

Namespace LlamaLogic.Packages

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Represents a Maxis DBPF format package file ()

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Represents the compression mode to use when setting the content of a resource in a [DataBasePackedFile](#)

[ResourceFileType](#)

The file type of a package resource independent of storage within a [DataBasePackedFile](#)

[ResourceKeyOrder](#)

Specifies the order in which a [ResourceKey](#) sequence should be processed

[ResourceType](#)

A type of resource within a [DataBasePackedFile](#)

Enum CompressionMode

Namespace: [LlamaLogic.Packages](#)

Assembly: LlamaLogic.Packages.dll

Represents the compression mode to use when setting the content of a resource in a [DataBasePacked File](#)

```
public enum CompressionMode
```

Fields

Auto = 0

The library will choose whether and how to compress the data or not

[Obsolete("This setting can no longer be used and will be removed in a future version. Supply the uncompressed data and Auto or ForceInternal.", true)]

CallerSuppliedInternal = 6

Deprecated: do not use

CallerSuppliedStreamable = 7

⚠ The data will not be processed for compression by the library and the resource will be marked as having been compressed using Maxis' streamable method (use with caution)

ForceInternal = 4

The data will be compressed using Maxis' internal method

ForceOff = 1

The data will not be compressed

[Obsolete("This setting can no longer be used and will be removed in a future version. If you need to force a compression, use a different force member of this enum.", true)] **ForceOn = 2**

Deprecated: do not use

ForceZLib = 3

The data will be compressed using ZLib

`SetDeletedFlag = 5`

⚠ The data will not be processed for compression by the library—thus callers will need to invoke [ZLibCompress\(ReadOnlyMemory<byte>\)](#) or [ZLibCompressAsync\(ReadOnlyMemory<byte>, CancellationToken\)](#), themselves and pass the result to [Set\(ResourceKey, ReadOnlyMemory<byte>, CompressionMode\)](#) or [SetAsync\(ResourceKey, ReadOnlyMemory<byte>, CompressionMode, CancellationToken\)](#), respectively, if they intend for the content to be compressed with ZLib despite being flagged—and the deleted flag will be set (use with caution)

Remarks

Important: While this library does support the older compression methods, it does not have a complete catalog of how to do so properly for every resource type automatically ([Auto](#)). If you want to be sure that you're compressing a resource correctly, utilize [GetExplicitCompressionMode\(ResourceKey\)](#) with a package the game is currently accepting.

Warning: The Sims 4 does not always expect or tolerate ZLib compression for certain types of resources, such as for world package files which ship with the game (see [thepancake1's comment about this on the Creator Musings Discord](#) for more information).

Class DataBasePackedFile

Namespace: [LlamaLogic.Packages](#)

Assembly: LlamaLogic.Packages.dll

Represents a Maxis DBPF format package file ()

```
public sealed class DataBasePackedFile : IAsyncDisposable, IDisposable
```

Inheritance

[object](#) ← DataBasePackedFile

Implements

[IAsyncDisposable](#), [IDisposable](#)

Inherited Members

[object.Equals\(object\)](#), [object.Equals\(object, object\)](#), [object.GetHashCode\(\)](#), [object.GetType\(\)](#),
[object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Remarks

Streams and Disposal

When a package is opened by this class from a [Stream](#), the class assumes ownership of the [Stream](#). Manipulating the [Stream](#) afterward may result in undefined behavior. The class will dispose of the [Stream](#) when it is, itself, disposed.

To use the [Save\(bool, ResourceKeyOrder\)](#) or [SaveAsync\(bool, ResourceKeyOrder, CancellationToken\)](#) methods, the package must have been opened from a [Stream](#) which is writeable. This can also be determined by the caller in advance of attempting to use them by checking the value of the [CanSaveInPlace](#) property. However, for ease of use in web frameworks like ASP.NET Core, the [CopyTo\(Stream, ResourceKeyOrder\)](#) and [CopyToAsync\(Stream, ResourceKeyOrder, CancellationToken\)](#) methods do *not* require that the [Stream](#) which they are passed is seekable.

Lazy Loading

When a package is first opened using this class, the package index is read but the content of the package resources is not. All of the retrieval methods of this class have async counterparts for callers who prefer not to be blocked by I/O operations which may be required when retrieving resource content.

Because resource names (when applicable) are determined by their content, this class will not index resource names until they are first referenced, either explicitly by calling [GetNames\(\)](#) or [GetNamesAsync\(CancellationToken\)](#), or implicitly by calling any of the other methods which deal with resource names. Afterward, the names are cached for the lifetime of the package instance and updated as the caller sets the content of resources or deletes them.

Thread Safety

All properties and methods of this class, including async methods, are kept thread-safe with internally managed locks. Async methods which accept cancellation tokens will honor signals so long as they have not progressed to mutating the state of the package.

Compression

Decompression of resource content is handled automatically by this class.

When retrieving resource content, this class will automatically decompress it using either proprietary Maxis internal or streaming compression, or ZLib compression. When saving resources, this class will always use ZLib compression. For more details, see the remarks for the [CompressionMode](#) enumeration.

Resource content is compressed in memory when it is set to minimize the amount of memory used while operating on a package.

Deleted Entries

This class honors the deleted entry flag in the package index under normal circumstances. If a caller attempts to retrieve the content of a resource flagged as deleted, the class will throw a [FileNotFoundException](#) by default. All retrieval methods have an optional `force bool` parameter which, when `true`, will cause the class to attempt to retrieve the content of a resource flagged as deleted (this is not guaranteed to work).

Constructors

DataBasePackedFile()

Initializes a new, blank [DataBasePackedFile](#)

```
public DataBasePackedFile()
```

DataBasePackedFile(Stream)

Initializes a [DataBasePackedFile](#) from the specified `stream` ( )

```
public DataBasePackedFile(Stream stream)
```

Parameters

`stream` [Stream](#)

DataBasePackedFile(string, bool)

Initializes a [DataBasePackedFile](#) from the specified `path` ( )

```
public DataBasePackedFile(string path, bool forReadOnly = true)
```

Parameters

`path` [string](#)

`forReadOnly` [bool](#)

Properties

CanSaveInPlace

Gets whether the package can be saved in place

```
public bool CanSaveInPlace { get; }
```

Property Value

[bool](#)

Count

Gets the number of resources

```
public int Count { get; }
```

Property Value

[int ↗](#)

CreationTime

Gets/sets when the package was created

```
public DateTimeOffset CreationTime { get; set; }
```

Property Value

[DateTimeOffset ↗](#)

FileVersion

Gets/sets the version of the format of the file

```
public Version FileVersion { get; set; }
```

Property Value

[Version ↗](#)

Remarks

This class is intended to work with versions of the Maxis DBPF format up to version [2.1](#) and going back as far as possible. While it will permit the caller to specify any version they like, it does not guard against potential negative consequences which may result from such packages actually being used. The default version for newly created packages is currently [2.1](#).

this[ResourceKey]

Gets/sets the content of a resource with the specified [key](#)

```
public object? this[ResourceKey key] { get; set; }
```

Parameters

key [ResourceKey](#)

Property Value

[object](#)

Keys

Gets a list of keys for all the resources in the package

```
public IReadOnlyList<ResourceKey> Keys { get; }
```

Property Value

[IReadOnlyList](#) <[ResourceKey](#)>

UpdatedTime

Gets/sets when the package was last updated

```
public DateTimeOffset UpdatedTime { get; set; }
```

Property Value

[DateTimeOffset](#)

UserVersion

Gets/sets the version of the user (presumably the user agent, actually? -- is Maxis versioning human beings?)

```
public Version UserVersion { get; set; }
```

Property Value

[Version](#)

Methods

ContainsKey(ResourceKey)

Gets whether the package contains a resource with the specified [key](#)

```
public bool ContainsKey(ResourceKey key)
```

Parameters

[key](#) [ResourceKey](#)

Returns

[bool](#)

ContainsKeyAsync(ResourceKey, CancellationToken)

Gets whether the package contains a resource with the specified [key](#) asynchronously

```
public Task<bool> ContainsKeyAsync(ResourceKey key, CancellationToken cancellationToken  
= default)
```

Parameters

[key](#) [ResourceKey](#)

[cancellationToken](#) [CancellationToken](#)

Returns

[Task](#) <bool>

CopyTo(Stream, ResourceKeyOrder)

Copies the package in binary format to the specified `destination` ( )

```
public void CopyTo(Stream destination, ResourceKeyOrder resourceKeyOrder  
= ResourceKeyOrder.Preserve)
```

Parameters

`destination` [Stream](#)

`resourceKeyOrder` [ResourceKeyOrder](#)

Exceptions

[ArgumentNullException](#)

`destination` is [null](#)

[ArgumentException](#)

`destination` is not writeable

CopyToAsync(Stream, ResourceKeyOrder, CancellationToken)

Copies the package in binary format to the specified `destination` asynchronously ( )

```
public Task CopyToAsync(Stream destination, ResourceKeyOrder resourceKeyOrder =  
ResourceKeyOrder.Preserve, CancellationToken cancellationToken = default)
```

Parameters

`destination` [Stream](#)

`resourceKeyOrder` [ResourceKeyOrder](#)

`cancellationToken` [CancellationToken](#)

Returns

[Task](#)

Exceptions

[ArgumentNullException](#)

`destination` is [null](#)

[ArgumentException](#)

`destination` is not writeable

Delete(ResourceKey)

Deletes the resource with the specified `key` and returns [true](#) if it was found; otherwise, [false](#)

```
public bool Delete(ResourceKey key)
```

Parameters

`key` [ResourceKey](#)

Returns

[bool](#)

Dispose()

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

```
public void Dispose()
```

DisposeAsync()

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

```
public ValueTask DisposeAsync()
```

Returns

[ValueTask](#)

A task that represents the asynchronous dispose operation.

~DataBasePackedFile()

Called by the finalizer

```
protected ~DataBasePackedFile()
```

ForEach(ResourceKeyOrder, Predicate<ResourceKey>, Action<ResourceKey, ReadOnlyMemory<byte>>, CancellationToken)

Processes undeleted resources in the specified `keyOrder` if they satisfy the specified `keyPredicate` using the specified `processResourceAction`

```
public void ForEach(ResourceKeyOrder keyOrder, Predicate<ResourceKey> keyPredicate,  
Action<ResourceKey, ReadOnlyMemory<byte>> processResourceAction, CancellationToken  
cancellationToken = default)
```

Parameters

`keyOrder` [ResourceKeyOrder](#)

`keyPredicate` [Predicate](#)<[ResourceKey](#)>

`processResourceAction` [Action](#)<[ResourceKey](#), [ReadOnlyMemory](#)<[byte](#)>>>

`cancellationToken` [CancellationToken](#)

ForEachAsync(ResourceKeyOrder, Predicate<ResourceKey>, Func<ResourceKey, ReadOnlyMemory<byte>, Task>, CancellationToken)

Processes undeleted resources in the specified `keyOrder` if they satisfy the specified `keyPredicate` using the specified `processResourceAsyncAction`

```
public Task ForEachAsync(ResourceKeyOrder keyOrder, Predicate<ResourceKey> keyPredicate,
Func<ResourceKey, ReadOnlyMemory<byte>, Task> processResourceAsyncAction, CancellationToken
cancellationToken = default)
```

Parameters

`keyOrder` [ResourceKeyOrder](#)

`keyPredicate` [Predicate](#)<[ResourceKey](#)>

`processResourceAsyncAction` [Func](#)<[ResourceKey](#), [ReadOnlyMemory](#)<[byte](#)>, [Task](#)>

`cancellationToken` [CancellationToken](#)

Returns

[Task](#)

ForEachRaw(ResourceKeyOrder, Predicate<ResourceKey>, Action<ResourceKey, ReadOnlyMemory<byte>>, CancellationToken)

Processes undeleted raw resources (meaning that the library will not decompress a resource for you if it is compressed) in the specified `keyOrder` if they satisfy the specified `keyPredicate` using the specified `processResourceAction`

```
public void ForEachRaw(ResourceKeyOrder keyOrder, Predicate<ResourceKey> keyPredicate,
Action<ResourceKey, ReadOnlyMemory<byte>> processResourceAction, CancellationToken
cancellationToken = default)
```

Parameters

`keyOrder` [ResourceKeyOrder](#)

`keyPredicate` [Predicate](#)<[ResourceKey](#)>

`processResourceAction` [Action](#)<[ResourceKey](#), [ReadOnlyMemory](#)<[byte](#)>>>

`cancellationToken` [CancellationToken](#)

`ForEachRawAsync(ResourceKeyOrder keyOrder, Predicate<ResourceKey> keyPredicate, Func<ResourceKey, ReadOnlyMemory<byte>, Task> processResourceAsyncAction, CancellationToken cancellationToken)`

Processes undeleted raw resources (meaning that the library will not decompress a resource for you if it is compressed) in the specified `keyOrder` if they satisfy the specified `keyPredicate` using the specified `processResourceAsyncAction`

```
public Task ForEachRawAsync(ResourceKeyOrder keyOrder, Predicate<ResourceKey> keyPredicate, Func<ResourceKey, ReadOnlyMemory<byte>, Task> processResourceAsyncAction, CancellationToken cancellationToken = default)
```

Parameters

`keyOrder` [ResourceKeyOrder](#)

`keyPredicate` [Predicate](#)<[ResourceKey](#)>

`processResourceAsyncAction` [Func](#)<[ResourceKey](#), [ReadOnlyMemory](#)<[byte](#)>, [Task](#)>

`cancellationToken` [CancellationToken](#)

Returns

[Task](#)

`FromPathAsync(string, bool)`

Initializes a [DataBasePackedFile](#) asynchronously from the specified `path` ( )

```
public static Task<DataBasePackedFile> FromPathAsync(string path, bool forReadOnly = true)
```

Parameters

path [string](#)

forReadOnly [bool](#)

Returns

[Task](#) <[DataBasePackedFile](#)>

FromStreamAsync(Stream, CancellationToken)

Initializes a [DataBasePackedFile](#) asynchronously from the specified `stream` ( [zz](#))

```
public static Task<DataBasePackedFile> FromStreamAsync(Stream stream, CancellationToken  
cancellationToken = default)
```

Parameters

stream [Stream](#)

cancellationToken [CancellationToken](#)

Returns

[Task](#) <[DataBasePackedFile](#)>

Get(ResourceKey, bool)

Gets the content of a resource with the specified `key`

```
public ReadOnlyMemory<byte> Get(ResourceKey key, bool force = false)
```

Parameters

key [ResourceKey](#)

The key of the resource

force [bool](#)

[true](#) to get the content of the resource even if it has been marked as deleted; otherwise, [false](#) (default)

Returns

[ReadOnlyMemory](#) <[byte](#)>

GetAllSizes(Predicate<ResourceKey>?)

Gets the size of the content of each resource in the package indexed by key

```
public IReadOnlyDictionary<ResourceKey, int> GetAllSizes(Predicate<ResourceKey>? predicate = null)
```

Parameters

predicate [Predicate](#) <[ResourceKey](#)>

An optional predicate to filter the keys

Returns

[IReadOnlyDictionary](#) <[ResourceKey](#), [int](#)>

GetAllSizesAsync(Predicate<ResourceKey>?, CancellationToken)

Gets the size of the content of each resource in the package indexed by key, asynchronously

```
public Task<IReadOnlyDictionary<ResourceKey, int>> GetAllSizesAsync(Predicate<ResourceKey>? predicate = null, CancellationToken cancellationToken = default)
```

Parameters

predicate [Predicate](#) <[ResourceKey](#)>

An optional predicate to filter the keys

`cancellationToken` [CancellationToken](#)

The token to monitor for cancellation requests

Returns

[Task](#) <[IReadOnlyDictionary](#)<[ResourceKey](#), [int](#)>>

GetAsync(ResourceKey, bool, CancellationToken)

Gets the content of a resource with the specified `key` asynchronously

```
public Task<ReadOnlyMemory<byte>> GetAsync(ResourceKey key, bool force = false,  
CancellationToken cancellationToken = default)
```

Parameters

`key` [ResourceKey](#)

The key of the resource

`force` [bool](#)

[true](#) to get the content of the resource even if it has been marked as deleted; otherwise, [false](#) (default)

`cancellationToken` [CancellationToken](#)

The token to monitor for cancellation requests

Returns

[Task](#) <[ReadOnlyMemory](#)<[byte](#)>>

GetCount()

Gets the number of resources

```
public int GetCount()
```

Returns

[int](#)

GetCountAsync(CancellationToken)

Gets the number of resources asynchronously

```
public Task<int> GetCountAsync(CancellationToken cancellationToken = default)
```

Parameters

cancellationToken [CancellationToken](#)

Returns

[Task](#)<[int](#)>

GetData(ResourceKey, bool)

Gets the content of a resource with the specified [key](#) as a [DataModel](#)

```
public DataModel GetData(ResourceKey key, bool force = false)
```

Parameters

key [ResourceKey](#)

force [bool](#)

Returns

[DataModel](#)

GetDataAsync(ResourceKey, bool, CancellationToken)

Gets the content of a resource with the specified [key](#) as a [DataModel](#) asynchronously

```
public Task<DataModel> GetDataAsync(ResourceKey key, bool force = false, CancellationToken cancellationToken = default)
```

Parameters

key [ResourceKey](#)

force [bool](#)

cancellationToken [CancellationToken](#)

Returns

[Task](#) <DataModel>

GetExplicitCompressionMode(ResourceKey)

