interface IIntVector

Standardization interface for vectors.

Filter by title

Inherited Members

IFormattable.ToString(string, IFormatProvider)
(https://learn.microsoft.com/dotnet/api/system.iformattable.tostring)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Numerics (Cobilas.GodotEngine.Utility.Numerics.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public interface IIntVector : IFormattable
```

Properties

AxisCount

Number of axes.

Declaration

```
int AxisCount { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns the number of axes a vector has.

this[int]

Allows you to access the axes of a vector through an index.

Declaration

```
int this[int index] { get; set; }
```

Parameters

+ Cobilas.GodotEngine.Utility.Serialization.RenderObjects (Cobilas.GodotEngine.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	The axis index.

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Sets the value of an axis by specifying its index.

aspect

Returns the aspect ratio of this vector, the ratio of IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x to IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y.

Declaration

```
float aspect { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x component divided by the IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y component.

magnitude

Returns the length (magnitude) of this vector.

Declaration

```
float magnitude { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The length of this vector.

See Also

LengthSquared()

sqrMagnitude

- int (https://learn.microsoft.com/dotnet/api/system.int32)
+ Cobilas.GodotEngine.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Returns the squared length (squared magnitude) of this vector. This method runs faster than magnitude (Cobilas.GodotEngine.Utility.Numerics.IVector.html#Cobilas_GodotEngine_Utility_Numerics_IVector_magnitude), so prefer it if you need to compare vectors or need the squared length for some formula.

Declaration

```
int sqrMagnitude { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	The squared length of this vector.

Methods

ToString(string)

Formats the value of the current instance using the specified format.

Declaration

```
string ToString(string format)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  IIntVector (Cobilas.GodotEngine.Utility.Numer
  IVector (Cobilas.GodotEngine.Utility.Numer
  IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  Quaternion (Cobilas.GodotEngine.Utility.Numer
  Vector2D (Cobilas.GodotEngine.Utility.Numer
  Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  Vector3D (Cobilas.GodotEngine.Utility.Numer
  Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  Vector4D (Cobilas.GodotEngine.Utility.Numer
  VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Interface IVector

Standardization interface for vectors.

Filter by title

Inherited Members

IFormattable.ToString(string, IFormatProvider)
(https://learn.microsoft.com/dotnet/api/system.iformattable.tostring)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Numerics (Cobilas.GodotEngine.Utility.Numerics.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public interface IVector : IFormattable
```

Properties

AxisCount

Number of axes.

Declaration

```
int AxisCount { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns the number of axes a vector has.

this[int]

Allows you to access the axes of a vector through an index.

Declaration

```
float this[int index] { get; set; }
```

Parameters

+ Cobilas.GodotEngine.Utility.Serialization.RenderObjects (Cobilas.GodotEngine.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	The axis index.

Property Value

Type		Description
float (https://learn.microsoft.com/dotnet/api/system.single)		Sets the value of an axis by specifying its index.

Normalized

Returns the vector scaled to unit length. Equivalent to `v / v.Length()`.

Declaration

```
IVector Normalized { get; }
```

Property Value

Type	Description
IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html)	A normalized version of the vector.

aspect

Returns the aspect ratio of this vector, the ratio of IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x to IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y.

Declaration

```
float aspect { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x component divided by the IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y component.

ceil

Returns a new vector with all components rounded up (towards positive infinity).

Declaration

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

```
IVector ceil { get; }
```

Property Value

Type	Description
IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html)	A vector with Ceil(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

floor

Returns a new vector with all components rounded down (towards negative infinity).

Declaration

```
IVector floor { get; }
```

Property Value

Type	Description
IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html)	A vector with Floor(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

magnitude

Returns the length (magnitude) of this vector.

Declaration

```
float magnitude { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The length of this vector.

See Also

LengthSquared()

sqrMagnitude

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Returns the squared length (squared magnitude) of this vector. This method runs faster than magnitude (Cobilas.GodotEngine.Utility.Numerics.IVector.html#Cobilas_GodotEngine_Utility_Numerics_IVector_magnitude), so prefer it if you need to compare vectors or need the squared length for some formula.

Declaration

```
float sqrMagnitude { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The squared length of this vector.

Methods

Round()

Returns this vector with all components rounded to the nearest integer, with halfway cases rounded towards the nearest multiple of two.

Declaration

```
IVector Round()
```

Returns

Type	Description
IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html)	The rounded vector.

ToString(string)

Formats the value of the current instance using the specified format.

Declaration

```
string ToString(string format)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	format	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**

+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**

+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**

+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**

- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**

  IIntVector (Cobilas.GodotEngine.Utility.Numer
  IVector (Cobilas.GodotEngine.Utility.Numer
  IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  1.html)
  Quaternion (Cobilas.GodotEngine.Utility.Numer
  Vector2D (Cobilas.GodotEngine.Utility.Numer
  Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  Vector3D (Cobilas.GodotEngine.Utility.Numer
  Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  Vector4D (Cobilas.GodotEngine.Utility.Numer
  VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer

+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

Interface IVectorGeneric<TVector>

Standardization interface for vectors.

Filter by title

Inherited Members

IEquatable<TVector>.Equals(TVector) (https://learn.microsoft.com/dotnet/api/system.iequatable-1.equals)
IVector.magnitude
(Cobilas.GodotEngine.Utility.Numerics.IVector.html#Cobilas_GodotEngine_Utility_Numerics_IVector_magnitude)
IVector.sqrMagnitude
(Cobilas.GodotEngine.Utility.Numerics.IVector.html#Cobilas_GodotEngine_Utility_Numerics_IVector_sqrMagnitude)
IVector.aspect
(Cobilas.GodotEngine.Utility.Numerics.IVector.html#Cobilas_GodotEngine_Utility_Numerics_IVector_aspect)
IVector.AxisCount
(Cobilas.GodotEngine.Utility.Numerics.IVector.html#Cobilas_GodotEngine_Utility_Numerics_IVector_AxisCount)
IVector.this[int]
(Cobilas.GodotEngine.Utility.Numerics.IVector.html#Cobilas_GodotEngine_Utility_Numerics_IVector_Item_System_Int32_)
IVector.ToString(string)
(Cobilas.GodotEngine.Utility.Numerics.IVector.html#Cobilas_GodotEngine_Utility_Numerics_IVector_ToString_System_String_)
IFormattable.ToString(string, IFormatProvider)
(https://learn.microsoft.com/dotnet/api/system.iformattable.tostring)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Numerics (Cobilas.GodotEngine.Utility.Numerics.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public interface IVectorGeneric<TVector> : IEquatable<TVector>, IVector, IFormattable where
TVector : IVector
```

Type Parameters

Name	Description
TVector	

Properties

Normalized

Returns the vector scaled to unit length. Equivalent to `v / v.Length()`.

Declaration

Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.
Input
(Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
IIntVector
(Cobilas.GodotEngine.Utility.Numer
IVector
(Cobilas.GodotEngine.Utility.Numer
IVectorGeneric<TVector>
(Cobilas.GodotEngine.Utility.Numer
Quaternion
(Cobilas.GodotEngine.Utility.Numer
Vector2D
(Cobilas.GodotEngine.Utility.Numer
Vector2DInt
(Cobilas.GodotEngine.Utility.Numer
Vector3D
(Cobilas.GodotEngine.Utility.Numer
Vector3DInt
(Cobilas.GodotEngine.Utility.Numer
Vector4D
(Cobilas.GodotEngine.Utility.Numer
VectorEqualityComparer
(Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph

```
TVector Normalized { get; }
```

Property Value

Type	Description
TVector	A normalized version of the vector.

ceil

Returns a new vector with all components rounded up (towards positive infinity).

Declaration

```
TVector ceil { get; }
```

Property Value

Type	Description
TVector	A vector with Ceil(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

floor

Returns a new vector with all components rounded down (towards negative infinity).

Declaration

```
TVector floor { get; }
```

Property Value

Type	Description
TVector	A vector with Floor(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

Methods

Round()

Returns this vector with all components rounded to the nearest integer, with halfway cases rounded towards the nearest multiple of two.

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.Ut
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
IIntVector (Cobilas.GodotEngine.Utility.Numer
IVector (Cobilas.GodotEngine.Utility.Numer
IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
Quaternion (Cobilas.GodotEngine.Utility.Numer
Vector2D (Cobilas.GodotEngine.Utility.Numer
Vector2DInt (Cobilas.GodotEngine.Utility.Numer
Vector3D (Cobilas.GodotEngine.Utility.Numer
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Declaration

```
TVector Round()
```

Returns

Type	Description
TVector	The rounded vector.

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+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Struct Quaternion

Quaternions are used to represent rotations.

Filter by title

Implements

IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)>

IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

Inherited Members

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system.object-system.object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Numerics (Cobilas.GodotEngine.Utility.Numerics.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
[Serializable]
public struct Quaternion : IEquatable<Quaternion>, IFormattable
```

Constructors

Quaternion(Quaternion)

Starts a new instance of the object.

Declaration

```
public Quaternion(Quaternion vector)
```

Parameters

Type	Name	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*vector*	

Quaternion(Vector4D)

Starts a new instance of the object.

Declaration

```
public Quaternion(Vector4D vector)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*vector*	

Quaternion(float, float)

Starts a new instance of the object.

Declaration

```
public Quaternion(float x, float y)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*x*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*y*	

Quaternion(float, float, float)

Starts a new instance of the object.

Declaration

```
public Quaternion(float x, float y, float z)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*x*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*y*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*z*	

Quaternion(float, float, float, float)

Starts a new instance of the object.

Declaration

```
public Quaternion(float x, float y, float z, float w)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*x*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*y*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*z*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*w*	

Fields

Deg2Rad

Degrees-to-radians conversion constant (Read Only).

Declaration

```
public const double Deg2Rad = 0.017453292519943295
```

Field Value

Type	Description
double (https://learn.microsoft.com/dotnet/api/system.double)	

KEpsilon

A small value used to compare quaternions for equality.

Declaration

```
public const float KEpsilon = 1E-06
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

Remarks

The `kEpsilon` constant is used to determine if two quaternions are nearly equal, accounting for floating-point precision errors.

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Rad2Deg

Radians-to-degrees conversion constant (Read Only).

Declaration

```
public const double Rad2Deg = 57.29577951308232
```

Field Value

Type	Description
double (https://learn.microsoft.com/dotnet/api/system.double)	

w

W component of the Quaternion. Do not directly modify quaternions.

Declaration

```
[ShowProperty(true)]
public float w
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

x

X component of the Quaternion. Don't modify this directly unless you know quaternions inside out.

Declaration

```
[ShowProperty(true)]
public float x
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

y

Y component of the Quaternion. Don't modify this directly unless you know quaternions inside out.

Declaration

```
[ShowProperty(true)]
public float y
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

z

Z component of the Quaternion. Don't modify this directly unless you know quaternions inside out.

Declaration

```
[ShowProperty(true)]
public float z
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

Properties

Euler

Returns or sets the euler angle representation of the rotation.

Declaration

```
public readonly Vector3D Euler { get; }
```

Property Value

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

Identity

The identity rotation (Read Only).

Declaration

```
public static Quaternion Identity { get; }
```

Property Value

Type	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	

Normalized

Returns this quaternion with a magnitude of 1 (Read Only).

Declaration

```
public readonly Quaternion Normalized { get; }
```

Property Value

Type	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	

Methods

Angle(Quaternion, Quaternion)

Returns the angle in degrees between two rotations a and b.

Declaration

```
public static float Angle(Quaternion a, Quaternion b)
```

Parameters

Type	Name	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*a*	Object to be compared.
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*b*	Object of comparison.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The floating point angle.

Dot(Quaternion, Quaternion)

The dot product between two rotations.

Declaration

```
public static float Dot(Quaternion a, Quaternion b)
```

Parameters

Type	Name	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*a*	Object to be compared.
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*b*	Object of comparison.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Returns the dot product of two quaternions.

Equals(Quaternion)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(Quaternion other)
```

Parameters

Type	Name	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(object)

Indicates whether this instance and a specified object are equal.

Declaration

```
public override readonly bool Equals(object obj)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*obj*	The object to compare with the current instance.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if `obj` and this instance are the same type and represent the same value; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Overrides

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

GenerateDirection(Vector3D)

Gera uma direção com base num Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html).

Declaration

```
public readonly Vector3D GenerateDirection(Vector3D dir)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*dir*	direção.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

GenerateDirectionBack()

Gera uma direção com base num Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html).back.

Declaration

```
public readonly Vector3D GenerateDirectionBack()
```

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

GenerateDirectionDown()

Gera uma direção com base num Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html).down.

Declaration

```
public readonly Vector3D GenerateDirectionDown()
```

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

GenerateDirectionForward()

Gera uma direção com base num Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html).forward.

Declaration

```
public readonly Vector3D GenerateDirectionForward()
```

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

GenerateDirectionLeft()

Gera uma direção com base num Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html).left.

Declaration

```
public readonly Vector3D GenerateDirectionLeft()
```

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

GenerateDirectionRight()

Gera uma direção com base num Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html).right.

Declaration

```
public readonly Vector3D GenerateDirectionRight()
```

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

GenerateDirectionUp()

Gera uma direção com base num Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html).up.

Declaration

```
public readonly Vector3D GenerateDirectionUp()
```

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

GetHashCode()

Returns the hash code for this instance.

Declaration

```
public override readonly int GetHashCode()
```

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A 32-bit signed integer that is the hash code for this instance.

Overrides

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

Normalize(Quaternion)

Converts this quaternion to one with the same orientation but with a magnitude of 1.

Declaration

```
public static Quaternion Normalize(Quaternion q)
```

Parameters

Type	Name	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*q*	The Quaternion that will be normalized.

Returns

Type	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	Returns an already normalized Quaternion.

ToEuler(Quaternion)

Convert quaternion to euler-angle.

Declaration

```
public static Vector3D ToEuler(Quaternion quaternion)
```

Parameters

Type	Name	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*quaternion*	The quaternion that will be converted.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the conversion from quaternion to euler.

ToQuaternion(Vector3D)

Convert euler-angle to quaternion.

Declaration

```
public static Quaternion ToQuaternion(Vector3D vector)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*vector*	Euler-angle that will be converted.

Returns

Type	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	Return result of euler to quaternion conversion.

ToString()

Returns the fully qualified type name of this instance.

Declaration

```
public override readonly string ToString()
```

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The fully qualified type name.

Overrides

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)

ToString(string)

Formats the value of the current instance using the specified format.

Declaration

```
public readonly string ToString(string format)
```

Parameters

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  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
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  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
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Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

ToString(string, IFormatProvider)

Formats the value of the current instance using the specified format.

Declaration

```
public readonly string ToString(string format, IFormatProvider formatProvider)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*formatProvider*	The provider to use to format the value.-or- A null reference (`Nothing` in Visual Basic) to obtain the numeric format information from the current locale setting of the operating system.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

Operators

operator == (Quaternion, Quaternion)

Indicates whether this instance is equal to another instance of the same type.

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  - IVector (Cobilas.GodotEngine.Utility.Numer
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+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Declaration

```
public static bool operator ==(Quaternion lhs, Quaternion rhs)
```

Parameters

Type	Name	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*lhs*	Object to be compared.
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*rhs*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

implicit operator Vector4D(Quaternion)

Implicit conversion operator Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html) to Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html))

Declaration

```
public static implicit operator Vector4D(Quaternion v)
```

Parameters

Type	Name	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*v*	Object to be converted.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	

operator !=(Quaternion, Quaternion)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(Quaternion lhs, Quaternion rhs)
```

Parameters

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Type	Name	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*lhs*	Object to be compared.
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*rhs*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator *(Quaternion, Quaternion)

Multiplication operation between two values.(Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html) * Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html))

Declaration

```
public static Quaternion operator *(Quaternion lhs, Quaternion rhs)
```

Parameters

Type	Name	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*lhs*	First module.
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*rhs*	Second module.

Returns

Type	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	The result of the multiplication.

operator *(Quaternion, Vector3D)

Multiplication operation between two values.(Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html) * Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static Vector3D operator *(Quaternion rotation, Vector3D point)
```

Parameters

Type	Name	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*rotation*	First module.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*point*	Second module.

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+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the multiplication.

Implements

IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

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- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
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  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer

+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

Struct Vector2D

Represents a two-dimensional vector

Filter by title

Implements

IVectorGeneric (Cobilas.GodotEngine.Utility.Numerics.IVectorGeneric-1.html)<Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)>

IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)>

IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html)

IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

Inherited Members

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Numerics (Cobilas.GodotEngine.Utility.Numerics.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
[Serializable]
public struct Vector2D : IVectorGeneric<Vector2D>, IEquatable<Vector2D>, IVector, IFormattable
```

Constructors

Vector2D(Vector2D)

Starts a new instance of the object.

Declaration

```
public Vector2D(Vector2D vector)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*vector*	

Vector2D(Vector2)

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Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Sel

+ Cobilas.GodotEngine.Utility.
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IO
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Input
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- Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N

IIntVector
(Cobilas.GodotEngine.Utility.Numer

IVector
(Cobilas.GodotEngine.Utility.Numer

IVectorGeneric<TVector>
(Cobilas.GodotEngine.Utility.Numer

Matrix
(Cobilas.GodotEngine.Utility.Numer

Quaternion
(Cobilas.GodotEngine.Utility.Numer

Vector2D
(Cobilas.GodotEngine.Utility.Numer

Vector2DInt
(Cobilas.GodotEngine.Utility.Numer

Vector3D
(Cobilas.GodotEngine.Utility.Numer

Vector3DInt
(Cobilas.GodotEngine.Utility.Numer

Vector4D
(Cobilas.GodotEngine.Utility.Numer

VectorEqualityComparer
(Cobilas.GodotEngine.Utility.Numer

+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph

Starts a new instance of the object.

Declaration

```
public Vector2D(Vector2 vector)
```

Parameters

Type	Name	Description
Vector2 (Cobilas.GodotEngine.Utility.Se	*vector*	

Vector2D(float, float)

Starts a new instance of the object.

Declaration

```
public Vector2D(float x, float y)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*x*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*y*	

Fields

x

X component of the vector.

Declaration

```
[ShowProperty(true)]
public float x;
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

y

Y component of the vector.

Declaration

```
[ShowProperty(true)]
public float y
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

Properties

AxisCount

Number of axles.

Declaration

```
public readonly int AxisCount { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns the number of axes a vector has.

Down

Shorthand for writing Vector2(0,1f).

Declaration

```
public static Vector2D Down { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	

this[int]

Allows you to access the axes of a vector through an index.

Declaration

```
public float this[int index] { readonly get; set; }
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	The axis index.

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Sets the value of an axis by specifying its index.

Left

Shorthand for writing Vector2(-1f,0).

Declaration

```
public static Vector2D Left { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	

Normalized

Returns the vector scaled to unit length. Equivalent to `v / v.Length()`.

Declaration

```
public readonly Vector2D Normalized { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	A normalized version of the vector.

One

Shorthand for writing Vector2(1f,1f).

Declaration

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+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
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  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

```
public static Vector2D One { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	

Right

Shorthand for writing Vector2(1,0).

Declaration

```
public static Vector2D Right { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	

Up

Shorthand for writing Vector2(0,-1).

Declaration

```
public static Vector2D Up { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	

Zero

Shorthand for writing Vector2(0,0).

Declaration

```
public static Vector2D Zero { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	

aspect

Returns the aspect ratio of this vector, the ratio of IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x to IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y.

Declaration

```
public readonly float aspect { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x component divided by the IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y component.

ceil

Returns a new vector with all components rounded up (towards positive infinity).

Declaration

```
public readonly Vector2D ceil { get; }
```

Property Value

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	A vector with Ceil(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

floor

Returns a new vector with all components rounded down (towards negative infinity).

Declaration

```
public readonly Vector2D floor { get; }
```

Property Value

+ Cobilas.GodotEngine.Utility.Numerics.Vector2D.html
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  + Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
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  - Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
    - IIntVector (Cobilas.GodotEngine.Utility.Numer
    - IVector (Cobilas.GodotEngine.Utility.Numer
    - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
    - Quaternion (Cobilas.GodotEngine.Utility.Numer
    - Vector2D (Cobilas.GodotEngine.Utility.Numer
    - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
    - Vector3D (Cobilas.GodotEngine.Utility.Numer
    - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
    - Vector4D (Cobilas.GodotEngine.Utility.Numer
    - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
  + Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	A vector with Floor(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

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+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
IIntVector (Cobilas.GodotEngine.Utility.Numer
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Quaternion (Cobilas.GodotEngine.Utility.Numer
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VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

magnitude

Returns the length (magnitude) of this vector.

Declaration

```
public readonly float magnitude { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The length of this vector.

See Also

LengthSquared()

sqrMagnitude

Returns the squared length (squared magnitude) of this vector. This method runs faster than magnitude (Cobilas.GodotEngine.Utility.Numerics.IVector.html#Cobilas_GodotEngine_Utility_Numerics_IVector_magnitude), so prefer it if you need to compare vectors or need the squared length for some formula.

Declaration

```
public readonly float sqrMagnitude { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The squared length of this vector.

Methods

Abs(in Vector2D)

Returns an absolute value of the vector.

Declaration

```
public static Vector2D Abs(in Vector2D a)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	The vector to become absolute.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	Returns the vector with its absolute value axes.

Abs(bool, bool)

Returns an absolute value of the vector.

Declaration

```
public readonly Vector2D Abs(bool absX = true, bool absY = true)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*absX*	The X axis becomes absolute.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*absY*	The Y axis becomes absolute.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	Returns the vector with its absolute value axes.

AngleTo(in Vector2D, in Vector2D)

Returns the angle in degrees between from and to.

Declaration

```
public static float AngleTo(in Vector2D lhs, in Vector2D rhs)
```

Parameters

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  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
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  - Vector3D (Cobilas.GodotEngine.Utility.Numer
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  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*lhs*	The vector from which the angular difference is measured.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*rhs*	The vector to which the angular difference is measured.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The angle in degrees between the two vectors.

AngleToPoint(in Vector2D, in Vector2D)

Returns the angle between the line connecting the two points and the X axis, in radians.

Declaration

```
public static float AngleToPoint(in Vector2D lhs, in Vector2D rhs)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*lhs*	One of the values.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*rhs*	The other value.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The angle between the two vectors, in radians.

Aspect(in Vector2D)

Returns the aspect ratio of this vector, the ratio of IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x to IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y.

Declaration

```
public static float Aspect(in Vector2D a)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	The vector whose aspect will be calculated.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x component divided by the IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y component.

Ceil(in Vector2D)

Returns a new vector with all components rounded up (towards positive infinity).

Declaration

```
public static Vector2D Ceil(in Vector2D a)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	The vector that will be the ceiling.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	A vector with Ceil(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

Cross(in Vector2D, in Vector2D)

Cross Product of two vectors.

Declaration

```
public static float Cross(in Vector2D lhs, in Vector2D rhs)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*lhs*	One of the values.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*rhs*	The other value.

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IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
Quaternion (Cobilas.GodotEngine.Utility.Numer
Vector2D (Cobilas.GodotEngine.Utility.Numer
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Vector3DInt (Cobilas.GodotEngine.Utility.Numer
Vector4D (Cobilas.GodotEngine.Utility.Numer
VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Returns the cross product of vectors.

Distance(in Vector2D, in Vector2D)

Returns the distance between a and b.

Declaration

```
public static float Distance(in Vector2D a, in Vector2D b)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	One of the values.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*b*	The other value.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The distance between two vectors.

Dot(in Vector2D, in Vector2D)

Dot Product of two vectors.

Declaration

```
public static float Dot(in Vector2D lhs, in Vector2D rhs)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*lhs*	
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*rhs*	

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	returns the result of the dot product.

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+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Matrix (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
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Equals(Vector2D)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(Vector2D other)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(object)

Indicates whether this instance and a specified object are equal.

Declaration

```
public override readonly bool Equals(object obj)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*obj*	The object to compare with the current instance.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if `obj` and this instance are the same type and represent the same value; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Overrides

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

Floor(in Vector2D)

Returns a new vector with all components rounded down (towards negative infinity).

Declaration

```
public static Vector2D Floor(in Vector2D a)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	The vector that will be the floor.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	A vector with Floor(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

GetHashCode()

Returns the hash code for this instance.

Declaration

```
public override readonly int GetHashCode()
```

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A 32-bit signed integer that is the hash code for this instance.

Overrides

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

Magnitude(in Vector2D)

Returns the length of this vector

Declaration

```
public static float Magnitude(in Vector2D a)
```


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+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.Numerics.html)
IIntVector (Cobilas.GodotEngine.Utility.Numerics.IIntVector.html)
IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html)
IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numerics.IVectorGeneric-1.html)
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)
VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numerics.VectorEqualityComparer.html)
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	One of the values.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	vector length.

Max(Vector2D, Vector2D)

Returns a vector that is made from the largest components of two vectors.

Declaration

```
public static Vector2D Max(Vector2D lhs, Vector2D rhs)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*lhs*	One of the values.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*rhs*	The other value.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	Whichever of the two values is higher.

Min(Vector2D, Vector2D)

Returns a vector that is made from the smallest components of two vectors.

Declaration

```
public static Vector2D Min(Vector2D lhs, Vector2D rhs)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*lhs*	One of the values.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*rhs*	The other value.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	Whichever of the two values is lower.

Neg(in Vector2D)

Inverts the values of a vector.

Declaration

```
public static Vector2D Neg(in Vector2D a)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	The vector to be inverted.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	Returns the axes of an inverted vector.

Neg(bool, bool)

Inverts the values of a vector.

Declaration

```
public readonly Vector2D Neg(bool negX = true, bool negY = true)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negX*	The X axis becomes inverted.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negY*	The Y axis becomes inverted.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	Returns the axes of an inverted vector.

Normalize(in Vector2D)

Makes this vector have a magnitude of 1.

+ Cobilas.GodotEngine.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Declaration

```
public static Vector2D Normalize(in Vector2D a)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	The vector to be normalized.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	Returns the already normalized vector.

Round()

Returns this vector with all components rounded to the nearest integer, with halfway cases rounded towards the nearest multiple of two.

Declaration

```
public readonly Vector2D Round()
```

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The rounded vector.

Round(in Vector2D)

Returns this vector with all components rounded to the nearest integer, with halfway cases rounded towards the nearest multiple of two.

Declaration

```
public static Vector2D Round(in Vector2D a)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	the vector to be rounded

Returns

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The rounded vector.

SqrMagnitude(in Vector2D)

Returns the square length of this vector

Declaration

```
public static Single SqrMagnitude(in Vector2D a)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	One of the values.

Returns

Type	Description
Single (https://learn.microsoft.com/dotnet/api/system.single)	square length of the vector.

ToString()

Returns the fully qualified type name of this instance.

Declaration

```
public override readonly string ToString()
```

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The fully qualified type name.

Overrides

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)

ToString(string)

Formats the value of the current instance using the specified format.

Declaration

+ Cobilas.GodotEngine.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IUniVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

```
public readonly string ToString(string format)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

ToString(string, IFormatProvider)

Formats the value of the current instance using the specified format.

Declaration

```
public readonly string ToString(string format, IFormatProvider formatProvider)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*formatProvider*	The provider to use to format the value.-or- A null reference (`Nothing` in Visual Basic) to obtain the numeric format information from the current locale setting of the operating system.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Operators

operator +(Vector2D, Vector2D)

Addition operation between two values.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) + Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static Vector2D operator +(Vector2D a, Vector2D b)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	First module.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the addition.

operator +(Vector2D, Vector2)

Addition operation between two values.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) + Godot.Vector2)

Declaration

```
public static Vector2D operator +(Vector2D a, Vector2 b)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	First module.
Vector2	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the addition.

operator +(Vector2, Vector2D)

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Addition operation between two values.(Godot.Vector2 + Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static Vector2D operator +(Vector2 a, Vector2D b)
```

Parameters

Type	Name	Description
Vector2	*a*	First module.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the addition.

operator /(Vector2D, Vector2D)

Division operation between two values.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) / Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static Vector2D operator /(Vector2D a, Vector2D b)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	First module.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the division.

operator /(Vector2D, Vector2)

Division operation between two values.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) / Godot.Vector2)

Declaration

```
public static Vector2D operator /(Vector2D a, Vector2 b)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	First module.
Vector2	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the division.

```
public static Vector2D operator /(Vector2D a, Vector2 b)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	First module.
Vector2	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the division.

operator /(Vector2D, float)

Division operation between two values.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) / float (https://learn.microsoft.com/dotnet/api/system.single))

Declaration

```
public static Vector2D operator /(Vector2D a, float b)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	First module.
float (https://learn.microsoft.com/dotnet/api/system.single)	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the division.

operator /(Vector2, Vector2D)

Division operation between two values.(Godot.Vector2 / Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static Vector2D operator /(Vector2 a, Vector2D b)
```

Parameters

Type	Name	Description
Vector2	*a*	First module.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the division.

operator == (in Vector2D, in Vector2D)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(in Vector2D lhs, in Vector2D rhs)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*lhs*	Object to be compared.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*rhs*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

implicit operator Vector3D(Vector2D)

Implicit conversion operator (Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) to Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static implicit operator Vector3D(Vector2D v)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*v*	Object to be converted.

Returns

- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.h
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
- Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

implicit operator Vector4D(Vector2D)

Implicit conversion operator.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) to Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html))

Declaration

```
public static implicit operator Vector4D(Vector2D v)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	

implicit operator Vector2(Vector2D)

Implicit conversion operator.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) to Godot.Vector2)

Declaration

```
public static implicit operator Vector2(Vector2D v)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector2	

implicit operator Vector3(Vector2D)

Implicit conversion operator.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) to Godot.Vector3)

Declaration

```
public static implicit operator Vector3(Vector2D v)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector3	

implicit operator Vector2D(Vector2)

Implicit conversion operator.(Godot.Vector2 to Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static implicit operator Vector2D(Vector2 v)
```

Parameters

Type	Name	Description
Vector2	*v*	Object to be converted.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	

implicit operator Vector2D(Vector3)

Implicit conversion operator.(Godot.Vector3 to Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static implicit operator Vector2D(Vector3 v)
```

Parameters

Type	Name	Description
Vector3	*v*	Object to be converted.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	

operator !=(in Vector2D, in Vector2D)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(in Vector2D lhs, in Vector2D rhs)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*lhs*	Object to be compared.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*rhs*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator %(Vector2D, Vector2D)

Modulo operation between two values.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) % Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static Vector2D operator %(Vector2D a, Vector2D b)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	First module.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the module.

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.Ut
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
IIntVector (Cobilas.GodotEngine.Utility.Numer
IVector (Cobilas.GodotEngine.Utility.Numer
IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
1.html)
Quaternion (Cobilas.GodotEngine.Utility.Numer
Vector2D (Cobilas.GodotEngine.Utility.Numer
Vector2DInt (Cobilas.GodotEngine.Utility.Numer
Vector3D (Cobilas.GodotEngine.Utility.Numer
Vector3DInt (Cobilas.GodotEngine.Utility.Numer
Vector4D (Cobilas.GodotEngine.Utility.Numer
VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

operator %(Vector2D, Vector2)

Modulo operation between two values.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) % Godot.Vector2)

Declaration

```
public static Vector2D operator %(Vector2D a, Vector2 b)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	First module.
Vector2	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the module.

operator %(Vector2D, float)

Modulo operation between two values.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) * float (https://learn.microsoft.com/dotnet/api/system.single))

Declaration

```
public static Vector2D operator %(Vector2D a, float b)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	First module.
float (https://learn.microsoft.com/dotnet/api/system.single)	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the module.

operator %(Vector2, Vector2D)

Modulo operation between two values.(Godot.Vector2 * Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.h
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
IntVector (Cobilas.GodotEngine.Utility.Numer
IVector (Cobilas.GodotEngine.Utility.Numer
IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
1.html)
Quaternion (Cobilas.GodotEngine.Utility.Numer
Vector2D (Cobilas.GodotEngine.Utility.Numer
Vector2DInt (Cobilas.GodotEngine.Utility.Numer
Vector3D (Cobilas.GodotEngine.Utility.Numer
Vector3DInt (Cobilas.GodotEngine.Utility.Numer
Vector4D (Cobilas.GodotEngine.Utility.Numer
VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Declaration

```
public static Vector2D operator %(Vector2 a, Vector2D b)
```

Parameters

Type	Name	Description
Vector2	*a*	First module.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the module.

operator *(Vector2D, Vector2D)

Multiplication operation between two values.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) * Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static Vector2D operator *(Vector2D a, Vector2D b)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	First module.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the multiplication.

operator *(Vector2D, Vector2)

Multiplication operation between two values.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) * Godot.Vector2)

Declaration

```
public static Vector2D operator *(Vector2D a, Vector2 b)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	First module.
Vector2	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the multiplication.

operator *(Vector2D, float)

Multiplication operation between two values.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) * float (https://learn.microsoft.com/dotnet/api/system.single))

Declaration

```
public static Vector2D operator *(Vector2D a, float b)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	First module.
float (https://learn.microsoft.com/dotnet/api/system.single)	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the multiplication.

operator *(Vector2, Vector2D)

Multiplication operation between two values.(Godot.Vector2 * Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static Vector2D operator *(Vector2 a, Vector2D b)
```

Parameters

Type	Name	Description
Vector2	*a*	First module.