Gets the [CompressionMode](#) value to pass to Set methods to ensure they will compress the content of the resource specified by key in the same way it is currently compressed in the package

```
public CompressionMode GetExplicitCompressionMode(ResourceKey key)
```

Parameters

key [ResourceKey](#)

Returns

[CompressionMode](#)

GetKeys(ResourceKeyOrder)

Gets a list of keys for all the resources in the package

```
public IReadOnlyList<ResourceKey> GetKeys(ResourceKeyOrder resourceKeyOrder = ResourceKeyOrder.Preserve)
```

Parameters

resourceKeyOrder [ResourceKeyOrder](#)

Returns

[IReadOnlyList](#) <[ResourceKey](#)>

GetKeysAsync(ResourceKeyOrder, CancellationToken)

Gets a list of keys for all the resources in the package asynchronously

```
public Task<IReadOnlyList<ResourceKey>> GetKeysAsync(ResourceKeyOrder resourceKeyOrder = ResourceKeyOrder.Preserve, CancellationToken cancellationToken = default)
```

Parameters

resourceKeyOrder [ResourceKeyOrder](#)

cancellationToken [CancellationToken](#)

Returns

[Task](#) <[IReadOnlyList](#) <[ResourceKey](#)>>

GetKeysByName(string)

Gets a list of keys for resources with the specified `name`

```
public IReadOnlyList<ResourceKey> GetKeysByName(string name)
```

Parameters

name [string](#)

Returns

[IReadOnlyList](#) <[ResourceKey](#)>

GetKeysByNameAsync(string, CancellationToken)

Gets a list of keys for resources with the specified `name` asynchronously

```
public Task<IReadOnlyList<ResourceKey>> GetKeysByNameAsync(string name, CancellationToken cancellationToken = default)
```

Parameters

`name` [string](#)

`cancellationToken` [CancellationToken](#)

Returns

[Task](#) < [IReadOnlyList](#) < [ResourceKey](#)>>

GetModFileManifest(ResourceKey, bool)

Gets the content of a resource with the specified `key` as a [ModFileManifestModel](#)

```
public ModFileManifestModel GetModFileManifest(ResourceKey key, bool force = false)
```

Parameters

`key` [ResourceKey](#)

`force` [bool](#)

Returns

[ModFileManifestModel](#)

GetModFileManifestAsync(ResourceKey, bool, CancellationToken)

Gets the content of a resource with the specified `key` as a [ModFileManifestModel](#) asynchronously

```
public Task<ModFileManifestModel> GetModFileManifestAsync(ResourceKey key, bool force = false, CancellationToken cancellationToken = default)
```

Parameters

key [ResourceKey](#)

force [bool](#)

cancellationToken [CancellationToken](#)

Returns

[Task](#) <[ModFileManifestModel](#)>

GetModelAsync<TModel>(ResourceKey, bool, CancellationToken)

Gets the content of a resource with the specified [key](#) as a [TModel](#) asynchronously

```
public Task<TModel> GetModelAsync<TModel>(ResourceKey key, bool force = false, CancellationToken cancellationToken = default) where TModel : IModel<TModel>
```

Parameters

key [ResourceKey](#)

force [bool](#)

cancellationToken [CancellationToken](#)

Returns

[Task](#) <[TModel](#)>

Type Parameters

[TModel](#)

A model used to browse and modify certain types of resources

Exceptions

[ArgumentException](#)

`TModel` cannot deal with resources of the type specified by `key`

GetModel<TModel>(ResourceKey, bool)

Gets the content of a resource with the specified `key` as a `TModel`

```
public TModel GetModel<TModel>(ResourceKey key, bool force = false) where TModel : IModel<TModel>
```

Parameters

`key` [ResourceKey](#)

`force` [bool](#)

Returns

`TModel`

Type Parameters

`TModel`

A model used to browse and modify certain types of resources

Exceptions

[ArgumentException](#)

`TModel` cannot deal with resources of the type specified by `key`

GetNameByKey(ResourceKey)

Gets the name for the resource with the specified `key`

```
public string? GetNameByKey(ResourceKey key)
```

Parameters

key [ResourceKey](#)

Returns

[string](#)

GetNameByKeyAsync(ResourceKey, CancellationToken)

Gets the name for the resource with the specified [key](#) asynchronously

```
public Task<string?> GetNameByKeyAsync(ResourceKey key, CancellationToken cancellationToken  
= default)
```

Parameters

key [ResourceKey](#)

cancellationToken [CancellationToken](#)

Returns

[Task](#) <[string](#)>

GetNames()

Gets the names for all the resources in the package

```
public IReadOnlyList<string> GetNames()
```

Returns

[IReadOnlyList](#) <[string](#)>

GetNamesAsync(CancellationToken)

Gets the names for all the resources in the package asynchronously

```
public Task<IReadOnlyList<string>> GetNamesAsync(CancellationToken cancellationToken  
= default)
```

Parameters

`cancellationToken` [CancellationToken](#)

Returns

[Task](#) < [IReadOnlyList](#) < [string](#)>>

GetRaw(ResourceKey, bool)

Gets the raw content of a resource with the specified `key`, meaning that the library will not decompress it for you if it is compressed

```
public ReadOnlyMemory<byte> GetRaw(ResourceKey key, bool force = false)
```

Parameters

`key` [ResourceKey](#)

The key of the resource

`force` [bool](#)

[true](#) to get the content of the resource even if it has been marked as deleted; otherwise, [false](#) (default)

Returns

[ReadOnlyMemory](#) < [byte](#)>

GetRawAsync(ResourceKey, bool, CancellationToken)

Gets the raw content of a resource with the specified **key** asynchronously, meaning that the library will not decompress it for you if it is compressed

```
public Task<ReadOnlyMemory<byte>> GetRawAsync(ResourceKey key, bool force = false,  
CancellationToken cancellationToken = default)
```

Parameters

key [ResourceKey](#)

The key of the resource

force [bool](#)

[true](#) to get the content of the resource even if it has been marked as deleted; otherwise, [false](#)
(default)

cancellationToken [CancellationToken](#)

The token to monitor for cancellation requests

Returns

[Task](#)<[ReadOnlyMemory](#)<[byte](#)>>

GetSize(ResourceKey)

Gets the size of the content of the resource with the specified **key**

```
public int GetSize(ResourceKey key)
```

Parameters

key [ResourceKey](#)

Returns

[int](#)

GetSizeAsync(ResourceKey, CancellationToken)

Gets the size of the content of the resource with the specified `key` asynchronously

```
public Task<int> GetSizeAsync(ResourceKey key, CancellationToken cancellationToken  
= default)
```

Parameters

`key` [ResourceKey](#)

`cancellationToken` [CancellationToken](#)

Returns

[Task](#) <int>

GetStringTable(ResourceKey, bool)

Gets the content of a resource with the specified `key` as a [StringTableModel](#)

```
public StringTableModel GetStringTable(ResourceKey key, bool force = false)
```

Parameters

`key` [ResourceKey](#)

`force` [bool](#)

Returns

[StringTableModel](#)

GetStringTableAsync(ResourceKey, bool, CancellationToken)

Gets the content of a resource with the specified `key` as a [StringTableModel](#) asynchronously

```
public Task<StringTableModel> GetStringTableAsync(ResourceKey key, bool force = false,
```

```
CancellationToken cancellationToken = default)
```

Parameters

key [ResourceKey](#)

force [bool](#)

cancellationToken [CancellationToken](#)

Returns

[Task](#) <[StringTableModel](#)>

GetText(ResourceKey, bool)

Gets the content of a resource with the specified **key** as a [string](#)

```
public string GetText(ResourceKey key, bool force = false)
```

Parameters

key [ResourceKey](#)

The key of the resource

force [bool](#)

[true](#) to get the content of the resource even if it has been marked as deleted; otherwise, [false](#) (default)

Returns

[string](#)

GetTextAsync(ResourceKey, bool, CancellationToken)

Gets the content of a resource with the specified **key** as a [string](#) asynchronously

```
public Task<string> GetTextAsync(ResourceKey key, bool force = false, CancellationToken cancellationToken = default)
```

Parameters

key [ResourceKey](#)

The key of the resource

force [bool](#)

[true](#) to get the content of the resource even if it has been marked as deleted; otherwise, [false](#)
(default)

cancellationToken [CancellationToken](#)

The token to monitor for cancellation requests

Returns

[Task](#)<[string](#)>

GetXml(ResourceKey, bool)

Gets the content of a resource with the specified **key** as an [XDocument](#)

```
public XDocument GetXml(ResourceKey key, bool force = false)
```

Parameters

key [ResourceKey](#)

The key of the resource

force [bool](#)

[true](#) to get the content of the resource even if it has been marked as deleted; otherwise, [false](#)
(default)

Returns

[XDocument](#)

GetXmlAsync(ResourceKey, bool, CancellationToken)

Gets the content of a resource with the specified `key` as an [XDocument](#) asynchronously

```
public Task<XDocument> GetXmlAsync(ResourceKey key, bool force = false, CancellationToken cancellationToken = default)
```

Parameters

`key` [ResourceKey](#)

The key of the resource

`force` [bool](#)

`true` to get the content of the resource even if it has been marked as deleted; otherwise, `false` (default)

`cancellationToken` [CancellationToken](#)

The token to monitor for cancellation requests

Returns

[Task](#)<[XDocument](#)>

InternalCompress(ReadOnlyMemory<byte>)

Compresses the specified `memory` in the manner of Maxis' internal algorithm, returning the result

```
public static ReadOnlyMemory<byte> InternalCompress(ReadOnlyMemory<byte> memory)
```

Parameters

`memory` [ReadOnlyMemory](#)<[byte](#)>

Returns

[ReadOnlyMemory](#)<[byte](#)>

InternalDecompress(ReadOnlyMemory<byte>)

Decompresses the specified `memory` in the manner of Maxis' internal algorithm, returning the result

```
public static ReadOnlyMemory<byte> InternalDecompress(ReadOnlyMemory<byte> memory)
```

Parameters

`memory` [ReadOnlyMemory](#)<[byte](#)>

Returns

[ReadOnlyMemory](#)<[byte](#)>

LoadAll(bool, CompressionMode)

Loads all resources in the package into memory

```
public void LoadAll(bool force = false, CompressionMode compressionMode  
= CompressionMode.Auto)
```

Parameters

`force` [bool](#)

[true](#) to get the content of the resources even if they has been marked as deleted; otheriwse, [false](#) (default)

`compressionMode` [CompressionMode](#)

This parameter is now ignored

LoadAllAsync(bool, CompressionMode, CancellationToken)

Loads all resources in the package into memory

```
public Task LoadAllAsync(bool force = false, CompressionMode compressionMode =
CompressionMode.Auto, CancellationToken cancellationToken = default)
```

Parameters

force [bool](#)

[true](#) to get the content of the resources even if they has been marked as deleted; otheriwse, [false](#)
(default)

compressionMode [CompressionMode](#)

This parameter is now ignored

cancellationToken [CancellationToken](#)

The token to monitor for cancellation requests

Returns

[Task](#)

LoadNames()

Loads the names of all the resources in the package (a no-op if the names are already loaded)

```
public void LoadNames()
```

LoadNamesAsync(CancellationToken)

Loads the names of all the resources in the package asynchronously (a no-op if the names are already loaded)

```
public Task LoadNamesAsync(CancellationToken cancellationToken = default)
```

Parameters

cancellationToken [CancellationToken](#)

Returns

[Task ↗](#)

Save(bool, ResourceKeyOrder)

Saves the package to the stream from which it was loaded

```
public void Save(bool unloadFromMemory = false, ResourceKeyOrder resourceKeyOrder  
= ResourceKeyOrder.Preserve)
```

Parameters

unloadFromMemory [bool ↗](#)

resourceKeyOrder [ResourceKeyOrder](#)

Exceptions

[InvalidOperationException](#) ↗

The package was not loaded from stream or the stream is not writeable

SaveAs(string, ResourceKeyOrder)

Saves the package to the specified path ( 

```
public void SaveAs(string path, ResourceKeyOrder resourceKeyOrder  
= ResourceKeyOrder.Preserve)
```

Parameters

path [string](#) ↗

resourceKeyOrder [ResourceKeyOrder](#)

SaveAsAsync(string, ResourceKeyOrder, CancellationToken)

Saves the package to the specified `path` asynchronously ()

```
public Task SaveAsAsync(string path, ResourceKeyOrder resourceKeyOrder = ResourceKeyOrder.Preserve, CancellationToken cancellationToken = default)
```

Parameters

`path` [string](#)

`resourceKeyOrder` [ResourceKeyOrder](#)

`cancellationToken` [CancellationToken](#)

Returns

[Task](#)

SaveAsync(bool, ResourceKeyOrder, CancellationToken)

Saves the package to the stream from which it was loaded asynchronously

```
public Task SaveAsync(bool unloadFromMemory = false, ResourceKeyOrder resourceKeyOrder = ResourceKeyOrder.Preserve, CancellationToken cancellationToken = default)
```

Parameters

`unloadFromMemory` [bool](#)

`resourceKeyOrder` [ResourceKeyOrder](#)

`cancellationToken` [CancellationToken](#)

Returns

[Task](#)

Exceptions

[InvalidOperationException](#)

The package was not loaded from stream or the stream is not writeable

Set(ResourceKey, IModel, CompressionMode)

Sets the `content` of a resource with the specified `key`, returning `true` if the resource was compressed; otherwise, `false`

```
public bool Set(ResourceKey key, IModel content, CompressionMode compressionMode  
= CompressionMode.Auto)
```

Parameters

`key` [ResourceKey](#)

The key of the resource

`content` [IModel](#)

The content of the resource

`compressionMode` [CompressionMode](#)

The compression mode to use for the resource

Returns

`bool`

Set(ResourceKey, ReadOnlyMemory<byte>, CompressionMode)

Sets the `content` of a resource with the specified `key`, returning `true` if the resource was compressed; otherwise, `false`

```
public bool Set(ResourceKey key, ReadOnlyMemory<byte> content, CompressionMode  
compressionMode = CompressionMode.Auto)
```

Parameters

`key` [ResourceKey](#)

The key of the resource

content [ReadOnlyMemory](#) <[byte](#)>

The content of the resource

compressionMode [CompressionMode](#)

The compression mode to use for the resource

Returns

[bool](#)

Set(ResourceKey, string, CompressionMode)

Sets the **content** of a resource with the specified **key**, returning [true](#) if the resource was compressed; otherwise, [false](#)

```
public bool Set(ResourceKey key, string content, CompressionMode compressionMode  
= CompressionMode.Auto)
```

Parameters

key [ResourceKey](#)

The key of the resource

content [string](#)

The content of the resource

compressionMode [CompressionMode](#)

The compression mode to use for the resource

Returns

[bool](#)

Set(ResourceKey, XDocument, CompressionMode)

Sets the `content` of a resource with the specified `key`, returning `true` if the resource was compressed; otherwise, `false`

```
public bool Set(ResourceKey key, XDocument content, CompressionMode compressionMode  
= CompressionMode.Auto)
```

Parameters

`key` [ResourceKey](#)

The key of the resource

`content` [XDocument](#)

The content of the resource

`compressionMode` [CompressionMode](#)

The compression mode to use for the resource

Returns

[bool](#)

SetAsync(ResourceKey, IMModel, CompressionMode, CancellationToken)

Sets the `content` of a resource with the specified `key`, returning `true` if the resource was compressed; otherwise, `false`

```
public Task<bool> SetAsync(ResourceKey key, IMModel content, CompressionMode compressionMode  
= CompressionMode.Auto, CancellationToken cancellationToken = default)
```

Parameters

`key` [ResourceKey](#)

The key of the resource

`content` [IMModel](#)

The content of the resource

compressionMode [CompressionMode](#)

The compression mode to use for the resource

cancellationToken [CancellationToken](#)

The token to monitor for cancellation requests

Returns

[Task](#) <[bool](#)>

SetAsync(ResourceKey, ReadOnlyMemory<byte>, CompressionMode, CancellationToken)

Sets the **content** of a resource with the specified **key**, returning [true](#) if the resource was compressed; otherwise, [false](#)

```
public Task<bool> SetAsync(ResourceKey key, ReadOnlyMemory<byte> content, CompressionMode  
compressionMode = CompressionMode.Auto, CancellationToken cancellationToken = default)
```

Parameters

key [ResourceKey](#)

The key of the resource

content [ReadOnlyMemory](#)<[byte](#)>

The content of the resource

compressionMode [CompressionMode](#)

The compression mode to use for the resource

cancellationToken [CancellationToken](#)

The token to monitor for cancellation requests

Returns

[Task](#) <bool>

SetAsync(ResourceKey, string, CompressionMode, CancellationToken)

Sets the **content** of a resource with the specified **key**, returning [true](#) if the resource was compressed; otherwise, [false](#)

```
public Task<bool> SetAsync(ResourceKey key, string content, CompressionMode compressionMode = CompressionMode.Auto, CancellationToken cancellationToken = default)
```

Parameters

key [ResourceKey](#)

The key of the resource

content [string](#)

The content of the resource

compressionMode [CompressionMode](#)

The compression mode to use for the resource

cancellationToken [CancellationToken](#)

The token to monitor for cancellation requests

Returns

[Task](#) <bool>

SetAsync(ResourceKey, XDocument, CompressionMode, CancellationToken)