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the multiplication.

operator - (Vector2D, Vector2D)

Subtraction operation between two values.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) - Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static Vector2D operator -(Vector2D a, Vector2D b)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	First module.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the subtraction.

operator - (Vector2D, Vector2)

Subtraction operation between two values.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) - Godot.Vector2)

Declaration

```
public static Vector2D operator -(Vector2D a, Vector2 b)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	First module.
Vector2	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the subtraction.

operator -(Vector2, Vector2D)

Subtraction operation between two values.(Godot.Vector2 - Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static Vector2D operator -(Vector2 a, Vector2D b)
```

Parameters

Type	Name	Description
Vector2	*a*	First module.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*b*	Second module.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	The result of the subtraction.

operator -(Vector2D)

The operator allows us to reverse the value.

Declaration

```
public static Vector2D operator -(Vector2D a)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	Or value that will be invested.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	Returns the result of the inversion.

Implements

IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numerics.IVectorGeneric-1.html)
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html)
IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**

+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**

+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**

+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**

- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**

  IIntVector (Cobilas.GodotEngine.Utility.Numer
  IVector (Cobilas.GodotEngine.Utility.Numer
  IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  Quaternion (Cobilas.GodotEngine.Utility.Numer
  Vector2D (Cobilas.GodotEngine.Utility.Numer
  Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  Vector3D (Cobilas.GodotEngine.Utility.Numer
  Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  Vector4D (Cobilas.GodotEngine.Utility.Numer
  VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer

+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

Struct Vector2DInt

Representation of a two-dimensional vector using integers.

Filter by title

Implements

IIntVector (Cobilas.GodotEngine.Utility.Numerics.IIntVector.html)

IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

Inherited Members

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Numerics (Cobilas.GodotEngine.Utility.Numerics.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
[Serializable]
public struct Vector2DInt : IIntVector, IFormattable
```

Constructors

Vector2DInt(in Vector2DInt)

Starts a new instance of the object.

Declaration

```
public Vector2DInt(in Vector2DInt vector)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*vector*	

Vector2DInt(in int, in int)

Starts a new instance of the object.

Declaration

```
public Vector2DInt(in int x, in int y)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*x*	
int (https://learn.microsoft.com/dotnet/api/system.int32)	*y*	

Fields

x

X component of the vector.

Declaration

```
[ShowProperty(true)]
public int x
```

Field Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	

y

Y component of the vector.

Declaration

```
[ShowProperty(true)]
public int y
```

Field Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	

Properties

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  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
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AxisCount

Number of axles.

Declaration

```
public readonly int AxisCount { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns the number of axes a vector has.

Down

Shorthand for writing Vector2(0,1).

Declaration

```
public static Vector2DInt Down { get; }
```

Property Value

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	

this[int]

Allows you to access the axes of a vector through an index.

Declaration

```
public int this[int index] { readonly get; set; }
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	The axis index.

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Sets the value of an axis by specifying its index.

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Left

Shorthand for writing Vector2(-1,0).

Declaration

```
public static Vector2DInt Left { get; }
```

Property Value

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	

One

Shorthand for writing Vector2(1,1).

Declaration

```
public static Vector2DInt One { get; }
```

Property Value

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	

Right

Shorthand for writing Vector2(1,0).

Declaration

```
public static Vector2DInt Right { get; }
```

Property Value

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	

Up

Shorthand for writing Vector2(0,-1).

Declaration

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Vector4D
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VectorEqualityComparer
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+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph

```
public static Vector2DInt Up { get; }
```

Property Value

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	

Zero

Shorthand for writing Vector2(0,0).

Declaration

```
public static Vector2DInt Zero { get; }
```

Property Value

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	

aspect

Returns the aspect ratio of this vector, the ratio of IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x to IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y.

Declaration

```
public readonly float aspect { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x component divided by the IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y component.

magnitude

Returns the length (magnitude) of this vector.

Declaration

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
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  - IintVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
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  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

```
public readonly float magnitude { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The length of this vector.

See Also

LengthSquared()

sqrMagnitude

Returns the squared length (squared magnitude) of this vector. This method runs faster than magnitude (Cobilas.GodotEngine.Utility.Numerics.IVector.html#Cobilas_GodotEngine_Utility_Numerics_IVector_magnitude), so prefer it if you need to compare vectors or need the squared length for some formula.

Declaration

```
public readonly int sqrMagnitude { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	The squared length of this vector.

Methods

Abs(in Vector2DInt)

Returns an absolute value of the vector.

Declaration

```
public static Vector2DInt Abs(in Vector2DInt a)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*a*	The vector to become absolute.

Returns

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+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
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  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
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  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	Returns the vector with its absolute value axes.

Abs(bool, bool)

Returns an absolute value of the vector.

Declaration

```
public readonly Vector2DInt Abs(bool absX = true, bool absY = true)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*absX*	The X axis becomes absolute.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*absY*	The Y axis becomes absolute.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	Returns the vector with its absolute value axes.

Aspect(in Vector2DInt)

Returns the aspect ratio of this vector, the ratio of IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x to IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y.

Declaration

```
public static float Aspect(in Vector2DInt a)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*a*	The vector whose aspect will be calculated.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x component divided by the IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y component.

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CeilToInt(in Vector2D)

Converts a floating-point vector to an integer vector and applies a Ceiling to each value.

Declaration

```
public static Vector2DInt CeilToInt(in Vector2D a)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	The vector to be converted is ceiling

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	Returns the converted vector and ceiling

Distance(in Vector2DInt, in Vector2DInt)

Returns the distance between a and b.

Declaration

```
public static float Distance(in Vector2DInt a, in Vector2DInt b)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*a*	One of the values.
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*b*	The other value.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The distance between two vectors.

Equals(Vector2DInt)

Declaration

```
public readonly bool Equals(Vector2DInt other)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*other*	

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

Equals(object)

Indicates whether this instance and a specified object are equal.

Declaration

```
public override readonly bool Equals(object obj)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*obj*	The object to compare with the current instance.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if `obj` and this instance are the same type and represent the same value; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Overrides

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

FloorToInt(in Vector2D)

Converts a floating-point vector to an integer vector and applies a Floor to each value.

Declaration

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
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+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

```
public static Vector2DInt FloorToInt(in Vector2D a)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	The vector to be converted is floor

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	Returns the converted vector and floor

GetHashCode()

Returns the hash code for this instance.

Declaration

```
public override readonly int GetHashCode()
```

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A 32-bit signed integer that is the hash code for this instance.

Overrides

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

Magnitude(in Vector2DInt)

Returns the length of this vector

Declaration

```
public static float Magnitude(in Vector2DInt a)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*a*	One of the values.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	vector length.

Max(Vector2DInt, Vector2DInt)

Returns a vector that is made from the largest components of two vectors.

Declaration

```
public static Vector2DInt Max(Vector2DInt lhs, Vector2DInt rhs)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*lhs*	One of the values.
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*rhs*	The other value.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	Whichever of the two values is higher.

Min(Vector2DInt, Vector2DInt)

Returns a vector that is made from the smallest components of two vectors.

Declaration

```
public static Vector2DInt Min(Vector2DInt lhs, Vector2DInt rhs)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*lhs*	One of the values.
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*rhs*	The other value.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	Whichever of the two values is lower.

Neg(Vector2DInt)

+ Cobilas.GodotEngine.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Inverts the values of a vector.

Declaration

```
public static Vector2DInt Neg(in Vector2DInt a)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*a*	The vector to be inverted.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	Returns the axes of an inverted vector.

Neg(bool, bool)

Inverts the values of a vector.

Declaration

```
public readonly Vector2DInt Neg(bool negX = true, bool negY = true)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negX*	The X axis becomes inverted.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negY*	The Y axis becomes inverted.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	Returns the axes of an inverted vector.

RoundToInt(in Vector2D)

Converts a floating-point vector to an integer vector by performing a Round for each value.

Declaration

```
public static Vector2DInt RoundToInt(in Vector2D a)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*a*	The vector that will be converted and rounded

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	Returns the converted and rounded vector

SqrMagnitude(in Vector2DInt)

Returns the squared length of this vector

Declaration

```
public static int SqrMagnitude(in Vector2DInt a)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*a*	One of the values.

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	square length of the vector.

ToString()

Returns the fully qualified type name of this instance.

Declaration

```
public override readonly string ToString()
```

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The fully qualified type name.

Overrides

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

ToString(string)

Formats the value of the current instance using the specified format.

Declaration

```
public readonly string ToString(string format)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

ToString(string, IFormatProvider)

Formats the value of the current instance using the specified format.

Declaration

```
public readonly string ToString(string format, IFormatProvider formatProvider)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*formatProvider*	The provider to use to format the value.-or- A null reference (`Nothing` in Visual Basic) to obtain the numeric format information from the current locale setting of the operating system.

Returns

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

Operators

operator +(Vector2DInt, Vector2DInt)

Addition operation between two values (Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html) + Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html))

Declaration

```
public static Vector2DInt operator +(Vector2DInt a, Vector2DInt b)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*a*	First module.
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*b*	Second module.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	The result of the addition.

operator /(Vector2DInt, Vector2DInt)

Division operation between two values (Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html) / Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html))

Declaration

```
public static Vector2DInt operator /(Vector2DInt a, Vector2DInt b)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*a*	First module.
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*b*	Second module.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	The result of the division.

operator /(Vector2DInt, int)

Division operation between two values.(Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html) / int (https://learn.microsoft.com/dotnet/api/system.int32))

Declaration

```
public static Vector2DInt operator /(Vector2DInt a, int b)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*a*	First module.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*b*	Second module.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	The result of the division.

operator ==(in Vector2DInt, in Vector2DInt)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(in Vector2DInt lhs, in Vector2DInt rhs)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*lhs*	Object to be compared.
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*rhs*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

+ Cobilas.GodotEngine.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.m
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

explicit operator Vector2DInt(Vector2D)

Explicit conversion operator.(Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) to Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html))

Declaration

```
public static explicit operator Vector2DInt(Vector2D v)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	

explicit operator Vector2DInt(Vector3D)

Explicit conversion operator.(Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) to Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html))

Declaration

```
public static explicit operator Vector2DInt(Vector3D v)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	

explicit operator Vector2DInt(Vector4D)

Explicit conversion operator.(Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) to Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html))

Declaration

+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.N**
+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEntityCollider (Cobilas.GodotEngine.Utility.Numer
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

```
public static explicit operator Vector2DInt(Vector4D v)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	

explicit operator Vector2DInt(Vector2)

Explicit conversion operator.(Godot.Vector2 to Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html))

Declaration

```
public static explicit operator Vector2DInt(Vector2 v)
```

Parameters

Type	Name	Description
Vector2	*v*	Object to be converted.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	

implicit operator Vector2D(Vector2DInt)

Implicit conversion operator.(Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html) to Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static implicit operator Vector2D(Vector2DInt v)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*v*	Object to be converted.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	

implicit operator Vector3D(Vector2DInt)

Implicit conversion operator (Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html) to Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static implicit operator Vector3D(Vector2DInt v)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*v*	Object to be converted.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

implicit operator Vector3DInt(Vector2DInt)

Implicit conversion operator (Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html) to Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html))

Declaration

```
public static implicit operator Vector3DInt(Vector2DInt v)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*v*	Object to be converted.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	

implicit operator Vector4D(Vector2DInt)

Implicit conversion operator.(Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html) to Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html))

Declaration

```
public static implicit operator Vector4D(Vector2DInt v)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*v*	Object to be converted.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	

implicit operator Vector2(Vector2DInt)

Implicit conversion operator.(Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html) to Godot.Vector2)

Declaration

```
public static implicit operator Vector2(Vector2DInt v)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*v*	Object to be converted.

Returns

Type	Description
Vector2	

operator != (in Vector2DInt, in Vector2DInt)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(in Vector2DInt lhs, in Vector2DInt rhs)
```

Parameters

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+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*lhs*	Object to be compared.
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*rhs*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator %(Vector2DInt, Vector2DInt)

Modulo operation between two values.(Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html) + Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html))

Declaration

```
public static Vector2DInt operator %(Vector2DInt a, Vector2DInt b)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*a*	First module.
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*b*	Second module.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	The result of the module.

operator %(Vector2DInt, int)

Modulo operation between two values.(Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html) + int (https://learn.microsoft.com/dotnet/api/system.int32))

Declaration

```
public static Vector2DInt operator %(Vector2DInt a, int b)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*a*	First module.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*b*	Second module.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	The result of the module.

operator *(Vector2DInt, Vector2DInt)

Multiplication operation between two values.(Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html) * Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html))

Declaration

```
public static Vector2DInt operator *(Vector2DInt a, Vector2DInt b)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*a*	First module.
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*b*	Second module.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	The result of the multiplication.

operator *(Vector2DInt, int)

Multiplication operation between two values.(Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html) * int (https://learn.microsoft.com/dotnet/api/system.int32))

Declaration

```
public static Vector2DInt operator *(Vector2DInt a, int b)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*a*	First module.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*b*	Second module.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	The result of the multiplication.

operator -(Vector2DInt, Vector2DInt)

Subtraction operation between two values.(Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html) - Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html))

Declaration

```
public static Vector2DInt operator -(Vector2DInt a, Vector2DInt b)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*a*	First module.
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*b*	Second module.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	The result of the subtraction.

operator -(Vector2DInt)

The operator allows us to reverse the value.

Declaration

```
public static Vector2DInt operator -(Vector2DInt a)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*a*	Or value that will be invested.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	Returns the result of the inversion.

Implements

IIntVector (Cobilas.GodotEngine.Utility.Numerics.IIntVector.html)
IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

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  Vector4D (Cobilas.GodotEngine.Utility.Numer
  VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer

+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

Struct Vector3D

Represents a three-dimensional vector.

Filter by title

Implements

IVectorGeneric (Cobilas.GodotEngine.Utility.Numerics.IVectorGeneric-1.html)<Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)>

IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)>

IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html)

IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

Inherited Members

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Numerics (Cobilas.GodotEngine.Utility.Numerics.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
[Serializable]
public struct Vector3D : IVectorGeneric<Vector3D>, IEquatable<Vector3D>, IVector, IFormattable
```

Constructors

Vector3D(Vector3D)

Starts a new instance of the object.

Declaration

```
public Vector3D(Vector3D vector)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*vector*	

Vector3D(Vector3)

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    - IVector
    - (Cobilas.GodotEngine.Utility.Numer
    - IVectorGeneric<TVector>
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    - Matrix
    - Quaternion
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    - Vector2D
    - (Cobilas.GodotEngine.Utility.Numer
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    - VectorEqualityComparer
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- + Cobilas.GodotEngine.Utility.
  - Physics
  - (Cobilas.GodotEngine.Utility.Ph

Starts a new instance of the object.

Declaration

```
public Vector3D(Vector3 vector)
```

Parameters

Type	Name	Description
Vector3 (Cobilas.GodotEngine.Utility.Se	*vector*	

Vector3D(float, float)

Starts a new instance of the object.

Declaration

```
public Vector3D(float x, float y)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*x*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*y*	

Vector3D(float, float, float)

Starts a new instance of the object.

Declaration

```
public Vector3D(float x, float y, float z)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*x*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*y*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*z*	

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- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - VectorGenerator<IVector> (Cobilas.GodotEngine.Utility.Numer
  - 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Fields

x

X component of the vector.

Declaration

```
[ShowProperty(true)]
public float x
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

y

Y component of the vector.

Declaration

```
[ShowProperty(true)]
public float y
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

z

Z component of the vector.

Declaration

```
[ShowProperty(true)]
public float z
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

Properties

AxisCount

Number of axles.

Declaration

```
public readonly int AxisCount { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns the number of axes a vector has.

Back

Shorthand for writing Vector3(0,0,-1f).

Declaration

```
public static Vector3D Back { get; }
```

Property Value

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

Down

Shorthand for writing Vector3(0,1f,0).

Declaration

```
public static Vector3D Down { get; }
```

Property Value

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

Forward

Shorthand for writing Vector3(0,0,1f).

Declaration

```
public static Vector3D Forward { get; }
```

Property Value

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

this[int]

Allows you to access the axes of a vector through an index.

Declaration

```
public float this[int index] { readonly get; set; }
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	The axis index.

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Sets the value of an axis by specifying its index.

Left

Shorthand for writing Vector3(-1f,0,0).

Declaration

```
public static Vector3D Left { get; }
```

Property Value

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

Normalized

Returns the vector scaled to unit length. Equivalent to `v / v.Length()`.

Declaration

```
public readonly Vector3D Normalized { get; }
```

Property Value

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	A normalized version of the vector.

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Vector4D (Cobilas.GodotEngine.Utility.Numer

VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer

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One

Shorthand for writing Vector3(1,1,1).

Declaration

```
public static Vector3D One { get; }
```

Property Value

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

Right

Shorthand for writing Vector3(1f,0,0).

Declaration

```
public static Vector3D Right { get; }
```

Property Value

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

Up

Shorthand for writing Vector3(0,1f,0).

Declaration

```
public static Vector3D Up { get; }
```

Property Value

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

Zero

Shorthand for writing Vector3(0,0,0).

Declaration

```
public static Vector3D Zero { get; }
```

Property Value

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

aspect

Returns the aspect ratio of this vector, the ratio of IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x to IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y.

Declaration

```
public readonly float aspect { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x component divided by the IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y component.

ceil

Returns a new vector with all components rounded up (towards positive infinity).

Declaration

```
public readonly Vector3D ceil { get; }
```

Property Value

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  Vector4D (Cobilas.GodotEngine.Utility.Numer
  VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
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Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	A vector with Ceil(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

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+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
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  - Quaternion (Cobilas.GodotEngine.Utility.Numer
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floor

Returns a new vector with all components rounded down (towards negative infinity).

Declaration

```
public readonly Vector3D floor { get; }
```

Property Value

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	A vector with Floor(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

magnitude

Returns the length (magnitude) of this vector.

Declaration

```
public readonly float magnitude { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The length of this vector.

See Also

LengthSquared()

sqrMagnitude

Returns the squared length (squared magnitude) of this vector. This method runs faster than magnitude (Cobilas.GodotEngine.Utility.Numerics.IVector.html#Cobilas_GodotEngine_Utility_Numerics_IVector_magnitude), so prefer it if you need to compare vectors or need the squared length for some formula.

Declaration

```
public readonly float sqrMagnitude { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The squared length of this vector.

Methods

Abs(in Vector3D)

Returns an absolute value of the vector.

Declaration

```
public static Vector3D Abs(in Vector3D a)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	The vector to become absolute.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	Returns the vector with its absolute value axes.

Abs(bool, bool, bool)

Returns an absolute value of the vector.

Declaration

```
public static Vector3D Abs(bool absX = true, bool absY = true, bool absZ = true)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*absX*	The X axis becomes absolute.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*absY*	The Y axis becomes absolute.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*absZ*	The Z axis becomes absolute.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	Returns the vector with its absolute value axes.

AngleTo(in Vector2D, in Vector2D)

Returns the angle in degrees between from and to.

Declaration

```
public static float AngleTo(in Vector2D lhs, in Vector2D rhs)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*lhs*	The vector from which the angular difference is measured.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*rhs*	The vector to which the angular difference is measured.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The angle in degrees between the two vectors.

Ceil(in Vector3D)

Returns a new vector with all components rounded up (towards positive infinity).

Declaration

```
public static Vector3D Ceil(in Vector3D a)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	The vector that will be the ceiling.

Returns

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- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	A vector with Ceil(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

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  - Quaternion (Cobilas.GodotEngine.Utility.Numer
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  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Cross(in Vector3D, in Vector3D)

Cross product of two vectors.

Declaration

```
public static Vector3D Cross(in Vector3D lhs, in Vector3D rhs)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*lhs*	One of the values.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*rhs*	The other value.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	Returns the cross product of vectors.

Distance(in Vector3D, in Vector3D)

Returns the distance between a and b.

Declaration

```
public static float Distance(in Vector3D a, in Vector3D b)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	One of the values.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*b*	The other value.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The distance between two vectors.

Dot(in Vector3D, in Vector3D)

Dot Product of two vectors.

Declaration

```
public static float Dot(in Vector3D lhs, in Vector3D rhs)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*lhs*	
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*rhs*	

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	returns the result of the dot product.

Equals(Vector3D)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(Vector3D other)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(object)

Indicates whether this instance and a specified object are equal.

Declaration

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  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
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  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
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  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

```
public override readonly bool Equals(object obj)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*obj*	The object to compare with the current instance.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if this instance and other are the same type and represent the same value; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Overrides

ValueType.Equals(Object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

Floor(in Vector3D)

Returns a new vector with all components rounded down (towards negative infinity).

Declaration

```
public static Vector3D Floor(in Vector3D a)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	The vector that will be the floor.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	A vector with Floor(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

GetHashCode()

Returns the hash code for this instance.

Declaration

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+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

```
public override readonly int GetHashCode()
```

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A 32-bit signed integer that is the hash code for this instance.

Overrides

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

Magnitude(in Vector3D)

Returns the length of this Vector

Declaration

```
public static float Magnitude(in Vector3D a)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	One of the values.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	vector length.

Max(Vector3D, Vector3D)

Returns a vector that is made from the largest components of two vectors.

Declaration

```
public static Vector3D Max(Vector3D lhs, Vector3D rhs)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*lhs*	One of the values.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*rhs*	The other value.

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+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.m
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
IIntVector (Cobilas.GodotEngine.Utility.Numer
IVector (Cobilas.GodotEngine.Utility.Numer
IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
1.html)
Quaternion (Cobilas.GodotEngine.Utility.Numer
Vector2D (Cobilas.GodotEngine.Utility.Numer
Vector2Int (Cobilas.GodotEngine.Utility.Numer
Vector3D (Cobilas.GodotEngine.Utility.Numer
Vector3DInt (Cobilas.GodotEngine.Utility.Numer
Vector4D (Cobilas.GodotEngine.Utility.Numer
VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	Whichever of the two values is higher.

Min(Vector3D, Vector3D)

Returns a vector that is made from the smallest components of two vectors.

Declaration

```
public static Vector3D Min(Vector3D lhs, Vector3D rhs)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*lhs*	One of the values.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*rhs*	The other value.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	Whichever of the two values is lower.

Neg(in Vector3D)

Inverts the values of a vector.

Declaration

```
public static Vector3D Neg(in Vector3D a)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	The vector to be inverted.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	Returns the axes of an inverted vector.

Neg(bool, bool, bool)

Inverts the values of a vector.

Declaration

```
public readonly Vector3D Neg(bool negX = true, bool negY = true, bool negZ = true)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negX*	The X axis becomes inverted.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negY*	The Y axis becomes inverted.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negZ*	The Z axis becomes inverted.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	Returns the axes of an inverted vector.

Normalize(in Vector3D)

Makes this vector have a magnitude of 1.

Declaration

```
public static Vector3D Normalize(in Vector3D a)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	The vector to be normalized.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	Returns the already normalized vector.

Round()

Returns this vector with all components rounded to the nearest integer, with halfway cases rounded towards the nearest multiple of two.

Declaration

```
public readonly Vector3D Round()
```

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The rounded vector.

Round(in Vector3D)

Returns this vector with all components rounded to the nearest integer, with halfway cases rounded towards the nearest multiple of two.

Declaration

```
public static Vector3D Round(in Vector3D a)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	the vector to be rounded

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The rounded vector.

SqrMagnitude(in Vector3D)

Returns the squared length of this vector

Declaration

```
public static float SqrMagnitude(in Vector3D a)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	One of the values.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	square length of the vector.

ToString()

Returns the fully qualified type name of this instance.

Declaration

```
public override readonly string ToString()
```

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The fully qualified type name.

Overrides

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)

ToString(string)

Formats the value of the current instance using the specified format.

Declaration

```
public readonly string ToString(string format)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

ToString(string, IFormatProvider)

Formats the value of the current instance using the specified format.

Declaration

```
public readonly string ToString(string format, IFormatProvider formatProvider)
```

Parameters

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+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  IntVector (Cobilas.GodotEngine.Utility.Numer
  IVector (Cobilas.GodotEngine.Utility.Numer
  IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  1.html)
  Quaternion (Cobilas.GodotEngine.Utility.Numer
  Vector2D (Cobilas.GodotEngine.Utility.Numer
  Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  Vector3D (Cobilas.GodotEngine.Utility.Numer
  Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  Vector4D (Cobilas.GodotEngine.Utility.Numer
  VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*formatProvider*	The provider to use to format the value.-or- A null reference (`Nothing` in Visual Basic) to obtain the numeric format information from the current locale setting of the operating system.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

Operators

operator - (Vector3D, Vector3D)

Addition operation between two values.(Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) + Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static Vector3D operator +(Vector3D a, Vector3D b)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	First module.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the addition.

operator + (Vector3D, Vector3)

Addition operation between two values.(Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) + Godot.Vector3)

Declaration

```
public static Vector3D operator +(Vector3D a, Vector3 b)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	First module.
Vector3	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the addition.

operator +(Vector3, Vector3D)

Addition operation between two values.(Godot.Vector3 + Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static Vector3D operator +(Vector3 a, Vector3D b)
```

Parameters

Type	Name	Description
Vector3	*a*	First module.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the addition.

operator /(Vector3D, Vector3D)

Division operation between two values.(Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) / Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static Vector3D operator /(Vector3D a, Vector3D b)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	First module.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the division.

operator /(Vector3D, Vector3)

Division operation between two values.(Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) / Godot.Vector3)

Declaration

```
public static Vector3D operator /(Vector3D a, Vector3 b)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	First module.
Vector3	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the division.

operator /(Vector3D, float)

Division operation between two values.(Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) / float (https://learn.microsoft.com/dotnet/api/system.single))

Declaration

```
public static Vector3D operator /(Vector3D a, float b)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	First module.

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the division.

operator /(Vector3, Vector3D)

Division operation between two values.(Godot.Vector3 / Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static Vector3D operator /(Vector3 a, Vector3D b)
```

Parameters

Type	Name	Description
Vector3	*a*	First module.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the division.

operator ==(in Vector3D, in Vector3D)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(in Vector3D lhs, in Vector3D rhs)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*lhs*	Object to be compared.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*rhs*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

implicit operator Vector2D(Vector3D)

Implicit conversion operator (Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) to Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static implicit operator Vector2D(Vector3D v)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	

implicit operator Vector4D(Vector3D)

Implicit conversion operator (Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) to Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html))

Declaration

```
public static implicit operator Vector4D(Vector3D v)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	

implicit operator Vector2(Vector3D)

Implicit conversion operator (Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) to Godot.Vector2)

Declaration

```
public static implicit operator Vector2(Vector3D v)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector2	

implicit operator Vector3(Vector3D)

Implicit conversion operator.(Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) to Godot.Vector3)

Declaration

```
public static implicit operator Vector3(Vector3D v)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector3	

implicit operator Vector3D(Vector2)

Implicit conversion operator.(Godot.Vector2 to Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static implicit operator Vector3D(Vector2 v)
```

Parameters

Type	Name	Description
Vector2	*v*	Object to be converted.

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+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
    f.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2Int (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

implicit operator Vector3D(Vector3)

Implicit conversion operator from Vector3 to Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static implicit operator Vector3D(Vector3 v)
```

Parameters

Type	Name	Description
Vector3	v	Object to be converted.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

operator != (in Vector3D, in Vector3D)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(in Vector3D lhs, in Vector3D rhs)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*lhs*	Object to be compared.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*rhs*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator %(Vector3D, Vector3D)

Modulo operation between two values.(Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) + Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static Vector3D operator %(Vector3D a, Vector3D b)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	First module.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the module.

operator %(Vector3D, Vector3)

Modulo operation between two values.(Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) + Godot.Vector3)

Declaration

```
public static Vector3D operator %(Vector3D a, Vector3 b)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	First module.
Vector3	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the module.

operator %(Vector3D, float)

Modulo operation between two values.(Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) + float (https://learn.microsoft.com/dotnet/api/system.single))

Declaration

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+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.m
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

```
public static Vector3D operator %(Vector3D a, float b)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	First module.
float (https://docs.microsoft.com/dotnet/api/system.single)	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the module.

operator %(Vector3, Vector3D)

Modulo operation between two values.(Godot.Vector3 + Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static Vector3D operator %(Vector3 a, Vector3D b)
```

Parameters

Type	Name	Description
Vector3	*a*	First module.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the module.

operator *(Vector3D, Vector3D)

Multiplication operation between two values.(Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) * Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static Vector3D operator *(Vector3D a, Vector3D b)
```

Parameters

+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility
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+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.
Input
(Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
IIntVector
(Cobilas.GodotEngine.Utility.Numer
IVector
(Cobilas.GodotEngine.Utility.Numer
IVectorGeneric<TVector>
(Cobilas.GodotEngine.Utility.Numer
1.html)
Quaternion
(Cobilas.GodotEngine.Utility.Numer
Vector2D
(Cobilas.GodotEngine.Utility.Numer
Vector2DInt
(Cobilas.GodotEngine.Utility.Numer
Vector3D
(Cobilas.GodotEngine.Utility.Numer
Vector3DInt
(Cobilas.GodotEngine.Utility.Numer
Vector4D
(Cobilas.GodotEngine.Utility.Numer
VectorEqualityComparer
(Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	First module.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the multiplication.

operator *(Vector3D, Vector3)

Multiplication operation between two values.(Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) * Godot.Vector3)

Declaration

```
public static Vector3D operator *(Vector3D a, Vector3 b)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	First module.
Vector3	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the multiplication.

operator *(Vector3D, float)

Multiplication operation between two values.(Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) * float (https://learn.microsoft.com/dotnet/api/system.single))

Declaration

```
public static Vector3D operator *(Vector3D a, float b)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	First module.
float (https://learn.microsoft.com/dotnet/api/system.single)	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the multiplication.

operator *(Vector3, Vector3D)

Multiplication operation between two values.(Godot.Vector3 * Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static Vector3D operator *(Vector3 a, Vector3D b)
```

Parameters

Type	Name	Description
Vector3	*a*	First module.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the multiplication.

operator -(Vector3D, Vector3D)

Subtraction operation between two values.(Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) - Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static Vector3D operator -(Vector3D a, Vector3D b)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	First module.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the subtraction.

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+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

operator -(Vector3D, Vector3)

Subtraction operation between two values.(Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) - Godot.Vector3)

Declaration

```
public static Vector3D operator -(Vector3D a, Vector3 b)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	First module.
Vector3	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the subtraction.

operator -(Vector3, Vector3D)

Subtraction operation between two values.(Godot.Vector3 - Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static Vector3D operator -(Vector3 a, Vector3D b)
```

Parameters

Type	Name	Description
Vector3	*a*	First module.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*b*	Second module.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	The result of the subtraction.

operator -(Vector3D)

The operator allows us to reverse the value.

Declaration

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- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
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```
public static Vector3D operator -(Vector3D a)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	Or value that will be invested.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	Returns the result of the inversion.

Implements

IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numerics.IVectorGeneric-1.html)
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html)
IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

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+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

Struct Vector3DInt

Representation of a three-dimensional vector using integers.

Filter by title

Implements

IIntVector (Cobilas.GodotEngine.Utility.Numerics.IIntVector.html)

IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

Inherited Members

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Numerics (Cobilas.GodotEngine.Utility.Numerics.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
[Serializable]
public struct Vector3DInt : IIntVector, IFormattable
```

Constructors

Vector3DInt(in Vector3DInt)

Starts a new instance of the object.

Declaration

```
public Vector3DInt(in Vector3DInt vector)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*vector*	

Vector3DInt(in int, in int)

Starts a new instance of the object.

Declaration

```
public Vector3DInt(in int x, in int y)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*x*	
int (https://learn.microsoft.com/dotnet/api/system.int32)	*y*	

Vector3DInt(in int, in int, in int)

Starts a new instance of the object.

Declaration

```
public Vector3DInt(in int x, in int y, in int z)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*x*	
int (https://learn.microsoft.com/dotnet/api/system.int32)	*y*	
int (https://learn.microsoft.com/dotnet/api/system.int32)	*z*	

Fields

x

X component of the vector.

Declaration

```
[ShowProperty(true)]
public int x
```

Field Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	

y

Y component of the vector.

Declaration

```
[ShowProperty(true)]
public int y
```

Field Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	

Z

Z component of the vector.

Declaration

```
[ShowProperty(true)]
public int z
```

Field Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	

Properties

AxisCount

Number of axles.

Declaration

```
public readonly int AxisCount { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns the number of axes a vector has.

Back

Shorthand for writing Vector3(0,0,-1).

Declaration

```
public static Vector3DInt Back { get; }
```

Property Value

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	

Down

Shorthand for writing Vector3(0,1,0).

Declaration

```
public static Vector3DInt Down { get; }
```

Property Value

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	

Forward

Shorthand for writing Vector3(0,0,1).

Declaration

```
public static Vector3DInt Forward { get; }
```

Property Value

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	

this[int]

Allows you to access the axes of a vector through an index.

Declaration

```
public int this[int index] { readonly get; set; }
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	The axis index.

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Sets the value of an axis by specifying its index.

Left

Shorthand for writing Vector3(-1,0,0).

Declaration

```
public static Vector3DInt Left { get; }
```

Property Value

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	

One

Shorthand for writing Vector3(1,1,1).

Declaration

```
public static Vector3DInt One { get; }
```

Property Value

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	

Right

Shorthand for writing Vector3(1,0,0).

Declaration

```
public static Vector3DInt Right { get; }
```

Property Value

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	

Up

Shorthand for writing Vector3(0, 1, 0).

Declaration

```
public static Vector3DInt Up { get; }
```

Property Value

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	

Zero

Shorthand for writing Vector3(0, 0, 0).

Declaration

```
public static Vector3DInt Zero { get; }
```

Property Value

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	

aspect

Returns the aspect ratio of this vector, the ratio of IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x to IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y.

Declaration

```
public readonly float aspect { get; }
```

Property Value

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+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x component divided by the IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y component.

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+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - Vector4DInt (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

ceilToInt

Declaration

```
public readonly Vector3DInt ceilToInt { get; }
```

Property Value

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	

floorToInt

Declaration

```
public readonly Vector3DInt floorToInt { get; }
```

Property Value

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	

magnitude

Returns the length (magnitude) of this vector.

Declaration

```
public readonly float magnitude { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The length of this vector.

See Also

LengthSquared()

sqrMagnitude

Returns the squared length (squared magnitude) of this vector. This method runs faster than magnitude (Cobilas.GodotEngine.Utility.Numerics.IVector.html#Cobilas_GodotEngine_Utility_Numerics_IVector_magnitude), so prefer it if you need to compare vectors or need the squared length for some formula.

Declaration

```
public readonly int sqrMagnitude { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	The squared length of this vector.

Methods

Abs(in Vector3DInt)

Returns an absolute value of the vector.

Declaration

```
public static Vector3DInt Abs(in Vector3DInt a)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*a*	The vector to become absolute.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	Returns the vector with its absolute value axes.

Abs(bool, bool, bool)

Returns an absolute value of the vector.

Declaration

```
public readonly Vector3DInt Abs(bool absX = true, bool absY = true, bool absZ = true)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*absX*	The X axis becomes absolute.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*absY*	The Y axis becomes absolute.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*absZ*	The Z axis becomes absolute.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	Returns the vector with its absolute value axes.

CeilToInt(in Vector3D)

Converts a floating-point vector to an integer vector and applies a Ceiling to each value.

Declaration

```
public static Vector3DInt CeilToInt(in Vector3D a)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	The vector to be converted is ceiling

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	Returns the converted vector and ceiling

Distance(in Vector3DInt, in Vector3DInt)

Returns the distance between a and b.

Declaration

```
public static float Distance(in Vector3DInt a, in Vector3DInt b)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*a*	One of the values.
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*b*	The other value.

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- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
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Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The distance between two vectors.

Equals(Vector3DInt)

Declaration

```
public readonly bool Equals(Vector3DInt other)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*other*	

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	

Equals(object)

Indicates whether this instance and a specified object are equal.

Declaration

```
public override readonly bool Equals(object obj)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*obj*	The object to compare with the current instance.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if `obj` and this instance are the same type and represent the same value; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Overrides

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  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

FloorToInt(in Vector3D)

Converts a floating-point vector to an integer vector and applies a Floor to each value.

Declaration

```
public static Vector3DInt FloorToInt(in Vector3D a)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	The vector to be converted is floor

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	Returns the converted vector and floor

GetHashCode()

Returns the hash code for this instance.

Declaration

```
public override readonly int GetHashCode()
```

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A 32-bit signed integer that is the hash code for this instance.

Overrides

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

Magnitude(in Vector3DInt)

Returns the length of this vector

Declaration

```
public static float Magnitude(in Vector3DInt a)
```


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Input
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- Cobilas.GodotEngine.Utility.
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VectorEqualityComparer
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+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*a*	One of the values.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	vector length.

Max(Vector3DInt, Vector3DInt)

Returns a vector that is made from the largest components of two vectors.

Declaration

```
public static Vector3DInt Max(Vector3DInt lhs, Vector3DInt rhs)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*lhs*	One of the values.
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*rhs*	The other value.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	Whichever of the two values is higher.

Min(Vector3DInt, Vector3DInt)

Returns a vector that is made from the smallest components of two vectors.

Declaration

```
public static Vector3DInt Min(Vector3DInt lhs, Vector3DInt rhs)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*lhs*	One of the values.
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*rhs*	The other value.

Returns

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
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- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	Whichever of the two values is lower.

Neg(in Vector3DInt)

Inverts the values of a vector.

Declaration

```
public readonly Vector3DInt Neg(in Vector3DInt a)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*a*	The vector to be inverted.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	Returns the axes of an inverted vector.

Neg(bool, bool, bool)

Inverts the values of a vector.

Declaration

```
public readonly Vector3DInt Neg(bool negX = true, bool negY = true, bool negZ = true)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negX*	The X axis becomes inverted.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negY*	The Y axis becomes inverted.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negZ*	The Z axis becomes inverted.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	Returns the axes of an inverted vector.

RoundToInt(in Vector3D)

+ Cobilas.GodotEngine.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IUVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Converts a floating-point vector to an integer vector by performing a Round for each value.

Declaration

```
public static Vector3DInt RoundToInt(in Vector3D a)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*a*	The vector that will be converted and rounded

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	Returns the converted and rounded vector

SqrMagnitude(in Vector3DInt)

Returns the squared length of this vector

Declaration

```
public static int SqrMagnitude(in Vector3DInt a)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*a*	One of the values.

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	square length of the vector.

ToString()

Returns the fully qualified type name of this instance.

Declaration

```
public override readonly string ToString()
```

Returns

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
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  Vector2DInt (Cobilas.GodotEngine.Utility.Numer
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  Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  Vector4D (Cobilas.GodotEngine.Utility.Numer
  VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The fully qualified type name.

Overrides

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)

ToString(string)

Formats the value of the current instance using the specified format.

Declaration

```
public readonly string ToString(string format)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

ToString(string, IFormatProvider)

Formats the value of the current instance using the specified format.

Declaration

```
public readonly string ToString(string format, IFormatProvider formatProvider)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.

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+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
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- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Type	Name	Description
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*formatProvider*	The provider to use to format the value.-or- A null reference (`Nothing` in Visual Basic) to obtain the numeric format information from the current locale setting of the operating system.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

Operators

operator +(Vector3DInt, Vector3DInt)

Addition operation between two values.(Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html) + Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html))

Declaration

```
public static Vector3DInt operator +(Vector3DInt a, Vector3DInt b)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*a*	First module.
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*b*	Second module.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	The result of the addition.

operator /(Vector3DInt, Vector3DInt)

Division operation between two values.(Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html) / Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html))

Declaration

```
public static Vector3DInt operator /(Vector3DInt a, Vector3DInt b)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*a*	First module.
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*b*	Second module.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	The result of the division.

operator /(Vector3DInt, int)

Division operation between two values.(Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html) / int (https://learn.microsoft.com/dotnet/api/system.int32))

Declaration

```
public static Vector3DInt operator /(Vector3DInt a, int b)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*a*	First module.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*b*	Second module.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	The result of the division.

operator ==(in Vector3DInt, in Vector3DInt)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(in Vector3DInt lhs, in Vector3DInt rhs)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*lhs*	Object to be compared.
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*rhs*	Object of comparison.

- Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
- Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

explicit operator Vector3DInt(Vector2D)

Explicit conversion operator (Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html) to Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html))

Declaration

```
public static explicit operator Vector3DInt(Vector2D v)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	

explicit operator Vector3DInt(Vector3D)

Explicit conversion operator (Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) to Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html))

Declaration

```
public static explicit operator Vector3DInt(Vector3D v)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	

explicit operator Vector3DInt(Vector4D)

Explicit conversion operator.(Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) to Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html))

Declaration

```
public static explicit operator Vector3DInt(Vector4D v)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	

explicit operator Vector3DInt(Vector2)

Explicit conversion operator.(Godot.Vector2 to Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html))

Declaration

```
public static explicit operator Vector3DInt(Vector2 v)
```

Parameters

Type	Name	Description
Vector2	*v*	Object to be converted.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	

implicit operator Vector2D(Vector3DInt)

Implicit conversion operator.(Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html) to Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static implicit operator Vector2D(Vector3DInt v)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*v*	Object to be converted.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	

implicit operator Vector2DInt(Vector3DInt)

Implicit conversion operator. (Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html) to Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html))

Declaration

```
public static implicit operator Vector2DInt(Vector3DInt v)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*v*	Object to be converted.

Returns

Type	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	

implicit operator Vector3D(Vector3DInt)

Implicit conversion operator. (Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html) to Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

```
public static implicit operator Vector3D(Vector3DInt v)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*v*	Object to be converted.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

implicit operator Vector4D(Vector3DInt)

Implicit conversion operator (Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html) to Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html))

Declaration

```
public static implicit operator Vector4D(Vector3DInt v)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*v*	Object to be converted.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	

implicit operator Vector2(Vector3DInt)

Implicit conversion operator (Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html) to Godot.Vector2)

Declaration

```
public static implicit operator Vector2(Vector3DInt v)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*v*	Object to be converted.

Returns

Type	Description
Vector2	

operator != (in Vector3DInt, in Vector3DInt)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(in Vector3DInt lhs, in Vector3DInt rhs)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*lhs*	Object to be compared.
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*rhs*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator %(Vector3DInt, Vector3DInt)

Modulo operation between two values.(Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html) + Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html))

Declaration

```
public static Vector3DInt operator %(Vector3DInt a, Vector3DInt b)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*a*	First module.
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*b*	Second module.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	The result of the module.

operator %(Vector3DInt, int)

Modulo operation between two values.(Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html) + int (https://learn.microsoft.com/dotnet/api/system.int32))

Declaration

```
public static Vector3DInt operator %(Vector3DInt a, int b)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*a*	First module.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*b*	Second module.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	The result of the module.

operator *(Vector3DInt, Vector3DInt)

Multiplication operation between two values.(Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html) * Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html))

Declaration

```
public static Vector3DInt operator *(Vector3DInt a, Vector3DInt b)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*a*	First module.
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*b*	Second module.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	The result of the multiplication.

operator *(Vector3DInt, int)

Multiplication operation between two values.(Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html) * int (https://learn.microsoft.com/dotnet/api/system.int32))

Declaration

```
public static Vector3DInt operator *(Vector3DInt a, int b)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*a*	First module.

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*b*	Second module.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	The result of the multiplication.

operator - (Vector3DInt, Vector3DInt)

Subtraction operation between two values.(Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html) - Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html))

Declaration

```
public static Vector3DInt operator -(Vector3DInt a, Vector3DInt b)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*a*	First module.
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*b*	Second module.

Returns

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	The result of the subtraction.

operator - (Vector3DInt)

The operator allows us to reverse the value.

Declaration

```
public static Vector3DInt operator -(Vector3DInt a)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*a*	Or value that will be invested.

Returns

+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  IIntVector (Cobilas.GodotEngine.Utility.Numer
  IVector (Cobilas.GodotEngine.Utility.Numer
  IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  Quaternion (Cobilas.GodotEngine.Utility.Numer
  Vector2D (Cobilas.GodotEngine.Utility.Numer
  Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  Vector3D (Cobilas.GodotEngine.Utility.Numer
  Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  Vector4D (Cobilas.GodotEngine.Utility.Numer
  VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Type	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	Returns the result of the inversion.

Implements

IIntVector (Cobilas.GodotEngine.Utility.Numerics.IIntVector.html)
IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

Struct Vector4D

Represents a four-dimensional vector.(Four-axis vector)

Filter by title

Implements

IVectorGeneric (Cobilas.GodotEngine.Utility.Numerics.IVectorGeneric-1.html)<Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)>

IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)>

IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html)

IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

Inherited Members

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Numerics (Cobilas.GodotEngine.Utility.Numerics.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
[Serializable]
public struct Vector4D : IVectorGeneric<Vector4D>, IEquatable<Vector4D>, IVector, IFormattable
```

Constructors

Vector4D(Quaternion)

Starts a new instance of the object.

Declaration

```
public Vector4D(Quaternion vector)
```

Parameters

Type	Name	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	*vector*	

Vector4D(Vector4D)

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  - IVector
    (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector>
    (Cobilas.GodotEngine.Utility.Numer
  - Matrix
    (Cobilas.GodotEngine.Utility.Numer
  - Quaternion
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  - Vector2D
    (Cobilas.GodotEngine.Utility.Numer
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  - Vector3D
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  - Vector3DInt
    (Cobilas.GodotEngine.Utility.Numer
  - Vector4D
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  - VectorEqualityComparer
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+ Cobilas.GodotEngine.Utility.
  Physics
  (Cobilas.GodotEngine.Utility.Ph

Starts a new instance of the object.

Declaration

```
public Vector4D(Vector4D vector)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*vector*	

Vector4D(float, float)

Starts a new instance of the object.

Declaration

```
public Vector4D(float x, float y)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*x*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*y*	

Vector4D(float, float, float)

Starts a new instance of the object.

Declaration

```
public Vector4D(float x, float y, float z)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*x*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*y*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*z*	

Vector4D(float, float, float, float)

Starts a new instance of the object.

Declaration

```
public Vector4D(float x, float y, float z, float w)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*x*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*y*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*z*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*w*	

Fields

W

W component of the vector.

Declaration

```
[ShowProperty(true)]
public float w
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

X

X component of the vector.

Declaration

```
[ShowProperty(true)]
public float x
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

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  - IntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
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  - Vector4D (Cobilas.GodotEngine.Utility.Numer
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y

Y component of the vector.

Declaration

```
[ShowProperty(true)]
public float y
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

z

Z component of the vector.

Declaration

```
[ShowProperty(true)]
public float z
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

Properties

AxisCount

Number of axles.

Declaration

```
public readonly int AxisCount { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns the number of axes a vector has.

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this[int]

Allows you to access the axes of a vector through an index.

Declaration

```
public float this[int index] { readonly get; set; }
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	The axis index.

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Sets the value of an axis by specifying its index.

Normalized

Returns the vector scaled to unit length. Equivalent to `v / v.Length()`.

Declaration

```
public readonly Vector4D Normalized { get; }
```

Property Value

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	A normalized version of the vector.

One

Shorthand for writing Vector4(1,1,1,1).

Declaration

```
public static Vector4D One { get; }
```

Property Value

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	

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  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
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Zero

Shorthand for writing Vector4(0,0,0,0).

Declaration

```
public static Vector4D Zero { get; }
```

Property Value

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	

aspect

Returns the aspect ratio of this vector, the ratio of IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x to IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y.

Declaration

```
public readonly float aspect { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).x component divided by the IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html).y component.

ceil

Returns a new vector with all components rounded up (towards positive infinity).

Declaration

```
public readonly Vector4D ceil { get; }
```

Property Value

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	A vector with Ceil(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

floor

Returns a new vector with all components rounded down (towards negative infinity).

Declaration

```
public readonly Vector4D floor { get; }
```

Property Value

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.IVector4D.html)	A vector with Floor(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

magnitude

Returns the length (magnitude) of this vector.

Declaration

```
public readonly float magnitude { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The length of this vector.

See Also

LengthSquared()

sqrMagnitude

Returns the squared length (squared magnitude) of this vector. This method runs faster than magnitude (Cobilas.GodotEngine.Utility.Numerics.IVector.html#Cobilas_GodotEngine_Utility_Numerics_IVector_magnitude), so prefer it if you need to compare vectors or need the squared length for some formula.

Declaration

```
public readonly float sqrMagnitude { get; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The squared length of this vector.

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Methods

Abs(in Vector4D)

Returns an absolute value of the vector.

Declaration

```
public static Vector4D Abs(in Vector4D a)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	The vector to become absolute.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	Returns the vector with its absolute value axes.

Abs(bool, bool, bool, bool)

Returns an absolute value of the vector.

Declaration

```
public readonly Vector4D Abs(bool absX = true, bool absY = true, bool absZ = true, bool absW = true)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*absX*	The X axis becomes absolute.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*absY*	The Y axis becomes absolute.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*absZ*	The Z axis becomes absolute.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*absW*	The W axis becomes absolute.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	Returns the vector with its absolute value axes.

Ceil(in Vector4D)

Declaration

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Returns a new vector with all components rounded up (towards positive infinity).

Declaration

```
public static Vector4D Ceil(in Vector4D a)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	The vector that will be the ceiling.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	A vector with Ceil(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

Distance(in Vector4D, Vector4D)

Returns the distance between a and b.

Declaration

```
public static float Distance(in Vector4D a, Vector4D b)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	One of the values.
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*b*	The other value.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	The distance between two vectors.

Dot(in Vector4D, in Vector4D)

Dot Product of two vectors.

Declaration

```
public static float Dot(in Vector4D a, in Vector4D b)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	One of the values.
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*b*	The other value.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	returns the result of the dot product.

Equals(Vector4D)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(Vector4D other)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(object)

Indicates whether this instance and a specified object are equal.

Declaration

```
public override readonly bool Equals(object obj)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*obj*	The object to compare with the current instance.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if *obj* and this instance are the same type and represent the same value; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Overrides

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

Floor(in Vector4D)

Returns a new vector with all components rounded down (towards negative infinity).

Declaration

```
public static Vector4D Floor(in Vector4D a)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	The vector that will be the floor.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	A vector with Floor(float) (https://learn.microsoft.com/dotnet/api/system.single) called on each component.

GetHashCode()

Returns the hash code for this instance.

Declaration

```
public override readonly int GetHashCode()
```

Returns

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  IVector (Cobilas.GodotEngine.Utility.Numer
  Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)
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Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A 32-bit signed integer that is the hash code for this instance.

Overrides

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

IsNormalized(in IVector)

Checks if the vector is normalized.

Declaration

```
public static bool IsNormalized(in IVector a)
```

Parameters

Type	Name	Description
IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html)	*a*	The vector to be checked.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when vector is normalized.

Magnitude(in Vector4D)

Returns the length of this vector

Declaration

```
public static float Magnitude(in Vector4D a)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	One of the values.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	vector length.

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Max(in Vector4D, in Vector4D)

Returns a vector that is made from the largest components of two vectors.

Declaration

```
public static Vector4D Max(in Vector4D lhs, in Vector4D rhs)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*lhs*	One of the values.
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*rhs*	The other value.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	Whichever of the two values is higher.

Min(in Vector4D, in Vector4D)

Returns a vector that is made from the smallest components of two vectors.

Declaration

```
public static Vector4D Min(in Vector4D lhs, in Vector4D rhs)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*lhs*	One of the values.
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*rhs*	The other value.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	Whichever of the two values is lower.

Neg(in Vector4D)

Inverts the values of a vector.

Declaration

+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.
Input
(Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
IIntVector
(Cobilas.GodotEngine.Utility.Numer
IVector
(Cobilas.GodotEngine.Utility.Numer
IVectorGeneric<TVector>
(Cobilas.GodotEngine.Utility.Numer
T.html)
Quaternion
(Cobilas.GodotEngine.Utility.Numer
Vector2D
(Cobilas.GodotEngine.Utility.Numer
Vector2DInt
(Cobilas.GodotEngine.Utility.Numer
Vector3D
(Cobilas.GodotEngine.Utility.Numer
Vector3DInt
(Cobilas.GodotEngine.Utility.Numer
Vector4D
(Cobilas.GodotEngine.Utility.Numer
VectorEqualityComparer
(Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph

```
public static Vector4D Neg(in Vector4D a)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	The vector to be inverted.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	Returns the axes of an inverted vector.

Neg(bool, bool, bool, bool)

Inverts the values of a vector.

Declaration

```
public readonly Vector4D Neg(bool negX = true, bool negY = true, bool negZ = true, bool negW
= true)
```

Parameters

Type	Name	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negX*	The X axis becomes inverted.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negY*	The Y axis becomes inverted.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negZ*	The Z axis becomes inverted.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negW*	The W axis becomes inverted.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	Returns the axes of an inverted vector.

Normalize(in Vector4D)

Makes this vector have a magnitude of 1.

Declaration

```
public static Vector4D Normalize(in Vector4D a)
```

Parameters

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.m
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	The vector to be normalized.

Returns

Type		Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)		Returns the already normalized vector.

Round()

Returns this vector with all components rounded to the nearest integer, with halfway cases rounded towards the nearest multiple of two.

Declaration

```
public readonly Vector4D Round()
```

Returns

Type		Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)		The rounded vector.

Round(in Vector4D)

Returns this vector with all components rounded to the nearest integer, with halfway cases rounded towards the nearest multiple of two.

Declaration

```
public static Vector4D Round(in Vector4D a)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	the vector to be rounded

Returns

Type		Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)		The rounded vector.

SqrMagnitude(in Vector4D)

Returns the squared length of this vector

- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<IVector> (Cobilas.GodotEngine.Utility.Numer
  - 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Nume
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
- **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

Declaration

```
public static float SqrMagnitude(in Vector4D a)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	One of the values.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	square length of the vector.

ToString()

Returns the fully qualified type name of this instance.

Declaration

```
public override readonly string ToString()
```

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The fully qualified type name.

Overrides

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)

ToString(string)

Formats the value of the current instance using the specified format.

Declaration

```
public readonly string ToString(string format)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

ToString(string, IFormatProvider)

Formats the value of the current instance using the specified format.

Declaration

```
public readonly string ToString(string format, IFormatProvider formatProvider)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	The format to use.-or- A null reference (`Nothing` in Visual Basic) to use the default format defined for the type of the IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable) implementation.
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*formatProvider*	The provider to use to format the value.-or- A null reference (`Nothing` in Visual Basic) to obtain the numeric format information from the current locale setting of the operating system.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The value of the current instance in the specified format.

Operators

operator +(Vector4D, Vector4D)

Addition operation between two values (Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) + Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html))

Declaration

```
public static Vector4D operator +(Vector4D a, Vector4D b)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	First module.
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*b*	Second module.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	The result of the addition.

operator /(Vector4D, Vector4D)

Division operation between two values.(Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) / Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html))

Declaration

```
public static Vector4D operator /(Vector4D a, Vector4D b)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	First module.
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*b*	Second module.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	The result of the division.

operator /(Vector4D, float)

Division operation between two values.(Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) / float (https://learn.microsoft.com/dotnet/api/system.single))

Declaration

```
public static Vector4D operator /(Vector4D a, float b)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	First module.
float (https://learn.microsoft.com/dotnet/api/system.single)	*b*	Second module.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	The result of the division.

operator /(float, Vector4D)

Division operation between two values.(float (https://learn.microsoft.com/dotnet/api/system.single) / Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html))

Declaration

```
public static Vector4D operator /(float a, Vector4D b)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*a*	First module.
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*b*	Second module.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	The result of the division.

operator ==(Vector4D, Vector4D)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(Vector4D A, Vector4D B)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*A*	Object to be compared.
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Serialization.RenderObjects.html)
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.html)
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO.html)
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.Input.html)
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.Numerics.html)
  - IMatrix (Cobilas.GodotEngine.Utility.Numerics.IMatrix.html)
  - IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html)
  - IVectorGeneric<IVector> (Cobilas.GodotEngine.Utility.Numerics.IVectorGeneric1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)
  - Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)
  - Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)
  - Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numerics.VectorEqualityComparer.html)
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

implicit operator Quaternion(Vector4D)

Implicit conversion operator.(Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) to Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html))

Declaration

```
public static implicit operator Quaternion(Vector4D v)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*v*	Object to be converted.

Returns

Type	Description
Quaternion (Cobilas.GodotEngine.Utility.Numerics.Quaternion.html)	

implicit operator Vector2D(Vector4D)

Implicit conversion operator.(Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) to Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html))

Declaration

```
public static implicit operator Vector2D(Vector4D v)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	

implicit operator Vector3D(Vector4D)

Implicit conversion operator.(Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) to Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html))

Declaration

+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.n**
+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
  - IInVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
  - 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEntityCollider (Cobilas.GodotEngine.Utility.Numer
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl**

```
public static implicit operator Vector3D(Vector4D v)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	

implicit operator Vector2(Vector4D)

Implicit conversion operator.(Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) to Godot.Vector2)

Declaration

```
public static implicit operator Vector2(Vector4D v)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector2	

implicit operator Vector3(Vector4D)

Implicit conversion operator.(Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) to Godot.Vector3)

Declaration

```
public static implicit operator Vector3(Vector4D v)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*v*	Object to be converted.

Returns

Type	Description
Vector3	

implicit operator Vector4D(Vector2)

Implicit conversion operator.(Godot.Vector2 to Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html))

Declaration

```
public static implicit operator Vector4D(Vector2 v)
```

Parameters

Type	Name	Description
Vector2	*v*	Object to be converted.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	

implicit operator Vector4D(Vector3)

Implicit conversion operator.(Godot.Vector3 to Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html))

Declaration

```
public static implicit operator Vector4D(Vector3 v)
```

Parameters

Type	Name	Description
Vector3	*v*	Object to be converted.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	

operator != (Vector4D, Vector4D)

Indicates whether the instance is different from another instance of the same type.

Declaration

Cobilas.GodotEngine.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
IVector (Cobilas.GodotEngine.Utility.Numer
IVector (Cobilas.GodotEngine.Utility.Numer
IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
1.html)
Quaternion (Cobilas.GodotEngine.Utility.Numer
Vector2D (Cobilas.GodotEngine.Utility.Numer
Vector2DInt (Cobilas.GodotEngine.Utility.Numer
Vector3D (Cobilas.GodotEngine.Utility.Numer
Vector3DInt (Cobilas.GodotEngine.Utility.Numer
Vector4D (Cobilas.GodotEngine.Utility.Numer
VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

```
public static bool operator !=(Vector4D A, Vector4D B)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*A*	Object to be compared.
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*B*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator %(Vector4D, Vector4D)

Modulo operation between two values.(Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) + Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html))

Declaration

```
public static Vector4D operator %(Vector4D a, Vector4D b)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	First module.
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*b*	Second module.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	The result of the module.

operator %(Vector4D, float)

Modulo operation between two values.(Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) + float (https://learn.microsoft.com/dotnet/api/system.single))

Declaration

```
public static Vector4D operator %(Vector4D a, float b)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	First module.
float (https://learn.microsoft.com/dotnet/api/system.single)	*b*	Second module.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	The result of the module.

operator %(float, Vector4D)

Modulo operation between two values.(float (https://learn.microsoft.com/dotnet/api/system.single) + Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html))

Declaration

```
public static Vector4D operator %(float a, Vector4D b)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*a*	First module.
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*b*	Second module.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	The result of the module.

operator *(Vector4D, Vector4D)

Multiplication operation between two values.(Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) * Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html))

Declaration

```
public static Vector4D operator *(Vector4D a, Vector4D b)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	First module.
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*b*	Second module.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	The result of the multiplication.

operator *(Vector4D, float)

Multiplication operation between two values.(Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) * float (https://learn.microsoft.com/dotnet/api/system.single))

Declaration

```
public static Vector4D operator *(Vector4D a, float b)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	First module.
float (https://learn.microsoft.com/dotnet/api/system.single)	*b*	Second module.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	The result of the multiplication.

operator *(float, Vector4D)

Multiplication operation between two values.(float (https://learn.microsoft.com/dotnet/api/system.single) * Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html))

Declaration

```
public static Vector4D operator *(float a, Vector4D b)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*a*	First module.
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*b*	Second module.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	The result of the multiplication.

operator -(Vector4D, Vector4D)

Subtraction operation between two values.(Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html) - Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html))

Declaration

```
public static Vector4D operator -(Vector4D a, Vector4D b)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	First module.
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*b*	Second module.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	The result of the subtraction.

operator -(Vector4D)

The operator allows us to reverse the value.

Declaration

```
public static Vector4D operator -(Vector4D a)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*a*	Or value that will be invested.

Returns

Type	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	Returns the result of the inversion.

Implements

IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numerics.IVectorGeneric-1.html)
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IVector (Cobilas.GodotEngine.Utility.Numerics.IVector.html)
IFormattable (https://learn.microsoft.com/dotnet/api/system.iformattable)

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.h
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
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  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
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  - Vector4D (Cobilas.GodotEngine.Utility.Nume
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Nume
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

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- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**

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  Vector3D (Cobilas.GodotEngine.Utility.Numer
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  Vector4D (Cobilas.GodotEngine.Utility.Numer
  VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer

+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

Struct VectorEqualityComparer

Defines methods to support comparing vectors for equality.

Filter by title

Implements

IEqualityComparer (https://learn.microsoft.com/dotnet/api/system.collections.iequalitycomparer)

IEqualityComparer (https://learn.microsoft.com/dotnet/api/system.collections.generic.iequalitycomparer-1)<Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)>

IEqualityComparer (https://learn.microsoft.com/dotnet/api/system.collections.generic.iequalitycomparer-1)<Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)>

IEqualityComparer (https://learn.microsoft.com/dotnet/api/system.collections.generic.iequalitycomparer-1)<Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)>

IEqualityComparer (https://learn.microsoft.com/dotnet/api/system.collections.generic.iequalitycomparer-1)<Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)>

IEqualityComparer (https://learn.microsoft.com/dotnet/api/system.collections.generic.iequalitycomparer-1)<Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)>

Inherited Members

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Numerics (Cobilas.GodotEngine.Utility.Numerics.html)

Assembly: Cobilas.godot.utility.dll

Syntax

```
public readonly struct VectorEqualityComparer : IEqualityComparer, IEqualityComparer<Vector2D>, IEqualityComparer<Vector3D>, IEqualityComparer<Vector4D>, IEqualityComparer<Vector2DInt>, IEqualityComparer<Vector3DInt>
```

Methods

Equals(Vector2D, Vector2D)

Determines whether the specified objects are equal.

Declaration

```
public bool Equals(Vector2D x, Vector2D y)
```


- Cobilas.GodotEditor.Utility.Serialization.RemoteObjects (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.h
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*x*	The first object of the parameter type to be compared.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*y*	The second object of the parameter type to be compared.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	`true` if the specified objects are equal; otherwise, `false` .

Remarks

Implement this method to provide a custom equality comparison for the specified type.

Equals(Vector2DInt, Vector2DInt)

Determines whether the specified objects are equal.

Declaration

```
public bool Equals(Vector2DInt x, Vector2DInt y)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*x*	The first object of the parameter type to be compared.
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*y*	The second object of the parameter type to be compared.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	`true` if the specified objects are equal; otherwise, `false` .

Remarks

Implement this method to provide a custom equality comparison for the specified type.

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
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- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
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  - IVector (Cobilas.GodotEngine.Utility.Numer
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  - Quaternion (Cobilas.GodotEngine.Utility.Numer
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  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Equals(Vector3D, Vector3D)

Determines whether the specified objects are equal.

Declaration

```
public bool Equals(Vector3D x, Vector3D y)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*x*	The first object of the parameter type to be compared.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*y*	The second object of the parameter type to be compared.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	`true` if the specified objects are equal; otherwise, `false` .

Remarks

Implement this method to provide a custom equality comparison for the specified type.

Equals(Vector3DInt, Vector3DInt)

Determines whether the specified objects are equal.

Declaration

```
public bool Equals(Vector3DInt x, Vector3DInt y)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*x*	The first object of the parameter type to be compared.
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*y*	The second object of the parameter type to be compared.

Returns

+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
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+ Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.N
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IO
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Input
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- Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
IIntVector
(Cobilas.GodotEngine.Utility.Numer
IVector
(Cobilas.GodotEngine.Utility.Numer
IVectorGeneric<TVector>
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Vector2D
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Vector3D
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Vector3DInt
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Vector4D
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VectorEqualityComparer
(Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	`true` if the specified objects are equal; otherwise, `false` .

Remarks

Implement this method to provide a custom equality comparison for the specified type.

Equals(Vector4D, Vector4D)

Determines whether the specified objects are equal.

Declaration

```
public bool Equals(Vector4D x, Vector4D y)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*x*	The first object of the parameter type to be compared.
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*y*	The second object of the parameter type to be compared.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	`true` if the specified objects are equal; otherwise, `false` .

Remarks

Implement this method to provide a custom equality comparison for the specified type.

Equals(object, object)

Determines whether the specified objects are equal.

Declaration

```
public bool Equals(object x, object y)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*x*	The first object of the parameter type to be compared.
object (https://learn.microsoft.com/dotnet/api/system.object)	*y*	The second object of the parameter type to be compared.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	`true` if the specified objects are equal; otherwise, `false`.

Remarks

Implement this method to provide a custom equality comparison for the specified type.

GetHashCode(Vector2D)

Returns a hash code for the specified object.

Declaration

```
public int GetHashCode(Vector2D obj)
```

Parameters

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*obj*	The object (https://learn.microsoft.com/dotnet/api/system.object) for which a hash code is to be returned.

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A hash code for the specified object.

Remarks

Implement this method to provide a customized hash code for type, corresponding to the customized equality comparison provided by the Equals method.

GetHashCode(Vector2DInt)

Returns a hash code for the specified object.

Declaration

```
public int GetHashCode(Vector2DInt obj)
```

Parameters

Type	Name	Description
Vector2DInt (Cobilas.GodotEngine.Utility.Numerics.Vector2DInt.html)	*obj*	The object (https://learn.microsoft.com/dotnet/api/system.object) for which a hash code is to be returned.

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A hash code for the specified object.

Remarks

Implement this method to provide a customized hash code for type, corresponding to the customized equality comparison provided by the Equals method.

GetHashCode(Vector3D)

Returns a hash code for the specified object.

Declaration

```
public int GetHashCode(Vector3D obj)
```

Parameters

Type	Name	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*obj*	The object (https://learn.microsoft.com/dotnet/api/system.object) for which a hash code is to be returned.

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A hash code for the specified object.

Remarks

Implement this method to provide a customized hash code for type, corresponding to the customized equality comparison provided by the Equals method.

GetHashCode(Vector3DInt)

Returns a hash code for the specified object.

+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
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+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
  - IIntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer
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  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

Declaration

```
public int GetHashCode(Vector3DInt obj)
```

Parameters

Type	Name	Description
Vector3DInt (Cobilas.GodotEngine.Utility.Numerics.Vector3DInt.html)	*obj*	The object (https://learn.microsoft.com/dotnet/api/system.object) for which a hash code is to be returned.

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A hash code for the specified object.

Remarks

Implement this method to provide a customized hash code for type, corresponding to the customized equality comparison provided by the Equals method.

GetHashCode(Vector4D)

Returns a hash code for the specified object.