Sets the **content** of a resource with the specified **key**, returning [true](#) if the resource was compressed; otherwise, [false](#)

```
public Task<bool> SetAsync(ResourceKey key, XDocument content, CompressionMode  
compressionMode = CompressionMode.Auto, CancellationToken cancellationToken = default)
```

Parameters

key [ResourceKey](#)

The key of the resource

content [XDocument](#)

The content of the resource

compressionMode [CompressionMode](#)

The compression mode to use for the resource

cancellationToken [CancellationToken](#)

The token to monitor for cancellation requests

Returns

[Task](#)<bool>

SetXml(ResourceKey, string, CompressionMode)

Sets the `xmlContent` of a resource with the specified `key`, returning `true` if the resource was compressed; otherwise, `false`

```
public bool SetXml(ResourceKey key, string xmlContent, CompressionMode compressionMode  
= CompressionMode.Auto)
```

Parameters

key [ResourceKey](#)

The key of the resource

xmlContent [string](#)

The XML content of the resource

compressionMode [CompressionMode](#)

The compression mode to use for the resource

Returns

[bool](#)

SetXmlAsync(ResourceKey, string, CompressionMode, CancellationToken)

Sets the [xmlContent](#) of a resource with the specified [key](#), returning [true](#) if the resource was compressed; otherwise, [false](#)

```
public Task<bool> SetXmlAsync(ResourceKey key, string xmlContent, CompressionMode  
compressionMode = CompressionMode.Auto, CancellationToken cancellationToken = default)
```

Parameters

key [ResourceKey](#)

The key of the resource

xmlContent [string](#)

The XML content of the resource

compressionMode [CompressionMode](#)

The compression mode to use for the resource

cancellationToken [CancellationToken](#)

The token to monitor for cancellation requests

Returns

[Task](#) <[bool](#)>

ZLibCompress(ReadOnlyMemory<byte>)

Compresses the specified `memory` using ZLib, returning the result

```
public static ReadOnlyMemory<byte> ZLibCompress(ReadOnlyMemory<byte> memory)
```

Parameters

`memory` [ReadOnlyMemory](#)<`byte`>

Returns

[ReadOnlyMemory](#)<`byte`>

ZLibCompressAsync(ReadOnlyMemory<byte>, CancellationToken)

Compresses the specified `memory` using ZLib asynchronously, returning the result

```
public static Task<ReadOnlyMemory<byte>> ZLibCompressAsync(ReadOnlyMemory<byte> memory, CancellationToken cancellationToken = default)
```

Parameters

`memory` [ReadOnlyMemory](#)<`byte`>

`cancellationToken` [CancellationToken](#)

Returns

[Task](#)<[ReadOnlyMemory](#)<`byte`>>

ZLibDecompress(ReadOnlyMemory<byte>, int)

Decompresses the specified `memory` using ZLib, returning the result at the specified `sizeDecompressed`

```
public static ReadOnlyMemory<byte> ZLibDecompress(ReadOnlyMemory<byte> memory, int sizeDecompressed)
```

Parameters

`memory` [ReadOnlyMemory<byte>](#)

`sizeDecompressed` [int](#)

Returns

[ReadOnlyMemory<byte>](#)

ZLibDecompressAsync(ReadOnlyMemory<byte>, int, CancellationToken)

Decompresses the specified `memory` using ZLib asynchronously, returning the result at the specified `sizeDecompressed`

```
public static Task<ReadOnlyMemory<byte>> ZLibDecompressAsync(ReadOnlyMemory<byte> memory,  
    int sizeDecompressed, CancellationToken cancellationToken = default)
```

Parameters

`memory` [ReadOnlyMemory<byte>](#)

`sizeDecompressed` [int](#)

`cancellationToken` [CancellationToken](#)

Returns

[Task<ReadOnlyMemory<byte>>](#)

Enum ResourceType

Namespace: [LlamaLogic.Packages](#)

Assembly: LlamaLogic.Packages.dll

The file type of a package resource independent of storage within a [DataBasePackedFile](#)

```
public enum ResourceType
```

Fields

[ResourceFileTypeFormat("bin", "application/octet-stream")] Binary = 0

Binary

[ResourceFileTypeFormat("dds", "image/vnd.ms-dds")] DirectDrawSurface = 1

DDS Image

[ResourceFileTypeFormat("json", "application/json")] JavaScriptObjectNotation = 2

JavaScript Object Notation

[ResourceFileTypeFormat("png", "image/png")] PortableNetworkGraphic = 3

PNG Image

[ResourceFileTypeFormat("xml", "application/xml")] TuningMarkup = 4

Tuning XML

[ResourceFileTypeFormat("yml", "application/x-yaml")] YetAnotherMarkupLanguage = 5

Yet Another Markup Language

Class ResourceTypeAttribute

Namespace: [LlamaLogic.Packages](#)

Assembly: LlamaLogic.Packages.dll

Specifies the file type of a package resource type independent of storage within a [DataBasePackedFile](#)

```
[AttributeUsage(AttributeTargets.Field, AllowMultiple = false)]
public sealed class ResourceTypeAttribute : Attribute
```

Inheritance

[object](#) ← [Attribute](#) ← ResourceTypeAttribute

Inherited Members

[Attribute.Equals\(object\)](#) , [Attribute.GetCustomAttribute\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttribute\(Assembly, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(Module, Type\)](#) , [Attribute.GetCustomAttribute\(Module, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(ParameterInfo, Type, bool\)](#) , [Attribute.GetCustomAttributes\(Assembly\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, bool\)](#) , [Attribute.GetCustomAttributes\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttributes\(MemberInfo\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo, bool\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo, Type, bool\)](#) , [Attribute.GetCustomAttributes\(Module\)](#) ,
[Attribute.GetCustomAttributes\(Module, bool\)](#) , [Attribute.GetCustomAttributes\(Module, Type\)](#) ,
[Attribute.GetCustomAttributes\(Module, Type, bool\)](#) , [Attribute.GetCustomAttributes\(ParameterInfo\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, bool\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, Type, bool\)](#) , [Attribute.GetHashCode\(\)](#) ,
[Attribute.IsDefaultAttribute\(\)](#) , [Attribute.IsDefined\(Assembly, Type\)](#) ,
[Attribute.IsDefined\(Assembly, Type, bool\)](#) , [Attribute.IsDefined\(MemberInfo, Type\)](#) ,
[Attribute.IsDefined\(MemberInfo, Type, bool\)](#) , [Attribute.IsDefined\(Module, Type\)](#) ,
[Attribute.IsDefined\(Module, Type, bool\)](#) , [Attribute.IsDefined\(ParameterInfo, Type\)](#) ,
[Attribute.IsDefined\(ParameterInfo, Type, bool\)](#) , [Attribute.Match\(object\)](#) , [Attribute.TypeId](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Constructors

ResourceFileTypeAttribute(ResourceFileType)

Specifies the file type of a package resource type independent of storage within a [DataBasePackedFile](#)

```
public ResourceFileTypeAttribute(ResourceFileType packageResourceFileType)
```

Parameters

packageResourceFileType [ResourceFileType](#)

Properties

ResourceFileType

Gets the file type of the decorated package resource type independent of storage within a [DataBasePackedFile](#)

```
public ResourceFileType ResourceFileType { get; }
```

Property Value

[ResourceFileType](#)

Class ResourceTypeFormatAttribute

Namespace: [LlamaLogic.Packages](#)

Assembly: LlamaLogic.Packages.dll

Specifies the extension and mime type of a file type of a package resource independent of storage within a [DataBasePackedFile](#)

```
[AttributeUsage(AttributeTargets.Field, AllowMultiple = false)]
public sealed class ResourceTypeFormatAttribute : Attribute
```

Inheritance

[object](#) ← [Attribute](#) ← ResourceTypeFormatAttribute

Inherited Members

[Attribute.Equals\(object\)](#) , [Attribute.GetCustomAttribute\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttribute\(Assembly, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(Module, Type\)](#) , [Attribute.GetCustomAttribute\(Module, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(ParameterInfo, Type, bool\)](#) , [Attribute.GetCustomAttributes\(Assembly\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, bool\)](#) , [Attribute.GetCustomAttributes\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttributes\(MemberInfo\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo, bool\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo, Type, bool\)](#) , [Attribute.GetCustomAttributes\(Module\)](#) ,
[Attribute.GetCustomAttributes\(Module, bool\)](#) , [Attribute.GetCustomAttributes\(Module, Type\)](#) ,
[Attribute.GetCustomAttributes\(Module, Type, bool\)](#) , [Attribute.GetCustomAttributes\(ParameterInfo\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, bool\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, Type, bool\)](#) , [Attribute.GetHashCode\(\)](#) ,
[Attribute.IsDefaultAttribute\(\)](#) , [Attribute.IsDefined\(Assembly, Type\)](#) ,
[Attribute.IsDefined\(Assembly, Type, bool\)](#) , [Attribute.IsDefined\(MemberInfo, Type\)](#) ,
[Attribute.IsDefined\(MemberInfo, Type, bool\)](#) , [Attribute.IsDefined\(Module, Type\)](#) ,
[Attribute.IsDefined\(Module, Type, bool\)](#) , [Attribute.IsDefined\(ParameterInfo, Type\)](#) ,
[Attribute.IsDefined\(ParameterInfo, Type, bool\)](#) , [Attribute.Match\(object\)](#) , [Attribute.TypeId](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Constructors

ResourceFileTypeFormatAttribute(string, string?)

Specifies the extension and mime type of a file type of a package resource independent of storage within a [DataBasePackedFile](#)

```
public ResourceFileTypeFormatAttribute(string extension, string? mimeType = null)
```

Parameters

extension [string](#)

mimeType [string](#)

Properties

Extension

Gets the extention used for files in the format

```
public string Extension { get; }
```

Property Value

[string](#)

MimeType

Gets the MIME type of the format

```
public string?MimeType { get; }
```

Property Value

[string](#)

Struct ResourceKey

Namespace: [LlamaLogic.Packages](#)

Assembly: LlamaLogic.Packages.dll

Represents the unique key of a resource within a [DataBasePackedFile](#)

```
public struct ResourceKey : IEquatable<ResourceKey>
```

Implements

[IEquatable](#) <ResourceKey>

Inherited Members

[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Extension Methods

[SmartSimUtilities.GetResourceKeyForLocale\(ResourceKey, CultureInfo\)](#) ,

[SmartSimUtilities.GetStringTableLocale\(ResourceKey\)](#).

Constructors

ResourceKey(ResourceType, uint, ulong)

Represents the unique key of a resource within a [DataBasePackedFile](#)

```
public ResourceKey(ResourceType type, uint group, ulong fullInstance)
```

Parameters

type [ResourceType](#)

group [uint](#)

fullInstance [ulong](#)

Fields

Empty

Represents the empty [ResourceKey](#)

```
public static readonly ResourceKey Empty
```

Field Value

[ResourceKey](#)

FullInstance

A value that uniquely identifies an individual resource within a given type and group

```
public readonly ulong FullInstance
```

Field Value

[ulong](#)

Group

A value used to group related resources together

```
public readonly uint Group
```

Field Value

[uint](#)

Remarks

In many cases, this value can be 0, especially for custom content. However, Maxis content and some specific modding scenarios might use different group values to organize resources. Group values help in categorizing resources that belong to a specific set or context.

Type

The type of resource indicated by the key

```
public readonly ResourceType Type
```

Field Value

[ResourceType](#)

Properties

FullInstanceHex

Gets the hex representation of [FullInstance](#)

```
public readonly string FullInstanceHex { get; }
```

Property Value

[string](#)

FullTgi

Gets the full TGI or TGI ID (type, group, and instance in hex format) of the resource key

```
public readonly string FullTgi { get; }
```

Property Value

[string](#)

GroupHex

Gets the hex representation of [Group](#)

```
public readonly string GroupHex { get; }
```

Property Value

[string](#)

Instance

Gets the low order bits of [FullInstance](#)

```
public readonly uint Instance { get; }
```

Property Value

[uint](#)

InstanceEx

Gets the high order bits of [FullInstance](#)

```
public readonly uint InstanceEx { get; }
```

Property Value

[uint](#)

InstanceExHex

Gets the hex representation of [InstanceEx](#)

```
public readonly string InstanceExHex { get; }
```

Property Value

[string](#)

InstanceHex

Gets the hex representation of [Instance](#)

```
public readonly string InstanceHex { get; }
```

Property Value

[string](#) ↗

TypeHex

Gets the hex representation of [Type](#)

```
public readonly string TypeHex { get; }
```

Property Value

[string](#) ↗

Methods

Deconstruct(out ResourceType, out uint, out ulong)

Deconstructs the key into its components

```
public readonly void Deconstruct(out ResourceType type, out uint group, out  
ulong fullInstance)
```

Parameters

type [ResourceType](#)

The [Type](#)

group [uint](#) ↗

The [Group](#)

fullInstance [ulong](#)

The [FullInstance](#)

Equals(ResourceKey)

Indicates whether the current object is equal to another object of the same type.

```
public readonly bool Equals(ResourceKey other)
```

Parameters

other [ResourceKey](#)

An object to compare with this object.

Returns

[bool](#)

[true](#) if the current object is equal to the **other** parameter; otherwise, [false](#).

Equals(object?)

Indicates whether this instance and a specified object are equal.

```
public override readonly bool Equals(object? obj)
```

Parameters

obj [object](#)

The object to compare with the current instance.

Returns

[bool](#)

[true](#) if **obj** and this instance are the same type and represent the same value; otherwise, [false](#).

GetHashCode()

Returns the hash code for this instance.

```
public override readonly int GetHashCode()
```

Returns

[int](#)

A 32-bit signed integer that is the hash code for this instance.

Parse(string)

Parses a string into a [ResourceKey](#).

```
public static ResourceKey Parse(string s)
```

Parameters

[s](#) [string](#)

The string to parse

Returns

[ResourceKey](#)

Exceptions

[FormatException](#)

[s](#) is not in the correct format

Parse(string, IFormatProvider?)

Parses a string into a [ResourceKey](#).

```
public static ResourceKey Parse(string s, IFormatProvider? provider)
```

Parameters

s [string](#)

The string to parse

provider [IFormatProvider](#)

An object that provides culture-specific formatting information about s

Returns

[ResourceKey](#)

Exceptions

[FormatException](#)

s is not in the correct format

ToString()

Returns the fully qualified type name of this instance.

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

Returns

[string](#)

The fully qualified type name.

TryParse(string?, out ResourceKey)

Tries to parse a string into a [ResourceKey](#).

```
public static bool TryParse(string? s, out ResourceKey result)
```

Parameters

s [string](#)

The string to parse

result [ResourceKey](#)

When this method returns, contains the result of successfully parsing s or an undefined value on failure

Returns

[bool](#)

TryParse(string?, IFormatProvider?, out ResourceKey)

Tries to parse a string into a [ResourceKey](#)

```
public static bool TryParse(string? s, IFormatProvider? provider, out ResourceKey result)
```

Parameters

s [string](#)

The string to parse

provider [IFormatProvider](#)

An object that provides culture-specific formatting information about s

result [ResourceKey](#)

When this method returns, contains the result of successfully parsing s or an undefined value on failure

Returns

[bool](#)

Operators

operator ==(ResourceKey, ResourceKey)

```
public static bool operator ==(ResourceKey left, ResourceKey right)
```

Parameters

left [ResourceKey](#)

right [ResourceKey](#)

Returns

[bool](#)

implicit operator ResourceKey(string)

Converts a string into a [ResourceKey](#).

```
public static implicit operator ResourceKey(string s)
```

Parameters

s [string](#)

The string to convert

Returns

[ResourceKey](#)

operator !=(ResourceKey, ResourceKey)

```
public static bool operator !=(ResourceKey left, ResourceKey right)
```

Parameters

left [ResourceKey](#)

right [ResourceKey](#)

Returns

[bool](#) ↗

Enum ResourceKeyOrder

Namespace: [LlamaLogic.Packages](#)

Assembly: LlamaLogic.Packages.dll

Specifies the order in which a [ResourceKey](#) sequence should be processed

```
public enum ResourceKeyOrder
```

Fields

InstanceTypeGroup = 1

The operation will process the [ResourceKey](#) sequence in the order [FullInstance](#), then [Type](#), then [Group](#)

Preserve = 0

The operation will process the [ResourceKey](#) sequence in the order in which it was originally encountered

TypeGroupInstance = 2

The operation will process the [ResourceKey](#) sequence in the order [Type](#), then [Group](#), then [FullInstance](#)

Class ResourceToolingMetadataAttribute

Namespace: [LlamaLogic.Packages](#)

Assembly: LlamaLogic.Packages.dll

Specifies that the [ResourceType](#) is tooling metadata and not intended for use by the game

```
[AttributeUsage(AttributeTargets.Field, AllowMultiple = false)]
public sealed class ResourceToolingMetadataAttribute : Attribute
```