Declaration

```
public int GetHashCode(Vector4D obj)
```

Parameters

Type	Name	Description
Vector4D (Cobilas.GodotEngine.Utility.Numerics.Vector4D.html)	*obj*	The object (https://learn.microsoft.com/dotnet/api/system.object) for which a hash code is to be returned.

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A hash code for the specified object.

Remarks

Implement this method to provide a customized hash code for type, corresponding to the customized equality comparison provided by the Equals method.

GetHashCode(object)

Returns a hash code for the specified object.

Declaration

```
public int GetHashCode(object obj)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*obj*	The object (https://learn.microsoft.com/dotnet/api/system.object) for which a hash code is to be returned.

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A hash code for the specified object.

Remarks

Implement this method to provide a customized hash code for type, corresponding to the customized equality comparison provided by the Equals method.

Implements

IEqualityComparer (https://learn.microsoft.com/dotnet/api/system.collections.iequalitycomparer)
IEqualityComparer<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.iequalitycomparer-1)
IEqualityComparer<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.iequalitycomparer-1)
IEqualityComparer<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.iequalitycomparer-1)
IEqualityComparer<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.iequalitycomparer-1)
IEqualityComparer<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.iequalitycomparer-1)

+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
  - IntVector (Cobilas.GodotEngine.Utility.Numer
  - IVector (Cobilas.GodotEngine.Utility.Numer-
  - IVectorGeneric<TVector> (Cobilas.GodotEngine.Utility.Numer 1.html)
  - Quaternion (Cobilas.GodotEngine.Utility.Numer
  - Vector2D (Cobilas.GodotEngine.Utility.Numer
  - Vector2DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector3D (Cobilas.GodotEngine.Utility.Numer
  - Vector3DInt (Cobilas.GodotEngine.Utility.Numer
  - Vector4D (Cobilas.GodotEngine.Utility.Numer
  - VectorEqualityComparer (Cobilas.GodotEngine.Utility.Numer
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

Namespace Cobilas.GodotEngine.Utility.Physics

Filter by title

Classes

Serialization.Properties

(Cobilas.GodotEditor.Utility.Ser

Physics2D (Cobilas.GodotEngine.Utility.Physics.Physics2D.html)

+ Cobilas.GodotEditor.Utility.

This class provides methods for detecting 2D physics bodies.

Serialization.RenderObjects

(Cobilas.GodotEditor.Utility.Ser

Structs

+ Cobilas.GodotEngine.Utility

(Cobilas.GodotEngine.Utility.ht

Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)

+ Cobilas.GodotEngine.Utility.

Responsible for storing information about a 2D collision.

IO

(Cobilas.GodotEngine.Utility.IO

RayHit2D (Cobilas.GodotEngine.Utility.Physics.RayHit2D.html)

+ Cobilas.GodotEngine.Utility.

Responsible for storing information about a 2D collision ray.

Input

(Cobilas.GodotEngine.Utility.In

+ Cobilas.GodotEngine.Utility.

Numerics

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- Cobilas.GodotEngine.Utility.

Physics

(Cobilas.GodotEngine.Utility.Ph

Hit2D

(Cobilas.GodotEngine.Utility.Physics

Physics2D

(Cobilas.GodotEngine.Utility.Physics

RayHit2D

(Cobilas.GodotEngine.Utility.Physics

+ Cobilas.GodotEngine.Utility.

Runtime

(Cobilas.GodotEngine.Utility.Ru

+ Cobilas.GodotEngine.Utility.

Scene

(Cobilas.GodotEngine.Utility.Sc

Struct Hit2D

Responsible for storing information about a 2D collision.

Filter by title

Inherited Members

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)
ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)
ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system.object,system.object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Physics (Cobilas.GodotEngine.Utility.Physics.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public struct Hit2D
```

Fields

Collision_Key

Represents the collider key.

Declaration

```
public const string Collision_Key = "collider"
```

Field Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	

ID_Key

Represents the collider id key.

Declaration

- **Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Se**
- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Se**
- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl**
  - Hit2D (Cobilas.GodotEngine.Utility.Physics
  - Physics2D (Cobilas.GodotEngine.Utility.Physics
  - RayHit2D (Cobilas.GodotEngine.Utility.Physics
- **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
- **Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc**

```
public const string ID_Key = "collider_id"
```

Field Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	

MetaData_Key

Represents the metadata key.

Declaration

```
public const string MetaData_Key = "metadata"
```

Field Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	

RID_Key

Represents the rid key.

Declaration

```
public const string RID_Key = "rid"
```

Field Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	

Properties

Collision

The colliding object.

Declaration

```
```


+ Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
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Physics2D (Cobilas.GodotEngine.Utility.Physics
RayLine2D (Cobilas.GodotEngine.Utility.Physics
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc

```
public readonly Node Collision { get; }
```

Property Value

Type	Description
Node	Returns the collider of the object.

ID

The colliding object's ID.

Declaration

```
public readonly int ID { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns the object ID.

MetaData

The intersecting shape's metadata. This metadata is different from GetMeta(string, object) (https://learn.microsoft.com/dotnet/api/system.string) , and is set with ShapeSetData(RID, object) (https://learn.microsoft.com/dotnet/api/system.object).

Declaration

```
public readonly object MetaData { get; }
```

Property Value

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the object's metadata.

Name

The name of the object.

Declaration

```
public readonly string Name { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns the name of the object.

RID

The intersecting objects Godot.RID.

Declaration

```
public readonly RID RID { get; }
```

Property Value

Type	Description
RID	Returns the RID of the object.

Methods

IsValid(Dictionary?)

Checks if the Godot.Collections.Dictionary type value is valid for conversion.

Declaration

```
public static bool IsValid(Dictionary? dictionary)
```

Parameters

Type	Name	Description
Dictionary	*dictionary*	The object to be checked.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the Godot.Collections.Dictionary type value is valid.

Operators

explicit operator Hit2D(Dictionary?)

Explicit conversion operator.(Godot.Collections.Dictionary to Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html))

Declaration

```
public static explicit operator Hit2D(Dictionary? D)
```

Parameters

Type	Name	Description
Dictionary	*D*	Object to be converted.

Returns

Type	Description
Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)	

Remarks

The conversion from Godot.Collections.Dictionary to Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html) will be valid when Godot.Collections.Dictionary contains the keys "collider_id", "rid", "metadata" and "collider".

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Collections.Dictionary object is null.
InvalidCastException (https://learn.microsoft.com/dotnet/api/system.invalidcastexception)	The exception is called when the Dictionary object is not valid for conversion because it does not contain the keys "collider_id", "rid", "metadata" and "collider".

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Class Physics2D

This class provides methods for detecting 2D physics bodies.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)

↳ Physics2D

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)

object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object,-system-object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Physics (Cobilas.GodotEngine.Utility.Physics.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class Physics2D
```

Methods

RayCast(Camera2D?, Vector2, Vector2, out RayHit2D)

Projects a ray that intersects the collider of a 2d object.

Declaration

```
public static bool RayCast(Camera2D? camera, Vector2 from, Vector2 to, out RayHit2D hit)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*from*	The starting point of the collision ray.

Type	Name	Description
Vector2	*to*	The endpoint of the collision ray.
RayHit2D (Cobilas.GodotEngine.Utility.Physics.RayHit2D.html)	*hit*	The output parameter for the object's collision information.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when any 2d object is detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

RayCast(Camera2D?, Vector2, Vector2, CollisionObject2D[]?, out RayHit2D)

Projects a ray that intersects the body of a 2d object.

Declaration

```
public static bool RayCast(Camera2D? camera, Vector2 from, Vector2 to, CollisionObject2D[]?
    exclude, out RayHit2D hit)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*from*	The starting point of the collision ray.
Vector2	*to*	The endpoint of the collision ray.
CollisionObject2D[]	*exclude*	The objects that will be excluded from the search.
RayHit2D (Cobilas.GodotEngine.Utility.Physics.RayHit2D.html)	*hit*	The output parameter for the object's collision information.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when any 2d object is detected.

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  - RayHit2D (Cobilas.GodotEngine.Utility.Physics
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Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

RayCast(Camera2D?, Vector2, Vector2, CollisionObject2D[]?, uint, out RayHit2D)

Projects a ray and intersects the collider of a 2d object.

Declaration

```
public static bool RayCast(Camera2D? camera, Vector2 from, Vector2 to, CollisionObject2D[]?
exclude, uint collisionLayer, out RayHit2D hit)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*from*	The starting point of the collision ray.
Vector2	*to*	The endpoint of the collision ray.
CollisionObject2D[]	*exclude*	The objects that will be excluded from the search.
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*collisionLayer*	The collision layers that will be checked by the 2D physical body detection methods.
RayHit2D (Cobilas.GodotEngine.Utility.Physics.RayHit2D.html)	*hit*	The output parameter for the object's collision information.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when any 2d object is detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

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RayCast(Camera2D?, Vector2, Vector2, uint, out RayHit2D)

Projects a ray that intersects the collider of a 2d object.

Declaration

```
public static bool RayCast(Camera2D? camera, Vector2 from, Vector2 to, uint collisionLayer,
out RayHit2D hit)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*from*	The starting point of the collision ray.
Vector2	*to*	The endpoint of the collision ray.
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*collisionLayer*	The collision layers that will be checked by the 2D physical body detection methods.
RayHit2D (Cobilas.GodotEngine.Utility.Physics.RayHit2D.html)	*hit*	The output parameter for the object's collision information.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when any 2d object is detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

RayCastAllBox(Camera2D?, Vector2, Vector2, CollisionObject2D[]?, List<Hit2D>?)

Creates a 2D box that allows you to detect multiple objects in 2D space simultaneously.

Declaration

```
public static bool RayCastAllBox(Camera2D? camera, Vector2 mousePosition, Vector2 size, Coll
isionObject2D[]? exclude, List<Hit2D>? list)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
Vector2	*size*	The size of the 2d collision box.
CollisionObject2D[]	*exclude*	The objects that will be excluded from the search.
List<Hit2D> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)	*list*	Here the objects that were detected by the 2d collision ray will be added.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when multiple 2D objects are detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when List<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) object is null.

RayCastAllBox(Camera2D?, Vector2, Vector2, CollisionObject2D[]?, uint, List<Hit2D>?)

Creates a 2D box that allows you to detect multiple objects in 2D space simultaneously.

Declaration

```
public static bool RayCastAllBox(Camera2D? camera, Vector2 mousePosition, Vector2 size, Collisionobject2D[]? exclude, uint collisionLayer, List<Hit2D>? list)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
Vector2	*size*	The size of the 2d collision box.
CollisionObject2D[]	*exclude*	The objects that will be excluded from the search.
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*collisionLayer*	The collision layers that will be checked by the 2D physical body detection methods.
List (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) < Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html) >	*list*	Here the objects that were detected by the 2d collision ray will be added.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when multiple 2D objects are detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when List<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) object is null.

RayCastAllBox(Camera2D?, Vector2, Vector2, List<Hit2D>?)

Creates a 2D box that allows you to detect multiple objects in 2D space simultaneously.

Declaration

```
public static bool RayCastAllBox(Camera2D? camera, Vector2 mousePosition, Vector2 size, List
<Hit2D>? list)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
Vector2	*size*	The size of the 2d collision box.
List<Hit2D> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)	*list*	Here the objects that were detected by the 2d collision ray will be added.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when multiple 2D objects are detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullException)	The exception is thrown when Godot.Camera2D object is null.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullException)	The exception is thrown when List<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) object is null.

RayCastAllBox(Camera2D?, Vector2, Vector2, uint, List<Hit2D>?)

Creates a 2D box that allows you to detect multiple objects in 2D space simultaneously.

Declaration

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```
public static bool RayCastAllBox(Camera2D? camera, Vector2 mousePosition, Vector2 size, uint
collisionLayer, List<Hit2D>? list)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
Vector2	*size*	The size of the 2d collision box.
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*collisionLayer*	The collision layers that will be checked by the 2D physical body detection methods.
List (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) <Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)>	*list*	Here the objects that were detected by the 2d collision ray will be added.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when multiple 2D objects are detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when List<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) object is null.

RayCastAllCircle(Camera2D?, Vector2, float, CollisionObject2D[]?, List<Hit2D>?)

Creates a 2D circle that allows you to detect multiple objects in 2D space simultaneously.

Declaration

```
public static bool RayCastAllCircle(Camera2D? camera, Vector2 mousePosition, float radius, C
ollisionObject2D[]? exclude, List<Hit2D>? list)
```

Parameters

Type	Name	Description
Camera2D (https://docs.godotengine.org/en/stable/classes/class_camera2d.html)	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2 (https://docs.godotengine.org/en/stable/classes/class_vector2.html)	*mousePosition*	The point from which the ray will be thrown.
float (https://learn.microsoft.com/dotnet/api/system.single)	*radius*	Defines the radius of the 2d collision circle.
CollisionObject2D[] (https://docs.godotengine.org/en/stable/classes/class_collisionobject2d.html)	*exclude*	The objects that will be excluded from the search.
List<Hit2D> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1)	*list*	Here the objects that were detected by the 2d collision ray will be added.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when multiple 2D objects are detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when List<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) object is null.

RayCastAllCircle(Camera2D?, Vector2, float, CollisionObject2D[]?, uint, List<Hit2D>?)

Creates a 2D circle that allows you to detect multiple objects in 2D space simultaneously.

Declaration

```
public static bool RayCastAllCircle(Camera2D? camera, Vector2 mousePosition, float radius, C
ollisionObject2D[]? exclude, uint collisionLayer, List<Hit2D>? list)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
float (https://learn.microsoft.com/dotnet/api/system.single)	*radius*	Defines the radius of the 2d collision circle.
CollisionObject2D[]	*exclude*	The objects that will be excluded from the search.
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*collisionLayer*	The collision layers that will be checked by the 2D physical body detection methods.
List (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) < Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html) >	*list*	Here the objects that were detected by the 2d collision ray will be added.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when multiple 2D objects are detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when List<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) object is null.

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RayCastAllCircle(Camera2D?, Vector2, float, List<Hit2D>?)

Creates a 2D circle that allows you to detect multiple objects in 2D space simultaneously.

Declaration

```
public static bool RayCastAllCircle(Camera2D? camera, Vector2 mousePosition, float radius, List<Hit2D>? list)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
float (https://learn.microsoft.com/dotnet/api/system.single)	*radius*	Defines the radius of the 2d collision circle.
List (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) < Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html) >	*list*	Here the objects that were detected by the 2d collision ray will be added.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when multiple 2D objects are detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when List<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) object is null.

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RayCastAllCircle(Camera2D?, Vector2, float, uint, List<Hit2D>?)

Creates a 2D circle that allows you to detect multiple objects in 2D space simultaneously.

Declaration

```
public static bool RayCastAllCircle(Camera2D? camera, Vector2 mousePosition, float radius, uint collisionLayer, List<Hit2D>? list)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
float (https://learn.microsoft.com/dotnet/api/system.single)	*radius*	Defines the radius of the 2d collision circle.
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*collisionLayer*	The collision layers that will be checked by the 2D physical body detection methods.
List (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) < Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html) >	*list*	Here the objects that were detected by the 2d collision ray will be added.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when multiple 2D objects are detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when List<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) object is null.

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+ Cobilas.GodotEditor.Utility. Serialization.Properties (Cobilas.GodotEditor.Utility.Se
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  - Hit2D (Cobilas.GodotEngine.Utility.Physics
  - Physics2D (Cobilas.GodotEngine.Utility.Physics
  - RayHit2D (Cobilas.GodotEngine.Utility.Physics
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RayCastBox(Camera2D?, Vector2, Vector2, out Hit2D)

Creates a 2D box that allows you to detect an object in 2D space.

Declaration

```
public static bool RayCastBox(Camera2D? camera, Vector2 mousePosition, Vector2 size, out Hit
2D hit)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
Vector2	*size*	The size of the 2d collision box.
Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)	*hit*	The output parameter for the object's collision information.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when any 2d object is detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

RayCastBox(Camera2D?, Vector2, Vector2, CollisionObject2D[]?, out Hit2D)

Creates a 2D box that allows you to detect an object in 2D space.

Declaration

```
public static bool RayCastBox(Camera2D? camera, Vector2 mousePosition, Vector2 size, Collisi
onObject2D[]? exclude, out Hit2D hit)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
Vector2	*size*	The size of the 2d collision box.
CollisionObject2D[]	*exclude*	The objects that will be excluded from the search.
Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)	*hit*	The output parameter for the object's collision information.

Returns

Type	Description
bool (https://docs.microsoft.com/dotnet/api/system.boolean)	Returns `true` when any 2d object is detected.

Exceptions

Type	Condition
ArgumentNullException (https://docs.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

RayCastBox(Camera2D?, Vector2, Vector2, CollisionObject2D[]?, uint, out Hit2D)

Creates a 2D box that allows you to detect an object in 2D space.

Declaration

```
public static bool RayCastBox(Camera2D? camera, Vector2 mousePosition, Vector2 size, Collisi
onObject2D[]? exclude, uint collisionLayer, out Hit2D hit)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.

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Hit2D (Cobilas.GodotEngine.Utility.Physic
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RayHit2D (Cobilas.GodotEngine.Utility.Physic
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc

Type	Name	Description
Vector2	*mousePosition*	The point from which the ray will be thrown.
Vector2	*size*	The size of the 2d collision box.
CollisionObject2D[]	*exclude*	The objects that will be excluded from the search.
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*collisionLayer*	The collision layers that will be checked by the 2D physical body detection methods.
Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)	*hit*	The output parameter for the object's collision information.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when any 2d object is detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

RayCastBox(Camera2D?, Vector2, Vector2, uint, out Hit2D)

Creates a 2D box that allows you to detect an object in 2D space.

Declaration

```
public static bool RayCastBox(Camera2D? camera, Vector2 mousePosition, Vector2 size, uint co
llisionLayer, out Hit2D hit)
```

Parameters

Type	Name	Description
Camera2D (Cobilas.GodotEngine.Utility.Physics.Physics2D.RayHit2D)	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
Vector2	*size*	The size of the 2d collision box.
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*collisionLayer*	The collision layers that will be checked by the 2D physical body detection methods.

Type	Name	Description
Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)	*hit*	The output parameter for the object's collision information.

Returns

Type		Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)		Returns `true` when any 2d object is detected.

Exceptions

Type		Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)		The exception is thrown when Godot.Camera2D object is null.

RayCastCircle(Camera2D?, Vector2, float, out Hit2D)

Creates a 2D circle that allows you to detect an object in 2D space.

Declaration

```
public static bool RayCastCircle(Camera2D? camera, Vector2 mousePosition, float radius, out
Hit2D hit)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
float (https://learn.microsoft.com/dotnet/api/system.single)	*radius*	Defines the radius of the 2d collision circle.
Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)	*hit*	The output parameter for the object's collision information.

Returns

Type		Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)		Returns `true` when any 2d object is detected.

Exceptions

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+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se
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Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

RayCastCircle(Camera2D?, Vector2, float, CollisionObject2D[]?, out Hit2D)

Creates a 2D circle that allows you to detect an object in 2D space.

Declaration

```
public static bool RayCastCircle(Camera2D? camera, Vector2 mousePosition, float radius, Coll
isionObject2D[]? exclude, out Hit2D hit)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
float (https://learn.microsoft.com/dotnet/api/system.single)	*radius*	Defines the radius of the 2d collision circle.
CollisionObject2D[]	*exclude*	The objects that will be excluded from the search.
Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)	*hit*	The output parameter for the object's collision information.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when any 2d object is detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

RayCastCircle(Camera2D?, Vector2, float, CollisionObject2D[]?, uint, out Hit2D)

Creates a 2D circle that allows you to detect an object in 2D space.

Declaration

```
public static bool RayCastCircle(Camera2D? camera, Vector2 mousePosition, float radius, Coll
isionObject2D[]? exclude, uint collisionLayer, out Hit2D hit)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
float (https://learn.microsoft.com/dotnet/api/system.single)	*radius*	Defines the radius of the 2d collision circle.
CollisionObject2D[]	*exclude*	The objects that will be excluded from the search.
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*collisionLayer*	The collision layers that will be checked by the 2D physical body detection methods.
Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)	*hit*	The output parameter for the object's collision information.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when any 2d object is detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

RayCastCircle(Camera2D?, Vector2, float, uint, out Hit2D)

Creates a 2D circle that allows you to detect an object in 2D space.

Declaration

```
public static bool RayCastCircle(Camera2D? camera, Vector2 mousePosition, float radius, uint
collisionLayer, out Hit2D hit)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
float (https://learn.microsoft.com/dotnet/api/system.single)	*radius*	Defines the radius of the 2d collision circle.
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*collisionLayer*	The collision layers that will be checked by the 2D physical body detection methods.
Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)	*hit*	The output parameter for the object's collision information.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when any 2d object is detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

RayCastHit(Camera2D?, Vector2, out Hit2D)

Creates a 2D ray that allows you to detect an object in 2D space.

Declaration

```
public static bool RayCastHit(Camera2D? camera, Vector2 mousePosition, out Hit2D hit)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)	*hit*	The output parameter for the object's collision information.

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Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when any 2d object is detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

RayCastHit(Camera2D?, Vector2, CollisionObject2D[]?, out Hit2D)

Creates a 2D ray that allows you to detect an object in 2D space.

Declaration

```
public static bool RayCastHit(Camera2D? camera, Vector2 mousePosition, CollisionObject2D[]?
  exclude, out Hit2D hit)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
CollisionObject2D[]	*exclude*	The objects that will be excluded from the search.
Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)	*hit*	The output parameter for the object's collision information.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when any 2d object is detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

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RayCastHit(Camera2D?, Vector2, CollisionObject2D[]?, uint, out Hit2D)

Creates a 2D ray that allows you to detect an object in 2D space.

Declaration

```
public static bool RayCastHit(Camera2D? camera, Vector2 mousePosition, CollisionObject2D[]?
exclude, uint collisionLayer, out Hit2D hit)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
CollisionObject2D[]	*exclude*	The objects that will be excluded from the search.
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*collisionLayer*	The collision layers that will be checked by the 2D physical body detection methods.
Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)	*hit*	The output parameter for the object's collision information.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when any 2d object is detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

RayCastHit(Camera2D?, Vector2, uint, out Hit2D)

Creates a 2D ray that allows you to detect an object in 2D space.

Declaration

```
public static bool RayCastHit(Camera2D? camera, Vector2 mousePosition, uint collisionLayer,
out Hit2D hit)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*collisionLayer*	The collision layers that will be checked by the 2D physical body detection methods.
Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)	*hit*	The output parameter for the object's collision information.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when any 2d object is detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.

RayCastHitAll(Camera2D?, Vector2, CollisionObject2D[]?, List<Hit2D>?)

Creates a 2D ray that allows detecting multiple objects in 2D space simultaneously.

Declaration

```
public static bool RayCastHitAll(Camera2D? camera, Vector2 mousePosition, CollisionObject2D
[]? exclude, List<Hit2D>? list)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
CollisionObject2D[]	*exclude*	The objects that will be excluded from the search.

Type	Name	Description
List (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) <Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)>	*list*	Here the objects that were detected by the 2d collision ray will be added.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when multiple 2D objects are detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when List<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) object is null.

RayCastHitAll(Camera2D?, Vector2, CollisionObject2D[]?, uint, List<Hit2D>?)

Creates a 2D ray that allows detecting multiple objects in 2D space simultaneously.

Declaration

```
public static bool RayCastHitAll(Camera2D? camera, Vector2 mousePosition, CollisionObject2D
[]? exclude, uint collisionLayer, List<Hit2D>? list)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.
CollisionObject2D[]	*exclude*	The objects that will be excluded from the search.

Type	Name	Description
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*collisionLayer*	The collision layers that will be checked by the 2D physical body detection methods.
List<Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1)	*list*	Here the objects that were detected by the 2d collision ray will be added.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when multiple 2D objects are detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when List<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) object is null.

RayCastHitAll(Camera2D?, Vector2, List<Hit2D>?)

Creates a 2D ray that allows detecting multiple objects in 2D space simultaneously.

Declaration

```
public static bool RayCastHitAll(Camera2D? camera, Vector2 mousePosition, List<Hit2D>? list)
```

Parameters

Type	Name	Description
Camera2D (Cobilas.GodotEngine.Utility.Runtime)	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.

Type	Name	Description
Vector2	*mousePosition*	The point from which the ray will be thrown.
List<Hit2D> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) (https://cobilas.godotengine.io/Physics.Hit2D.html)	*list*	Here the objects that were detected by the 2d collision ray will be added.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when multiple 2D objects are detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when List<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) object is null.

RayCastHitAll(Camera2D?, Vector2, uint, List<Hit2D>?)

Creates a 2D ray that allows detecting multiple objects in 2D space simultaneously.

Declaration

```
public static bool RayCastHitAll(Camera2D? camera, Vector2 mousePosition, uint collisionLayer, List<Hit2D>? list)
```

Parameters

Type	Name	Description
Camera2D	*camera*	Camera that will be used to convert a point on the screen to a point in the 2d world.
Vector2	*mousePosition*	The point from which the ray will be thrown.

Type	Name	Description
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*collisionLayer*	The collision layers that will be checked by the 2D physical body detection methods.
List<Hit2D (Cobilas.GodotEngine.Utility.Physics.Hit2D.html)> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1)	*list*	Here the objects that were detected by the 2d collision ray will be added.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when multiple 2D objects are detected.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Camera2D object is null.
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when List<T> (https://learn.microsoft.com/dotnet/api/system.collections.generic.list-1) object is null.

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+ **Cobilas.GodotEditor.Utility. Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
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+ **Cobilas.GodotEngine.Utility. IO (Cobilas.GodotEngine.Utility.IO**
+ **Cobilas.GodotEngine.Utility. Input (Cobilas.GodotEngine.Utility.In**
+ **Cobilas.GodotEngine.Utility. Numerics (Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility. Physics (Cobilas.GodotEngine.Utility.Ph**
  - Hit2D (Cobilas.GodotEngine.Utility.Physics
  - Physics2D (Cobilas.GodotEngine.Utility.Physics
  - RayHit2D (Cobilas.GodotEngine.Utility.Physics
+ **Cobilas.GodotEngine.Utility. Runtime (Cobilas.GodotEngine.Utility.Ru**
+ **Cobilas.GodotEngine.Utility. Scene (Cobilas.GodotEngine.Utility.Sc**

Struct RayHit2D

Responsible for storing information about a 2D collision ray.

Filter by title

Inherited Members

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)
ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)
ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system.object,system.object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Physics (Cobilas.GodotEngine.Utility.Physics.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public struct RayHit2D
```

Fields

Normal_Key

Represents normal key.

Declaration

```
public const string Normal_Key = "normal"
```

Field Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	

Position_Key

Represents position key.

Declaration

Serialization.Hints
(Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEditor.Utility.
Serialization.Properties
(Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.
Input
(Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
- Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph
Hit2D
(Cobilas.GodotEngine.Utility.Physics
Physics2D
(Cobilas.GodotEngine.Utility.Physics
RayHit2D
(Cobilas.GodotEngine.Utility.Physics
+ Cobilas.GodotEngine.Utility.
Runtime
(Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.
Scene
(Cobilas.GodotEngine.Utility.Sc

```
public const string Position_Key = "position"
```

Field Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	

Properties

Collision

The colliding object.

Declaration

```
public readonly Node Collision { get; }
```

Property Value

Type	Description
Node	Returns the collider of the object.

ID

The colliding object's ID.

Declaration

```
public readonly int ID { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns the object ID.

MetaData

The intersecting shape's metadata. This metadata is different from GetMeta(string, object) (https://learn.microsoft.com/dotnet/api/system.string) , and is set with ShapeSetData(RID, object) (https://learn.microsoft.com/dotnet/api/system.object).

Declaration

- **Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
  - Hit2D (Cobilas.GodotEngine.Utility.Physics
  - Physics2D (Cobilas.GodotEngine.Utility.Physics
  - RayHit2D (Cobilas.GodotEngine.Utility.Physics
- **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
- **Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc**

```
public readonly object MetaData { get; }
```

Property Value

Type	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	Returns the object's metadata.

Name

The name of the object.

Declaration

```
public readonly string Name { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns the name of the object.

Normal

The object's surface normal at the intersection point.

Declaration

```
public readonly Vector2 Normal { get; }
```

Property Value

Type	Description
Vector2	Returns the surface normal of the object at the intersection point.

Position

The intersection point.

Declaration

```
public readonly Vector2 Position { get; }
```

Property Value

Hit2D
(Cobilas.GodotEngine.Utility.Physics
Physics2D
(Cobilas.GodotEngine.Utility.Physics
RayHit2D
(Cobilas.GodotEngine.Utility.Physics
+ Cobilas.GodotEngine.Utility.
Runtime
(Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.
Scene
(Cobilas.GodotEngine.Utility.Sc
Serialization.Hints
(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
Serialization.Properties
(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.
Input
(Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph

Type	Description
Vector2	Returns the intersection point.

RID

The intersecting object's Godot.RID.

Declaration

```
public readonly RID RID { get; }
```

Property Value

Type	Description
RID	Returns the RID of the object.

Methods

IsValid(Dictionary?)

Checks if the Godot.Collections.Dictionary type value is valid for conversion.

Declaration

```
public static bool IsValid(Dictionary? dictionary)
```

Parameters

Type	Name	Description
Dictionary (Cobilas.GodotEngine.Utility.Variant.Dictionary)	dictionary	The object to be checked.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the Godot.Collections.Dictionary type value is valid.

Operators

explicit operator RayHit2D(Dictionary?)

Explicit conversion operator.(Godot.Collections.Dictionary to RayHit2D (Cobilas.GodotEngine.Utility.Physics.RayHit2D.html))

Declaration

```
public static explicit operator RayHit2D(Dictionary? D)
```

Parameters

Type	Name	Description
Dictionary	D	Object to be converted.

Returns

Type	Description
RayHit2D (Cobilas.GodotEngine.Utility.Physics.RayHit2D.html)	

Remarks

The conversion from Godot.Collections.Dictionary to RayHit2D (Cobilas.GodotEngine.Utility.Physics.RayHit2D.html) will be valid when Godot.Collections.Dictionary contains the keys "collider_id", "rid", "metadata", "normal", "position" and "collider".

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	The exception is thrown when Godot.Collections.Dictionary object is null.
InvalidCastException (https://learn.microsoft.com/dotnet/api/system.invalidcastexception)	The exception is called when the Dictionary object is not valid for conversion because it does not contain the keys "collider_id", "rid", "metadata", "normal", "position" and "collider".

+ **Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
  - Hit2D (Cobilas.GodotEngine.Utility.Physics
  - Physics2D (Cobilas.GodotEngine.Utility.Physics
  - RayHit2D (Cobilas.GodotEngine.Utility.Physics
+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
+ **Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc**

Namespace Cobilas.GodotEngine.Utility.Runtime

Filter by title

Classes

RunTimeInitialization (Cobilas.GodotEngine.Utility.Runtime.RunTimeInitialization.html)

Responsible for initializing other classes marked with the RunTimeInitializationClassAttribute (Cobilas.GodotEngine.Utility.Runtime.RunTimeInitializationClassAttribute.html) attribute.

RunTimeInitializationClassAttribute (Cobilas.GodotEngine.Utility.Runtime.RunTimeInitializationClassAttribute.html)

Indicates that the class will be called by RunTimeInitialization (Cobilas.GodotEngine.Utility.Runtime.RunTimeInitialization.html).

Structs

PriorityList (Cobilas.GodotEngine.Utility.Runtime.PriorityList.html)

Represents a list of RunTimeInitialization (Cobilas.GodotEngine.Utility.Runtime.RunTimeInitialization.html) priorities.

RunTime (Cobilas.GodotEngine.Utility.Runtime.RunTime.html)

Provides RunTime values and functions.

Enums

ExecutionMode (Cobilas.GodotEngine.Utility.Runtime.ExecutionMode.html)

Represents the editor mode states.

PlayModeStateChange (Cobilas.GodotEngine.Utility.Runtime.PlayModeStateChange.html)

Enumeration specifying a change in the Editor's play mode state.

Priority (Cobilas.GodotEngine.Utility.Runtime.Priority.html)

Indicates the boot priority.

(Cobilas.GodotEditor.Utility.Se

+ **Cobilas.GodotEditor.Utility. Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Se**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
+ **Cobilas.GodotEngine.Utility. IO (Cobilas.GodotEngine.Utility.IC**
+ **Cobilas.GodotEngine.Utility. Input (Cobilas.GodotEngine.Utility.In**
+ **Cobilas.GodotEngine.Utility. Numerics (Cobilas.GodotEngine.Utility.N**
+ **Cobilas.GodotEngine.Utility. Physics (Cobilas.GodotEngine.Utility.Ph**
- **Cobilas.GodotEngine.Utility. Runtime (Cobilas.GodotEngine.Utility.Ru**
  - ExecutionMode (Cobilas.GodotEngine.Utility.Runtim
  - PlayModeStateChange (Cobilas.GodotEngine.Utility.Runtim
  - Priority (Cobilas.GodotEngine.Utility.Runtim
  - PriorityList (Cobilas.GodotEngine.Utility.Runtim
  - RunTime (Cobilas.GodotEngine.Utility.Runtim
  - RunTimeInitialization (Cobilas.GodotEngine.Utility.Runtim
  - RunTimeInitializationClass Attribute (Cobilas.GodotEngine.Utility.Runtim

Enum ExecutionMode

Represents the editor mode states.

Filter by title

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Runtime (Cobilas.GodotEngine.Utility.Runtime.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public enum ExecutionMode : byte
```

Fields

Name	Description
EditorMode	When the editor is not running the project.
PlayerMode	When the editor is running the project.

(Cobilas.GodotEditor.Utility.Ser

+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**

+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**

+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**

+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**

+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**

- **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**

  ExecutionMode (Cobilas.GodotEngine.Utility.Runtim

  PlayModeStateChange (Cobilas.GodotEngine.Utility.Runtim

  Priority (Cobilas.GodotEngine.Utility.Runtim

  PriorityList (Cobilas.GodotEngine.Utility.Runtim

  RunTime (Cobilas.GodotEngine.Utility.Runtim

  RunTimeInitialization (Cobilas.GodotEngine.Utility.Runtim

  RunTimeInitializationClassAttribute (Cobilas.GodotEngine.Utility.Runtim

Enum PlayModeStateChange

Enumeration specifying a change in the Editor's play mode state.

Filter by title

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Runtime (Cobilas.GodotEngine.Utility.Runtime.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public enum PlayModeStateChange : byte
```

Fields

Name	Description
EnteredEditMode	Occurs during the next update of the Editor application if it is in edit mode and was previously in play mode.
EnteredPlayMode	Occurs during the next update of the Editor application if it is in play mode and was previously in edit mode.
ExitingEditMode	Occurs when exiting edit mode, before the Editor is in play mode.
ExitingPlayMode	Occurs when exiting play mode, before the Editor is in edit mode.

(Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.
(Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.
Input
(Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph
- Cobilas.GodotEngine.Utility.
Runtime
(Cobilas.GodotEngine.Utility.Ru
ExecutionMode
(Cobilas.GodotEngine.Utility.Runtim
PlayModeStateChange
(Cobilas.GodotEngine.Utility.Runtim
Priority
(Cobilas.GodotEngine.Utility.Runtim
PriorityList
(Cobilas.GodotEngine.Utility.Runtim
RunTime
(Cobilas.GodotEngine.Utility.Runtim
RunTimeInitialization
(Cobilas.GodotEngine.Utility.Runtim
RunTimeInitializationClass
Attribute
(Cobilas.GodotEngine.Utility.Runtim

Enum Priority

Indicates the boot priority.

Filter by title

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Runtime (Cobilas.GodotEngine.Utility.Runtime.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public enum Priority : byte
```

Fields

Name	Description
StartBefore	Starts before everyone else.
StartLater	Starts after everyone else.

+ **Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
- **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
  - ExecutionMode (Cobilas.GodotEngine.Utility.Runtim
  - PlayModeStateChange (Cobilas.GodotEngine.Utility.Runtim
  - Priority (Cobilas.GodotEngine.Utility.Runtim
  - PriorityList (Cobilas.GodotEngine.Utility.Runtim
  - RunTime (Cobilas.GodotEngine.Utility.Runtim
  - RunTimeInitialization (Cobilas.GodotEngine.Utility.Runtim
  - RunTimeInitializationClass Attribute (Cobilas.GodotEngine.Utility.Runtim

Struct PriorityList

Represents a list of RunTimeInitialization (Cobilas.GodotEngine.Utility.Runtime.RunTimeInitialization.html) priorities.

Implements

IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)

Inherited Members

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)
ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)
ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system.object,system.object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Runtime (Cobilas.GodotEngine.Utility.Runtime.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public struct PriorityList : IDisposable
```

Methods

Add(int, Node)

Adds items to the priority list.

Declaration

```
public PriorityList Add(int priority, Node node)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*priority*	Object execution priority.
Node	*node*	The object to be added to the list.

Returns

Filter by title

- (Cobilas.GodotEditor.Utility.Ser
- (Cobilas.GodotEditor.Utility.Serialization.RenderObjects
- (Cobilas.GodotEditor.Utility.Ser
- (Cobilas.GodotEngine.Utility.m
- + Cobilas.GodotEngine.Utility.IO
- (Cobilas.GodotEngine.Utility.IO
- + Cobilas.GodotEngine.Utility.Input
- (Cobilas.GodotEngine.Utility.In
- + Cobilas.GodotEngine.Utility.Numerics
- (Cobilas.GodotEngine.Utility.N
- + Cobilas.GodotEngine.Utility.Physics
- (Cobilas.GodotEngine.Utility.Ph
- - Cobilas.GodotEngine.Utility.Runtime
- (Cobilas.GodotEngine.Utility.Ru
- ExecutionMode (Cobilas.GodotEngine.Utility.Runtim
- PlayModeStateChange (Cobilas.GodotEngine.Utility.Runtim
- Priority (Cobilas.GodotEngine.Utility.Runtim
- PriorityList (Cobilas.GodotEngine.Utility.Runtim
- RunTime (Cobilas.GodotEngine.Utility.Runtim
- RunTimeInitialization (Cobilas.GodotEngine.Utility.Runtim
- RunTimeInitializationClass Attribute (Cobilas.GodotEngine.Utility.Runtim

Type	Description
PriorityList (Cobilas.GodotEngine.Utility.Runtime.PriorityList.html)	The method will return a PriorityList (Cobilas.GodotEngine.Utility.Runtime.PriorityList.html) object with its modified priority list.

Dispose()

Performs application-defined tasks associated with freeing, releasing, or resetting unmanaged resources.

Declaration

```
public void Dispose()
```

ReOrderList()

Sort the priority list according to the priority of the list items.

Declaration

```
public void ReOrderList()
```

Run(Node)

Execute your priority list.

Declaration

```
public readonly void Run(Node root)
```

Parameters

Type	Name	Description
Node	*root*	The parent node where nodes will be added to start their priority execution.

Implements

IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)

Struct RunTime

Provides RunTime values and functions.

Filter by title

Inherited Members

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)
ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)
ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas.GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Runtime (Cobilas.GodotEngine.Utility.Runtime.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public readonly struct RunTime
```

Fields

DeltaTime

The interval in seconds from the last frame to the current one (Read Only).

Declaration

```
public const float DeltaTime = 0.33333334
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

FixedDeltaTime

The interval in seconds of in-game time at which physics and other fixed frame rate updates are performed.

Declaration

(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.
Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.h
+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.
Input
(Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph
- Cobilas.GodotEngine.Utility.
Runtime
(Cobilas.GodotEngine.Utility.Ru
ExecutionMode
(Cobilas.GodotEngine.Utility.Runtim
PlayModeStateChange
(Cobilas.GodotEngine.Utility.Runtim
Priority
(Cobilas.GodotEngine.Utility.Runtim
PriorityList
(Cobilas.GodotEngine.Utility.Runtim
RuTime
(Cobilas.GodotEngine.Utility.Runtim
RunTimeInitialization
(Cobilas.GodotEngine.Utility.Runtim
RunTimeInitializationClass
Attribute
(Cobilas.GodotEngine.Utility.Runtim

```
public const float FixedDeltaTime = 0.02
```

Field Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

Properties

ExecutionMode

Allows you to check whether the editor is in `EditorMode` or `PlayMode`.

Declaration

```
public static ExecutionMode ExecutionMode { get; }
```

Property Value

Type	Description
ExecutionMode (Cobilas.GodotEngine.Utility.Runtime.ExecutionMode.html)	Returns the state of the editor.

Remarks

This property will only work correctly when you create a RunTimeInitialization (Cobilas.GodotEngine.Utility.Runtime.RunTimeInitialization.html) class and add it to AutoLoad.

FrameCount

The total number of frames in the part of the game (Read Only).

Declaration

```
public static int FrameCount { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	The total number of frames

TimeScale

(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects
(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO
(Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input
(Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics
(Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics
(Cobilas.GodotEngine.Utility.Pl
- Cobilas.GodotEngine.Utility.Runtime
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Controls how fast or slow the in-game clock ticks versus the real life one. It defaults to 1.0. A value of 2.0 means the game moves twice as fast as real life, whilst a value of 0.5 means the game moves at half the regular speed. This also affects Godot.Timer and Godot.SceneTreeTimer (see Godot.SceneTree.CreateTimer(System.Single,System.Boolean) for how to control this).

Declaration

```
public static float TimeScale { get; set; }
```

Property Value

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	

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Class RunTimeInitialization

Responsible for initializing other classes marked with the RunTimeInitializationClassAttribute (Cobilas.GodotEngine.Utility.Runtime.RunTimeInitializationClassAttribute.html) attribute.

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Object
↳ Node
↳ RunTimeInitialization

Implements

IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)

Inherited Members

Node.NotificationEnterTree
Node.NotificationExitTree
Node.NotificationMovedInParent
Node.NotificationReady
Node.NotificationPaused
Node.NotificationUnpaused
Node.NotificationPhysicsProcess
Node.NotificationProcess
Node.NotificationParented
Node.NotificationUnparented
Node.NotificationInstanced
Node.NotificationDragBegin
Node.NotificationDragEnd
Node.NotificationPathChanged
Node.NotificationInternalProcess
Node.NotificationInternalPhysicsProcess
Node.NotificationPostEnterTree
Node.NotificationResetPhysicsInterpolation
Node.NotificationWmMouseEnter
Node.NotificationWmMouseExit
Node.NotificationWmFocusIn
Node.NotificationWmFocusOut
Node.NotificationWmQuitRequest
Node.NotificationWmGoBackRequest
Node.NotificationWmUnfocusRequest
Node.NotificationOsMemoryWarning
Node.NotificationTranslationChanged
Node.NotificationWmAbout
Node.NotificationCrash
Node.NotificationOslmeUpdate
Node.NotificationAppResumed

Node.NotificationAppPaused
Node.GetNode<T>(NodePath)
Node.GetNodeOrNull<T>(NodePath)
Node.GetChild<T>(int) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.GetChildOrNull<T>(int) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.GetOwner<T>()
Node.GetOwnerOrNull<T>()
Node.GetParent<T>()
Node.GetParentOrNull<T>()
Node._EnterTree()
Node._ExitTree()
Node._Input(InputEvent)
Node._PhysicsProcess(float) (https://learn.microsoft.com/dotnet/api/system.single)
Node._Process(float) (https://learn.microsoft.com/dotnet/api/system.single)
Node._UnhandledInput(InputEvent)
Node._UnhandledKeyInput(InputEvent)
Node.AddChildBelowNode(Node, Node, bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.SetName(string) (https://learn.microsoft.com/dotnet/api/system.string)
Node.GetName()
Node.IsInsideTreeOrPendingAdd() (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.RemoveChild(Node)
Node.GetChildCount()
Node.GetChildren()
Node.GetChild(int) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.HasNode(NodePath)
Node.GetNode(NodePath)
Node.GetNodeOrNull(NodePath)
Node.GetParent()
Node.FindNode(string, bool, bool) (https://learn.microsoft.com/dotnet/api/system.string)
Node.FindParent(string) (https://learn.microsoft.com/dotnet/api/system.string)
Node.HasNodeAndResource(NodePath)
Node.GetNodeAndResource(NodePath)
Node.IsInsideTree()
Node.IsAParentOf(Node)
Node.IsGreaterThan(Node)
Node.GetPath()
Node.GetPathTo(Node)
Node.AddToGroup(string, bool) (https://learn.microsoft.com/dotnet/api/system.string)
Node.RemoveFromGroup(string) (https://learn.microsoft.com/dotnet/api/system.string)
Node.IsInGroup(string) (https://learn.microsoft.com/dotnet/api/system.string)
Node.MoveChild(Node, int) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.GetGroups()
Node.Raise()
Node.SetOwner(Node)
Node.GetOwner()
Node.RemoveAndSkip()
Node.GetIndex()
Node.PrintTree()
Node.PrintTreePretty()
Node.SetFilename(string) (https://learn.microsoft.com/dotnet/api/system.string)

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PriorityList
(Cobilas.GodotEngine.Utility.Runtime.PriorityList
RepeatTime
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RuntimeInitialization
(Cobilas.GodotEngine.Utility.Runtime.RuntimeInitialization
RuntimeInitializationClass
(Cobilas.GodotEngine.Utility.Runtime.RuntimeInitializationClass
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Node.GetFilename()
Node.PropagateNotification(int) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.PropagateCall(string, Array, bool) (https://learn.microsoft.com/dotnet/api/system.string)
Node.SetPhysicsProcess(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.GetPhysicsProcessDeltaTime()
Node.IsPhysicsProcessing()
Node.GetProcessDeltaTime()
Node.SetProcess(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.SetProcessPriority(int) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.GetProcessPriority()
Node.IsProcessing()
Node.SetProcessInput(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.IsProcessingInput()
Node.SetProcessUnhandledInput(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.IsProcessingUnhandledInput()
Node.SetProcessUnhandledKeyInput(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.IsProcessingUnhandledKeyInput()
Node.SetPauseMode(Node.PauseModeEnum)
Node.GetPauseMode()
Node.CanProcess()
Node.PrintStrayNodes()
Node.GetPositionInParent()
Node.SetDisplayFolded(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.IsDisplayedFolded()
Node.SetProcessInternal(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.IsProcessingInternal()
Node.SetPhysicsProcessInternal(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.IsPhysicsProcessingInternal()
Node.SetPhysicsInterpolationMode(Node.PhysicsInterpolationModeEnum)
Node.GetPhysicsInterpolationMode()
Node.IsPhysicsInterpolated()
Node.IsPhysicsInterpolatedAndEnabled()
Node.ResetPhysicsInterpolation()
Node.GetTree()
Node.CreateTween()
Node.Duplicate(int) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.ReplaceBy(Node, bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.SetSceneInstanceLoadPlaceholder(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.GetSceneInstanceLoadPlaceholder()
Node.GetViewport()
Node.QueueFree()
Node.RequestReady()
Node.SetNetworkMaster(int, bool) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.GetNetworkMaster()
Node.IsNetworkMaster()
Node.GetMultiplayer()
Node.SetCustomMultiplayer()
Node.SetCustomMultiplayer(MultiplayerAPI)
Node.RpcConfig(string, MultiplayerAPI.RPCMode) (https://learn.microsoft.com/dotnet/api/system.string)

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RpcTimeInitializationCallMultiplayerAPI
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Node.RsetConfig(string, MultiplayerAPI.RPCMode) (https://learn.microsoft.com/dotnet/api/system.string)
Node.SetUniqueNameInOwner(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Node.IsUniqueNameInOwner()
Node.Rpc(string, params object[]) (https://learn.microsoft.com/dotnet/api/system.string)
Node.RpcUnreliable(string, params object[]) (https://learn.microsoft.com/dotnet/api/system.string)
Node.RpcId(int, string, params object[]) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.RpcUnreliableId(int, string, params object[]) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.Rset(string, object) (https://learn.microsoft.com/dotnet/api/system.string)
Node.RsetId(int, string, object) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.RsetUnreliable(string, object) (https://learn.microsoft.com/dotnet/api/system.string)
Node.RsetUnreliableId(int, string, object) (https://learn.microsoft.com/dotnet/api/system.int32)
Node.UpdateConfigurationWarning()
Node.EditorDescription
Node._ImportPath
Node.PauseMode
Node.PhysicsInterpolationMode
Node.Name
Node.UniqueNameInOwner
Node.PhysicsMode
Node.Owner
Node.Multiplayer
Node.CustomMultiplayer
Node.ProcessPriority
Object.NotificationPostinitialize
Object.NotificationPredelete
Object.IsInstanceValid(Object)
Object.WeakRef(Object)
Object.Dispose()
Object.Dispose(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Object.ToString()
Object.ToSignal(Object, string) (https://learn.microsoft.com/dotnet/api/system.string)
Object._Get(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object._GetPropertyList()
Object._Notification(int) (https://learn.microsoft.com/dotnet/api/system.int32)
Object._Set(string, object) (https://learn.microsoft.com/dotnet/api/system.string)
Object.Free()
Object.GetClass()
Object.IsClass(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.Set(string, object) (https://learn.microsoft.com/dotnet/api/system.string)
Object.Get(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.SetIndexed(NodePath, object) (https://learn.microsoft.com/dotnet/api/system.object)
Object.GetIndexed(NodePath)
Object.GetPropertyList()
Object.GetMethodList()
Object.Notification(int, bool) (https://learn.microsoft.com/dotnet/api/system.int32)
Object.GetInstanceId()
Object.SetScript(Reference)
Object.GetScript()
Object.SetMeta(string, object) (https://learn.microsoft.com/dotnet/api/system.string)

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PrGTimeInitialization
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PrGTScriptInitializationClass
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Object.RemoveMeta(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.GetMeta(string, object) (https://learn.microsoft.com/dotnet/api/system.string)
Object.HasMeta(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.GetMetaList()
Object.AddUserSignal(string, Array) (https://learn.microsoft.com/dotnet/api/system.string)
Object.HasUserSignal(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.EmitSignal(string, params object[]) (https://learn.microsoft.com/dotnet/api/system.string)
Object.Call(string, params object[]) (https://learn.microsoft.com/dotnet/api/system.string)
Object.CallDeferred(string, params object[]) (https://learn.microsoft.com/dotnet/api/system.string)
Object.SetIndexed(string, object) (https://learn.microsoft.com/dotnet/api/system.string)
Object.GetIndexed(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.HasMethod(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.HasSignal(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.GetSignalList()
Object.HasSignalConnectedTo(Object, string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.GetIncomingConnections()
Object.Connect(string, Object, string, Array, uint) (https://learn.microsoft.com/dotnet/api/system.string)
Object.Disconnect(string, Object, string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.IsConnected(string, Object, string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.SetBlockSignals(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Object.IsBlockingSignals()
Object.PropertyListChangedNotify()
Object.SetMessageTranslation(bool) (https://learn.microsoft.com/dotnet/api/system.boolean)
Object.CanTranslateMessages()
Object.Tr(string) (https://learn.microsoft.com/dotnet/api/system.string)
Object.IsQueuedForDeletion()
Object.NativeInstance
Object.DynamicObject
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Runtime (Cobilas.GodotEngine.Utility.Runtime.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public class RunTimeInitialization : Node, IDisposable
```

Examples

The `RunTimeInitialization` class allows you to automate the `Project>Project Settings>AutoLoad` option. To use the `RunTimeInitialization` class, you must create a class and make it inherit `RunTimeInitialization`.///

```
using Cobilas.GodotEngine.Utility.Runtime;
// The name of the class is up to you.
public class RunTimeProcess : RunTimeInitialization {}
```

And remember to add the class that inherits `RunTimeInitialization` in `Project>Project Settings>AutoLoad`. Remembering that the `RunTimeInitialization` class uses the virtual method `_Ready()` to perform the initialization of other classes. And to initialize other classes along with the `RunTimeInitialization` class, the class must inherit the `Godot.Node` class or some class that inherits `Godot.Node` and use the `RunTimeInitializationClassAttribute` attribute.

```
using Godot;
using Cobilas.GodotEngine.Utility.Runtime;
[RunTimeInitializationClass]
public class ClassTest : Node {}
```

Methods

_EnterTree()

Called when the node enters the Godot.SceneTree (e.g. upon instancing, scene changing, or after calling AddChild(Node, bool) (https://learn.microsoft.com/dotnet/api/system.boolean) in a script). If the node has children, its Godot.Node._EnterTree() callback will be called first, and then that of the children.

Corresponds to the Godot.Node.NotificationEnterTree notification in _Notification(int) (https://learn.microsoft.com/dotnet/api/system.int32).

Declaration

```
public override void _EnterTree()
```

Overrides

Godot.Node._EnterTree()

_ExitTree()

Called when the node is about to leave the Godot.SceneTree (e.g. upon freeing, scene changing, or after calling Godot.Node.RemoveChild(Godot.Node) in a script). If the node has children, its Godot.Node._ExitTree() callback will be called last, after all its children have left the tree.

Corresponds to the Godot.Node.NotificationExitTree notification in _Notification(int) (https://learn.microsoft.com/dotnet/api/system.int32) and signal `tree_exiting`. To get notified when the node has already left the active tree, connect to the `tree_exited`.

Declaration

```
public override void _ExitTree()
```

Overrides

Godot.Node._ExitTree()

_Ready()

Called when the node is "ready", i.e. when both the node and its children have entered the scene tree. If the node has children, their Godot.Node._Ready() callbacks get triggered first, and the parent node will receive the ready notification afterwards.

Corresponds to the Godot.Node.NotificationReady notification in _Notification(int) (https://learn.microsoft.com/dotnet/api/system.int32). See also the `onready` keyword for variables.

Usually used for initialization. For even earlier initialization, may be used. See also Godot.Node._EnterTree().

Note: Godot.Node._Ready() may be called only once for each node. After removing a node from the scene tree and adding it again, `_ready` will not be called a second time. This can be bypassed by requesting another call with Godot.Node.RequestReady(), which may be called anywhere before adding the node again.

Declaration

```
public override void _Ready()
```

Overrides

Godot.Node._Ready()

Events

PlayModeStateChanged

Event that is raised whenever the Editor's play mode state changes.

Declaration

```
public static event Action<PlayModeStateChange>? PlayModeStateChanged
```

Event Type

Type	Description
Action (https://learn.microsoft.com/dotnet/api/system.action-1)<PlayModeStateChange (Cobilas.GodotEngine.Utility.Runtime.PlayModeStateChange.html)>	

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RunTimeInitialization
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Attribute
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Implements

IDisposable (https://learn.microsoft.com/dotnet/api/system.idisposable)

Extension Methods

Node_GD_CB_Extension.ContainsNode(Node, Node)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_ContainsNode_Godot_Node_Godot_Node_)
Node_GD_CB_Extension.Duplicate<T>(Node, int)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_Duplicate__1_Godot_Node_System_Int32_)
Node_GD_CB_Extension.FindNodeByName(Node, string)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodeByName_Godot_Node_System_String_)
Node_GD_CB_Extension.FindNodeByName(Node, string, bool)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodeByName_Godot_Node_System_String_System_Boolean_)
Node_GD_CB_Extension.FindNodeByName(Node, string, Type, bool)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodeByName_Godot_Node_System_String_System_Type_System_Boolean_)
Node_GD_CB_Extension.FindNodeByName<T>(Node, string)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodeByName__1_Godot_Node_System_String_)
Node_GD_CB_Extension.FindNodeByName<T>(Node, string, bool)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodeByName__1_Godot_Node_System_String_System_Boolean_)
Node_GD_CB_Extension.FindNodes(Node, Type)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodes_Godot_Node_System_Type_)
Node_GD_CB_Extension.FindNodes(Node, Type, bool)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodes_Godot_Node_System_Type_System_Boolean_)
Node_GD_CB_Extension.FindNodes<T>(Node)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodes__1_Godot_Node_)
Node_GD_CB_Extension.FindNodes<T>(Node, bool)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_FindNodes__1_Godot_Node_System_Boolean_)
Node_GD_CB_Extension.GetNodePosition(Node)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_GetNodePosition_Godot_Node_)
Node_GD_CB_Extension.GetNodeRotation(Node)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_GetNodeRotation_Godot_Node_)
Node_GD_CB_Extension.GetNodeScale(Node)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_GetNodeScale_Godot_Node_)
Node_GD_CB_Extension.SetNodePosition(Node, Vector3D)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_SetNodePosition_Godot_Node_Cobilas_GodotEngine_Utility_Numerics_Vector3D_)
Node_GD_CB_Extension.SetNodeRotation(Node, Vector3D)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_SetNodeRotation_Godot_Node_Cobilas_GodotEngine_Utility_Numerics_Vector3D_)
Node_GD_CB_Extension.SetNodeScale(Node, Vector3D)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_SetNodeScale_Godot_Node_Cobilas_GodotE

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ngine_Utility_Numerics_Vector3D_)
Node_GD_CB_Extension.SetParent(Node?, Node?)
(Godot.Node_GD_CB_Extension.html#Godot_Node_GD_CB_Extension_SetParent_Godot_Node_Godot_Node_)
Object_CB_GD_Extension.Print(Object, params object[])
(Godot.Object_CB_GD_Extension.html#Godot_Object_CB_GD_Extension_Print_Godot_Object_System_Object___)
Object_CB_GD_Extension.SafelySetScript<T>(Object, Resource)
(Godot.Object_CB_GD_Extension.html#Godot_Object_CB_GD_Extension_SafelySetScript__1_Godot_Object_Godot_Resource_)
Object_CB_GD_Extension.SafelySetScript<T>(Object, string)
(Godot.Object_CB_GD_Extension.html#Godot_Object_CB_GD_Extension_SafelySetScript__1_Godot_Object_System_String_)

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Attribute
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Class RunTimeInitializationClassAttribute

This attribute marks which classes will be called by RunTimeInitialization (Cobilas.GodotEngine.Utility.Runtime.RunTimeInitialization.html).

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Attribute (https://learn.microsoft.com/dotnet/api/system.attribute)
↳ RunTimeInitializationClassAttribute

Implements

_Attribute (https://learn.microsoft.com/dotnet/api/system.runtime.interopservices._attribute)

Inherited Members

Attribute.GetCustomAttributes(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-type))
Attribute.GetCustomAttributes(MemberInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(MemberInfo) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo))
Attribute.GetCustomAttributes(MemberInfo, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-boolean))
Attribute.IsDefined(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-memberinfo-system-type))
Attribute.IsDefined(MemberInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttribute(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-memberinfo-system-type))
Attribute.GetCustomAttribute(MemberInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(ParameterInfo) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo))
Attribute.GetCustomAttributes(ParameterInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo-system-type))
Attribute.GetCustomAttributes(ParameterInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo-system-type-system-boolean))

Attribute.GetCustomAttributes(ParameterInfo, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo-system-boolean))
Attribute.IsDefined(ParameterInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-parameterinfo-system-type))
Attribute.IsDefined(ParameterInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttribute(ParameterInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-parameterinfo-system-type))
Attribute.GetCustomAttribute(ParameterInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(Module, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module-system-type))
Attribute.GetCustomAttributes(Module)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module))
Attribute.GetCustomAttributes(Module, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module-system-boolean))
Attribute.GetCustomAttributes(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module-system-type-system-boolean))
Attribute.IsDefined(Module, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-module-system-type))
Attribute.IsDefined(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-module-system-type-system-boolean))
Attribute.GetCustomAttribute(Module, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-module-system-type))
Attribute.GetCustomAttribute(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-module-system-type-system-boolean))
Attribute.GetCustomAttributes(Assembly, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-type))
Attribute.GetCustomAttributes(Assembly, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-type-system-boolean))
Attribute.GetCustomAttributes(Assembly)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly))
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getcustomattributes(system-reflection-assembly-system-boolean))
Attribute.IsDefined(Assembly, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-assembly-system-type))
Attribute.IsDefined(Assembly, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-assembly-system-type-system-boolean))
Attribute.GetCustomAttribute(Assembly, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-assembly-system-type))
Attribute.GetCustomAttribute(Assembly, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-assembly-system-type-system-boolean))
Attribute.Equals(object) (https://learn.microsoft.com/dotnet/api/system.attribute.equals)
Attribute.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.attribute.gethashcode)
Attribute.Match(object) (https://learn.microsoft.com/dotnet/api/system.attribute.match)
Attribute.IsDefaultAttribute() (https://learn.microsoft.com/dotnet/api/system.attribute.isdefaultattribute)
Attribute.TypeId (https://learn.microsoft.com/dotnet/api/system.attribute.typeid)
object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Runtime (Cobilas.GodotEngine.Utility.Runtime.html)
Assembly: com.cobilas.godot.utility.dll

Syntax

```
[AttributeUsage(System.AttrTargets.Class, Inherited = false, AllowMultiple = false)]
public sealed class RunTimeInitializationClassAttribute : Attribute, _Attribute
```

Examples

Simple example of class demarcation to be called by RunTimeInitialization (Cobilas.GodotEngine.Utility.Runtime.RunTimeInitialization.html).

```
using Godot;
using Cobilas.GodotEngine.Utility.Runtime;
[RunTimeInitializationClass]
public class ClassTest : Node {}
```

Constructors

RunTimeInitializationClassAttribute()

Instance the RunTimeInitializationClassAttribute attribute.

Declaration

```
public RunTimeInitializationClassAttribute()
```

RunTimeInitializationClassAttribute(string?, Priority, int, bool)

Instance the RunTimeInitializationClassAttribute attribute.

Declaration

```
public RunTimeInitializationClassAttribute(string? name, Priority bootPriority = Priority.St
artBefore, int subPriority = 0, bool lastBoot = false)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	The name of the priority.
Priority (Cobilas.GodotEngine.Utility.Runtime.Priority.html)	*bootPriority*	The type of priority.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*subPriority*	The execution priority.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*lastBoot*	Allows the object to be called last in the root object hierarchy.

Properties

BootPriority

The type of priority.

Declaration

```
public Priority BootPriority { get; }
```

Property Value

Type	Description
Priority (Cobilas.GodotEngine.Utility.Runtime.Priority.html)	Returns the type of priority that will be executed.

ClassName

The name of the priority.

Declaration

```
public string ClassName { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns the name of the priority that will be executed.

LastBoot

Allows the object to be called last in the root object hierarchy.

Declaration

```
public bool LastBoot { get; }
```

Property Value

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when marked to be called last in the root object hierarchy.

SubPriority

The execution priority.

Declaration

```
public int SubPriority { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns the priority execution level.

Implements

_Attribute (https://learn.microsoft.com/dotnet/api/system.runtime.interopservices._attribute)

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  - RunTimeInitialization (Cobilas.GodotEngine.Utility.Runtim
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Namespace Cobilas.GodotEngine.Utility.Scene

Filter by title

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  SceneManager (Cobilas.GodotEngine.Utility.Scene.

Classes

SceneManager (Cobilas.GodotEngine.Utility.Scene.SceneManager.html)

This class can be used to manage scene switching.

Structs

Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)

Contains the scene information.

Struct Scene

Contains the scene information.

Filter by title

Implements

IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)>

IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<int (https://learn.microsoft.com/dotnet/api/system.int32)>

IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1)<string (https://learn.microsoft.com/dotnet/api/system.string)>

Inherited Members

object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system.object,system.object))

object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)

object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Scene (Cobilas.GodotEngine.Utility.Scene.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public struct Scene : IEquatable<Scene>, IEquatable<int>, IEquatable<string?>
```

Constructors

Scene(string, int, Node)

Starts a new instance of the object.

Declaration

```
public Scene(string scenePath, int index, Node sceneNode)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*scenePath*	
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	
Node	*sceneNode*	

Properties

Empty

Empty scenario.

Declaration

```
public static Scene Empty { get; }
```

Property Value

Type	Description
Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)	Returns a representation of an empty scenario.

Index

The scene index.

Declaration

```
public readonly int Index { get; }
```

Property Value

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	Returns the scene index.

Name

The name of the scene file.

Declaration

```
public readonly string Name { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns a string containing the name of the scene file with its extension.

Exceptions

Type	Condition
ArgumentException (https://learn.microsoft.com/dotnet/api/system.argumentexception)	path contains one or more of the invalid characters defined in GetInvalidPathChars() (https://learn.microsoft.com/dotnet/api/system.io.path.getinvalidpathchars) .

NameWithoutExtension

The name of the scene file without the extension.

Declaration

```
public Cobilas.GodotEngine.Utility.IO.FileInfo NameWithoutExtension { get; }
```

Property Value

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	Returns a string containing the name of the scene file without its extension.

Exceptions

Type	Condition
ArgumentException (https://learn.microsoft.com/dotnet/api/system.argumentexception)	path contains one or more of the invalid characters defined in GetInvalidPathChars() (https://learn.microsoft.com/dotnet/api/system.io.path.getinvalidpathchars) .

SceneNode

Stores the root Godot.Node of the scenario.

Declaration

```
public readonly Node? SceneNode { get; }
```

Property Value

Type	Description
Node	Returns a Godot.Node type object that is the root of the scenario.

ScenePath

The path of the scene file.

Declaration

```
public readonly string? ScenePath { get; }
```

Property Value

Type	Description
string? (https://learn.microsoft.com/dotnet/api/system.string)	Returns the full or relative path of the scene file.

Methods

Equals(Scene)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(Scene other)
```

Parameters

Type	Name	Description
Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(int)

Indicates whether the current object is equal to another object of the same type.

Declaration

```
public readonly bool Equals(int other)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Equals(object)

Indicates whether this instance and a specified object are equal.

Declaration

```
public override readonly bool Equals(object obj)
```

Parameters

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*obj*	The object to compare with the current instance.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if `obj` and this instance are the same type and represent the same value; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

Overrides

ValueType.Equals(object) (https://learn.microsoft.com/dotnet/api/system.valuetype.equals)

Equals(string?)

Indicates whether the current object is equal to another object of the same type.

Declaration

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```
public readonly bool Equals(string? other)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*other*	An object to compare with this object.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	true (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool) if the current object is equal to the `other` parameter; otherwise, false (https://learn.microsoft.com/dotnet/csharp/language-reference/builtin-types/bool).

GetHashCode()

Returns the hash code for this instance.

Declaration

```
public override readonly int GetHashCode()
```

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	A 32-bit signed integer that is the hash code for this instance.

Overrides

ValueType.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.valuetype.gethashcode)

ToString()

Returns the fully qualified type name of this instance.

Declaration

```
public override readonly string ToString()
```

Returns

+ Cobilas.GodotEditor.Utility.Serialization.Hints (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.Properties (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEditor.Utility.Serialization.RenderObjects (Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
- Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc
Scene (Cobilas.GodotEngine.Utility.Scene.
SceneManager (Cobilas.GodotEngine.Utility.Scene.

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The fully qualified type name.