Inheritance

[object](#) ← [Attribute](#) ← ResourceToolingMetadataAttribute

Inherited Members

[Attribute.Equals\(object\)](#) , [Attribute.GetCustomAttribute\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttribute\(Assembly, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(MemberInfo, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(Module, Type\)](#) , [Attribute.GetCustomAttribute\(Module, Type, bool\)](#) ,
[Attribute.GetCustomAttribute\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttribute\(ParameterInfo, Type, bool\)](#) , [Attribute.GetCustomAttributes\(Assembly\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, bool\)](#) , [Attribute.GetCustomAttributes\(Assembly, Type\)](#) ,
[Attribute.GetCustomAttributes\(Assembly, Type, bool\)](#) , [Attribute.GetCustomAttributes\(MemberInfo\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo, bool\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(MemberInfo, Type, bool\)](#) , [Attribute.GetCustomAttributes\(Module\)](#) ,
[Attribute.GetCustomAttributes\(Module, bool\)](#) , [Attribute.GetCustomAttributes\(Module, Type\)](#) ,
[Attribute.GetCustomAttributes\(Module, Type, bool\)](#) , [Attribute.GetCustomAttributes\(ParameterInfo\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, bool\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, Type\)](#) ,
[Attribute.GetCustomAttributes\(ParameterInfo, Type, bool\)](#) , [Attribute.GetHashCode\(\)](#) ,
[Attribute.IsDefaultAttribute\(\)](#) , [Attribute.IsDefined\(Assembly, Type\)](#) ,
[Attribute.IsDefined\(Assembly, Type, bool\)](#) , [Attribute.IsDefined\(MemberInfo, Type\)](#) ,
[Attribute.IsDefined\(MemberInfo, Type, bool\)](#) , [Attribute.IsDefined\(Module, Type\)](#) ,
[Attribute.IsDefined\(Module, Type, bool\)](#) , [Attribute.IsDefined\(ParameterInfo, Type\)](#) ,
[Attribute.IsDefined\(ParameterInfo, Type, bool\)](#) , [Attribute.Match\(object\)](#) , [Attribute.TypeId](#) ,
[object.Equals\(object, object\)](#) , [object.GetType\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Enum ResourceType

Namespace: [LlamaLogic.Packages](#)

Assembly: LlamaLogic.Packages.dll

A type of resource within a [DataBasePackedFile](#)

```
public enum ResourceType : uint
```

Fields

AVI = 929579223

AVI

[ResourceFileType(ResourceFileType.TuningMarkup)] AccountRewardTuning = 3138329048

Account Reward Tuning

[ResourceFileType(ResourceFileType.TuningMarkup)] AchievementCategoryTuning = 609337601

Achievement Category Tuning

[ResourceFileType(ResourceFileType.TuningMarkup)] AchievementCollectionTuning = 80917605

Achievement Collection Tuning

[ResourceFileType(ResourceFileType.TuningMarkup)] AchievementTuning = 2018877086

Achievement Tuning

[ResourceFileType(ResourceFileType.TuningMarkup)] ActionTuning = 209137191

Action Tuning

AgeGenderMap = 17805169

Age Gender Map

[ResourceFileType(ResourceFileType.TuningMarkup)] Ambience = 3537656749

Ambience

AnimationBoundaryConditionCache = 479834948

Animation Boundary Condition Cache

AnimationConstraintCache = 3794048034

Animation Constraint Cache

[ResourceFileType(ResourceFileType.TuningMarkup)] AnimationStateMachine = 47570707

Animation State Machine

[ResourceFileType(ResourceFileType.TuningMarkup)] AnimationTuning = 3994535597

Animation Tuning

[ResourceFileType(ResourceFileType.PortableNetworkGraphic)] ApartmentThumbnail1 = 2870590650

Apartment Thumbnail 1

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Aspiration Track Tuning

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Audio Configuration

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Audio Configuration Reference

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Audio Vocals

AutomationTuning = 3671155384

Automation Tuning

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Away Action Tuning

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Balloon Tuning

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Batch Fix History

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Blend Geometry

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Block

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Blueprint

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Body Part Thumbnail

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Broadcaster Tuning

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Buy Build Thumbnail

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CAS Camera Tuning

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CAS Lighting Tuning

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CAS Menu Item Tuning

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CAS Menu Tuning

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CAS Modifier Tuning

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CAS Occult Skintone Tuning

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CAS Occult Tuning

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CAS Part Thumbnail

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CAS Preference Item Tuning

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CAS Preset

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CAS Stories Answer Tuning

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Clan Value Tuning

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ClipHeader = 3158986820

Clip Header

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Club Interaction Group Tuning

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Club Seed Tuning

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Color Blended Terrain

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Color List

ColorTimelineData = 4250380503

Color Timeline Data

Column = 493744591

Column

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Combined Binary Tuning

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Conditional Layer Tuning

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Cursor

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Cutout Info Table

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DST Image

DecoTrim = 332336850

Deco Trim

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Deformer Map

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Detective Clue Tuning

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Developmental Milestone Tuning

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Drama Node Tuning

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Ensemble Tuning

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Fence

Floor = 3036111561

Floor

FloorTrim = 2227319321

Floor Trim

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Font Configuration

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Footprint 3

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Foundation

FountainTrim = 3886917533

Fountain Trim

Frieze = 2690089244

Frieze

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Game Ruleset Tuning

GenericMTX = 2885921078

Generic MTX

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Guidance Tip Tuning

HalfWall = 2438063804

HalfWall

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Holiday Definition Tuning

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Holiday Tradition Tuning

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Household Description

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Household Milestone Tuning

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Household Template

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Hsv Tweaker Settings Tuning

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LRLE Image

Ladder = 3423141965

Ladder

Light = 62178845

Light

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Lot Decoration Preset Tuning

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Lot Decoration Tuning

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Lot Description

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Lot Footprint Reference

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Lot Type Event Map

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Lunar Cycle Tuning

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MTX Catalog

Magalog = 3105757403

Magalog

MagazineCollection = 1946487583

Magazine Collection

MaterialDefinition = 30467933

Material Definition

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Material Set

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Maxis World Pipeline 1

MaxisWorldPipeline2 = 4196775902

Maxis World Pipeline 2

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Modal Music Mapping

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ModelCutout = 123169303

Model Cutout

ModelLOD = 30478132

Model LOD

ModularPiece = 2568481485

Modular Piece

ModularPieceCatalog = 2688883901

Modular Piece Catalog

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Mood Tuning

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Music Data

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Name Map

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Narrative Tuning

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Native Build Buy Tuning

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Native Seasons Weather Tuning

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Notebook Entry Tuning

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Object Catalog

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Object Catalog Set

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Object Definition

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Object Modifiers

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Object Part Tuning

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Object State Tuning

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Objective Tuning

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OpenType Font

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Pet Coat Pattern

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Platform

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Pond

PoolTrim = 2782919923

Pool Trim

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QueryableWorldMaskManifest = 1316074726

Queryable World Mask Manifest

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RLES Image

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Rabbit Hole Tuning

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Railing

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Recipe Tuning

RecordBundle = 1051371644

Record Bundle

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Roof Pattern

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Roof Trim

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Sims 4 Studio Merged Package Manifest

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Sims 4 Save Game Data

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Sim Featured Outfit Thumbnail

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Sound Modifier Mapping

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Spawner

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Static Commodity Tuning

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Styled Look

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Sync Point Schema

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Tag Set Tuning

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Telemetry Memory Usage Telemetry Settings Tuning

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Telemetry Tuning

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Terrain KD Tree

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Terrain Paint

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Terrain Size Info

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Terrain Tool

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Test Based Score Tuning

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A proprietary resource used by The Sims Resource Workshop

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Thrift Store Tuning

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Timeline Events

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Track Mask

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Trait Tuning

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Tutorial Tuning

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UI Control Event Map

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UI Event Mode Mapping

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Video Global Tuning

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Video Playlist Tuning

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Visual Effects

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Visual Effects Merged

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Voice Effect

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WMRF Reference

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Wall

WallTrim = 4264756878

Wall Trim

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Water Manifest

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WaterMaskList = 2763687493

Water Mask List

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Weather Event Tuning

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Weather Forecast Tuning

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Whim Tuning

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Window Set

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World Camera Info

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World Camera Mesh

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World Conditional Data

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World Data

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World Description

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World File Header

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World Landing Strip

WorldLightsInfo = 418629235

World Lights Info

WorldLotArchitecture = 311764532

World Lot Architecture

WorldLotObjects = 2438369240

World Lot Objects

WorldLotParameterInfo = 1006173574

World Lot ParameterInfo

WorldManifest = 2026421476

World Manifest

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World Object Data

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WorldRoadPolys = 1866496362

World Road Polys

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World Timeline Color

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World Visual Effects Info

WorldWaterManifest = 356327961

World Water Manifest

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Worldmap Lot Thumbnail

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Zone Director Tuning

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Zone Modifier Tuning

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Zone Object Data

Class SmartSimUtilities

Namespace: [LlamaLogic.Packages](#)

Assembly: LlamaLogic.Packages.dll

Provides utility methods specific to The Sims 4

```
public static class SmartSimUtilities
```

Inheritance

[object](#) ← SmartSimUtilities

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

GetResourceKeyForLocale(ResourceKey, CultureInfo)

Gets the [ResourceKey](#) for this string table resource with the specified [locale](#)

```
public static ResourceKey GetResourceKeyForLocale(this ResourceKey key, CultureInfo locale)
```

Parameters

key [ResourceKey](#)

locale [CultureInfo](#)

Returns

[ResourceKey](#)

Exceptions

[ArgumentOutOfRangeException](#)

The locale is not supported by The Sims 4

GetStringTableLocale(ResourceKey)

Gets the locale of a string table resource in The Sims 4 based on its [key](#)

```
public static CultureInfo GetStringTableLocale(this ResourceKey key)
```

Parameters

[key](#) [ResourceKey](#)

Returns

[CultureInfo](#)

Exceptions

[ArgumentOutOfRangeException](#)

The high order byte of the instance does not correspond to a locale supported by The Sims 4

GetStringTableResourceKey(CultureInfo, uint, ulong)

Gets the [ResourceKey](#) of a string table resource in The Sims 4 based on its [locale](#), [group](#), and [fullInstance](#)

```
public static ResourceKey GetStringTableResourceKey(this CultureInfo locale, uint group,  
ulong fullInstance)
```

Parameters

[locale](#) [CultureInfo](#)

[group](#) [uint](#)

[fullInstance](#) [ulong](#)

Returns

[ResourceKey](#)

Exceptions

[ArgumentOutOfRangeException ↗](#)

The locale is not supported by The Sims 4

Namespace LlamaLogic.Packages.Cryptography

Classes

[Fnv24](#)

Represents the 24-bit implementation of the Fowler–Noll–Vo hash algorithm

[Fnv32](#)

Represents the 32-bit implementation of the Fowler–Noll–Vo hash algorithm

[Fnv56](#)

Represents the 56-bit implementation of the Fowler–Noll–Vo hash algorithm

[Fnv64](#)

Represents the 64-bit implementation of the Fowler–Noll–Vo hash algorithm

[FnvHash](#)

Represents the base class from which this library's implementations of the Fowler–Noll–Vo hash algorithms derive

Class Fnv24

Namespace: [LlamaLogic.Packages.Cryptography](#)

Assembly: LlamaLogic.Packages.dll

Represents the 24-bit implementation of the Fowler–Noll–Vo hash algorithm

```
public sealed class Fnv24 : Fnv32, ICryptoTransform, IDisposable
```

Inheritance

[object](#) ← [HashAlgorithm](#) ← [FnvHash](#) ← [Fnv32](#) ← [Fnv24](#)

Implements

[ICryptoTransform](#), [IDisposable](#)

Inherited Members

[Fnv32.HashSize](#), [FnvHash.ComputeHash\(string\)](#), [FnvHash.Initialize\(\)](#), [HashAlgorithm.Clear\(\)](#),
[HashAlgorithm.ComputeHash\(byte\[\]\)](#), [HashAlgorithm.ComputeHash\(byte\[\], int, int\)](#),
[HashAlgorithm.ComputeHash\(Stream\)](#),
[HashAlgorithm.ComputeHashAsync\(Stream, CancellationToken\)](#), [HashAlgorithm.Create\(\)](#),
[HashAlgorithm.Create\(string\)](#), [HashAlgorithm.Dispose\(\)](#),
[HashAlgorithm.TransformBlock\(byte\[\], int, int, byte\[\], int\)](#),
[HashAlgorithm.TransformFinalBlock\(byte\[\], int, int\)](#),
[HashAlgorithm.TryComputeHash\(ReadOnlySpan<byte>, Span<byte>, out int\)](#),
[HashAlgorithm.CanReuseTransform](#), [HashAlgorithm.CanTransformMultipleBlocks](#),
[HashAlgorithm.InputBlockSize](#), [HashAlgorithm.OutputBlockSize](#), [object.Equals\(object\)](#),
[object.Equals\(object, object\)](#), [object.GetHashCode\(\)](#), [object.GetType\(\)](#),
[object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Fields

EmptyStringHash

Gets the hash value for an empty string

```
public static readonly uint EmptyStringHash
```

Field Value

Properties

Hash

Gets the value of the computed hash code.

```
public override byte[]? Hash { get; }
```

Property Value

[byte](#)[]

The current value of the computed hash code.

Exceptions

[CryptographicUnexpectedOperationException](#)

[HashValue](#) is [null](#).

[ObjectDisposedException](#)

The object has already been disposed.

Methods

GetHash(string?)

Computes the hash value for the specified string

```
public static uint GetHash(string? text)
```

Parameters

[text](#) [string](#)

Returns

[uint ↗](#)

SetHighBit(uint)

Sets the high bit of a 24-bit Fowler–Noll–Vo hash

```
public static uint SetHighBit(uint hash)
```

Parameters

hash [uint ↗](#)

Returns

[uint ↗](#)

Class Fnv32

Namespace: [LlamaLogic.Packages.Cryptography](#)

Assembly: LlamaLogic.Packages.dll

Represents the 32-bit implementation of the Fowler–Noll–Vo hash algorithm

```
public class Fnv32 : FnvHash, ICryptoTransform, IDisposable
```

Inheritance

[object](#) ← [HashAlgorithm](#) ← [FnvHash](#) ← [Fnv32](#)

Implements

[ICryptoTransform](#), [IDisposable](#)

Derived

[Fnv24](#)

Inherited Members

[FnvHash.hash](#), [FnvHash.ComputeHash\(string\)](#), [FnvHash.HashCore\(byte\[\], int, int\)](#), [FnvHash.HashFinal\(\)](#),
[FnvHash.Initialize\(\)](#), [HashAlgorithm.HashSizeValue](#), [HashAlgorithm.HashValue](#),
[HashAlgorithm.State](#), [HashAlgorithm.Clear\(\)](#), [HashAlgorithm.ComputeHash\(byte\[\]\)](#),
[HashAlgorithm.ComputeHash\(byte\[\], int, int\)](#), [HashAlgorithm.ComputeHash\(Stream\)](#),
[HashAlgorithm.ComputeHashAsync\(Stream, CancellationToken\)](#), [HashAlgorithm.Create\(\)](#),
[HashAlgorithm.Create\(string\)](#), [HashAlgorithm.Dispose\(\)](#), [HashAlgorithm.Dispose\(bool\)](#),
[HashAlgorithm.HashCore\(ReadOnlySpan<byte>\)](#),
[HashAlgorithm.TransformBlock\(byte\[\], int, int, byte\[\], int\)](#),
[HashAlgorithm.TransformFinalBlock\(byte\[\], int, int\)](#),
[HashAlgorithm.TryComputeHash\(ReadOnlySpan<byte>, Span<byte>, out int\)](#),
[HashAlgorithm.TryHashFinal\(Span<byte>, out int\)](#), [HashAlgorithm.CanReuseTransform](#),
[HashAlgorithm.CanTransformMultipleBlocks](#), [HashAlgorithm.InputBlockSize](#),
[HashAlgorithm.OutputBlockSize](#), [object.Equals\(object\)](#), [object.Equals\(object, object\)](#),
[object.GetHashCode\(\)](#), [object.GetType\(\)](#), [object.MemberwiseClone\(\)](#),
[object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Constructors

[Fnv32\(\)](#)

Initializes a new instance of the [Fnv32](#) class

```
public Fnv32()
```

Fields

EmptyStringHash

Gets the hash value for an empty string

```
public static readonly uint EmptyStringHash
```

Field Value

[uint](#)

Properties

Hash

Gets the value of the computed hash code.

```
public override byte[]? Hash { get; }
```

Property Value

[byte](#)[]

The current value of the computed hash code.

Exceptions

[CryptographicUnexpectedOperationException](#)

[HashValue](#) is [null](#).

[ObjectDisposedException](#)

The object has already been disposed.

HashSize

Gets the size, in bits, of the computed hash code.

```
public override int HashSize { get; }
```

Property Value

[int](#)

The size, in bits, of the computed hash code.

Methods

GetHash(string?)