Overrides

ValueType.ToString() (https://learn.microsoft.com/dotnet/api/system.valuetype.tostring)

Operators

operator ==(Scene, Scene)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(Scene left, Scene right)
```

Parameters

Type	Name	Description
Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)	*left*	Object to be compared.
Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)	*right*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator ==(Scene, int)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(Scene left, int right)
```

Parameters

Type	Name	Description
Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)	*left*	Object to be compared.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*right*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator ==(Scene, string)

Indicates whether this instance is equal to another instance of the same type.

Declaration

```
public static bool operator ==(Scene left, string right)
```

Parameters

Type	Name	Description
Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)	*left*	Object to be compared.
string (https://learn.microsoft.com/dotnet/api/system.string)	*right*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

explicit operator int(Scene)

Explicit conversion operator.(Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html) to int (https://learn.microsoft.com/dotnet/api/system.int32))

Declaration

```
public static explicit operator int(Scene scene)
```

Parameters

Type	Name	Description
Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)	*scene*	Object to be converted.

Returns

Type	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	

explicit operator string(Scene)

Explicit conversion operator.(Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html) to string (https://learn.microsoft.com/dotnet/api/system.string))

Declaration

```
public static explicit operator string(Scene value)
```

Parameters

Type	Name	Description
Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)	*value*	Object to be converted.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	

operator !=(Scene, Scene)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(Scene left, Scene right)
```

Parameters

Type	Name	Description
Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)	*left*	Object to be compared.
Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)	*right*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator !=(Scene, int)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(Scene left, int right)
```

Parameters

Type	Name	Description
Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)	*left*	Object to be compared.
int (https://learn.microsoft.com/dotnet/api/system.int32)	*right*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

operator != (Scene, string)

Indicates whether this instance is different from another instance of the same type.

Declaration

```
public static bool operator !=(Scene left, string right)
```

Parameters

Type	Name	Description
Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)	*left*	Object to be compared.
string (https://learn.microsoft.com/dotnet/api/system.string)	*right*	Object of comparison.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns the result of the comparison.

Implements

IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)

Class SceneManager

This class can be used to manage scene switching.

Filter by title

+ Cobilas.GodotEditor.Utility.
  Serialization.Hints
  (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEditor.Utility.
  Serialization.Properties
  (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEditor.Utility.
  Serialization.RenderObjects
  (Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility
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+ Cobilas.GodotEngine.Utility.
  Numerics
  (Cobilas.GodotEngine.Utility.N
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  Physics
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+ Cobilas.GodotEngine.Utility.
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  Scene
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  Scene
  (Cobilas.GodotEngine.Utility.Scene.
  SceneManager
  (Cobilas.GodotEngine.Utility.Scene.

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Scene (Cobilas.GodotEngine.Utility.Scene.html)
↳ SceneManager

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system.object,system.object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Cobilas (Cobilas.html).GodotEngine (Cobilas.GodotEngine.html).Utility (Cobilas.GodotEngine.Utility.html).Scene (Cobilas.GodotEngine.Utility.Scene.html)
Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class SceneManager
```

Properties

BuiltScenes

The compiled scenes.

Declaration

```
public static Scene[] BuiltScenes { get; }
```

Property Value

Type	Description
Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)[]	Returns a list of scenes that were compiled along with the project.

CurrentScene

The current scene.

Declaration

```
public static Scene CurrentScene { get; }
```

Property Value

Type	Description
Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)	Returns the scene that is currently loaded.

CurrentSceneNode

The current scene in node form.

Declaration

```
public static Node CurrentSceneNode { get; }
```

Property Value

Type	Description
Node	Returns the currently loaded scene in node form.

Methods

DontDestroyOnLoad(Node)

Prevents an object from being destroyed when switching scenes.

Declaration

```
public static void DontDestroyOnLoad(Node obj)
```

Parameters

Type	Name	Description
Node	obj	The object that will be marked so as not to be destroyed when changing scenes.

LoadScene(int)

Allows you to load a specific scene.

Declaration

```
public static bool LoadScene(int index)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	The specific scene index.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the scene loaded correctly.

LoadScene(string)

Allows you to load a specific scene.

Declaration

```
public static bool LoadScene(string name)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	The specific scene name.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` if the scene loaded correctly.

Events

LoadedScene

This event is called when a new scene is loaded.

Declaration

```
public static event Action<Scene>? LoadedScene
```

Event Type

Type	Description
Action (https://learn.microsoft.com/dotnet/api/system.action-1)< Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)>	

+ Cobilas.GodotEditor.Utility.
  Serialization.Hints
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+ Cobilas.GodotEditor.Utility.
  Serialization.Properties
  (Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEditor.Utility.
  Serialization.RenderObjects
  (Cobilas.GodotEditor.Utility.Ser

+ Cobilas.GodotEngine.Utility
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  Numerics
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  Physics
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  Runtime
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- Cobilas.GodotEngine.Utility.
  Scene
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  Scene
  (Cobilas.GodotEngine.Utility.Scene.
  SceneManager
  (Cobilas.GodotEngine.Utility.Scene.

UnloadedScene

This event is called when the current scene is unloaded.

Declaration

```
public static event Action<Scene>? UnloadedScene
```

Event Type

Type	Description
Action (https://learn.microsoft.com/dotnet/api/system.action-1)< Scene (Cobilas.GodotEngine.Utility.Scene.Scene.html)>	

Namespace Godot

Classes

Filter by title

(Cobilas.GodotEditor.Utility.Ser

Camera2D_GD_CB_Extension (Godot.Camera2D_GD_CB_Extension.html)

Extension for Godot.Camera2D class.

(Cobilas.GodotEngine.Utility.ht

Control_GD_CB_Extension (Godot.Control_GD_CB_Extension.html)

Provides extension methods for the Godot.Control class of Godot (Godot.html), allowing operations with 2D rectangles (Rect2D (https://learn.microsoft.com/dotnet/api/system.drawing.rectangle)) more conveniently.

(Cobilas.GodotEngine.Utility.IO

ExportRangeAttribute (Godot.ExportRangeAttribute.html)

Allows you to serialize int (https://learn.microsoft.com/dotnet/api/system.int32) and float (https://learn.microsoft.com/dotnet/api/system.single) values as a sliderbar with a minimum and maximum range.

(Cobilas.GodotEngine.Utility.In

(Cobilas.GodotEngine.Utility.N

Label_CB_GD_Extension (Godot.Label_CB_GD_Extension.html)

Provides extension methods for Godot's Godot.Label class, allowing string operations to be performed fluently and efficiently using StringBuilder (https://learn.microsoft.com/dotnet/api/system.text.stringbuilder) internally.

(Cobilas.GodotEngine.Utility.Pl

NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extension.html)

Extensions for Godot.NodePath class.

(Cobilas.GodotEngine.Utility.Ru

Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.html)

Extension for Godot.Node class.

(Cobilas.GodotEngine.Utility.Sc

Object_CB_GD_Extension (Godot.Object_CB_GD_Extension.html)

Extensions for Godot.Object class.

Rect2_GD_CB_Extension (Godot.Rect2_GD_CB_Extension.html)

Extension to the Godot.Rect2 struct.

Sprite_CB_GB_Extension (Godot.Sprite_CB_GB_Extension.html)

Provides extension methods for Godot (Godot.html)'s Sprite class, allowing more convenient operations with 2D rectangles (Rect2D).

+ **Cobilas.GodotEngine.Utility**
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- **Godot (Godot.html)**
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  - Control_GD_CB_Extension (Godot.Control_GD_CB_Extension.h
  - ExportRangeAttribute (Godot.ExportRangeAttribute.html)
  - Label_CB_GD_Extension (Godot.Label_CB_GD_Extension.htm
  - NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extensior
  - Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htn
  - Object_CB_GD_Extension

String_GD_CB_Extension (Godot.String_GD_CB_Extension.html)

Provide methods for string (https://learn.microsoft.com/dotnet/api/system.string) class.

TextEdit_CB_GD_Extension (Godot.TextEdit_CB_GD_Extension.html)

Provides extension methods for Godot's Godot.TextEdit class, allowing string operations to be performed fluently and efficiently using StringBuilder (https://learn.microsoft.com/dotnet/api/system.text.stringbuilder) instances.

Vector2_CB_GD_Extensions (Godot.Vector2_CB_GD_Extensions.html)

Extension to the Godot.Vector2 struct.

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- Godot (Godot.html)

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(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Class Camera2D_GD_CB_Extension

Extension for Godot.Camera2D class.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Camera2D_GD_CB_Extension

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Godot (Godot.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class Camera2D_GD_CB_Extension
```

Methods

ScreenToWorldPoint(Camera2D, Vector2D)

Converts a position on the screen to a position in the 2D world.

Declaration

```
public static Vector2D ScreenToWorldPoint(this Camera2D C, Vector2D mousePosition)
```

Parameters

Type	Name	Description
Camera2D	*C*	The 2D camera that will be used for conversion.

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NodePath_GD_CB_Extension
(Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Type	Name	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*mousePosition*	The position on the screen that will be converted.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	Return a two-dimensional vector with the result of converting the screen position to a position in the 2D world.

WorldToScreenPoint(Camera2D, Vector2D)

Converts a position in the 2D world to a position on the screen.

Declaration

```
public static Vector2D WorldToScreenPoint(this Camera2D C, Vector2D position)
```

Parameters

Type	Name	Description
Camera2D	*C*	The 2D camera that will be used for conversion.
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	*position*	The position of the 2D world that will be converted.

Returns

Type	Description
Vector2D (Cobilas.GodotEngine.Utility.Numerics.Vector2D.html)	Returns a two-dimensional vector with the result of converting the 2D world position to a screen position.

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ExportRangeAttribute
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NodePath_GD_CB_Extension
(Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Class Control_GD_CB_Extension

Provides extension methods for the Godot.Control class of Godot (Godot.html), allowing operations with 2D rectangles (Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)) more conveniently.

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Control_GD_CB_Extension

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Godot (Godot.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class Control_GD_CB_Extension
```

Remarks

This class facilitates conversion between the rectangle properties of Godot.Control and the custom Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) type, for both local and global coordinates.

Methods

GetGlobalRect2D(Control?)

Gets a Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) representing the global rectangle of the Godot.Control.

Declaration

```
public static Rect2D GetGlobalRect2D(this Control? ctl)
```

Parameters

Type	Name	Description
Control	*ctl*	Godot.Control target (can be null)

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	A Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) containing the global position, size, rotation, scale, and pivot of the Godot.Control

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Control is null

GetRect2D(Control?)

Gets a Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) representing the local rectangle of the Godot.Control.

Declaration

```
public static Rect2D GetRect2D(this Control? ctl)
```

Parameters

Type	Name	Description
Control	*ctl*	Godot.Control target (can be null)

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	A Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) containing the position, size, rotation, scale, and pivot of the Godot.Control

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Control is null

SetGlobalRect2D(Control?, Rect2D)

Sets the properties of the Godot.Control based on a Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html), using global coordinates.

Declaration

```
public static void SetGlobalRect2D(this Control? ctl, Rect2D rect)
```

Parameters

Type	Name	Description
Control	*ctl*	Godot.Control target (can be null)
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	*rect*	Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) containing the global properties to be applied

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Control is null

SetRect2D(Control?, Rect2D)

Sets the properties of the Godot.Control based on a Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html).

Declaration

```
public static void SetRect2D(this Control? ctl, Rect2D rect)
```

Parameters

Type	Name	Description
Control	*ctl*	Godot.Control target (can be null)
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	*rect*	Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) contendo as propriedades a serem aplicadas

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Control is null

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Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htn
Object_CB_GD_Extension

Class ExportRangeAttribute

Allows you to serialize int (https://learn.microsoft.com/dotnet/api/system.int32) and float (https://learn.microsoft.com/dotnet/api/system.single) values as a sliderbar with a minimum and maximum range.

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Attribute (https://learn.microsoft.com/dotnet/api/system.attribute)
↳ ExportAttribute
↳ ExportRangeAttribute

Implements

_Attribute (https://learn.microsoft.com/dotnet/api/system.runtime.interopservices._attribute)

Inherited Members

Attribute.GetCustomAttributes(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-type))
Attribute.GetCustomAttributes(MemberInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(MemberInfo) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo))
Attribute.GetCustomAttributes(MemberInfo, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-memberinfo-system-boolean))
Attribute.IsDefined(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-memberinfo-system-type))
Attribute.IsDefined(MemberInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttribute(MemberInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-memberinfo-system-type))
Attribute.GetCustomAttribute(MemberInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-memberinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(ParameterInfo) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo))
Attribute.GetCustomAttributes(ParameterInfo, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo-system-type))
Attribute.GetCustomAttributes(ParameterInfo, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-

getcustomattributes(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(ParameterInfo, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-parameterinfo-system-boolean))
Attribute.IsDefined(ParameterInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-parameterinfo-system-type))
Attribute.IsDefined(ParameterInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttribute(ParameterInfo, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-parameterinfo-system-type))
Attribute.GetCustomAttribute(ParameterInfo, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-parameterinfo-system-type-system-boolean))
Attribute.GetCustomAttributes(Module, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module-system-type))
Attribute.GetCustomAttributes(Module)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module))
Attribute.GetCustomAttributes(Module, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module-system-boolean))
Attribute.GetCustomAttributes(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-module-system-type-system-boolean))
Attribute.IsDefined(Module, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-module-system-type))
Attribute.IsDefined(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-module-system-type-system-boolean))
Attribute.GetCustomAttribute(Module, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-module-system-type))
Attribute.GetCustomAttribute(Module, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-module-system-type-system-boolean))
Attribute.GetCustomAttributes(Assembly, Type)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-type))
Attribute.GetCustomAttributes(Assembly, Type, bool)
(https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-type-system-boolean))
Attribute.GetCustomAttributes(Assembly)
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  - Node_GD_CB_Extension
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  - Object_CB_GD_Extension

Attribute.GetCustomAttributes(Assembly, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattributes#system-attribute-getcustomattributes(system-reflection-assembly-system-boolean))
Attribute.IsDefined(Assembly, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-assembly-system-type))
Attribute.IsDefined(Assembly, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.isdefined#system-attribute-isdefined(system-reflection-assembly-system-type-system-boolean))
Attribute.GetCustomAttribute(Assembly, Type) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-assembly-system-type))
Attribute.GetCustomAttribute(Assembly, Type, bool) (https://learn.microsoft.com/dotnet/api/system.attribute.getcustomattribute#system-attribute-getcustomattribute(system-reflection-assembly-system-type-system-boolean))
Attribute.Equals(object) (https://learn.microsoft.com/dotnet/api/system.attribute.equals)
Attribute.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.attribute.gethashcode)
Attribute.Match(object) (https://learn.microsoft.com/dotnet/api/system.attribute.match)
Attribute.IsDefaultAttribute() (https://learn.microsoft.com/dotnet/api/system.attribute.isdefaultattribute)
Attribute.TypeId (https://learn.microsoft.com/dotnet/api/system.attribute.typeid)
object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Godot (Godot.html)
Assembly: com.cobilas.godot.utility.dll

Syntax

```
public class ExportRangeAttribute : ExportAttribute, _Attribute
```

Constructors

ExportRangeAttribute(int, int)

Creates a new instance of this object.

Declaration

```
public ExportRangeAttribute(int min, int max)
```

Parameters

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*min*	

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*max*	

ExportRangeAttribute(float, float)

Creates a new instance of this object.

Declaration

```
public ExportRangeAttribute(float min, float max)
```

Parameters

Type	Name	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	*min*	
float (https://learn.microsoft.com/dotnet/api/system.single)	*max*	

Implements

_Attribute (https://learn.microsoft.com/dotnet/api/system.runtime.interopservices._attribute)

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+ Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
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  - Control_GD_CB_Extension (Godot.Control_GD_CB_Extension.h
  - ExportRangeAttribute (Godot.ExportRangeAttribute.html)
  - Label_CB_GD_Extension (Godot.Label_CB_GD_Extension.htm
  - NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extensior
  - Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htn
  - Object_CB_GD_Extension

Class Label_CB_GD_Extension

Provides extension methods for Godot's Godot.Label class, allowing string operations to be performed fluently and efficiently using StringBuilder (https://learn.microsoft.com/dotnet/api/system.text.stringbuilder) internally.

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Label_CB_GD_Extension

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Godot (Godot.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class Label_CB_GD_Extension
```

Remarks

This class uses a shared static StringBuilder (https://learn.microsoft.com/dotnet/api/system.text.stringbuilder) for better performance in frequent text manipulation operations in TextEdits.

Methods

Append(Label?, bool)

Adds the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a bool (https://learn.microsoft.com/dotnet/api/system.boolean) value to the Godot.Label text.

Declaration

```
public static Label? Append(this Label? L, bool value)
```

Parameters

Filter by title

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NodePath_GD_CB_Extension
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Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*value*	bool (https://learn.microsoft.com/dotnet/api/system.boolean) value to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Append(Label?, byte)

Adds a byte (https://learn.microsoft.com/dotnet/api/system.byte) value to the Godot.Label text.

Declaration

```
public static void Append(Label? L, byte value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
byte (https://learn.microsoft.com/dotnet/api/system.byte)	*value*	byte (https://learn.microsoft.com/dotnet/api/system.byte) value to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Append(Label?, char)

Adds a character to the Godot.Label text.

Declaration

```
public static Label Append(this Label? L, char value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
char (https://learn.microsoft.com/dotnet/api/system.char)	*value*	Character to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Append(Label?, char, int)

Adds a character repeated a specified number of times to the text of Godot.Label.

Declaration

```
public static Label Append(this Label? L, char value, int repeatCount)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
char (https://learn.microsoft.com/dotnet/api/system.char)	*value*	Character to be added
int (https://learn.microsoft.com/dotnet/api/system.int32)	*repeatCount*	Number of repetitions of the character

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Append(Label?, char[])

Adds a char[] to the text of the Godot.Label.

Declaration

```
public static Label Append(this Label? L, char[] value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
char (https://learn.microsoft.com/dotnet/api/system.char)[]	*value*	char[] to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Append(Label?, char[], int, int)

Adds a part of a char[] to the text of the Godot.Label.

Declaration

```
public static Label Append(this Label? L, char[] value, int startIndex, int charCount)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)

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NodePath_GD_CB_Extension
(Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Type	Name	Description
char (https://learn.microsoft.com/dotnet/api/system.char) []	*value*	char[] of origin
int (https://learn.microsoft.com/dotnet/api/system.int32)	*startIndex*	Starting index in Array (https://learn.microsoft.com/dotnet/api/system.array)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*charCount*	Number of characters to add

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Append(Label?, decimal)

Adds a decimal (https://learn.microsoft.com/dotnet/api/system.decimal) value to the text of Godot.Label.

Declaration

```
public static Label Append(this Label? L, decimal value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
decimal (https://learn.microsoft.com/dotnet/api/system.decimal)	*value*	decimal (https://learn.microsoft.com/dotnet/api/system.decimal) value to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Append(Label?, double)

Adds a double (https://learn.microsoft.com/dotnet/api/system.double) value to the text of Godot.Label.

Declaration

```
public static Label Append(this Label? L, double value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
double (https://learn.microsoft.com/dotnet/api/system.double)	*value*	double (https://learn.microsoft.com/dotnet/api/system.double) value to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Append(Label?, short)

Adds a short (https://learn.microsoft.com/dotnet/api/system.int16) value to the text of Godot.Label.

Declaration

```
public static Label Append(this Label? L, short value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)

Type	Name	Description
short (https://learn.microsoft.com/dotnet/api/system.int16)	*value*	short (https://learn.microsoft.com/dotnet/api/system.int16) value to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Append(Label?, int)

Adds a int (https://learn.microsoft.com/dotnet/api/system.int32) value to the text of Godot.Label.

Declaration

```
public static Label Append(this Label? L, int value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*value*	int (https://learn.microsoft.com/dotnet/api/system.int32) value to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Append(Label?, long)

Adds a long (https://learn.microsoft.com/dotnet/api/system.int64) value to the text of Godot.Label.

Declaration

```
public static Label Append(this Label? L, long value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
long (https://learn.microsoft.com/dotnet/api/system.int64)	*value*	long (https://learn.microsoft.com/dotnet/api/system.int64) value to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Append(Label?, object)

Adds the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a object (https://learn.microsoft.com/dotnet/api/system.object) to the text of the Godot.Label.

Declaration

```
public static Label Append(this Label? L, object value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	object (https://learn.microsoft.com/dotnet/api/system.object) to be added

Returns

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Numerics
(Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.
Runtime
(Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.
Scene
(Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
Camera2D_GD_CB_Extension
(Godot.Camera2D_GD_CB_Extensio
Control_GD_CB_Extension
(Godot.Control_GD_CB_Extension.h
ExportRangeAttribute
(Godot.ExportRangeAttribute.html)
Label_CB_GD_Extension
(Godot.Label_CB_GD_Extension.htm
NodePath_GD_CB_Extension
(Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type		Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)		Thrown when Godot.Label is null

Append(Label?, sbyte)

Adds a sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte) value to the text of Godot.Label.

Declaration

```
public static Label Append(this Label? L, sbyte value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte)	*value*	sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte) value to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type		Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)		Thrown when Godot.Label is null

Append(Label?, float)

Adds a float (https://learn.microsoft.com/dotnet/api/system.single) value to the text of the Godot.Label.

Declaration

```
public static Label Append(this Label? L, float value)
```


+ Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility
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+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.
Input
(Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.
Runtime
(Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.
Scene
(Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
Camera2D_GD_CB_Extension
(Godot.Camera2D_GD_CB_Extensio
Control_GD_CB_Extension
(Godot.Control_GD_CB_Extension.h
ExportRangeAttribute
(Godot.ExportRangeAttribute.html)
Label_CB_GD_Extension
(Godot.Label_CB_GD_Extension.htm
NodePath_GD_CB_Extension
(Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
float (https://learn.microsoft.com/dotnet/api/system.single)	*value*	float (https://learn.microsoft.com/dotnet/api/system.single) value to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Append(Label?, string)

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) to the text of the Godot.Label.

Declaration

```
public static Label Append(this Label? L, string value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*value*	string (https://learn.microsoft.com/dotnet/api/system.string) to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

- **Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
- **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
- **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
- **Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc**
- **Godot (Godot.html)**
  - Camera2D_GD_CB_Extension (Godot.Camera2D_GD_CB_Extensio
  - Control_GD_CB_Extension (Godot.Control_GD_CB_Extension.h
  - ExportRangeAttribute (Godot.ExportRangeAttribute.html)
  - Label_CB_GD_Extension (Godot.Label_CB_GD_Extension.htm
  - NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extensior
  - Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htm
  - Object_CB_GD_Extension

Append(Label?, string, int, int)

Adds a substring to the Godot.Label text.

Declaration

```
public static Label Append(this Label? L, string value, int startIndex, int count)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*value*	string (https://learn.microsoft.com/dotnet/api/system.string) source
int (https://learn.microsoft.com/dotnet/api/system.int32)	*startIndex*	Starting index in source string (https://learn.microsoft.com/dotnet/api/system.string)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*count*	Number of characters to add

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Append(Label?, ushort)

Adds a ushort (https://learn.microsoft.com/dotnet/api/system.uint16) value to the text of the Godot.Label.

Declaration

```
public static Label Append(this Label? L, ushort value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)

Type	Name	Description
ushort (https://learn.microsoft.com/dotnet/api/system.uint16)	*value*	ushort (https://learn.microsoft.com/dotnet/api/system.uint16) value to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Append(Label?, uint)

Adds a uint (https://learn.microsoft.com/dotnet/api/system.uint32) value to the Godot.Label text.

Declaration

```
public static Label Append(this Label? L, uint value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*value*	uint (https://learn.microsoft.com/dotnet/api/system.uint32) value to add

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Append(Label?, ulong)

Adds a ulong (https://learn.microsoft.com/dotnet/api/system.uint64) value to the Godot.Label text.

Declaration

```
public static Label Append(this Label? L, ulong value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
ulong (https://learn.microsoft.com/dotnet/api/system.uint64)	*value*	ulong (https://learn.microsoft.com/dotnet/api/system.uint64) value to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

AppendFormat(Label?, IFormatProvider, string, object)

Adds formatted text to Label using a specific format provider.

Declaration

```
public static Label AppendFormat(this Label? L, IFormatProvider provider, string format, obj
ect arg0)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*provider*	Culture-specific format provider
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg0*	First argument to be formatted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

AppendFormat(Label?, IFormatProvider, string, object, object)

Adds formatted text to Label using a specific format provider.

Declaration

```
public static Label AppendFormat(this Label? L, IFormatProvider provider, string format, obj
ect arg0, object arg1)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*provider*	Culture-specific format provider
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg0*	First argument to be formatted
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg1*	Second argument to be formatted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

AppendFormat(Label?, IFormatProvider, string, object, object, object)

Adds formatted text to Label using a specific format provider.

Declaration

```
public static Label AppendFormat(this Label? L, IFormatProvider provider, string format, object arg0, object arg1, object arg2)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*provider*	Culture-specific format provider
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg0*	First argument to be formatted
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg1*	Second argument to be formatted
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg2*	Third argument to be formatted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

AppendFormat(Label?, IFormatProvider, string, params object[])

Adds formatted text to Label using a specific format provider.

Declaration

```
public static Label AppendFormat(this Label? L, IFormatProvider provider, string format, par
ams object[] args)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*provider*	Culture-specific format provider
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format
object (https://learn.microsoft.com/dotnet/api/system.object) []	*args*	Array (https://learn.microsoft.com/dotnet/api/system.array) of arguments to be formatted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

AppendFormat(Label?, string, object)

Adds formatted text to Label using a specific format provider.

Declaration

```
public static Label AppendFormat(this Label? L, string format, object arg0)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg0*	First argument to be formatted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

AppendFormat(Label?, string, object, object)

Adds formatted text using a specific format provider.

Declaration

```
public static Label AppendFormat(this Label? L, string format, object arg0, object arg1)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg0*	First argument to be formatted

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg1*	Second argument to be formatted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

AppendFormat(Label?, string, object, object, object)

Adds formatted text to Label using a specific format provider.

Declaration

```
public static Label AppendFormat(this Label? L, string format, object arg0, object arg1, obj
ect arg2)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg0*	First argument to be formatted
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg1*	Second argument to be formatted
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg2*	Third argument to be formatted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

AppendFormat(Label?, string, params object[])

Adds formatted text to Label using a specific format provider.

Declaration

```
public static Label AppendFormat(this Label? L, string format, params object[] args)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format
object (https://learn.microsoft.com/dotnet/api/system.object)[]	*args*	Array (https://learn.microsoft.com/dotnet/api/system.array) of arguments to be formatted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

AppendJoin(Label?, char, object[])

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) created by joining a object[] with a character separator.

Declaration

```
public static Label AppendJoin(this Label? L, char separator, object[] values)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
char (https://learn.microsoft.com/dotnet/api/system.char)	*separator*	Separator between elements
object (https://learn.microsoft.com/dotnet/api/system.object)[]	*values*	object[] to be joined

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

AppendJoin(Label?, char, string[])

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) created by joining a string[] with a character separator.

Declaration

```
public static Label AppendJoin(this Label? L, char separator, string[] values)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
char (https://learn.microsoft.com/dotnet/api/system.char)	*separator*	Separator between elements
string (https://learn.microsoft.com/dotnet/api/system.string)[]	*values*	string[] to be joined

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

AppendJoin(Label?, string, object[])

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) created by joining a object[] with a separator.

Declaration

- Cobilas.GodotEditor.Utility.Se
- Cobilas.GodotEngine.Utility
  - Cobilas.GodotEngine.Utility.ht
  - Cobilas.GodotEngine.Utility.IO
  - Cobilas.GodotEngine.Utility.IO
  - Cobilas.GodotEngine.Utility.Input
  - Cobilas.GodotEngine.Utility.In
  - Cobilas.GodotEngine.Utility.Numerics
  - Cobilas.GodotEngine.Utility.N
  - Cobilas.GodotEngine.Utility.Physics
  - Cobilas.GodotEngine.Utility.Pl
  - Cobilas.GodotEngine.Utility.Runtime
  - Cobilas.GodotEngine.Utility.Ru
  - Cobilas.GodotEngine.Utility.Scene
  - Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
  - Camera2D_GD_CB_Extension
    - (Godot.Camera2D_GD_CB_Extensio
  - Control_GD_CB_Extension
    - (Godot.Control_GD_CB_Extension.h
  - ExportRangeAttribute
    - (Godot.ExportRangeAttribute.html)
  - Label_CB_GD_Extension
    - (Godot.Label_CB_GD_Extension.htm
  - NodePath_GD_CB_Extension
    - (Godot.NodePath_GD_CB_Extensio
  - Node_GD_CB_Extension
    - (Godot.Node_GD_CB_Extension.htm
  - Object_CB_GD_Extension

```
public static Label AppendJoin(this Label? L, string separator, object[] values)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*separator*	Separator between elements
object (https://learn.microsoft.com/dotnet/api/system.object)[]	*values*	object[] to be joined

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

AppendJoin(Label?, string, string[])

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) created by joining a string[] with a separator.

Declaration

```
public static Label AppendJoin(this Label? L, string separator, string[] values)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*separator*	Separator between elements
string (https://learn.microsoft.com/dotnet/api/system.string)[]	*values*	string[] to be joined

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

AppendJoin<T>(Label?, char, IEquatable<T>)

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) created by joining a collection of objects with a character separator.

Declaration

- Godot (Godot.html)
  - Camera2D_GD_CB_Extension
    (Godot.Camera2D_GD_CB_Extensio
  - Control_GD_CB_Extension
    (Godot.Control_GD_CB_Extension.h
  - ExportRangeAttribute
    (Godot.ExportRangeAttribute.html)
  - Label_CB_GD_Extension
    (Godot.Label_CB_GD_Extension.htm
  - NodePath_GD_CB_Extension
    (Godot.NodePath_GD_CB_Extension
  - Node_GD_CB_Extension
    (Godot.Node_GD_CB_Extension.htm
  - Object_CB_GD_Extension
    (Cobilas.GodotEditor.Utility.Ser
  - Cobilas.GodotEngine.Utility
    (Cobilas.GodotEngine.Utility.ht
  - Cobilas.GodotEngine.Utility.IO
    (Cobilas.GodotEngine.Utility.IO
  - Cobilas.GodotEngine.Utility.Input
    (Cobilas.GodotEngine.Utility.In
  - Cobilas.GodotEngine.Utility.Numerics
    (Cobilas.GodotEngine.Utility.N
  - Cobilas.GodotEngine.Utility.Physics
    (Cobilas.GodotEngine.Utility.Ph
  - Cobilas.GodotEngine.Utility.Runtime
    (Cobilas.GodotEngine.Utility.Ru
  - Cobilas.GodotEngine.Utility.Scene
    (Cobilas.GodotEngine.Utility.Sc

```
public static Label AppendJoin<T>(this Label? L, char separator, IEquatable<T> values)
```

Parameters

Type	Name	Description
Label (Cobilas.GodotEditor.Utility.Ser	*L*	Godot.Label target (can be null)
char (https://learn.microsoft.com/dotnet/api/system.char)	*separator*	Separator between elements
IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1) <T>	*values*	Collection of objects to be joined

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Type Parameters

Name	Description
T	Type (https://learn.microsoft.com/dotnet/api/system.type) of elements in the collection

AppendJoin<T>(Label?, string, IEquatable<T>)

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) created by joining a collection of objects with a separator.

Declaration

```
public static Label AppendJoin<T>(this Label? L, string separator, IEquatable<T> values)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*separator*	Separator between elements
IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1) <T>	*values*	Collection of objects to be joined

Returns

+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
  - Camera2D_GD_CB_Extension (Godot.Camera2D_GD_CB_Extensio
  - Control_GD_CB_Extension (Godot.Control_GD_CB_Extension.h
  - ExportRangeAttribute (Godot.ExportRangeAttribute.html)
  - Label_CB_GD_Extension (Godot.Label_CB_GD_Extension.htm
  - NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extensior
  - Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htm
  - Object_CB_GD_Extension

Type	Description
Label	The Godot.Label itself to allow chained calls

Type Parameters

Name	Description
T	Type (https://learn.microsoft.com/dotnet/api/system.type) of elements in the collection

AppendLine(Label?)

Adds a line break to the text of Godot.Label.

Declaration

```
public static Label AppendLine(this Label? L)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

AppendLine(Label?, object)

Adds the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a object (https://learn.microsoft.com/dotnet/api/system.object) followed by a line break to the text of the Godot.Label.

Declaration

```
public static Label AppendLine(this Label? L, object value)
```

Parameters

(Cobilas.GodotEditor.Utility.Sel

+ Cobilas.GodotEngine.Utility

(Cobilas.GodotEngine.Utility.ht

+ Cobilas.GodotEngine.Utility.IO

(Cobilas.GodotEngine.Utility.IO

+ Cobilas.GodotEngine.Utility.Input

(Cobilas.GodotEngine.Utility.In

+ Cobilas.GodotEngine.Utility.Numerics

(Cobilas.GodotEngine.Utility.N

+ Cobilas.GodotEngine.Utility.Physics

(Cobilas.GodotEngine.Utility.Ph

+ Cobilas.GodotEngine.Utility.Runtime

(Cobilas.GodotEngine.Utility.Ru

+ Cobilas.GodotEngine.Utility.Scene

(Cobilas.GodotEngine.Utility.Sc

- Godot (Godot.html)

Camera2D_GD_CB_Extension

(Godot.Camera2D_GD_CB_Extensio

Control_GD_CB_Extension

(Godot.Control_GD_CB_Extension.h

ExportRangeAttribute

(Godot.ExportRangeAttribute.html)

Label_CB_GD_Extension

(Godot.Label_CB_GD_Extension.htm

NodePath_GD_CB_Extension

(Godot.NodePath_GD_CB_Extension

Node_GD_CB_Extension

(Godot.Node_GD_CB_Extension.htm

Object_CB_GD_Extension

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	object (https://learn.microsoft.com/dotnet/api/system.object) to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

AppendLine(Label?, string)

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) followed by a line break to the text of the Godot.Label.

Declaration

```
public static Label AppendLine(this Label? L, string value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*value*	string (https://learn.microsoft.com/dotnet/api/system.string) to be added

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

ClearText(Label?)

Clears all text from Godot.Label.

Declaration

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+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
Camera2D_GD_CB_Extension (Godot.Camera2D_GD_CB_Extensio
Control_GD_CB_Extension (Godot.Control_GD_CB_Extension.h
ExportRangeAttribute (Godot.ExportRangeAttribute.html)
Label_CB_GD_Extension (Godot.Label_CB_GD_Extension.htm
NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extensior
Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htn
Object_CB_GD_Extension

```
public static Label ClearText(this Label? L)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, bool)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a bool (https://learn.microsoft.com/dotnet/api/system.boolean) value into the text of the Godot.Label at the specified position.

Declaration

```
public static Label Insert(this Label? L, int index, bool value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*value*	bool (https://learn.microsoft.com/dotnet/api/system.boolean) value to be inserted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, byte)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a byte (https://learn.microsoft.com/dotnet/api/system.byte) value into the text of the Godot.Label at the specified position.

Declaration

```
public static Label Insert(this Label? L, int index, byte value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
byte (https://learn.microsoft.com/dotnet/api/system.byte)	*value*	byte (https://learn.microsoft.com/dotnet/api/system.byte) value to be inserted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, char)

Inserts a char (https://learn.microsoft.com/dotnet/api/system.char) into the text of the Godot.Label at the specified position.

Declaration

```
public static Label Insert(this Label? L, int index, char value)
```

Parameters

Type	Name	Description
Label (Cobilas.GgodotEngine.Utility.Se	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
char (https://learn.microsoft.com/dotnet/api/system.char)	*value*	char (https://learn.microsoft.com/dotnet/api/system.char) value to be inserted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, char[])

Inserts a char[] into the text of the Godot.Label at the specified position.

Declaration

```
public static Label Insert(this Label? L, int index, char[] value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
char (https://learn.microsoft.com/dotnet/api/system.char)[]	*value*	char[] value to be inserted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, char[], int, int)

Inserts a portion of a char[] into the text of the Godot.Label at the specified position.

Declaration

```
public static Label Insert(this Label? L, int index, char[] value, int startIndex, int charC
ount)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
char (https://learn.microsoft.com/dotnet/api/system.char)[]	*value*	char[] of origin
int (https://learn.microsoft.com/dotnet/api/system.int32)	*startIndex*	Starting index in Array (https://learn.microsoft.com/dotnet/api/system.array)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*charCount*	Number of characters to enter

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

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(Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.
IO
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+ Cobilas.GodotEngine.Utility.
Input
(Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.
Runtime
(Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.
Scene
(Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
Camera2D_GD_CB_Extension
(Godot.Camera2D_GD_CB_Extensio
Control_GD_CB_Extension
(Godot.Control_GD_CB_Extension.h
ExportRangeAttribute
(Godot.ExportRangeAttribute.html)
Label_CB_GD_Extension
(Godot.Label_CB_GD_Extension.htm
NodePath_GD_CB_Extension
(Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Insert(Label?, int, decimal)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a decimal (https://learn.microsoft.com/dotnet/api/system.decimal) value into the text of the Godot.Label at the specified position.

Declaration

```
public static Label Insert(this Label? L, int index, decimal value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
decimal (https://learn.microsoft.com/dotnet/api/system.decimal)	*value*	decimal (https://learn.microsoft.com/dotnet/api/system.decimal) value to be inserted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, double)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a double (https://learn.microsoft.com/dotnet/api/system.double) value into the text of the Godot.Label at the specified position.

Declaration

```
public static Label Insert(this Label? L, int index, double value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
double (https://learn.microsoft.com/dotnet/api/system.double)	*value*	double (https://learn.microsoft.com/dotnet/api/system.double) value to be inserted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, short)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a short (https://learn.microsoft.com/dotnet/api/system.int16) value into the text of the Godot.Label at the specified position.

Declaration

```
public static Label? Insert(this Label? L, int index, short value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
short (https://learn.microsoft.com/dotnet/api/system.int16)	*value*	short (https://learn.microsoft.com/dotnet/api/system.int16) value to be inserted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, int)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a int (https://learn.microsoft.com/dotnet/api/system.int32) value into the text of the Godot.Label at the specified position.

Declaration

```
public static Label Insert(this Label? L, int index, int value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
int (https://learn.microsoft.com/dotnet/api/system.int32)	*value*	int (https://learn.microsoft.com/dotnet/api/system.int32) value to be inserted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, long)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a long (https://learn.microsoft.com/dotnet/api/system.int64) value into the text of the Godot.Label at the specified position.

Declaration

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+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.
Input
(Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.
Runtime
(Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.
Scene
(Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
Camera2D_GD_CB_Extensio
(Godot.Camera2D_GD_CB_Extensio
Control_GD_CB_Extension
(Godot.Control_GD_CB_Extension.h
ExportRangeAttribute
(Godot.ExportRangeAttribute.html)
Label_GD_CB_Extension
(Godot.Label_CB_GD_Extension.htm
NodePath_GD_CB_Extension
(Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

```
public static Label Insert(this Label? L, int index, long value)
```

Parameters

Type	Name	Description
Label (Cobilas.GodotEditor.Utility.Se	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
long (https://learn.microsoft.com/dotnet/api/system.int64)	*value*	long (https://learn.microsoft.com/dotnet/api/system.int64) value to be inserted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, object)

Insere a representação em string (https://learn.microsoft.com/dotnet/api/system.string) de um object (https://learn.microsoft.com/dotnet/api/system.object) no texto do Godot.Label na posição especificada.

Declaration

```
public static Label Insert(this Label? L, int index, object value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	object (https://learn.microsoft.com/dotnet/api/system.object) value to be inserted

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+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
  - Camera2D_GD_CB_Extension (Godot.Camera2D_GD_CB_Extensio
  - Control_GD_CB_Extension (Godot.Control_GD_CB_Extension.h
  - ExportRangeAttribute (Godot.ExportRangeAttribute.html)
  - Label_CB_GD_Extension (Godot.Label_CB_GD_Extension.htm
  - NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extensio
  - Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htm
  - Object_CB_GD_Extension

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, sbyte)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte) value into the text of the Godot.Label at the specified position.

Declaration

```
public static Label Insert(this Label? L, int index, sbyte value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte)	*value*	sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte) value to be inserted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, float)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a float (https://learn.microsoft.com/dotnet/api/system.single) value into the text of the Godot.Label at the specified position.

Declaration

```
public static Label Insert(this Label? L, int index, float value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
float (https://learn.microsoft.com/dotnet/api/system.single)	*value*	float (https://learn.microsoft.com/dotnet/api/system.single) value to be inserted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, string)

Inserts a string (https://learn.microsoft.com/dotnet/api/system.string) into the text of the Godot.Label at the specified position.

Declaration

```
public static Label Insert(this Label? L, int index, string value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
string (https://learn.microsoft.com/dotnet/api/system.string)	*value*	string (https://learn.microsoft.com/dotnet/api/system.string) value to be inserted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, string, int)

Inserts a string (https://learn.microsoft.com/dotnet/api/system.string) repeated a specified number of times into the text of the Godot.Label at the specified position.

Declaration

```
public static Label Insert(this Label? L, int index, string value, int count)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
string (https://learn.microsoft.com/dotnet/api/system.string)	*value*	string (https://learn.microsoft.com/dotnet/api/system.string) value to be inserted
int (https://learn.microsoft.com/dotnet/api/system.int32)	*count*	Number of repetitions

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, ushort)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a ushort (https://learn.microsoft.com/dotnet/api/system.uint16) value into the text of the Godot.Label at the specified position.

Declaration

```
public static Label Insert(this Label? L, int index, ushort value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
ushort (https://learn.microsoft.com/dotnet/api/system.uint16)	*value*	ushort (https://learn.microsoft.com/dotnet/api/system.uint16) value to be inserted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, uint)

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+ Cobilas.GodotEngine.Utility.
IO
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+ Cobilas.GodotEngine.Utility.
Input
(Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.
Runtime
(Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.
Scene
(Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
Camera2D_GD_CB_Extension
(Godot.Camera2D_GD_CB_Extensio
Control_GD_CB_Extension
(Godot.Control_GD_CB_Extension.h
ExportRangeAttribute
(Godot.ExportRangeAttribute.html)
Label_CB_GD_Extension
(Godot.Label_CB_GD_Extension.htm
NodePath_GD_CB_Extension
(Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a uint (https://learn.microsoft.com/dotnet/api/system.uint32) value into the text of the Godot.Label at the specified position.

Declaration

```
public static Label Insert(this Label? L, int index, uint value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*value*	uint (https://learn.microsoft.com/dotnet/api/system.uint32) value to be inserted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Insert(Label?, int, ulong)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a ulong (https://learn.microsoft.com/dotnet/api/system.uint64) value into the text of the Godot.Label at the specified position.

Declaration

```
public static Label Insert(this Label? L, int index, ulong value)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)

+ Cobilas.GodotEditor.Utility.Se
+ Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.
Input
(Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.
Runtime
(Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.
Scene
(Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
Camera2D_GD_CB_Extension
(Godot.Camera2D_GD_CB_Extensio
Control_GD_CB_Extension
(Godot.Control_GD_CB_Extension.h
ExportRangeAttribute
(Godot.ExportRangeAttribute.html)
Label_CB_GD_Extension
(Godot.Label_CB_GD_Extension.htm
NodePath_GD_CB_Extension
(Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Type	Name	Description
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
ulong (https://learn.microsoft.com/dotnet/api/system.uint64)	*value*	ulong (https://learn.microsoft.com/dotnet/api/system.uint64) value to be inserted

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Remove(Label?, int, int)

Remove um número específico de caracteres do texto do Label a partir da posição especificada.

Declaration

```
public static Label Remove(this Label? L, int startIndex, int length)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*startIndex*	Posição inicial para remoção
int (https://learn.microsoft.com/dotnet/api/system.int32)	*length*	Número de caracteres a remover

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

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Object_CB_GD_Extension

Replace(Label?, char, char)

Replaces all occurrences of one char (https://learn.microsoft.com/dotnet/api/system.char) with another in the text of the Godot.Label.

Declaration

```
public static Label Replace(this Label? L, char oldChar, char newChar)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
char (https://learn.microsoft.com/dotnet/api/system.char)	*oldChar*	char (https://learn.microsoft.com/dotnet/api/system.char) to be replaced
char (https://learn.microsoft.com/dotnet/api/system.char)	*newChar*	Replaced char (https://learn.microsoft.com/dotnet/api/system.char)

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Replace(Label?, char, char, int, int)

Replaces all occurrences of one char (https://learn.microsoft.com/dotnet/api/system.char) with another in a specified portion of the text of the Godot.Label.

Declaration

```
public static Label Replace(this Label? L, char oldChar, char newChar, int startIndex, int c
out)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)

Type	Name	Description
char (https://learn.microsoft.com/dotnet/api/system.char)	*oldChar*	char (https://learn.microsoft.com/dotnet/api/system.char) to be replaced
char (https://learn.microsoft.com/dotnet/api/system.char)	*newChar*	Replaced char (https://learn.microsoft.com/dotnet/api/system.char)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*startIndex*	Starting position for search
int (https://learn.microsoft.com/dotnet/api/system.int32)	*count*	Number of characters to consider

Return

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Replace(Label?, string, string)

Replaces all occurrences of one string (https://learn.microsoft.com/dotnet/api/system.string) with another in the text of the Godot.Label.

Declaration

```
public static Label Replace(this Label? L, string oldValue, string newValue)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*oldValue*	string (https://learn.microsoft.com/dotnet/api/system.string) to be replaced

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*newValue*	Replaced string (https://learn.microsoft.com/dotnet/api/system.string)

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Label is null

Replace(Label?, string, string, int, int)

Replaces all occurrences of one string (https://learn.microsoft.com/dotnet/api/system.string) with another in a specified portion of the text of the Godot.Label.

Declaration

```
public static Label Replace(this Label? L, string oldValue, string newValue, int startIndex,
int count)
```

Parameters

Type	Name	Description
Label	*L*	Godot.Label target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*oldValue*	string (https://learn.microsoft.com/dotnet/api/system.string) to be replaced
string (https://learn.microsoft.com/dotnet/api/system.string)	*newValue*	Replaced string (https://learn.microsoft.com/dotnet/api/system.string)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*startIndex*	Starting position for search
int (https://learn.microsoft.com/dotnet/api/system.int32)	*count*	Number of characters to consider

Returns

Type	Description
Label	The Godot.Label itself to allow chained calls

Exceptions

Type		Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)		Thrown when Godot.Label is null

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+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**
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+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
+ **Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc**
- **Godot (Godot.html)**

Camera2D_GD_CB_Extension (Godot.Camera2D_GD_CB_Extensio
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NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extension
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Object_CB_GD_Extension

Class NodePath_GD_CB_Extension

Extensions for Godot.NodePath class.

Filter by title

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Object_CB_GD_Extension

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ NodePath_GD_CB_Extension

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Godot (Godot.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class NodePath_GD_CB_Extension
```

Methods

GetNode(NodePath?)

Fetches a node. The NodePath can be either a relative path (from the current node) or an absolute path (in the scene tree) to a node.

Declaration

```
public static Node GetNode(this NodePath? np)
```

Parameters

Type	Name	Description
NodePath	np	Godot.NodePath from where the node will be obtained.

Returns

Type	Description
Node	returns the node that was obtained from the Godot.NodePath.

GetNode<T>(NodePath?)

Fetches a node. The NodePath must be either a relative path (from the current node) or an absolute path (in the scene tree) to a node.

Declaration

```
public static T GetNode<T>(this NodePath? np) where T : Node
```

Parameters

Type	Name	Description
NodePath	*np*	Godot.NodePath from where the node will be obtained.

Returns

Type	Description
T	returns the node that was obtained from the Godot.NodePath.

Type Parameters

Name	Description
T	

Hash(NodePath?)

Hash the Godot.NodePath and return a 32 bits unsigned integer.

Declaration

```
public static uint Hash(this NodePath? np)
```

Parameters

Type	Name	Description
NodePath	*np*	Godot.NodePath to be calculated.

Returns

Type	Description
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	The calculated hash of the Godot.NodePath.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs when the np parameter is null!

StringHash(NodePath?)

Hash the string (https://learn.microsoft.com/dotnet/api/system.string) and return a 32 bits unsigned integer.

Declaration

```
public static string StringHash(this NodePath? np)
```

Parameters

Type	Name	Description
NodePath	*np*	Godot.NodePath to be calculated.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The calculated hash of the string (https://learn.microsoft.com/dotnet/api/system.string).

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs when the np parameter is null!

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Object_CB_GD_Extension

Class Node_GD_CB_Extension

Extension for Godot.Node class.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Node_GD_CB_Extension

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Godot (Godot.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class Node_GD_CB_Extension
```

Methods

ContainsNode(Node, Node)

Allows you to check whether a given Godot.Node object is a child.

Declaration

```
public static bool ContainsNode(this Node origin, Node node)
```

Parameters

Type	Name	Description
Node	*origin*	The target object.
Node	*node*	The Godot.Node to be compared.

Returns

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Node_GD_CB_Extension
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Object_CB_GD_Extension

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the target object contains the comparison object.

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  NodePath_GD_CB_Extension
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  Node_GD_CB_Extension
  (Godot.Node_GD_CB_Extension.htm
  Object_CB_GD_Extension

Duplicate<T>(Node, int)

Duplicates the node, returning a new node.

You can fine-tune the behavior using the `flags` (see Godot.Node.DuplicateFlags).

Note: It will not work properly if the node contains a script with constructor arguments (i.e. needs to supply arguments to method). In that case, the node will be duplicated without a script.

Declaration

```
public static T Duplicate<T>(this Node node, int flags = 15) where T : Node
```

Parameters

Type	Name	Description
Node	*node*	
int (https://learn.microsoft.com/dotnet/api/system.int32)	*flags*	

Returns

Type	Description
T	

Type Parameters

Name	Description
T	

FindNodeByName(Node, string)

Get a node from its name.

By default, the method looks for a node of type node.(Type (https://learn.microsoft.com/dotnet/api/system.type) typeNode = typeof(Godot.Node))

By default, the method searches recursively.(bool (https://learn.microsoft.com/dotnet/api/system.boolean) recusive = true)

Declaration

```
public static Node FindNodeByName(this Node N, string name)
```

Parameters

Type	Name	Description
Node	*N*	The Godot.Node that will be used.
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	The node name

Returns

Type	Description
Node	

FindNodeByName(Node, string, bool)

Get a node from name.

By default, the method looks for a node of type node.(Type (https://learn.microsoft.com/dotnet/api/system.type) typeNode = typeof(Godot.Node))

Declaration

```
public static Node FindNodeByName(this Node N, string name, bool recusive)
```

Parameters

Type	Name	Description
Node	*N*	The Godot.Node that will be used.
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	The node name
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*recusive*	Also look for your children.

Returns

Type	Description
Node	

FindNodeByName(Node, string, Type, bool)

Get a node from name.

Declaration

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NodePath_GD_CB_Extension
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Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

```
public static Node FindNodeByName(this Node N, string name, Type typeNode, bool recusive)
```

Parameters

Type	Name	Description
Node	*N*	The Godot.Node that will be used.
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	The node name
Type (https://learn.microsoft.com/dotnet/api/system.type)	*typeNode*	The type to look for.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*recusive*	Also look for your children.

Returns

Type	Description
Node	The method returns the object based on its name, if not found the method returns NullNode (Cobilas.GodotEngine.Utility.NullNode.html).

FindNodeByName<T>(Node, string)

Get a node from name.

By default, the method searches recursively.(bool (https://learn.microsoft.com/dotnet/api/system.boolean) recusive = true)

Declaration

```
public static T FindNodeByName<T>(this Node N, string name) where T : Node
```

Parameters

Type	Name	Description
Node	*N*	The Godot.Node that will be used.
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	The node name

Returns

Type	Description
T	

Type Parameters

Name	Description
T	

FindNodeByName<T>(Node, string, bool)

Get a node from name.

Declaration

```
public static T FindNodeByName<T>(this Node N, string name, bool recusive) where T : Node
```

Parameters

Type	Name	Description
Node	*N*	The Godot.Node that will be used.
string (https://learn.microsoft.com/dotnet/api/system.string)	*name*	The node name
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*recusive*	Also look for your children.

Returns

Type	Description
T	

Type Parameters

Name	Description
T	The type to look for.

FindNodes(Node, Type)

Get the nodes from a type.

By default, the method searches recursively.(bool (https://learn.microsoft.com/dotnet/api/system.boolean) recusive = true)

Declaration

```
public static Node[] FindNodes(this Node N, Type typeNode)
```

Parameters

Type	Name	Description
Node	*N*	The Godot.Node that will be used.
Type (https://learn.microsoft.com/dotnet/api/system.type)	*typeNode*	The type to look for.

Returns

Type	Description
Node[]	Returns a list of nodes.

FindNodes(Node, Type, bool)

Get the nodes from a type.

Declaration

```
public static Node[] FindNodes(this Node N, Type typeNode, bool recusive)
```

Parameters

Type	Name	Description
Node	*N*	The Godot.Node that will be used.
Type (https://learn.microsoft.com/dotnet/api/system.type)	*typeNode*	The type to look for.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*recusive*	Also look for your children.

Returns

Type	Description
Node[]	Returns a list of nodes.

FindNodes<T>(Node)

Get the nodes from a type.

By default, the method searches recursively.(bool (https://learn.microsoft.com/dotnet/api/system.boolean) recusive = true)

Declaration

```
public static T[] FindNodes<T>(this Node N) where T : Node
```

Parameters

Type	Name	Description
Node	*N*	

Returns

Type	Description
T[]	Returns a list of nodes.

Type Parameters

Name	Description
T	The type to look for.

FindNodes<T>(Node, bool)

Get the nodes from a type.

Declaration

```
public static T[] FindNodes<T>(this Node N, bool recusive) where T : Node
```

Parameters

Type	Name	Description
Node	*N*	The Godot.Node that will be used.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*recusive*	Also look for your children.

Returns

Type	Description
T[]	Returns a list of nodes.

Type Parameters

Name	Description
T	The type to look for.

GetNodePosition(Node)

Obtem a posição atual do objeto Godot.Node.

Também funciona com o mesmo efeito quando o Godot.Node object inherits the Godot.Node2D class or the Godot.Spatial class.

Declaration

```
public static Vector3D GetNodePosition(this Node N)
```

Parameters

Type	Name	Description
Node	*N*	The Godot.Node that will be used.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	Returns a Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) containing the current position of the Godot.Node object.

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NodePath_GD_CB_Extension
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Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

GetNodeRotation(Node)

Gets the current rotation of the Godot.Node object.

This method will only take effect when the Godot.Node object inherits the Godot.Node2D class or the Godot.Spatial class.

Declaration

```
public static Vector3D GetNodeRotation(this Node N)
```

Parameters

Type	Name	Description
Node	*N*	The Godot.Node that will be used.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	Returns a Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html) containing the current rotation of the Godot.Node object.

GetNodeScale(Node)

Gets the current scale of the Godot.Node object.

This method will only take effect when the Godot.Node object inherits the Godot.Node2D class or the Godot.Spatial class.

Declaration

```
public static Vector3D GetNodeScale(this Node N)
```

Parameters

Type	Name	Description
Node	*N*	The Godot.Node that will be used.

Returns

Type	Description
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	Returns a Vector3D containing the current scale of the Node object.

SetNodePosition(Node, Vector3D)

Allows you to define the position of the Godot.Node object.

This method will only take effect when the Godot.Node object inherits the Godot.Node2D class or the Godot.Spatial class.

Declaration

```
public static void SetNodePosition(this Node N, Vector3D position)
```

Parameters

Type	Name	Description
Node	*N*	The Godot.Node that will be used.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*position*	The new position of the Godot.Node object.

SetNodeRotation(Node, Vector3D)

Allows you to define the rotation of the Godot.Node object.

This method will only take effect when the Godot.Node object inherits the Godot.Node2D class or the Godot.Spatial class.

Declaration

```
public static void SetNodeRotation(this Node N, Vector3D rotation)
```

Parameters

Type	Name	Description
Node	*N*	The Godot.Node that will be used.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*rotation*	The new rotation of the Godot.Node object.

SetNodeScale(Node, Vector3D)

Allows you to define the scale of the Godot.Node object.

This method will only take effect when the Godot.Node object inherits the Godot.Node2D class or the Godot.Spatial class.

Declaration

```
public static void SetNodeScale(this Node N, Vector3D scale)
```

Parameters

Type	Name	Description
Node	*N*	The Godot.Node that will be used.
Vector3D (Cobilas.GodotEngine.Utility.Numerics.Vector3D.html)	*scale*	The new size or scale of the Godot.Node object.

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SetParent(Node?, Node?)

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Input

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+ Cobilas.GodotEngine.Utility.

Numerics

(Cobilas.GodotEngine.Utility.N

+ Cobilas.GodotEngine.Utility.

Physics

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+ Cobilas.GodotEngine.Utility.

Runtime

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+ Cobilas.GodotEngine.Utility.

Scene

(Cobilas.GodotEngine.Utility.Sc

- Godot (Godot.html)

Camera2D_GD_CB_Extension
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Control_GD_CB_Extension
(Godot.Control_GD_CB_Extension.h
ExportRangeAttribute
(Godot.ExportRangeAttribute.html)
Label_CB_GD_Extension
(Godot.Label_CB_GD_Extension.htm
NodePath_GD_CB_Extension
(Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

The method allows you to change the object's parent.

Declaration

```
public static void SetParent(this Node? p, Node? parent)
```

Parameters

Type	Name	Description
Node	*p*	The target object.
Node	*parent*	The object that will be the parent of the target object.

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs when the target object parameter is passed as null.

Class Object_CB_GD_Extension

Extensions for Godot.Object class.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Object_CB_GD_Extension

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Godot (Godot.html)
Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class Object_CB_GD_Extension
```

Methods

Print(Object, params object[])

Converts one or more arguments of any type to string in the best way possible and prints them to the console.

Note: Consider using PushError(string) (https://learn.microsoft.com/dotnet/api/system.string) and PushWarning(string) (https://learn.microsoft.com/dotnet/api/system.string) to print error and warning messages instead of Print(params object[]) (https://learn.microsoft.com/dotnet/api/system.object). This distinguishes them from print messages used for debugging purposes, while also displaying a stack trace when an error or warning is printed.

Declaration

```
public static void Print(this Object N, params object[] args)
```

Parameters

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Numerics
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Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Type	Name	Description
Object	*N*	The Godot.Node that will be used.
object (https://learn.microsoft.com/dotnet/api/system.object) []	*args*	The arguments passed will be printed to the console.

Examples

```
var a = new int[] { 1, 2, 3 };
GD.Print("a", "b", a); // Prints ab[1, 2, 3]
```

SafelySetScript<T>(Object, Resource)

Permite definir scripts de forma segura.

Declaration

```
public static T? SafelySetScript<T>(this Object obj, Resource resource) where T : Object
```

Parameters

Type	Name	Description
Object	*obj*	O objeto alvo.
Resource	*resource*	O script que será definido.

Returns

Type	Description
T	Retorna o objeto alvo modificado.

Type Parameters

Name	Description
T	O tipo do objeto que será retornado.

SafelySetScript<T>(Object, string)

Permite definir scripts de forma segura.

Declaration

```
public static T? SafelySetScript<T>(this Object obj, string resource) where T : Object
```

Parameters

Type	Name	Description
Object	*obj*	O objeto alvo.
string (https://learn.microsoft.com/dotnet/api/system.string)	*resource*	O script que será definido.

Returns

Type	Description
T	Retorna o objeto alvo modificado.

Type Parameters

Name	Description
T	O tipo do objeto que será retornado.

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+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph

+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru

+ Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc

- Godot (Godot.html)

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Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Class Rect2_GD_CB_Extension

Extension to the Godot.Rect2 struct.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Rect2_GD_CB_Extension

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Godot (Godot.html)
Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class Rect2_GD_CB_Extension
```

Methods

Bottom(Rect2)

Gets the bottom position of Godot.Rect2.

Declaration

```
public static float Bottom(this Rect2 R)
```

Parameters

Type	Name	Description
Rect2	R	Godot.Rect2That will be used.

Returns

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Node_GD_CB_Extension
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Object_CB_GD_Extension

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Returns a floating-point value with the bottom position of Godot.Rect2.

Contains(Rect2, in Vector2D)

Allows you to check if the mouse position is inside the 2D rectangle.

Declaration

```
[Obsolete("Use Rect2.HasPoint(Vector2)")]
public static bool Contains(this Rect2 rect, in Vector2D mousePosition)
```

Parameters

Type	Name	Description
Rect2	*rect*	The 2D rectangle to be used.
Vector2D (https://learn.microsoft.com/dotnet/api/system.numerics.vector2d.html)	*mousePosition*	The mouse position to be compared.

Returns

Type	Description
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	Returns `true` when the mouse position is inside the 2D rectangle.

Height(Rect2)

Get the height of the Godot.Rect2

Declaration

```
public static float Height(this Rect2 R)
```

Parameters

Type	Name	Description
Rect2	*R*	That will be used.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Returns a floating-point right height of Godot.Rect2.

Left(Rect2)

Gets the left position of Godot.Rect2.

Declaration

```
public static float Left(this Rect2 R)
```

Parameters

Type	Name	Description
Rect2	*R*	Godot.Rect2That will be used.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Returns a floating-point left position of Godot.Rect2.

Right(Rect2)

Gets the right position of Godot.Rect2.

Declaration

```
public static float Right(this Rect2 R)
```

Parameters

Type	Name	Description
Rect2	*R*	Godot.Rect2That will be used.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Returns a floating-point right position of Godot.Rect2.

Top(Rect2)

Gets the top position of Godot.Rect2.

Declaration

```
public static float Top(this Rect2 R)
```

Parameters

Type	Name	Description
Rect2	*R*	Godot.Rect2That will be used.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Returns a floating-point with the top position of Godot.Rect2.

Width(Rect2)

Gets the width of the Godot.Rect2.

Declaration

```
public static float Width(this Rect2 R)
```

Parameters

Type	Name	Description
Rect2	*R*	That will be used.

Returns

Type	Description
float (https://learn.microsoft.com/dotnet/api/system.single)	Returns a floating-point right width of Godot.Rect2.

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  - Control_GD_CB_Extension (Godot.Control_GD_CB_Extension.h
  - ExportRangeAttribute (Godot.ExportRangeAttribute.html)
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  - NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extensio
  - Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htm
  - Object_CB_GD_Extension

Class Sprite_CB_GB_Extension

Provides extension methods for Godot (Godot.html)'s Sprite class, allowing more convenient operations with 2D rectangles (Rect2D).

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Sprite_CB_GB_Extension

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Godot (Godot.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class Sprite_CB_GB_Extension
```

Remarks

This class facilitates conversion between Godot.Sprite properties and the custom Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) type, for both local and global coordinates.

Methods

GetGlobalRect2D(Sprite?)

Gets a Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) representing the global rectangle of the Godot.Control.

Declaration

```
public static Rect2D GetGlobalRect2D(this Sprite? ctl)
```

Parameters

Type	Name	Description
Sprite	*ctl*	Godot.Control target (can be null)

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	A Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) containing the global position, size, rotation, scale, and pivot of the Godot.Control

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Control is null

GetRect2D(Sprite?)

Gets a Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) representing the local rectangle of the Godot.Control.

Declaration

```
public static Rect2D GetRect2D(this Sprite? ctl)
```

Parameters

Type	Name	Description
Sprite	*ctl*	Godot.Control target (can be null)

Returns

Type	Description
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	A Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) containing the position, size, rotation, scale, and pivot of the Godot.Control

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Control is null

SetGlobalRect2D(Sprite?, Rect2D)

Sets the properties of the Godot.Control based on a Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html), using global coordinates.

Declaration

```
public static void SetGlobalRect2D(this Sprite? ctl, Rect2D rect)
```

Parameters

Type	Name	Description
Sprite	*ctl*	Godot.Control target (can be null)
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	*rect*	Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) containing the global properties to be applied

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Control is null

SetRect2D(Sprite?, Rect2D)

Sets the properties of the Godot.Control based on a Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html).

Declaration

```
public static void SetRect2D(this Sprite? ctl, Rect2D rect)
```

Parameters

Type	Name	Description
Sprite	*ctl*	Godot.Control target (can be null)
Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html)	*rect*	Rect2D (Cobilas.GodotEngine.Utility.Rect2D.html) contendo as propriedades a serem aplicadas

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.Control is null

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+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl**

+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**

+ **Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc**

- **Godot (Godot.html)**

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  Object_CB_GD_Extension

Class String_GD_CB_Extension

Provide methods for string (https://learn.microsoft.com/dotnet/api/system.string) class.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ String_GD_CB_Extension

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Godot (Godot.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class String_GD_CB_Extension
```

Methods

StringHash(string)

Hash the string (https://learn.microsoft.com/dotnet/api/system.string) and return a 32 bits unsigned integer.

Declaration

```
public static string StringHash(this string str)
```

Parameters

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*str*	string (https://learn.microsoft.com/dotnet/api/system.string) to be calculated.

Returns

Type	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	The calculated hash of the string (https://learn.microsoft.com/dotnet/api/system.string).

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Occurs when the np parameter is null!

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+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In

+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N

+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Pl

+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru

+ Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc

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ExportRangeAttribute (Godot.ExportRangeAttribute.html)
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NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extensior
Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htn
Object_CB_GD_Extension

Class TextEdit_CB_GD_Extension

Provides extension methods for Godot's Godot.TextEdit class, allowing string operations to be performed fluently and efficiently using StringBuilder (https://learn.microsoft.com/dotnet/api/system.text.stringbuilder) internally.

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ TextEdit_CB_GD_Extension

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Godot (Godot.html)

Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class TextEdit_CB_GD_Extension
```

Remarks

This class uses a shared static StringBuilder (https://learn.microsoft.com/dotnet/api/system.text.stringbuilder) for better performance in frequent text manipulation operations in TextEdits.

Methods

Append(TextEdit?, bool)

Adds the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a bool (https://learn.microsoft.com/dotnet/api/system.boolean) value to the Godot.TextEdit text.

Declaration

```
public static TextEdit? Append(this TextEdit? L, bool value)
```

Parameters

Filter by title

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ExportRangeAttribute
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NodePath_GD_CB_Extension
(Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*value*	bool (https://learn.microsoft.com/dotnet/api/system.boolean) value to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, byte)

Adds a byte (https://learn.microsoft.com/dotnet/api/system.byte) value to the Godot.TextEdit text.

Declaration

```
public static TextEdit Append(this TextEdit? L, byte value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
byte (https://learn.microsoft.com/dotnet/api/system.byte)	*value*	byte (https://learn.microsoft.com/dotnet/api/system.byte) value to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, char)

Adds a character to the Godot.TextEdit text.

Declaration

```
public static TextEdit Append(this TextEdit? L, char value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
char (https://learn.microsoft.com/dotnet/api/system.char)	*value*	Character to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, char, int)

Adds a character repeated a specified number of times to the text of Godot.TextEdit.