Computes the hash value for the specified string

```
public static uint GetHash(string? text)
```

Parameters

[text](#) [string](#)

Returns

[uint](#)

SetHighBit(uint)

Sets the high bit of a 32-bit Fowler–Noll–Vo hash

```
public static uint SetHighBit(uint hash)
```

Parameters

hash [uint](#) ↗

Returns

[uint](#) ↗

Class Fnv56

Namespace: [LlamaLogic.Packages.Cryptography](#)

Assembly: LlamaLogic.Packages.dll

Represents the 56-bit implementation of the Fowler–Noll–Vo hash algorithm

```
public sealed class Fnv56 : Fnv64, ICryptoTransform, IDisposable
```

Inheritance

[object](#) ← [HashAlgorithm](#) ← [FnvHash](#) ← [Fnv64](#) ← [Fnv56](#)

Implements

[ICryptoTransform](#), [IDisposable](#)

Inherited Members

[Fnv64.HashSize](#), [FnvHash.ComputeHash\(string\)](#), [FnvHash.Initialize\(\)](#), [HashAlgorithm.Clear\(\)](#),
[HashAlgorithm.ComputeHash\(byte\[\]\)](#), [HashAlgorithm.ComputeHash\(byte\[\], int, int\)](#),
[HashAlgorithm.ComputeHash\(Stream\)](#),
[HashAlgorithm.ComputeHashAsync\(Stream, CancellationToken\)](#), [HashAlgorithm.Create\(\)](#),
[HashAlgorithm.Create\(string\)](#), [HashAlgorithm.Dispose\(\)](#),
[HashAlgorithm.TransformBlock\(byte\[\], int, int, byte\[\], int\)](#),
[HashAlgorithm.TransformFinalBlock\(byte\[\], int, int\)](#),
[HashAlgorithm.TryComputeHash\(ReadOnlySpan<byte>, Span<byte>, out int\)](#),
[HashAlgorithm.CanReuseTransform](#), [HashAlgorithm.CanTransformMultipleBlocks](#),
[HashAlgorithm.InputBlockSize](#), [HashAlgorithm.OutputBlockSize](#), [object.Equals\(object\)](#),
[object.Equals\(object, object\)](#), [object.GetHashCode\(\)](#), [object.GetType\(\)](#),
[object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Fields

EmptyStringHash

Gets the hash value for an empty string

```
public static readonly ulong EmptyStringHash
```

Field Value

[ulong](#)

Properties

Hash

Gets the value of the computed hash code.

```
public override byte[]? Hash { get; }
```

Property Value

[byte](#)[]

The current value of the computed hash code.

Exceptions

[CryptographicUnexpectedOperationException](#)

[HashValue](#) is [null](#).

[ObjectDisposedException](#)

The object has already been disposed.

Methods

GetHash(string?)

Computes the hash value for the specified string

```
public static ulong GetHash(string? text)
```

Parameters

[text](#) [string](#)

Returns

[ulong ↗](#)

SetHighBit(ulong)

Sets the high bit of a 56-bit Fowler–Noll–Vo hash

```
public static ulong SetHighBit(ulong hash)
```

Parameters

hash [ulong ↗](#)

Returns

[ulong ↗](#)

Class Fnv64

Namespace: [LlamaLogic.Packages.Cryptography](#)

Assembly: LlamaLogic.Packages.dll

Represents the 64-bit implementation of the Fowler–Noll–Vo hash algorithm

```
public class Fnv64 : FnvHash, ICryptoTransform, IDisposable
```

Inheritance

[object](#) ← [HashAlgorithm](#) ← [FnvHash](#) ← [Fnv64](#)

Implements

[ICryptoTransform](#), [IDisposable](#)

Derived

[Fnv56](#)

Inherited Members

[FnvHash.hash](#), [FnvHash.ComputeHash\(string\)](#), [FnvHash.HashCore\(byte\[\], int, int\)](#), [FnvHash.HashFinal\(\)](#),
[FnvHash.Initialize\(\)](#), [HashAlgorithm.HashSizeValue](#), [HashAlgorithm.HashValue](#),
[HashAlgorithm.State](#), [HashAlgorithm.Clear\(\)](#), [HashAlgorithm.ComputeHash\(byte\[\]\)](#),
[HashAlgorithm.ComputeHash\(byte\[\], int, int\)](#), [HashAlgorithm.ComputeHash\(Stream\)](#),
[HashAlgorithm.ComputeHashAsync\(Stream, CancellationToken\)](#), [HashAlgorithm.Create\(\)](#),
[HashAlgorithm.Create\(string\)](#), [HashAlgorithm.Dispose\(\)](#), [HashAlgorithm.Dispose\(bool\)](#),
[HashAlgorithm.HashCore\(ReadOnlySpan<byte>\)](#),
[HashAlgorithm.TransformBlock\(byte\[\], int, int, byte\[\], int\)](#),
[HashAlgorithm.TransformFinalBlock\(byte\[\], int, int\)](#),
[HashAlgorithm.TryComputeHash\(ReadOnlySpan<byte>, Span<byte>, out int\)](#),
[HashAlgorithm.TryHashFinal\(Span<byte>, out int\)](#), [HashAlgorithm.CanReuseTransform](#),
[HashAlgorithm.CanTransformMultipleBlocks](#), [HashAlgorithm.InputBlockSize](#),
[HashAlgorithm.OutputBlockSize](#), [object.Equals\(object\)](#), [object.Equals\(object, object\)](#),
[object.GetHashCode\(\)](#), [object.GetType\(\)](#), [object.MemberwiseClone\(\)](#),
[object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Constructors

[Fnv64\(\)](#)

Initializes a new instance of the [Fnv64](#) class

```
public Fnv64()
```

Fields

EmptyStringHash

Gets the hash value for an empty string

```
public static readonly ulong EmptyStringHash
```

Field Value

[ulong](#)

Properties

Hash

Gets the value of the computed hash code.

```
public override byte[]? Hash { get; }
```

Property Value

[byte](#)[]

The current value of the computed hash code.

Exceptions

[CryptographicUnexpectedOperationException](#)

[HashValue](#) is [null](#).

[ObjectDisposedException](#)

The object has already been disposed.

HashSize

Gets the size, in bits, of the computed hash code.

```
public override int HashSize { get; }
```

Property Value

[int](#)

The size, in bits, of the computed hash code.

Methods

GetHash(string?)

Computes the hash value for the specified string

```
public static ulong GetHash(string? text)
```

Parameters

[text](#) [string](#)

Returns

[ulong](#)

SetHighBit(ulong)

Sets the high bit of a 64-bit Fowler–Noll–Vo hash

```
public static ulong SetHighBit(ulong hash)
```

Parameters

hash [ulong](#) ↗

Returns

[ulong](#) ↗

Class FnvHash

Namespace: [LlamaLogic.Packages.Cryptography](#)

Assembly: LlamaLogic.Packages.dll

Represents the base class from which this library's implementations of the Fowler–Noll–Vo hash algorithms derive

```
public abstract class FnvHash : HashAlgorithm, ICryptoTransform, IDisposable
```

Inheritance

[object](#) ← [HashAlgorithm](#) ← FnvHash

Implements

[ICryptoTransform](#), [IDisposable](#)

Derived

[Fnv32](#), [Fnv64](#)

Inherited Members

[HashAlgorithm.HashSizeValue](#), [HashAlgorithm.HashValue](#), [HashAlgorithm.State](#),
[HashAlgorithm.Clear\(\)](#), [HashAlgorithm.ComputeHash\(byte\[\]\)](#),
[HashAlgorithm.ComputeHash\(byte\[\], int, int\)](#), [HashAlgorithm.ComputeHash\(Stream\)](#),
[HashAlgorithm.ComputeHashAsync\(Stream, CancellationToken\)](#), [HashAlgorithm.Create\(\)](#),
[HashAlgorithm.Create\(string\)](#), [HashAlgorithm.Dispose\(\)](#), [HashAlgorithm.Dispose\(bool\)](#),
[HashAlgorithm.HashCore\(ReadOnlySpan<byte>\)](#),
[HashAlgorithm.TransformBlock\(byte\[\], int, int, byte\[\], int\)](#),
[HashAlgorithm.TransformFinalBlock\(byte\[\], int, int\)](#),
[HashAlgorithm.TryComputeHash\(ReadOnlySpan<byte>, Span<byte>, out int\)](#),
[HashAlgorithm.TryHashFinal\(Span<byte>, out int\)](#), [HashAlgorithm.CanReuseTransform](#),
[HashAlgorithm.CanTransformMultipleBlocks](#), [HashAlgorithm.Hash](#), [HashAlgorithm.HashSize](#),
[HashAlgorithm.InputBlockSize](#), [HashAlgorithm.OutputBlockSize](#), [object.Equals\(object\)](#),
[object.Equals\(object, object\)](#), [object.GetHashCode\(\)](#), [object.GetType\(\)](#),
[object.MemberwiseClone\(\)](#), [object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Constructors

[FnvHash\(ulong, ulong\)](#)

Represents the base class from which this library's implementations of the Fowler–Noll–Vo hash algorithms derive

```
protected FnvHash(ulong prime, ulong offset)
```

Parameters

prime [ulong](#)

offset [ulong](#)

Fields

hash

The hash aggregate

```
protected ulong hash
```

Field Value

[ulong](#)

Methods

ComputeHash(string?)

Computes the hash value for the specified string

```
public byte[] ComputeHash(string? value)
```

Parameters

value [string](#)

Returns

[byte](#)[]

HashCore(byte[], int, int)

When overridden in a derived class, routes data written to the object into the hash algorithm for computing the hash.

```
protected override void HashCore(byte[] array, int ibStart, int cbSize)
```

Parameters

array [byte](#)[]

The input to compute the hash code for.

ibStart [int](#)

The offset into the byte array from which to begin using data.

cbSize [int](#)

The number of bytes in the byte array to use as data.

HashFinal()

When overridden in a derived class, finalizes the hash computation after the last data is processed by the cryptographic hash algorithm.

```
protected override byte[] HashFinal()
```

Returns

[byte](#)[]

The computed hash code.

Initialize()

Resets the hash algorithm to its initial state.

```
public override void Initialize()
```

Namespace LlamaLogic.Packages.Models

Classes

[Model](#)

Represents a model for a raw resource

[StringTableModel](#)

Represents a [StringTable](#) resource ()

[UnexpectedFormatDecodingException](#)

Represents an exception thrown by an [IModel<TSelf>](#) when it attempts to decode a resource that is not in the expected format

Interfaces

[IModel](#)

Represents a model for a resource

[IModel<TSelf>](#)

Represents a model for a raw resource

Interface IModel

Namespace: [LlamaLogic.Packages.Models](#)

Assembly: LlamaLogic.Packages.dll

Represents a model for a resource

```
public interface IModel
```

Properties

ResourceName

Gets the name of this resource if it has one

```
string? ResourceName { get; }
```

Property Value

[string](#)

SupportedTypes

Gets a list of resource types that this model supports

```
public static abstract ISet<ResourceType> SupportedTypes { get; }
```

Property Value

[ISet](#)<[ResourceType](#)>

Methods

Encode()

Encodes the resource model into raw format ( )

`ReadOnlyMemory<byte> Encode()`

Returns

[ReadOnlyMemory<byte>](#)

GetName(Stream)

Gets the name of a resource from its raw data, if it has one ( )

`public static abstract string? GetName(Stream stream)`

Parameters

`stream Stream`

Returns

[string](#)

GetNameAsync(Stream, CancellationToken)

Gets the name of a resource from its raw data, if it has one, asynchronously ( )

`public static abstract Task<string?> GetNameAsync(Stream stream, CancellationToken cancellationToken = default)`

Parameters

`stream Stream`

`cancellationToken CancellationToken`

Returns

[Task<string>](#)

Interface `IModel<TSelf>`

Namespace: [LlamaLogic.Packages.Models](#)

Assembly: LlamaLogic.Packages.dll

Represents a model for a raw resource

```
public interface IModel<TSelf> : IModel where TSelf : IModel<TSelf>
```

Type Parameters

`TSelf`

Inherited Members

[IModel.SupportedTypes](#) , [IModel.GetName\(Stream\)](#) , [IModel.GetNameAsync\(Stream, CancellationToken\)](#) ,
[IModel.ResourceName](#) , [IModel.Encode\(\)](#)

Methods

`Decode(ReadOnlyMemory<byte>)`

Decodes the resource in raw format to produce an operable model ( )

```
public static abstract TSelf Decode(ReadOnlyMemory<byte> data)
```

Parameters

`data` [ReadOnlyMemory<byte>](#)

Returns

`TSelf`

Class Model

Namespace: [LlamaLogic.Packages.Models](#)

Assembly: LlamaLogic.Packages.dll

Represents a model for a raw resource

```
public abstract class Model : IModel
```

Inheritance

[object](#) ← Model

Implements

[IModel](#)

Derived

[DataModel](#), [GlobalModsManifestModel](#), [ModFileManifestModel](#), [StringTableModel](#)

Inherited Members

[object.Equals\(object\)](#), [object.Equals\(object, object\)](#), [object.GetHashCode\(\)](#), [object.GetType\(\)](#),
[object.MemberwiseClone\(\)](#), [object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Properties

ResourceName

Gets the name of this resource if it has one

```
public abstract string? ResourceName { get; }
```

Property Value

[string](#)

SupportedTypes

Gets a list of resource types that this model supports

```
public static ISet<ResourceType> SupportedTypes { get; }
```

Property Value

[ISet](#) < [ResourceType](#)>

Methods

Encode()

Encodes the resource model into raw format ( )

```
public abstract ReadOnlyMemory<byte> Encode()
```

Returns

[ReadOnlyMemory](#) < [byte](#)>

GetName(ResourceType, Stream)

Gets the name of a resource from its raw data, if it has one

```
public static string? GetName(ResourceType type, Stream stream)
```

Parameters

type [ResourceType](#)

stream [Stream](#)

Returns

[string](#)

GetName(Stream)

Gets the name of a resource from its raw data, if it has one ( )

```
public static string? GetName(Stream stream)
```

Parameters

stream [Stream](#) ↗

Returns

[string](#) ↗

GetNameAsync(ResourceType, Stream, CancellationToken)

Gets the name of a resource from its raw data, if it has one

```
public static Task<string?> GetNameAsync(ResourceType type, Stream stream, CancellationToken cancellationToken = default)
```

Parameters

type [ResourceType](#)

stream [Stream](#) ↗

cancellationToken [CancellationToken](#) ↗

Returns

[Task](#) ↗ <[string](#) ↗ >

GetNameAsync(Stream, CancellationToken)

Gets the name of a resource from its raw data, if it has one, asynchronously ( )

```
public static Task<string?> GetNameAsync(Stream stream, CancellationToken cancellationToken = default)
```

Parameters

stream [Stream](#)

cancellationToken [CancellationToken](#)

Returns

[Task](#)<[string](#)>

Class StringTableModel

Namespace: [LlamaLogic.Packages.Models](#)

Assembly: LlamaLogic.Packages.dll

Represents a [StringTable](#) resource ()

```
public class StringTableModel : Model, IModel<StringTableModel>, IModel
```

Inheritance

[object](#) ↗ ← [Model](#) ← StringTableModel

Implements

[IModel<StringTableModel>](#), [IModel](#)

Inherited Members

[Model.GetName\(ResourceType, Stream\)](#) ,
[Model.GetNameAsync\(ResourceType, Stream, CancellationToken\)](#) , [object.Equals\(object\)](#) ↗ ,
[object.Equals\(object, object\)](#) ↗ , [object.GetHashCode\(\)](#) ↗ , [object.GetType\(\)](#) ↗ ,
[object.MemberwiseClone\(\)](#) ↗ , [object.ReferenceEquals\(object, object\)](#) ↗ , [object.ToString\(\)](#) ↗

Properties

Count

Gets the number of entries in the string table

```
public int Count { get; }
```

Property Value

[int](#) ↗

this[uint]

Gets/sets the string associated with a [keyHash](#)

```
public string this[uint keyHash] { get; set; }
```

Parameters

keyHash [uint](#)

Property Value

[string](#)

KeyHashes

Gets the key hashes in the string table

```
public IReadOnlyList<uint> KeyHashes { get; }
```

Property Value

[IReadOnlyList](#)<[uint](#)>

ResourceName

Gets the name of this resource if it has one

```
public override string? ResourceName { get; }
```

Property Value

[string](#)

SupportedTypes

Gets a list of resource types that this model supports

```
public static ISet<ResourceType> SupportedTypes { get; }
```

Property Value

[ISet](#) <[ResourceType](#)>

Methods

AddNew(string)

Adds `string` to the string table, returning its key hash

```
public uint AddNew(string @string)
```

Parameters

`string` [string](#)

Returns

[uint](#)

Exceptions

[ArgumentException](#)

The key hash generated for `string` already existed in the string table

Decode(ReadOnlyMemory<byte>)

Decodes the resource in raw format to produce an operable model ( )

```
public static StringTableModel Decode(ReadOnlyMemory<byte> data)
```

Parameters

`data` [ReadOnlyMemory](#) <[byte](#)>

Returns

[StringTableModel](#)

Delete(uint)

Deletes the string associated with a `keyHash`, returning `true` if the key hash existed in the string table

```
public bool Delete(uint keyHash)
```

Parameters

`keyHash` [uint](#)

Returns

[bool](#)

Encode()

Encodes the resource model into raw format ()

```
public override ReadOnlyMemory<byte> Encode()
```

Returns

[ReadOnlyMemory](#) <[byte](#)>

Get(uint)

Gets the string associated with a `keyHash`

```
public string Get(uint keyHash)
```

Parameters

`keyHash` [uint](#)

Returns

[string](#)

GetName(Stream)

Gets the name of a resource from its raw data, if it has one ([🔗](#) [Copied](#))

```
public static string? GetName(Stream stream)
```

Parameters

stream [Stream](#)

Returns

[string](#)

GetNameAsync(Stream, CancellationToken)

Gets the name of a resource from its raw data, if it has one, asynchronously ([🔗](#) [Copied](#))

```
public static Task<string?> GetNameAsync(Stream stream, CancellationToken cancellationToken = default)
```

Parameters

stream [Stream](#)

cancellationToken [CancellationToken](#)

Returns

[Task](#) <[string](#)>

Set(uint, string)

Sets the `string` associated with a `keyHash`, returning `true` if the key hash did not already exist in the string table

```
public bool Set(uint keyHash, string @string)
```

Parameters

`keyHash` `uint`

`string` `string`

Returns

`bool`

Class UnexpectedFormatException

Namespace: [LlamaLogic.Packages.Models](#)

Assembly: LlamaLogic.Packages.dll

Represents an exception thrown by an [IModel<TSelf>](#) when it attempts to decode a resource that is not in the expected format

```
public sealed class UnexpectedFormatException : Exception, ISerializable
```

Inheritance

[object](#) ← [Exception](#) ← UnexpectedFormatException

Implements

[ISerializable](#)

Inherited Members

[Exception.GetBaseException\(\)](#) , [Exception.GetObjectData\(SerializationInfo, StreamingContext\)](#) ,
[Exception.GetType\(\)](#) , [Exception.ToString\(\)](#) , [Exception.Data](#) , [Exception.HelpLink](#) ,
[Exception.HResult](#) , [Exception.InnerException](#) , [Exception.Message](#) , [Exception.Source](#) ,
[Exception.StackTrace](#) , [Exception.TargetSite](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Constructors

UnexpectedFormatException()

Initializes a new [UnexpectedFormatException](#)

```
public UnexpectedFormatException()
```

UnexpectedFormatException(Exception?)

Initializes a new [UnexpectedFormatException](#) with the specified [innerException](#)

```
public UnexpectedFormatException(Exception? innerException)
```

Parameters

innerException [Exception](#)

UnexpectedFormatException(string)

Initializes a new [UnexpectedFormatException](#) with the specified message

```
public UnexpectedFormatException(string message)
```

Parameters

message [string](#)

UnexpectedFormatException(string, Exception?)

Initializes a new [UnexpectedFormatException](#) with the specified message and innerException

```
public UnexpectedFormatException(string message, Exception? innerException)
```

Parameters

message [string](#)

innerException [Exception](#)

Namespace LlamaLogic.Packages.Models.Data

Classes

[DataModel](#)

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Enums

[DataModelType](#)

A type of data within a data resource

[DataModelVersion](#)

Known versions of the format for [SimData](#) and [CombinedTuning](#) resources

Class DataModel

Namespace: [LlamaLogic.Packages.Models.Data](#)

Assembly: LlamaLogic.Packages.dll

Represents a [SimData](#) or [CombinedTuning](#) resource ()

```
public sealed class DataModel : Model, IModel<DataModel>, IModel
```

Inheritance

[object](#) ↗ ← [Model](#) ← DataModel

Implements

[IModel<DataModel>](#), [IModel](#)

Inherited Members

[Model.GetName\(ResourceType, Stream\)](#) ,
[Model.GetNameAsync\(ResourceType, Stream, CancellationToken\)](#) , [object.Equals\(object\)](#) ↗ ,
[object.Equals\(object, object\)](#) ↗ , [object.GetHashCode\(\)](#) ↗ , [object.GetType\(\)](#) ↗ ,
[object.ReferenceEquals\(object, object\)](#) ↗ , [object.ToString\(\)](#) ↗

Remarks

Synchronous API Only

Due to performance considerations, this object model provides no asynchronous API. Thus, the caller will be blocked until the entire [SimData](#) or [CombinedTuning](#) resource is decoded by [Decode\(ReadOnlyMemory<byte>\)](#) or encoded by [Encode\(\)](#). Front-end developers are advised to wrap calls to either method with [Run\(Func<Task>\)](#) ↗ to avoid blocking the UI thread. The asynchronous API of [DataBasePackedFile](#) will do this automatically.

Eager Loading

When a [SimData](#) or [CombinedTuning](#) resource is passed to [Decode\(ReadOnlyMemory<byte>\)](#), the entire resource is decoded to compose a complete graph of all tables in the resource, including their metadata and records. For some [CombinedTuning](#) resources shipped by Maxis, this may result in a large number of tables and records being loaded into memory and take a significant amount of time.

Thread Safety

For performance reasons, this class and its supporting classes in this namespace are not thread-safe. If a caller has need for parallelized use of a [DataModel](#), they are expected to manage synchronization on

their own.

Exposed Reference Structure

To grant callers maximum control, the structure of references from the [SimData](#) or [CombinedTuning](#) resource is preserved and unabstracted.

While the classes which implement [DataModelReference](#) have properties to produce useful compositions (e.g. the [Value](#) property of [DataModelString](#) will convert the null-terminated sequence of ASCII characters it references in a [DataModelTable](#) of [CHAR8](#) values to a [string](#)), these conveniences are processed on-demand and only so long as the reference has remained valid. The original data being referenced remains stored by instances of [DataModelTable](#) as it appeared in the resource at the time it was decoded. All instances of [DataModelReference](#) monitor the row (or rows) of the [DataModelTable](#) they are referencing and will invalidate themselves if any constituent element is altered by the caller.

[Encode\(\)](#) reacts to invalid references by writing the [RELOFFSET_NULL](#) value in their place. Callers can check to see if something they've done has invalidated a reference by checking its [IsValid](#) property.

Properties

this[int]

Gets the table at the specified [index](#)

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

Parameters

[index](#) [int](#)

Property Value

[DataModelTable](#)

this[string]

Gets the table with the specified [name](#)

```
public DataModelTable this[string name] { get; }
```

Parameters

name [string](#)

Property Value

[DataModelTable](#)

ResourceName

Gets the name of this resource if it has one

```
public override string? ResourceName { get; }
```

Property Value

[string](#)

SupportedTypes

Gets a list of resource types that this model supports

```
public static ISet<ResourceType> SupportedTypes { get; }
```

Property Value

[ISet](#)<[ResourceType](#)>

Tables

Gets the tables in this resource

```
public Collection<DataModelTable> Tables { get; }
```

Property Value

[Collection](#)<[DataModelTable](#)>

Version

Gets/sets the [DataModelVersion](#) of this resource

```
public DataModelVersion Version { get; set; }
```

Property Value

[DataModelVersion](#)

Methods

Decode(ReadOnlyMemory<byte>)

Decodes the resource in raw format to produce an operable model ( )

```
public static DataModel Decode(ReadOnlyMemory<byte> data)
```

Parameters

data [ReadOnlyMemory<byte>](#)

Returns

[DataModel](#)

Exceptions

[UnexpectedFormatDecodingException](#)

The data appears to be a [CombinedTuning](#) resource in XML format

Encode()

Encodes the resource model into raw format ( )

```
public override ReadOnlyMemory<byte> Encode()
```

Returns

[ReadOnlyMemory](#) <byte>

GetName(Stream)

Gets the name of a resource from its raw data, if it has one ( )

```
public static string? GetName(Stream stream)
```

Parameters

stream [Stream](#)

Returns

[string](#)

GetNameAsync(Stream, CancellationToken)

Gets the name of a resource from its raw data, if it has one, asynchronously ( )

```
public static Task<string?> GetNameAsync(Stream stream, CancellationToken cancellationToken = default)
```

Parameters

stream [Stream](#)

cancellationToken [CancellationToken](#)

Returns

[Task](#) <string>

GetTable(string)

Gets the table with the specified `name`

```
public DataModelTable GetTable(string name)
```

Parameters

`name` [string](#)

Returns

[DataModelTable](#)

Class DataModelObject

Namespace: [LlamaLogic.Packages.Models.Data](#)

Assembly: LlamaLogic.Packages.dll

Represents an [OBJECT](#) reference in a [SimData](#) or [CombinedTuning](#) resource ()

```
public class DataModelObject : DataModelReference
```

Inheritance

[object](#) ← [DataModelReference](#) ← DataModelObject

Derived

[DataModelVariant](#)

Inherited Members

[DataModelReference.Column](#) , [DataModelReference.ColumnIndex](#) , [DataModelReference.IsValid](#) ,
[DataModelReference.Row](#) , [DataModelReference.RowIndex](#) , [DataModelReference.Table](#) ,
[DataModelReference.Type](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

DataModelObject(DataModelTable, Index, Index, DataModelType)

Initializes a new [DataModelObject](#) ( )

```
public DataModelObject(DataModelTable table, Index rowIndex, Index columnIndex,  
DataModelType type)
```

Parameters

table [DataModelTable](#)

The table containing the object being referenced

rowIndex [Index ↗](#)

The row index within the containing table of the object being referenced

columnIndex [Index ↗](#)

The column index within the containing table of the object being referenced

type [DataModelType](#)

The type of the object being referenced

Properties

NullReference

Gets the null reference [DataModelObject](#)

```
public static DataModelObject NullReference { get; }
```

Property Value

[DataModelObject](#)

Value

Gets/sets the value referenced by the object ([z ↗](#))

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

Property Value

[object ↗](#)

Class DataModelReference

Namespace: [LlamaLogic.Packages.Models.Data](#)

Assembly: LlamaLogic.Packages.dll

Represents a reference in a [SimData](#) or [CombinedTuning](#) resource ()

```
public abstract class DataModelReference
```

Inheritance

[object](#) ← DataModelReference

Derived

[DataModelObject](#), [DataModelString](#), [DataModelVector](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

DataModelReference(DataModelTable, Index, Index,
DataModelType)

Initializes a new [DataModelReference](#) ( )

```
protected DataModelReference(DataModelTable table, Index rowIndex, Index columnIndex,  
DataModelType type)
```

Parameters

table [DataModelTable](#)

The table containing the structure being referenced

rowIndex [Index](#)

The row index within the containing table of the structure being referenced

`columnIndex` [Index ↗](#)

The column index within the containing table of the structure being referenced

`type` [DataModelType](#)

The type of the structure being referenced

Properties

Column

Gets the column index within the table containing the reference of the reference

```
public int Column { get; }
```

Property Value

[int ↗](#)

ColumnIndex

Gets the column index within the table containing the reference of the reference

```
public Index ColumnIndex { get; }
```

Property Value

[Index ↗](#)

IsValid

Gets whether the reference has remained valid

```
public virtual bool IsValid { get; }
```

Property Value

[bool](#)

Row

Gets the row index within the table containing the reference of the reference (or -1 if the row has been removed)

```
public int Row { get; }
```

Property Value

[int](#)

RowIndex

Gets the row index within the table containing the reference of the reference (or -1 if the row has been removed)

```
public Index RowIndex { get; }
```

Property Value

[Index](#)

Table

Gets the table containing the structure being referenced

```
public DataModelTable Table { get; }
```

Property Value

[DataModelTable](#)

Type

Gets the type of the structure being referenced

```
public DataModelType Type { get; }
```

Property Value

[DataModelType](#)

Class DataModelString

Namespace: [LlamaLogic.Packages.Models.Data](#)

Assembly: LlamaLogic.Packages.dll

Represents a [STRING8](#) or [HASHEDSTRING8](#) reference in a [SimData](#) or [CombinedTuning](#) resource ()

```
public sealed class DataModelString : DataModelReference
```

Inheritance

[object](#) ↗ ← [DataModelReference](#) ← DataModelString

Inherited Members

[DataModelReference.Column](#) , [DataModelReference.ColumnIndex](#) , [DataModelReference.IsValid](#) ,
[DataModelReference.Row](#) , [DataModelReference.RowIndex](#) , [DataModelReference.Table](#) ,
[DataModelReference.Type](#) , [object.Equals\(object\)](#) ↗ , [object.Equals\(object, object\)](#) ↗ ,
[object.GetHashCode\(\)](#) ↗ , [object.GetType\(\)](#) ↗ , [object.ReferenceEquals\(object, object\)](#) ↗ ,
[object.ToString\(\)](#) ↗

Constructors

DataModelString(DataModelTable, Index)

Initializes a new [DataModelString](#) ( )

```
public DataModelString(DataModelTable table, Index rowIndex)
```

Parameters

table [DataModelTable](#)

The table, a sub sequence of which, is the null-terminated string of [CHAR8](#) values

rowIndex [Index](#) ↗

The row index within the containing table of the string being referenced at which the string begins

Properties

Length

Gets the length of the string in ASCII characters, including the null terminator

```
public int Length { get; }
```

Property Value

[int↗](#)

NullReference

Gets the null reference [DataModelString](#)

```
public static DataModelString NullReference { get; }
```

Property Value

[DataModelString](#)

Range

Gets the range rows of the string

```
public Range Range { get; }
```

Property Value

[Range↗](#)

Value

Gets/sets the value of the string ([zz](#))

```
public string Value { get; set; }
```

Property Value

[string](#) ↗

Class DataModelTable

Namespace: [LlamaLogic.Packages.Models.Data](#)

Assembly: LlamaLogic.Packages.dll

Represents a table in a [SimData](#) or [CombinedTuning](#) resource ()

```
public sealed class DataModelTable
```

Inheritance

[object](#) ← DataModelTable

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

DataModelTable(string?, string?, uint?)

Represents a table in a [SimData](#) or [CombinedTuning](#) resource ()

```
public DataModelTable(string? name, string? schemaName, uint? schemaHash)
```

Parameters

name [string](#)

schemaName [string](#)

schemaHash [uint](#)?

Properties

ColumnCount

Gets the number of columns

```
public int ColumnCount { get; }
```

Property Value

[int](#)

this[Index]

Gets/sets the values of the specified [rowIndex](#)

```
public object? this[Index rowIndex] { get; set; }
```

Parameters

[rowIndex](#) [Index](#)

Property Value

[object](#)

this[Index, Index]

Gets/sets the value at the specified [rowIndex](#) and [columnIndex](#)

```
public object? this[Index rowIndex, Index columnIndex] { get; set; }
```

Parameters

[rowIndex](#) [Index](#)

[columnIndex](#) [Index](#)

Property Value

[object](#)

this[Index, string]

Gets/sets the value of the specified `rowIndex` for column with the specified `columnName`

```
public object? this[Index rowIndex, string columnName] { get; set; }
```

Parameters

`rowIndex` [Index](#)

`columnName` [string](#)

Property Value

[object](#)

Name

Gets/sets the name of the table

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

Property Value

[string](#)

RawValues

Gets the raw values of the table

```
public IEnumerable<object?> RawValues { get; }
```

Property Value

[IEnumerable](#) <[object](#)>

RowCount

Gets the number of rows

```
public int RowCount { get; }
```

Property Value

[int](#)

SchemaHash

Gets/sets the unique identifier for the schema of the table

```
public uint? SchemaHash { get; set; }
```

Property Value

[uint](#)?

SchemaName

Gets/sets the name of the schema of the table

```
public string? SchemaName { get; set; }
```

Property Value

[string](#)

Methods

AddColumn(string?, DataModelType, ushort,
IEnumerable<object?>?)

Adds a column with the specified `name`, `type`, `flags`, and `values`, and returns the index of the column

```
public int AddColumn(string? name, DataModelType type, ushort flags = 0, IEnumerable<object?> values = null)
```

Parameters

name [string](#)

type [DataModelType](#)

flags [ushort](#)

values [IEnumerable<object>](#)

Returns

[int](#)

AddRow(object?)

Adds the specified [row](#) and returns the index of the row

```
public int AddRow(object? row)
```

Parameters

row [object](#)

Returns

[int](#)

Get(Index)

Gets the values of the row at the specified [rowIndex](#)

```
public object? Get(Index rowIndex)
```

Parameters

`rowIndex` [Index ↗](#)

Returns

[object ↗](#)

Get(Index, Index)

Gets the value at the specified `rowIndex` and `columnIndex`

```
public object? Get(Index rowIndex, Index columnIndex)
```

Parameters

`rowIndex` [Index ↗](#)

`columnIndex` [Index ↗](#)

Returns

[object ↗](#)

Get(Index, string)

Gets the value at the specified `rowIndex` for the column with the specified `columnName`

```
public object? Get(Index rowIndex, string columnName)
```

Parameters

`rowIndex` [Index ↗](#)

`columnName` [string ↗](#)

Returns

[object ↗](#)

GetColumnFlags(Index)

Gets the flags of the column at the specified `index`

```
public ushort GetColumnFlags(Index index)
```

Parameters

`index` [Index](#)

Returns

[ushort](#)

GetColumnFlags(string)

Gets the flags of the column with the specified `columnName`

```
public ushort GetColumnFlags(string columnName)
```

Parameters

`columnName` [string](#)

Returns

[ushort](#)

GetColumnIndex(string)

Gets the index of the column with the specified `columnName`, or [null](#) if the column does not exist

```
public int? GetColumnIndex(string columnName)
```

Parameters

`columnName` [string](#)

Returns

[int](#)?