Declaration

```
public static TextEdit Append(this TextEdit? L, char value, int repeatCount)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
char (https://learn.microsoft.com/dotnet/api/system.char)	*value*	Character to be added
int (https://learn.microsoft.com/dotnet/api/system.int32)	*repeatCount*	Number of repetitions of the character

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, char[])

Adds a char[] to the text of the Godot.TextEdit.

Declaration

```
public static TextEdit Append(this TextEdit? L, char[] value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
char (https://learn.microsoft.com/dotnet/api/system.char)[]	*value*	char[] to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, char[], int, int)

Adds a part of a char[] to the text of the Godot.TextEdit.

Declaration

```
public static TextEdit Append(this TextEdit? L, char[] value, int startIndex, int charCount)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)

Type	Name	Description
char (https://learn.microsoft.com/dotnet/api/system.char) []	*value*	char[] of origin
int (https://learn.microsoft.com/dotnet/api/system.int32)	*startIndex*	Starting index in Array (https://learn.microsoft.com/dotnet/api/system.array)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*charCount*	Number of characters to add

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, decimal)

Adds a decimal (https://learn.microsoft.com/dotnet/api/system.decimal) value to the text of Godot.TextEdit.

Declaration

```
public static TextEdit Append(this TextEdit? L, decimal value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
decimal (https://learn.microsoft.com/dotnet/api/system.decimal)	*value*	decimal (https://learn.microsoft.com/dotnet/api/system.decimal) value to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, double)

Adds a double (https://learn.microsoft.com/dotnet/api/system.double) value to the text of Godot.TextEdit.

Declaration

```
public static TextEdit Append(this TextEdit? L, double value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
double (https://learn.microsoft.com/dotnet/api/system.double)	*value*	double (https://learn.microsoft.com/dotnet/api/system.double) value to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, short)

Adds a short (https://learn.microsoft.com/dotnet/api/system.int16) value to the text of Godot.TextEdit.

Declaration

```
public static TextEdit Append(this TextEdit? L, short value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)

Type	Name	Description
short (https://learn.microsoft.com/dotnet/api/system.int16)	*value*	short (https://learn.microsoft.com/dotnet/api/system.int16) value to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, int)

Adds a int (https://learn.microsoft.com/dotnet/api/system.int32) value to the text of Godot.TextEdit.

Declaration

```
public static TextEdit Append(this TextEdit? L, int value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*value*	int (https://learn.microsoft.com/dotnet/api/system.int32) value to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, long)

Adds a long (https://learn.microsoft.com/dotnet/api/system.int64) value to the text of Godot.TextEdit.

Declaration

```
public static TextEdit Append(this TextEdit? L, long value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
long (https://learn.microsoft.com/dotnet/api/system.int64)	*value*	long (https://learn.microsoft.com/dotnet/api/system.int64) value to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, object)

Adds the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a object (https://learn.microsoft.com/dotnet/api/system.object) to the text of the Godot.TextEdit.

Declaration

```
public static TextEdit Append(this TextEdit? L, object value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	object (https://learn.microsoft.com/dotnet/api/system.object) to be added

Returns

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(Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.
IO
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Input
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Numerics
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Physics
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Scene
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- Godot (Godot.html)
Camera2D_GD_CB_Extension
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Control_GD_CB_Extension
(Godot.Control_GD_CB_Extension.h
ExportRangeAttribute
(Godot.ExportRangeAttribute.html)
Label_CB_GD_Extension
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NodePath_GD_CB_Extension
(Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type		Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)		Thrown when Godot.TextEdit is null

Append(TextEdit?, sbyte)

Adds a sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte) value to the text of Godot.TextEdit.

Declaration

```
public static TextEdit Append(this TextEdit? L, sbyte value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte)	*value*	sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte) value to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type		Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)		Thrown when Godot.TextEdit is null

Append(TextEdit?, float)

Adds a float (https://learn.microsoft.com/dotnet/api/system.single) value to the text of the Godot.TextEdit.

Declaration

```
public static TextEdit Append(this TextEdit? L, float value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
float (https://learn.microsoft.com/dotnet/api/system.single)	*value*	float (https://learn.microsoft.com/dotnet/api/system.single) value to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, string)

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) to the text of the Godot.TextEdit.

Declaration

```
public static TextEdit Append(this TextEdit? L, string value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*value*	string (https://learn.microsoft.com/dotnet/api/system.string) to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, string, int, int)

Adds a substring to the Godot.TextEdit text.

Declaration

```
public static TextEdit Append(this TextEdit? L, string value, int startIndex, int count)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*value*	string (https://learn.microsoft.com/dotnet/api/system.string) source
int (https://learn.microsoft.com/dotnet/api/system.int32)	*startIndex*	Starting index in source string (https://learn.microsoft.com/dotnet/api/system.string)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*count*	Number of characters to add

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, ushort)

Adds a ushort (https://learn.microsoft.com/dotnet/api/system.uint16) value to the text of the Godot.TextEdit.

Declaration

```
public static TextEdit Append(this TextEdit? L, ushort value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)

Type	Name	Description
ushort (https://learn.microsoft.com/dotnet/api/system.uint16)	*value*	ushort (https://learn.microsoft.com/dotnet/api/system.uint16) value to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, uint)

Adds a uint (https://learn.microsoft.com/dotnet/api/system.uint32) value to the Godot.TextEdit text.

Declaration

```
public static TextEdit Append(this TextEdit? L, uint value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*value*	uint (https://learn.microsoft.com/dotnet/api/system.uint32) value to add

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Append(TextEdit?, ulong)

Adds a ulong (https://learn.microsoft.com/dotnet/api/system.uint64) value to the Godot.TextEdit text.

Declaration

```
public static TextEdit Append(this TextEdit? L, ulong value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
ulong (https://learn.microsoft.com/dotnet/api/system.uint64)	*value*	ulong (https://learn.microsoft.com/dotnet/api/system.uint64) value to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

AppendFormat(TextEdit?, IFormatProvider, string, object)

Adds formatted text to TextEdit using a specific format provider.

Declaration

```
public static TextEdit AppendFormat(this TextEdit? L, IFormatProvider provider, string forma
t, object arg0)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*provider*	Culture-specific format provider
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg0*	First argument to be formatted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

AppendFormat(TextEdit?, IFormatProvider, string, object, object)

Adds formatted text to TextEdit using a specific format provider.

Declaration

```
public static TextEdit AppendFormat(this TextEdit? L, IFormatProvider provider, string format, object arg0, object arg1)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*provider*	Culture-specific format provider
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg0*	First argument to be formatted
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg1*	Second argument to be formatted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

AppendFormat(TextEdit?, IFormatProvider, string, object, object, object)

Adds formatted text to TextEdit using a specific format provider.

Declaration

```
public static TextEdit AppendFormat(this TextEdit? L, IFormatProvider provider, string forma
t, object arg0, object arg1, object arg2)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*provider*	Culture-specific format provider
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg0*	First argument to be formatted
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg1*	Second argument to be formatted
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg2*	Third argument to be formatted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

AppendFormat(TextEdit?, IFormatProvider, string, params object[])

Adds formatted text to TextEdit using a specific format provider.

Declaration

```
public static TextEdit AppendFormat(this TextEdit? L, IFormatProvider provider, string forma
t, params object[] args)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
IFormatProvider (https://learn.microsoft.com/dotnet/api/system.iformatprovider)	*provider*	Culture-specific format provider
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format
object (https://learn.microsoft.com/dotnet/api/system.object) []	*args*	Array (https://learn.microsoft.com/dotnet/api/system.array) of arguments to be formatted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

AppendFormat(TextEdit?, string, object)

Adds formatted text to TextEdit using a specific format provider.

Declaration

```
public static TextEdit AppendFormat(this TextEdit? L, string format, object arg0)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg0*	First argument to be formatted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

AppendFormat(TextEdit?, string, object, object)

Adds formatted text to the TextEdit using a specific format provider.

Declaration

```
public static TextEdit AppendFormat(this TextEdit? L, string format, object arg0, object arg1)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format

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+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
  Camera2D_GD_CB_Extension (Godot.Camera2D_GD_CB_Extensio
  Control_GD_CB_Extension (Godot.Control_GD_CB_Extension.h
  ExportRangeAttribute (Godot.ExportRangeAttribute.html)
  Label_CB_GD_Extension (Godot.Label_CB_GD_Extension.htm
  NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extensior
  Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htm
  Object_CB_GD_Extension

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg0*	First argument to be formatted
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg1*	Second argument to be formatted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

AppendFormat(TextEdit?, string, object, object, object)

Adds formatted text to TextEdit using a specific format provider.

Declaration

```
public static TextEdit AppendFormat(this TextEdit? L, string format, object arg0, object arg
1, object arg2)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg0*	First argument to be formatted
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg1*	Second argument to be formatted

- Godot (Godot.html)
  - Camera2D_GD_CB_Extension (Godot.Camera2D_GD_CB_Extensio
  - Control_GD_CB_Extension (Godot.Control_GD_CB_Extension.h
  - ExportRangeAttribute (Godot.ExportRangeAttribute.html)
  - Label_CB_GD_Extension (Godot.Label_CB_GD_Extension.htm
  - NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extensior
  - Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htn
  - Object_CB_GD_Extension
  - (Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
- Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
- Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
- Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc

Type	Name	Description
object (https://learn.microsoft.com/dotnet/api/system.object)	*arg2*	Third argument to be formatted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

AppendFormat(TextEdit?, string, params object[])

Adds formatted text to TextEdit using a specific format provider.

Declaration

```
public static TextEdit AppendFormat(this TextEdit? L, string format, params object[] args)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*format*	string (https://learn.microsoft.com/dotnet/api/system.string) format
object (https://learn.microsoft.com/dotnet/api/system.object) []	*args*	Array (https://learn.microsoft.com/dotnet/api/system.array) of arguments to be formatted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

- Cobilas.GodotEditor.Utility.Se
- Cobilas.GodotEngine.Utility
  - Cobilas.GodotEngine.Utility.ht
  - Cobilas.GodotEngine.Utility.
  - IO
  - Cobilas.GodotEngine.Utility.IC
  - Cobilas.GodotEngine.Utility.
  - Input
  - Cobilas.GodotEngine.Utility.In
  - Cobilas.GodotEngine.Utility.
  - Numerics
  - Cobilas.GodotEngine.Utility.N
  - Cobilas.GodotEngine.Utility.
  - Physics
  - Cobilas.GodotEngine.Utility.Ph
  - Cobilas.GodotEngine.Utility.
  - Runtime
  - Cobilas.GodotEngine.Utility.Ru
  - Cobilas.GodotEngine.Utility.
  - Scene
  - Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
  - Camera2D_GD_CB_Extension
  - (Godot.Camera2D_GD_CB_Extensio
  - Control_GD_CB_Extension
  - (Godot.Control_GD_CB_Extension.h
  - ExportRangeAttribute
  - (Godot.ExportRangeAttribute.html)
  - Label_CB_GD_Extension
  - (Godot.Label_CB_GD_Extension.htm
  - NodePath_GD_CB_Extension
  - (Godot.NodePath_GD_CB_Extension
  - Node_GD_CB_Extension
  - (Godot.Node_GD_CB_Extension.htm
  - Object_CB_GD_Extension

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

AppendJoin(TextEdit?, char, object[])

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) created by joining a object[] with a character separator.

Declaration

```
public static TextEdit AppendJoin(this TextEdit? L, char separator, object[] values)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
char (https://learn.microsoft.com/dotnet/api/system.char)	*separator*	Separator between elements
object (https://learn.microsoft.com/dotnet/api/system.object)[]	*values*	object[] to be joined

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

AppendJoin(TextEdit?, char, string[])

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) created by joining a string[] with a character separator.

Declaration

```
public static TextEdit AppendJoin(this TextEdit? L, char separator, string[] values)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
char (https://learn.microsoft.com/dotnet/api/system.char)	*separator*	Separator between elements
string (https://learn.microsoft.com/dotnet/api/system.string)[]	*values*	string[] to be joined

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

AppendJoin(TextEdit?, string, object[])

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) created by joining a object[] with a separator.

Declaration

```
public static TextEdit AppendJoin(this TextEdit? L, string separator, object[] values)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*separator*	Separator between elements
object (https://learn.microsoft.com/dotnet/api/system.object)[]	*values*	object[] to be joined

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

AppendJoin(TextEdit?, string, string[])

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) created by joining a string[] with a separator.

Declaration

```
public static TextEdit AppendJoin(this TextEdit? L, string separator, string[] values)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*separator*	Separator between elements
string (https://learn.microsoft.com/dotnet/api/system.string)[]	*values*	string[] to be joined

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

AppendJoin<T>(TextEdit?, char, IEquatable<T>)

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) created by joining a collection of objects with a character separator.

Declaration

```
public static TextEdit AppendJoin<T>(this TextEdit? L, char separator, IEquatable<T> values)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
char (https://learn.microsoft.com/dotnet/api/system.char)	*separator*	Separator between elements
IEquatable<T> (https://learn.microsoft.com/dotnet/api/system.iequatable-1)	*values*	Collection of objects to be joined

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Type Parameters

Name	Description
T	Type (https://learn.microsoft.com/dotnet/api/system.type) of elements in the collection

AppendJoin<T>(TextEdit?, string, IEquatable<T>)

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) created by joining a collection of objects with a separator.

Declaration

```
public static TextEdit AppendJoin<T>(this TextEdit? L, string separator, IEquatable<T> values)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*separator*	Separator between elements

- Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
- Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
- Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
- Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
- Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
- Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
- Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
  - Camera2D_GD_CB_Extension (Godot.Camera2D_GD_CB_Extensio
  - Control_GD_CB_Extension (Godot.Control_GD_CB_Extension.h
  - ExportRangeAttribute (Godot.ExportRangeAttribute.html)
  - Label_CB_GD_Extension (Godot.Label_CB_GD_Extension.htm
  - NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extensior
  - Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htm
  - Object_CB_GD_Extension

Type	Name	Description
IEquatable (https://learn.microsoft.com/dotnet/api/system.iequatable-1) <T>	*values*	Collection of objects to be joined

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Type Parameters

Name	Description
T	Type (https://learn.microsoft.com/dotnet/api/system.type) of elements in the collection

AppendLine(TextEdit?)

Adds a newline to the text of the Godot.TextEdit.

Declaration

```
public static TextEdit AppendLine(this TextEdit? L)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

AppendLine(TextEdit?, object)

Adds the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a object (https://learn.microsoft.com/dotnet/api/system.object) followed by a line break to the text of the Godot.TextEdit.

Declaration

```
public static TextEdit AppendLine(this TextEdit? L, object value)
```

Parameters

Type	Name	Description
TextEdit (Cobilas.GodotEditor.Utility.Se	*L*	Godot.TextEdit target (can be null)
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	object (https://learn.microsoft.com/dotnet/api/system.object) to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

AppendLine(TextEdit?, string)

Adds a string (https://learn.microsoft.com/dotnet/api/system.string) followed by a line break to the text of the Godot.TextEdit.

Declaration

```
public static TextEdit AppendLine(this TextEdit? L, string value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*value*	string (https://learn.microsoft.com/dotnet/api/system.string) to be added

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

ClearText(TextEdit?)

Clears all text from Godot.TextEdit.

Declaration

```
public static TextEdit ClearText(this TextEdit? L)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, bool)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a bool (https://learn.microsoft.com/dotnet/api/system.boolean) value into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static TextEdit Insert(this TextEdit? L, int index, bool value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*value*	bool (https://learn.microsoft.com/dotnet/api/system.boolean) value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, byte)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a byte (https://learn.microsoft.com/dotnet/api/system.byte) value into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static TextEdit Insert(this TextEdit? L, int index, byte value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
byte (https://learn.microsoft.com/dotnet/api/system.byte)	*value*	byte (https://learn.microsoft.com/dotnet/api/system.byte) value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, char)

(Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.
Input
(Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.
Runtime
(Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.
Scene
(Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
Camera2D_GD_CB_Extension
(Godot.Camera2D_GD_CB_Extensio
Control_GD_CB_Extension
(Godot.Control_GD_CB_Extension.h
ExportRangeAttribute
(Godot.ExportRangeAttribute.html)
Label_CB_GD_Extension
(Godot.Label_CB_GD_Extension.htm
NodePath_GD_CB_Extension
(Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Inserts a char (https://learn.microsoft.com/dotnet/api/system.char) into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static TextEdit Insert(this TextEdit? L, int index, char value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
char (https://learn.microsoft.com/dotnet/api/system.char)	*value*	char (https://learn.microsoft.com/dotnet/api/system.char) value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, char[])

Inserts a char[] into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static TextEdit Insert(this TextEdit? L, int index, char[] value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
char (https://learn.microsoft.com/dotnet/api/system.char)[]	*value*	char[] value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, char[], int, int)

Inserts a portion of a char[] into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static TextEdit Insert(this TextEdit? L, int index, char[] value, int startIndex, int
charCount)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
char[] (https://learn.microsoft.com/dotnet/api/system.char)	*value*	char[] of origin
int (https://learn.microsoft.com/dotnet/api/system.int32)	*startIndex*	Starting index in Array (https://learn.microsoft.com/dotnet/api/system.array)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*charCount*	Number of characters to enter

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, decimal)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a decimal (https://learn.microsoft.com/dotnet/api/system.decimal) value into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static void Insert(this TextEdit? L, int index, decimal value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
decimal (https://learn.microsoft.com/dotnet/api/system.decimal)	*value*	decimal (https://learn.microsoft.com/dotnet/api/system.decimal) value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, double)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a double (https://learn.microsoft.com/dotnet/api/system.double) value into the text of the Godot.TextEdit at the specified position.

Declaration

+ Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
  - Camera2D_GD_CB_Extension (Godot.Camera2D_GD_CB_Extensio
  - Control_GD_CB_Extension (Godot.Control_GD_CB_Extension.h
  - ExportRangeAttribute (Godot.ExportRangeAttribute.html)
  - Label_CB_GD_Extension (Godot.Label_CB_GD_Extension.htm
  - NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extensior
  - Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htm
  - Object_CB_GD_Extension

```
public static TextEdit Insert(this TextEdit? L, int index, double value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
double (https://learn.microsoft.com/dotnet/api/system.double)	*value*	double (https://learn.microsoft.com/dotnet/api/system.double) value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, short)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a short (https://learn.microsoft.com/dotnet/api/system.int16) value into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static TextEdit Insert(this TextEdit? L, int index, short value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert

Type	Name	Description
short (https://learn.microsoft.com/dotnet/api/system.int16)	*value*	short (https://learn.microsoft.com/dotnet/api/system.int16) value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, int)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a int (https://learn.microsoft.com/dotnet/api/system.int32) value into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static TextEdit Insert(this TextEdit? L, int index, int value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
int (https://learn.microsoft.com/dotnet/api/system.int32)	*value*	int (https://learn.microsoft.com/dotnet/api/system.int32) value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, long)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a long (https://learn.microsoft.com/dotnet/api/system.int64) value into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static void Insert(this TextEdit? L, int index, long value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
long (https://learn.microsoft.com/dotnet/api/system.int64)	*value*	long (https://learn.microsoft.com/dotnet/api/system.int64) value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, object)

Insere a representação em string (https://learn.microsoft.com/dotnet/api/system.string) de um object (https://learn.microsoft.com/dotnet/api/system.object) no texto do Godot.TextEdit na posição especificada.

Declaration

Cobilas.GodotEditor.Utility.Ser
+ Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.
Input
(Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.
Runtime
(Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.
Scene
(Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
Camera2D_GD_CB_Extension
(Godot.Camera2D_GD_CB_Extensio
Control_GD_CB_Extension
(Godot.Control_GD_CB_Extension.h
ExportRangeAttribute
(Godot.ExportRangeAttribute.html)
Label_CB_GD_Extension
(Godot.Label_CB_GD_Extension.htm
NodePath_GD_CB_Extension
(Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

```
public static TextEdit Insert(this TextEdit? L, int index, object value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
object (https://learn.microsoft.com/dotnet/api/system.object)	*value*	object (https://learn.microsoft.com/dotnet/api/system.object) value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, sbyte)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte) value into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static TextEdit Insert(this TextEdit? L, int index, sbyte value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert

Type	Name	Description
sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte)	*value*	sbyte (https://learn.microsoft.com/dotnet/api/system.sbyte) value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, float)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a float (https://learn.microsoft.com/dotnet/api/system.single) value into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static TextEdit Insert(this TextEdit? L, int index, float value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
float (https://learn.microsoft.com/dotnet/api/system.single)	*value*	float (https://learn.microsoft.com/dotnet/api/system.single) value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

- **(Cobilas.GodotEditor.Utility.Ser**
- **Cobilas.GodotEngine.Utility**
  - **(Cobilas.GodotEngine.Utility.ht**
- **Cobilas.GodotEngine.Utility.IO**
  - **(Cobilas.GodotEngine.Utility.IO**
- **Cobilas.GodotEngine.Utility.Input**
  - **(Cobilas.GodotEngine.Utility.In**
- **Cobilas.GodotEngine.Utility.Numerics**
  - **(Cobilas.GodotEngine.Utility.N**
- **Cobilas.GodotEngine.Utility.Physics**
  - **(Cobilas.GodotEngine.Utility.Ph**
- **Cobilas.GodotEngine.Utility.Runtime**
  - **(Cobilas.GodotEngine.Utility.Ru**
- **Cobilas.GodotEngine.Utility.Scene**
  - **(Cobilas.GodotEngine.Utility.Sc**
- **Godot (Godot.html)**
  - Camera2D_GD_CB_Extension
    - (Godot.Camera2D_GD_CB_Extensio
  - Control_GD_CB_Extension
    - (Godot.Control_GD_CB_Extension.h
  - ExportRangeAttribute
    - (Godot.ExportRangeAttribute.html)
  - Label_CB_GD_Extension
    - (Godot.Label_CB_GD_Extension.htm
  - NodePath_GD_CB_Extension
    - (Godot.NodePath_GD_CB_Extension
  - Node_GD_CB_Extension
    - (Godot.Node_GD_CB_Extension.htm
  - Object_CB_GD_Extension

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, string)

Inserts a string (https://learn.microsoft.com/dotnet/api/system.string) into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static TextEdit Insert(this TextEdit? L, int index, string value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
string (https://learn.microsoft.com/dotnet/api/system.string)	*value*	string (https://learn.microsoft.com/dotnet/api/system.string) value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, string, int)

Inserts a string (https://learn.microsoft.com/dotnet/api/system.string) repeated a specified number of times into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static TextEdit Insert(this TextEdit? L, int index, string value, int count)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
string (https://learn.microsoft.com/dotnet/api/system.string)	*value*	string (https://learn.microsoft.com/dotnet/api/system.string) value to be inserted
int (https://learn.microsoft.com/dotnet/api/system.int32)	*count*	Number of repetitions

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, ushort)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a ushort (https://learn.microsoft.com/dotnet/api/system.uint16) value into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static TextEdit Insert(this TextEdit? L, int index, ushort value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert

- Cobilas.GodotEditor.Utility.Ser
- Cobilas.GodotEngine.Utility
  - Cobilas.GodotEngine.Utility.ht
  - Cobilas.GodotEngine.Utility.IO
  - Cobilas.GodotEngine.Utility.IC
  - Cobilas.GodotEngine.Utility.Input
  - Cobilas.GodotEngine.Utility.In
  - Cobilas.GodotEngine.Utility.Numerics
  - Cobilas.GodotEngine.Utility.N
  - Cobilas.GodotEngine.Utility.Physics
  - Cobilas.GodotEngine.Utility.Pl
  - Cobilas.GodotEngine.Utility.Runtime
  - Cobilas.GodotEngine.Utility.Ru
  - Cobilas.GodotEngine.Utility.Scene
  - Cobilas.GodotEngine.Utility.Sc
- Godot (Godot.html)
  - Camera2D_GD_CB_Extension
    - (Godot.Camera2D_GD_CB_Extensio
  - Control_GD_CB_Extension
    - (Godot.Control_GD_CB_Extension.h
  - ExportRangeAttribute
    - (Godot.ExportRangeAttribute.html)
  - Label_CB_GD_Extension
    - (Godot.Label_CB_GD_Extension.htm
  - NodePath_GD_CB_Extension
    - (Godot.NodePath_GD_CB_Extension
  - Node_GD_CB_Extension
    - (Godot.Node_GD_CB_Extension.htm
  - Object_CB_GD_Extension

Type	Name	Description
ushort (https://learn.microsoft.com/dotnet/api/system.uint16)	*value*	ushort (https://learn.microsoft.com/dotnet/api/system.uint16) value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, uint)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a uint (https://learn.microsoft.com/dotnet/api/system.uint32) value into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static TextEdit Insert(this TextEdit? L, int index, uint value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.uint32)	*index*	Position where to insert
uint (https://learn.microsoft.com/dotnet/api/system.uint32)	*value*	uint (https://learn.microsoft.com/dotnet/api/system.uint32) value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Insert(TextEdit?, int, ulong)

Inserts the string (https://learn.microsoft.com/dotnet/api/system.string) representation of a ulong (https://learn.microsoft.com/dotnet/api/system.uint64) value into the text of the Godot.TextEdit at the specified position.

Declaration

```
public static TextEdit Insert(this TextEdit? L, int index, ulong value)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*index*	Position where to insert
ulong (https://learn.microsoft.com/dotnet/api/system.uint64)	*value*	ulong (https://learn.microsoft.com/dotnet/api/system.uint64) value to be inserted

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Remove(TextEdit?, int, int)

Remove um número específico de caracteres do texto do TextEdit a partir da posição especificada.

Declaration

```
public static TextEdit Remove(this TextEdit? L, int startIndex, int length)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*startIndex*	Posição inicial para remoção
int (https://learn.microsoft.com/dotnet/api/system.int32)	*length*	Número de caracteres a remover

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Replace(TextEdit?, char, char)

Replaces all occurrences of one char (https://learn.microsoft.com/dotnet/api/system.char) with another in the text of the Godot.TextEdit.

Declaration

```
public static TextEdit Replace(this TextEdit? L, char oldChar, char newChar)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
char (https://learn.microsoft.com/dotnet/api/system.char)	*oldChar*	char (https://learn.microsoft.com/dotnet/api/system.char) to be replaced
char (https://learn.microsoft.com/dotnet/api/system.char)	*newChar*	Replaced char (https://learn.microsoft.com/dotnet/api/system.char)

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Replace(TextEdit?, char, char, int, int)

Replaces all occurrences of one char (https://learn.microsoft.com/dotnet/api/system.char) with another in a specified portion of the text of the Godot.TextEdit.

Declaration

```
public static TextEdit Replace(this TextEdit? L, char oldChar, char newChar, int startIndex,
int count)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
char (https://learn.microsoft.com/dotnet/api/system.char)	*oldChar*	char (https://learn.microsoft.com/dotnet/api/system.char) to be replaced
char (https://learn.microsoft.com/dotnet/api/system.char)	*newChar*	Replaced char (https://learn.microsoft.com/dotnet/api/system.char)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*startIndex*	Starting position for search
int (https://learn.microsoft.com/dotnet/api/system.int32)	*count*	Number of characters to consider

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Replace(TextEdit?, string, string)

Replaces all occurrences of one string (https://learn.microsoft.com/dotnet/api/system.string) with another in the text of the Godot.TextEdit.

Declaration

```
public static TextEdit Replace(this TextEdit? L, string oldValue, string newValue)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)
string (https://learn.microsoft.com/dotnet/api/system.string)	*oldValue*	string (https://learn.microsoft.com/dotnet/api/system.string) to be replaced
string (https://learn.microsoft.com/dotnet/api/system.string)	*newValue*	Replaced string (https://learn.microsoft.com/dotnet/api/system.string)

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

Replace(TextEdit?, string, string, int, int)

Replaces all occurrences of one string (https://learn.microsoft.com/dotnet/api/system.string) with another in a specified portion of the text of the Godot.TextEdit.

Declaration

```
public static TextEdit Replace(this TextEdit? L, string oldValue, string newValue, int start
Index, int count)
```

Parameters

Type	Name	Description
TextEdit	*L*	Godot.TextEdit target (can be null)

Type	Name	Description
string (https://learn.microsoft.com/dotnet/api/system.string)	*oldValue*	string (https://learn.microsoft.com/dotnet/api/system.string) to be replaced
string (https://learn.microsoft.com/dotnet/api/system.string)	*newValue*	Replaced string (https://learn.microsoft.com/dotnet/api/system.string)
int (https://learn.microsoft.com/dotnet/api/system.int32)	*startIndex*	Starting position for search
int (https://learn.microsoft.com/dotnet/api/system.int32)	*count*	Number of characters to consider

Returns

Type	Description
TextEdit	The Godot.TextEdit itself to allow chained calls

Exceptions

Type	Condition
ArgumentNullException (https://learn.microsoft.com/dotnet/api/system.argumentnullexception)	Thrown when Godot.TextEdit is null

+ **(Cobilas.GodotEditor.Utility.Ser**
+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.h**
+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IO**
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
+ **Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc**
- **Godot (Godot.html)**
  - Camera2D_GD_CB_Extension (Godot.Camera2D_GD_CB_Extensio
  - Control_GD_CB_Extension (Godot.Control_GD_CB_Extension.h
  - ExportRangeAttribute (Godot.ExportRangeAttribute.html)
  - Label_CB_GD_Extension (Godot.Label_CB_GD_Extension.htm
  - NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extension
  - Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htm
  - Object_CB_GD_Extension

Class Vector2_CB_GD_Extensions

Extension to the Godot.Vector2 struct.

Filter by title

Inheritance

↳ object (https://learn.microsoft.com/dotnet/api/system.object)
↳ Vector2_CB_GD_Extensions

Inherited Members

object.ToString() (https://learn.microsoft.com/dotnet/api/system.object.tostring)
object.Equals(object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object))
object.Equals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.equals#system-object-equals(system-object-system-object))
object.ReferenceEquals(object, object) (https://learn.microsoft.com/dotnet/api/system.object.referenceequals)
object.GetHashCode() (https://learn.microsoft.com/dotnet/api/system.object.gethashcode)
object.GetType() (https://learn.microsoft.com/dotnet/api/system.object.gettype)
object.MemberwiseClone() (https://learn.microsoft.com/dotnet/api/system.object.memberwiseclone)

Namespace: Godot (Godot.html)
Assembly: com.cobilas.godot.utility.dll

Syntax

```
public static class Vector2_CB_GD_Extensions
```

Methods

Neg(Vector2, bool, bool)

Inverts the axes of a vector.

Declaration

```
public static Vector2 Neg(this Vector2 v, bool negX = true, bool negY = true)
```

Parameters

Type	Name	Description
Vector2	*v*	The vector that will be inverted.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negX*	Allows you to invert the X axis.
bool (https://learn.microsoft.com/dotnet/api/system.boolean)	*negY*	Allows you to invert the Y axis.

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+ Cobilas.GodotEngine.Utility
(Cobilas.GodotEngine.Utility.ht
+ Cobilas.GodotEngine.Utility.
IO
(Cobilas.GodotEngine.Utility.IO
+ Cobilas.GodotEngine.Utility.
Input
(Cobilas.GodotEngine.Utility.In
+ Cobilas.GodotEngine.Utility.
Numerics
(Cobilas.GodotEngine.Utility.N
+ Cobilas.GodotEngine.Utility.
Physics
(Cobilas.GodotEngine.Utility.Ph
+ Cobilas.GodotEngine.Utility.
Runtime
(Cobilas.GodotEngine.Utility.Ru
+ Cobilas.GodotEngine.Utility.
Scene
(Cobilas.GodotEngine.Utility.Sc
Godot (Godot.html)
Camera2D_GD_CB_Extension
(Godot.Camera2D_GD_CB_Extensio
Control_GD_CB_Extension
(Godot.Control_GD_CB_Extension.h
ExportRangeAttribute
(Godot.ExportRangeAttribute.html)
Label_CB_GD_Extension
(Godot.Label_CB_GD_Extension.htm
NodePath_GD_CB_Extension
(Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension
(Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension

Returns

Type	Description
Vector2	Returns the already transformed vector.

(Cobilas.GodotEditor.Utility.Ser

+ **Cobilas.GodotEngine.Utility (Cobilas.GodotEngine.Utility.ht**
+ **Cobilas.GodotEngine.Utility.IO (Cobilas.GodotEngine.Utility.IC**
+ **Cobilas.GodotEngine.Utility.Input (Cobilas.GodotEngine.Utility.In**
+ **Cobilas.GodotEngine.Utility.Numerics (Cobilas.GodotEngine.Utility.N**
+ **Cobilas.GodotEngine.Utility.Physics (Cobilas.GodotEngine.Utility.Ph**
+ **Cobilas.GodotEngine.Utility.Runtime (Cobilas.GodotEngine.Utility.Ru**
+ **Cobilas.GodotEngine.Utility.Scene (Cobilas.GodotEngine.Utility.Sc**
- **Godot (Godot.html)**

Camera2D_GD_CB_Extension (Godot.Camera2D_GD_CB_Extensio
Control_GD_CB_Extension (Godot.Control_GD_CB_Extension.h
ExportRangeAttribute (Godot.ExportRangeAttribute.html)
Label_CB_GD_Extension (Godot.Label_CB_GD_Extension.htm
NodePath_GD_CB_Extension (Godot.NodePath_GD_CB_Extension
Node_GD_CB_Extension (Godot.Node_GD_CB_Extension.htm
Object_CB_GD_Extension