GetColumnName(Index)

Gets the name of the column at the specified [index](#)

```
public string? GetColumnName(Index index)
```

Parameters

[index](#) [Index](#)

Returns

[string](#)

GetColumnType(Index)

Gets the [DataModelType](#) of the column at the specified [index](#)

```
public DataModelType GetColumnType(Index index)
```

Parameters

[index](#) [Index](#)

Returns

[DataModelType](#)

GetColumnType(string)

Gets the [DataModelType](#) of the column with the specified [columnName](#)

```
public DataModelType GetColumnType(string columnName)
```

Parameters

columnName [string](#)

Returns

[DataModelType](#)

GetColumnValues(Index)

Gets all the values for the column at the specified index

```
public IReadOnlyList<object?> GetColumnValues(Index index)
```

Parameters

index [Index](#)

Returns

[IReadOnlyList](#) <[object](#)>

GetColumnValues(Index, Index, Predicate<object?>)

Gets the values for the specified columnIndex starting at the specified startingRowIndex for as long as the takeWhile predicate returns true

```
public IReadOnlyList<object?> GetColumnValues(Index columnIndex, Index startingRowIndex,  
Predicate<object?> takeWhile)
```

Parameters

columnIndex [Index](#)

startingRowIndex [Index](#)

`takeWhile` [Predicate](#)<[object](#)>

Returns

[IReadOnlyList](#)<[object](#)>

GetColumnValues(Index, Range)

Gets the values for the column at the specified `columnIndex` for the specified `rows`

```
public IReadOnlyList<object?> GetColumnValues(Index columnIndex, Range rows)
```

Parameters

`columnIndex` [Index](#)

`rows` [Range](#)

Returns

[IReadOnlyList](#)<[object](#)>

GetColumnValues(string)

Gets all the values for the column with the specified `columnName`

```
public IReadOnlyList<object?> GetColumnValues(string columnName)
```

Parameters

`columnName` [string](#)

Returns

[IReadOnlyList](#)<[object](#)>

GetColumnValues(string, Index, Predicate<object?>)

Gets the values for the column with the specified `columnName` starting at the specified `startingRowIndex` for as long as the `takeWhile` predicate returns `true`

```
public IReadOnlyList<object?> GetColumnValues(string columnName, Index startingRowIndex,  
Predicate<object?> takeWhile)
```

Parameters

`columnName` [string](#)

`startingRowIndex` [Index](#)

`takeWhile` [Predicate](#)<[object](#)>

Returns

[IReadOnlyList](#)<[object](#)>

GetColumnValues(string, Range)

Gets the values for the column with the specified `columnName` for the specified `rows`

```
public IReadOnlyList<object?> GetColumnValues(string columnName, Range rows)
```

Parameters

`columnName` [string](#)

`rows` [Range](#)

Returns

[IReadOnlyList](#)<[object](#)>

GetRawValue(Index)

Gets the value of a raw table for the specified `row`

```
public object? GetRawValue(Index row)
```

Parameters

row [Index](#)

Returns

[object](#)

GetRawValues(int, int)

Gets the values of a raw table for the specified number of [rows](#) beginning at the specified [RowIndex](#)

```
public IReadOnlyList<object?> GetRawValues(int rowIndex, int rows)
```

Parameters

rowIndex [int](#)

rows [int](#)

Returns

[IReadOnlyList](#)<[object](#)>

GetRawValues(Range)

Gets the values of a raw table for the specified [rows](#)

```
public IReadOnlyList<object?> GetRawValues(Range rows)
```

Parameters

rows [Range](#)

Returns

[IReadOnlyList](#)<[object](#)>

InsertColumn(Index, string?, DataModelType, ushort, IEnumerable<object?>?)

Inserts a column with the specified `name`, `type`, and `flags` at the specified `index`

```
public void InsertColumn(Index index, string? name, DataModelType type, ushort flags = 0, IEnumerable<object?>? values = null)
```

Parameters

`index` [Index](#)

`name` [string](#)

`type` [DataModelType](#)

`flags` [ushort](#)

`values` [IEnumerable](#)<[object](#)>

InsertRow(Index, object?)

Inserts the specified `row` at the specified `index`

```
public void InsertRow(Index index, object? row)
```

Parameters

`index` [Index](#)

`row` [object](#)

RemoveColumn(Index)

Removes the column at the specified `index`

```
public void RemoveColumn(Index index)
```

Parameters

index [Index ↗](#)

RemoveColumn(string)

Removes the column with the specified `columnName` and returns the index at which the column was removed

```
public int RemoveColumn(string columnName)
```

Parameters

columnName [string ↗](#)

Returns

[int ↗](#)

RemoveRow(Index)

Removes the row at the specified `index`

```
public void RemoveRow(Index index)
```

Parameters

index [Index ↗](#)

Set(Index, Index, object?)

Sets the value at the specified `RowIndex` and `ColumnIndex`

```
public void Set(Index rowIndex, Index columnIndex, object? value)
```

Parameters

rowIndex [Index](#)

columnIndex [Index](#)

value [object](#)

Set(Index, object?)

Sets the `row` at the specified `index`

```
public void Set(Index index, object? row)
```

Parameters

index [Index](#)

row [object](#)

Set(Index, string, object?)

Sets the value of the specified `rowIndex` for column with the specified `columnName`

```
public void Set(Index rowIndex, string columnName, object? value)
```

Parameters

rowIndex [Index](#)

columnName [string](#)

value [object](#)

SetColumnFlags(Index, ushort)

Sets the flags of the column at the specified `index`

```
public void SetColumnFlags(Index index, ushort flags)
```

Parameters

`index` [Index](#)

`flags` [ushort](#)

SetColumnFlags(string, ushort)

Sets the flags of the column with the specified `columnName`

```
public void SetColumnFlags(string columnName, ushort flags)
```

Parameters

`columnName` [string](#)

`flags` [ushort](#)

SetColumnName(Index, string?)

Sets the name of the column at the specified `index`

```
public void SetColumnName(Index index, string? name)
```

Parameters

`index` [Index](#)

`name` [string](#)

SetRawValue(Index, object?)

Sets the `value` of a raw table for the specified `row`

```
public void SetRawValue(Index row, object? value)
```

Parameters

row [Index](#)

value [object](#)

SetRawValues(Range, IEnumerable<object?>)

Replaces the specified **rows** in a raw table with the specified **values**, returning the length of **values**

```
public int SetRawValues(Range rows, IEnumerable<object?> values)
```

Parameters

rows [Range](#)

values [IEnumerable](#)<[object](#)>

Returns

[int](#)

Enum DataModelType

Namespace: [LlamaLogic.Packages.Models.Data](#)

Assembly: LlamaLogic.Packages.dll

A type of data within a data resource

```
public enum DataModelType
```

Fields

BOOL = 0

A [bool](#) expressed with an entire [byte](#) (0 is [false](#), any other value is [true](#))

CHAR8 = 1

A single ASCII character

FLOAT = 10

A [float](#)

FLOAT2 = 15

You might think it's a [double](#), but nope: two [float](#)s

FLOAT3 = 16

An obvious trend is developing, for this is three [float](#)s

FLOAT4 = 17

(You know when, every once in a while, there's a great trilogy and someone messes it up?) Here are your four [float](#)s

HASHEDSTRING8 = 12

An [int](#) offset to a null-terminated ASCII [string](#) and its accompanying [Fnv32](#) hash

INT16 = 4

A [short](#)

INT32 = 6

An [int](#)

INT64 = 8

A [long](#)

INT8 = 2

An [sbyte](#)

LOCKEY = 20

A four-[byte](#) key used to uniquely identify localized strings in The Sims 4 (typically the [Env32](#) hash of the string in its original language)

OBJECT = 13

An [int](#) offset to an object

RESOURCEKEY = 19

A [ResourceKey](#) laid out by [FullInstance](#), then [Type](#), then [Group](#)

STRING8 = 11

An [int](#) offset to a null-terminated ASCII [string](#)

TABLESETREFERENCE = 18

It's not just about good manners from "How to Serve and Not Be Served", it's really about this [ulong](#)

Seriously, though, why have these when we already have [UINT64](#), you ask?

you're right that table set refs are just uint64s, but it is important to distinguish them because they mean different things. int64s are just literal numbers, table set refs are tuning IDs. so, when the game loads these, it knows that uint64 is just a number, so leave it alone, whereas a table set ref is tuning, so it needs to look that tuning up and use it as the value there rather than the number itself

— frankk, August 16, 2024 in Lot 51's Discord

UINT16 = 5

A [ushort](#)

UINT32 = 7

A [uint](#)

UINT64 = 9

A [ulong](#)

UINT8 = 3

A [byte](#)

UNDEFINED = 22

?

VARIANT = 21

An [int](#) offset to an object accompanied by a [uint](#) type hash

VECTOR = 14

An [int](#) offset to an array of objects and a [uint](#) that is its size

Class DataModelVariant

Namespace: [LlamaLogic.Packages.Models.Data](#)

Assembly: LlamaLogic.Packages.dll

Represents a [VARIANT](#) reference in a [SimData](#) or [CombinedTuning](#) resource ()

```
public sealed class DataModelVariant : DataModelObject
```

Inheritance

[object](#)  [DataModelReference](#)  [DataModelObject](#)  DataModelVariant

Inherited Members

[DataModelObject.NullReference](#) , [DataModelObject.Value](#) , [DataModelReference.Column](#) ,
[DataModelReference.ColumnIndex](#) , [DataModelReference.IsValid](#) , [DataModelReference.Row](#) ,
[DataModelReference.RowIndex](#) , [DataModelReference.Table](#) , [DataModelReference.Type](#) ,
[object.Equals\(object\)](#)  , [object.Equals\(object, object\)](#)  , [object.GetHashCode\(\)](#)  , [object.GetType\(\)](#)  ,
[object.ReferenceEquals\(object, object\)](#)  , [object.ToString\(\)](#) 

Constructors

DataModelVariant(DataModelTable, Index, Index, DataModelType, uint)

Initializes a new [DataModelVariant](#) ( )

```
public DataModelVariant(DataModelTable table, Index rowIndex, Index columnIndex,  
DataModelType type, uint typeHash)
```

Parameters

table [DataModelTable](#)

The table containing the variant being referenced

rowIndex [Index](#) 

The row index within the containing table of the variant being referenced

columnIndex [Index](#)

The column index within the containing table of the variant being referenced

type [DataModelType](#)

The type of the variant being referenced

typeHash [uint](#)

The type hash of the variant

Properties

TypeHash

Gets/sets the type hash of the variant

```
public uint TypeHash { get; set; }
```

Property Value

[uint](#)

Methods

CreateNullReference(uint)

Create a [DataModelVariant](#) null reference

```
public static DataModelVariant CreateNullReference(uint typeHash)
```

Parameters

typeHash [uint](#)

The type hash of the variant

Returns

DataModelVariant

Class DataModelVector

Namespace: [LlamaLogic.Packages.Models.Data](#)

Assembly: LlamaLogic.Packages.dll

Represents a [VECTOR](#) reference in a [SimData](#) or [CombinedTuning](#) resource ()

```
public sealed class DataModelVector : DataModelReference
```

Inheritance

[object](#)  [DataModelReference](#)  DataModelVector

Inherited Members

[DataModelReference.Column](#) , [DataModelReference.ColumnIndex](#) , [DataModelReference.Row](#) ,
[DataModelReference.RowIndex](#) , [DataModelReference.Table](#) , [DataModelReference.Type](#) ,
[object.Equals\(object\)](#)  , [object.Equals\(object, object\)](#)  , [object.GetHashCode\(\)](#)  , [object.GetType\(\)](#)  ,
[object.ReferenceEquals\(object, object\)](#)  , [object.ToString\(\)](#) 

Constructors

DataModelVector(DataModelTable, Index, DataModelType, int)

Initializes a new [DataModelVector](#) ( )

```
public DataModelVector(DataModelTable table, Index rowIndex, DataModelType type, int count)
```

Parameters

table [DataModelTable](#)

The table, a sub sequence of which, is the vector

rowIndex [Index](#) 

The row index within the containing table of the vector being referenced at which the vector begins

type [DataModelType](#)

The type of the objects being referenced

`count` [int](#)

The number of elements in the vector

Properties

Count

Gets the number of elements in the vector

```
public int Count { get; }
```

Property Value

[int](#)

Indices

Gets the indices of the vector

```
public IEnumerable<int> Indices { get; }
```

Property Value

[IEnumerable](#) <[int](#)>

IsValid

Gets whether the reference has remained valid

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

Property Value

[bool](#)

Range

Gets the range rows of the vector

```
public Range Range { get; }
```

Property Value

[Range](#)

Values

Gets/sets the sequence of values referenced by the vector ([zz](#))

```
public IEnumerable<object?> Values { get; set; }
```

Property Value

[IEnumerable](#) <[object](#)>

Methods

CreateNullReference(int)

Create a [DataModelVector](#) null reference

```
public static DataModelVector CreateNullReference(int count = 0)
```

Parameters

count [int](#)

The number of elements (probably should be [0](#))

Returns

[DataModelVector](#)

Enum DataModelVersion

Namespace: [LlamaLogic.Packages.Models.Data](#)

Assembly: LlamaLogic.Packages.dll

Known versions of the format for [SimData](#) and [CombinedTuning](#) resources

```
public enum DataModelVersion : uint
```

Fields

SmartSimOriginalEdition = 256

The edition of the format which shipped with the original release of The Sims 4 on September 2, 2014

VariantSupport = 257

The edition of the format which shipped with The Sims 4 (v1.5.139) on February 17, 2015, introducing support for [VARIANT](#) and allowing the creation of [CombinedTuning](#) resources

Namespace LlamaLogic.Packages.Models.GlobalManifest

Classes

[GlobalModsManifestModel](#)

Represents the global mods manifest [SnippetTuning](#) resource ()

[GlobalModsManifestModelManifestedModFile](#)

Represents a manifested mod in a global mods manifest [SnippetTuning](#) resource ()

Class GlobalModsManifestModel

Namespace: [LlamaLogic.Packages.Models.GlobalManifest](#)

Assembly: LlamaLogic.Packages.dll

Represents the global mods manifest [SnippetTuning](#) resource ()

```
public sealed class GlobalModsManifestModel : Model, IModel<GlobalModsManifestModel>,  
IModel, IXmlSerializable
```

Inheritance

[object](#) ← [Model](#) ← GlobalModsManifestModel

Implements

[IModel<GlobalModsManifestModel>](#), [IModel](#), [IXmlSerializable](#)

Inherited Members

[Model.GetName\(Stream\)](#), [Model.GetNameAsync\(Stream, CancellationToken\)](#),
[Model.GetName\(ResourceType, Stream\)](#),
[Model.GetNameAsync\(ResourceType, Stream, CancellationToken\)](#), [object.Equals\(object\)](#),
[object.Equals\(object, object\)](#), [object.GetHashCode\(\)](#), [object.GetType\(\)](#),
[object.ReferenceEquals\(object, object\)](#), [object.ToString\(\)](#)

Remarks

This model allows agents to easily create, read, and update the global mods manifest, which itself is an index of the player's installed packs and manifested mod files easily accessible to script mods.

Properties

InstalledPacks

Gets the collection of pack codes for this game installation's installed packs

```
public Collection<string> InstalledPacks { get; }
```

Property Value

[Collection](#)<[string](#)>

ManifestedModFiles

Gets the collection of manifested mod files in the player's Mods folder

```
public Collection<GlobalModsManifestModelManifestedModFile> ManifestedModFiles { get; }
```

Property Value

[Collection](#)<[GlobalModsManifestModelManifestedModFile](#)>

ResourceKey

Gets the [ResourceKey](#) always used by the global mods manifest

```
public static ResourceKey ResourceKey { get; }
```

Property Value

[ResourceKey](#)

ResourceName

Gets the name of this resource if it has one

```
public override string? ResourceName { get; }
```

Property Value

[string](#)

SupportedTypes

Gets a list of resource types that this model supports

```
public static ISet<ResourceType> SupportedTypes { get; }
```

Property Value

[ISet](#)< [ResourceType](#)>

Methods

Decode(ReadOnlyMemory<byte>)

Decodes the resource in raw format to produce an operable model ( )

```
public static GlobalModsManifestModel Decode(ReadOnlyMemory<byte> data)
```

Parameters

data [ReadOnlyMemory](#)< [byte](#)>

Returns

[GlobalModsManifestModel](#)

Encode()

Encodes the resource model into raw format ( )

```
public override ReadOnlyMemory<byte> Encode()
```

Returns

[ReadOnlyMemory](#)< [byte](#)>

Class

GlobalModsManifestModelManifestedModFile

Namespace: [LlamaLogic.Packages.Models.GlobalManifest](#)

Assembly: LlamaLogic.Packages.dll

Represents a manifested mod in a global mods manifest [SnippetTuning](#) resource ()

```
public sealed class GlobalModsManifestModelManifestedModFile : IXmlSerializable
```

Inheritance

[object](#) ← GlobalModsManifestModelManifestedModFile

Implements

[IXmlSerializable](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Properties

Hashes

Gets the union of [SubsumedHashes](#) and the agent's calculated manifest hash for the mod file

```
public HashSet<ImmutableArray<byte>> Hashes { get; }
```

Property Value

[HashSet](#)<[ImmutableArray](#)<[byte](#)>>

ManifestKey

Gets/sets the [ResourceKey](#) of the mod manifest [SnippetTuning](#) of the mod file if it's a package

```
public ResourceKey? ManifestKey { get; set; }
```

Property Value

[ResourceKey?](#)

ManifestTuningName

Gets the tuning name of the mod manifest [SnippetTuning](#) of the mod file if it's a package

```
public string? ManifestTuningName { get; set; }
```

Property Value

[string](#) ↗

ModsFolderPath

Gets/sets the relative path from the root of the Mods folder to the mod file

```
public string ModsFolderPath { get; set; }
```

Property Value

[string](#) ↗

Namespace LlamaLogic.Packages.Models.ModFileManifest

Classes

[ModFileManifestModel](#)

Represents a mod file manifest [SnippetTuning](#) resource ()

[ModFileManifestModelRequiredMod](#)

Represents a required mod in a mod file manifest [SnippetTuning](#) resource ()

Class ModFileManifestModel

Namespace: [LlamaLogic.Packages.Models.ModFileManifest](#)

Assembly: LlamaLogic.Packages.dll

Represents a mod file manifest [SnippetTuning](#) resource ()

```
public sealed class ModFileManifestModel : Model, IModel<ModFileManifestModel>,  
IModel, IXmlSerializable
```

Inheritance

[object](#) ← [Model](#) ← ModFileManifestModel

Implements

[IModel<ModFileManifestModel>](#), [IModel](#), [IXmlSerializable](#)

Inherited Members

[Model.GetName\(ResourceType, Stream\)](#) ,
[Model.GetNameAsync\(ResourceType, Stream, CancellationToken\)](#) , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Remarks

This model allows callers to easily create, read, and update a mod file manifest. These manifests are a format sponsored by the Llama Logic team to permit creators to specify the dependency requirements of their mods.

Use in Mod Package (.package) files

When originally creating packages, place one and only one mod file manifest [SnippetTuning](#) resource in the package and use sufficiently unique values for its [FullInstance](#) and [TuningName](#). If an external application encounters multiple [SnippetTuning](#) manifest resources in a package, it must assume that a manifest un-aware tool has merged multiple manifested packages and process each manifest accordingly.

Avoid using [Group 0x00000000](#) as this is informally reserved for Maxis. It would be a bizarre miracle if they started incorporating dependency information using a community format. Regardless, let's not make them feel unwelcome and hold their spot for them.

Use in Script Mod Archive (.ts4script) files

Because these files are just ZIP archives with a different extension and their contents are not flatly merged by the game as the contents of package files are, there is no risk of collision. Also, since they need not contend with game resource management, they need not be in an arcane format like XML, so they are in YAML instead. The static parsing methods of this type expect YAML representations of manifests and the [ToString\(\)](#) method produces them. Name your mod file manifest resource `llamalogic.modfilemanifest.yml` and put it in the root of your `.ts4script` archive.

Properties

Creators

Gets the names of the creators of the mod

```
[YamlMember(Order = 2, DefaultValuesHandling = DefaultValuesHandling.OmitEmptyCollections)]
public Collection<string> Creators { get; }
```

Property Value

[Collection](#)<[string](#)>

ElectronicArtsPromoCode

Gets/sets the promo code it is suggested the player use during check out in the EA Store if purchasing a pack for use with this mod

```
[YamlMember(Order = 11, DefaultValuesHandling = DefaultValuesHandling.OmitNull)]
public string? ElectronicArtsPromoCode { get; set; }
```

Property Value

[string](#)

Exclusivities

Gets the globally unique names of the exclusivities of this mod, causing it to be incompatible with other mods which share one or more of them

```
[YamlMember(Order = 9, DefaultValuesHandling = DefaultValuesHandling.OmitEmptyCollections)]  
public Collection<string> Exclusivities { get; }
```

Property Value

[Collection](#)<[string](#)>

Features

Gets the names of the features unique to this mod which it offers to other mods as a dependency

```
[YamlMember(Order = 8, DefaultValuesHandling = DefaultValuesHandling.OmitEmptyCollections)]  
public Collection<string> Features { get; }
```

Property Value

[Collection](#)<[string](#)>

Hash

Gets/sets the hash of the mod file

```
[YamlMember(Order = 5, DefaultValuesHandling = DefaultValuesHandling.OmitEmptyCollections)]  
public ImmutableArray<byte> Hash { get; set; }
```

Property Value

[ImmutableArray](#)<[byte](#)>

HashResourceKeys

Gets the resource keys for the resources included in the [Hash](#)

```
[YamlMember(Order = 6, DefaultValuesHandling = DefaultValuesHandling.OmitEmptyCollections)]  
public HashSet<ResourceKey> HashResourceKeys { get; }
```

Property Value

[HashSet](#)<[ResourceKey](#)>

IncompatiblePacks

Gets the list of pack codes identifying the packs incompatible with this mod (e.g. "EP01" for Get to Work)

```
[YamlMember(Order = 12, DefaultValuesHandling = DefaultValuesHandling.OmitEmptyCollections)]  
public Collection<string> IncompatiblePacks { get; }
```

Property Value

[Collection](#)<[string](#)>

Name

Gets/sets the name of the mod

```
[YamlMember(Order = 1, DefaultValuesHandling = DefaultValuesHandling.OmitDefaults)]  
public required string Name { get; set; }
```

Property Value

[string](#)

RequiredMods

Gets the list of mods required by this mod

```
[YamlMember(Order = 13, DefaultValuesHandling = DefaultValuesHandling.OmitEmptyCollections)]  
public Collection<ModFileManifestModelRequiredMod> RequiredMods { get; }
```

Property Value

[Collection](#)<[ModFileManifestModelRequiredMod](#)>

RequiredPacks

Gets the list of pack codes identifying the packs required by this mod (e.g. "EP01" for Get to Work)

```
[YamlMember(Order = 10, DefaultValuesHandling = DefaultValuesHandling.OmitEmptyCollections)]  
public Collection<string> RequiredPacks { get; }
```

Property Value

[Collection](#)<[string](#)>

ResourceName

Gets the name of this resource if it has one

```
[YamlIgnore]  
public override string? ResourceName { get; }
```

Property Value

[string](#)

SubsumedHashes

Gets the hashes of previous versions of this mod in for which I stand even though my hash is different

```
[YamlMember(Order = 7, DefaultValuesHandling = DefaultValuesHandling.OmitEmptyCollections)]  
public HashSet<ImmutableArray<byte>> SubsumedHashes { get; }
```

Property Value

[HashSet](#)<[ImmutableArray](#)<[byte](#)>>

SupportedTypes

Gets a list of resource types that this model supports

```
public static ISet<ResourceType> SupportedTypes { get; }
```

Property Value

[ISet](#) < [ResourceType](#)>

TuningFullInstance

Gets the [SnippetTuning](#) decimal conversion of the [FullInstance](#) for the mod file manifest

```
[YamlMember(Order = -2, DefaultValuesHandling = DefaultValuesHandling.OmitDefaults)]
public ulong TuningFullInstance { get; set; }
```

Property Value

[ulong](#)

TuningName

Gets the [SnippetTuning](#) name for the mod file manifest

```
[YamlMember(Order = -1, DefaultValuesHandling = DefaultValuesHandling.OmitNull)]
public string? TuningName { get; set; }
```

Property Value

[string](#)

Url

Gets/sets the URL to which players can go to find more information about this mod

```
[YamlMember(Order = 4, DefaultValuesHandling = DefaultValuesHandling.OmitNull)]
public Uri? Url { get; set; }
```

Property Value

[Uri](#)

Version

Gets/sets the version of this mod

```
[YamlMember(Order = 3, DefaultValuesHandling = DefaultValuesHandling.OmitNull)]
public string? Version { get; set; }
```

Property Value

[string](#)

Methods

Decode(ReadOnlyMemory<byte>)

Decodes the resource in raw format to produce an operable model ( )

```
public static ModFileManifestModel Decode(ReadOnlyMemory<byte> data)
```

Parameters

data [ReadOnlyMemory](#)<[byte](#)>

Returns

[ModFileManifestModel](#)

DeleteModFileManifest(ZipArchive)

Deletes all mod file manifest resources in the specified **scriptMod**

```
public static void DeleteModFileManifest(ZipArchive scriptMod)
```

Parameters

scriptMod [ZipArchive](#)

DeleteModFileManifests(DataBasePackedFile)

Deletes all mod file manifest resources in the specified [package](#)

```
public static void DeleteModFileManifests(DataBasePackedFile package)
```

Parameters

package [DataBasePackedFile](#)

DeleteModFileManifestsAsync(DataBasePackedFile)

Deletes all mod file manifest resources in the specified [package](#), asynchronously

```
public static Task DeleteModFileManifestsAsync(DataBasePackedFile package)
```

Parameters

package [DataBasePackedFile](#)

Returns

[Task](#)

Encode()

Encodes the resource model into raw format ( )

```
public override ReadOnlyMemory<byte> Encode()
```

Returns

[ReadOnlyMemory](#) <byte>

GetFileSha256Hash(string)

Gets the SHA 256 hash of the content of the file located at `filePath`

```
public static ImmutableArray<byte> GetFileSha256Hash(string filePath)
```

Parameters

`filePath` [string](#)

Returns

[ImmutableArray](#) <byte>

GetFileSha256HashAsync(string, CancellationToken)

Gets the SHA 256 hash of the content of the file located at `filePath` asynchronously

```
public static Task<ImmutableArray<byte>> GetFileSha256HashAsync(string filePath,  
CancellationToken cancellationToken = default)
```

Parameters

`filePath` [string](#)

`cancellationToken` [CancellationToken](#)

Returns

[Task](#) <[ImmutableArray](#) <byte>>

GetModFileHash(DataBasePackedFile, HashSet<ResourceKey>)

Gets the hash for the specified `package` using the specified `hashResourceKeys`

```
public static ImmutableArray<byte> GetModFileHash(DataBasePackedFile package,  
HashSet<ResourceKey> hashResourceKeys)
```

Parameters

package [DataBasePackedFile](#)

hashResourceKeys [HashSet<ResourceKey>](#)

Returns

[ImmutableArray<byte>](#)

GetModFileHash(ZipArchive)

Gets the hash for the specified `scriptMod`

```
public static ImmutableArray<byte> GetModFileHash(ZipArchive scriptMod)
```

Parameters

scriptMod [ZipArchive](#)

Returns

[ImmutableArray<byte>](#)

GetModFileHashAsync(DataBasePackedFile, HashSet<ResourceKey>, CancellationToken)

Gets the hash for the specified `package` using the specified `hashResourceKeys`, asynchronously

```
public static Task<ImmutableArray<byte>> GetModFileHashAsync(DataBasePackedFile package,  
HashSet<ResourceKey> hashResourceKeys, CancellationToken cancellationToken = default)
```

Parameters

```
package DataBasePackedFile

hashResourceKeys HashSet<ResourceKey>
```

cancelationToken CancellationToken

Returns

```
Task<ImmutableArray<byte[]>>
```

GetModFileManifest(DataBasePackedFile)

Gets the mod file manifest for the specified `package`, if it has one

```
public static ModFileManifestModel? GetModFileManifest(DataBasePackedFile package)
```

Parameters

```
package DataBasePackedFile
```

Returns

```
ModFileManifestModel
```

GetModFileManifest(ZipArchive)

Gets the mod file manifest for the specified `scriptMod`, if it has one

```
public static ModFileManifestModel? GetModFileManifest(ZipArchive scriptMod)
```

Parameters

```
scriptMod ZipArchive
```

Returns

```
ModFileManifestModel
```

GetModFileManifestAndKey(DataBasePackedFile)

Gets the mod file manifest for the specified `package` and its [ResourceKey](#), if the `package` has one

```
public static (ResourceKey, ModFileManifestModel?)  
GetModFileManifestAndKey(DataBasePackedFile package)
```

Parameters

`package` [DataBasePackedFile](#)

Returns

[\(ResourceKey, ModFileManifestModel\)](#)

GetModFileManifestAndKeyAsync(DataBasePackedFile)

Gets the mod file manifest for the specified `package`, asynchronously, if the `package` has one

```
public static Task<(ResourceKey, ModFileManifestModel?)>  
GetModFileManifestAndKeyAsync(DataBasePackedFile package)
```

Parameters

`package` [DataBasePackedFile](#)

Returns

[Task](#) <[\(ResourceKey, ModFileManifestModel\)](#)>

GetModFileManifestAsync(DataBasePackedFile)

Gets the mod file manifest for the specified `package`, asynchronously, if it has one

```
public static Task<ModFileManifestModel?> GetModFileManifestAsync(DataBasePackedFile  
package)
```

Parameters

package [DataBasePackedFile](#)

Returns

[Task ↗ < ModFileManifestModel >](#)

GetModFileManifestAsync(ZipArchive)

Gets the mod file manifest for the specified `scriptMod`, asynchronously, if it has one

```
public static Task<ModFileManifestModel?> GetModFileManifestAsync(ZipArchive scriptMod)
```

Parameters

`scriptMod` [ZipArchive ↗](#)

Returns

[Task ↗ < ModFileManifestModel >](#)

GetModFileManifests(DataBasePackedFile)

Gets the mod file manifests for the specified `package` (for use by editors checking for packages which may have been merged by manifest unaware tooling)

```
public static IReadOnlyDictionary<ResourceKey, ModFileManifestModel>
GetModFileManifests(DataBasePackedFile package)
```

Parameters

package [DataBasePackedFile](#)

Returns

[IReadOnlyDictionary ↗ < ResourceKey, ModFileManifestModel >](#)

GetModFileManifestsAsync(DataBasePackedFile)

Gets the mod file manifests for the specified [package](#), asynchronously (for use by editors checking for packages which may have been merged by manifest unaware tooling)

```
public static Task<IReadOnlyDictionary<ResourceKey, ModFileManifestModel>>
GetModFileManifestsAsync(DataBasePackedFile package)
```

Parameters

[package](#) [DataBasePackedFile](#)

Returns

[Task](#) <[IReadOnlyDictionary](#) <[ResourceKey](#), [ModFileManifestModel](#)>>

GetName(Stream)

Gets the name of a resource from its raw data, if it has one ([🔗](#))

```
public static string? GetName(Stream stream)
```

Parameters

[stream](#) [Stream](#)

Returns

[string](#)

GetNameAsync(Stream, CancellationToken)

Gets the name of a resource from its raw data, if it has one, asynchronously ([🔗](#))

```
public static Task<string?> GetNameAsync(Stream stream, CancellationToken cancellationToken
= default)
```

Parameters

stream [Stream](#)

cancellationToken [CancellationToken](#)

Returns

[Task](#)<[string](#)>

Parse(string)

Parses a string into a [ModFileManifestModel](#)

```
public static ModFileManifestModel Parse(string s)
```

Parameters

s [string](#)

The string to parse

Returns

[ModFileManifestModel](#)

Exceptions

[FormatException](#)

s is not in the correct format

Parse(string, IFormatProvider?)

Parses a string into a [ModFileManifestModel](#)

```
public static ModFileManifestModel Parse(string s, IFormatProvider? provider)
```

Parameters

`s` [string](#)

The string to parse

`provider` [IFormatProvider](#)

An object that provides culture-specific formatting information about `s`

Returns

[ModFileManifestModel](#)

Exceptions

[FormatException](#)

`s` is not in the correct format

SetModFileManifest(DataBasePackedFile, ModFileManifestModel)

Set the specified `manifest` for the specified `package`

```
public static void SetModFileManifest(DataBasePackedFile package,  
ModFileManifestModel manifest)
```

Parameters

`package` [DataBasePackedFile](#)

`manifest` [ModFileManifestModel](#)

SetModFileManifest(ZipArchive, ModFileManifestModel)

Set the specified `manifest` for the specified `scriptMod`

```
public static void SetModFileManifest(ZipArchive scriptMod, ModFileManifestModel manifest)
```

Parameters

`scriptMod` [ZipArchive](#)

`manifest` [ModFileManifestModel](#)

SetModFileManifestAsync(DataBasePackedFile, ModFileManifestModel)

Set the specified `manifest` for the specified `package`, asynchronously

```
public static Task SetModFileManifestAsync(DataBasePackedFile package,  
ModFileManifestModel manifest)
```

Parameters

`package` [DataBasePackedFile](#)

`manifest` [ModFileManifestModel](#)

Returns

[Task](#)

SetModFileManifestAsync(ZipArchive, ModFileManifestModel)

Set the specified `manifest` for the specified `scriptMod`, asynchronously

```
public static Task SetModFileManifestAsync(ZipArchive scriptMod,  
ModFileManifestModel manifest)
```

Parameters

`scriptMod` [ZipArchive](#)

`manifest` [ModFileManifestModel](#)

Returns

[Task](#)

ToString()

Generates the YAML representation of the [ModFileManifestModel](#)

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

Returns

[string](#)

TryParse(string?, out ModFileManifestModel)

Tries to parse a string into a [ModFileManifestModel](#)

```
public static bool TryParse(string? s, out ModFileManifestModel result)
```

Parameters

[s](#) [string](#)

The string to parse

[result](#) [ModFileManifestModel](#)

When this method returns, contains the result of successfully parsing [s](#) or an undefined value on failure

Returns

[bool](#)

TryParse(string?, IFormatProvider?, out ModFileManifestModel)

Tries to parse a string into a [ResourceKey](#)

```
public static bool TryParse(string? s, IFormatProvider? provider, out  
ModFileManifestModel result)
```

Parameters

`s` [string](#)

The string to parse

`provider` [IFormatProvider](#)

An object that provides culture-specific formatting information about `s`

`result` [ModFileManifestModel](#)

When this method returns, contains the result of successfully parsing `s` or an undefined value on failure

Returns

[bool](#)

Class ModFileManifestModelRequiredMod

Namespace: [LlamaLogic.Packages.Models.ModFileManifest](#)

Assembly: LlamaLogic.Packages.dll

Represents a required mod in a mod file manifest [SnippetTuning](#) resource ()

```
public sealed class ModFileManifestModelRequiredMod : IXmlSerializable
```

Inheritance

[object](#) ← ModFileManifestModelRequiredMod

Implements

[IXmlSerializable](#)

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Properties

Creators

Gets the names of the creators of the dependency mod

```
[YamlMember(Order = 2, DefaultValuesHandling = DefaultValuesHandling OMITEmptyCollections)]  
public Collection<string> Creators { get; }
```

Property Value

[Collection](#) <[string](#)>

Hashes

Gets the hashes of the mod files that must be present in order for this dependency to be fulfilled

```
[YamlMember(Order = 7)]  
public HashSet<ImmutableArray<byte>> Hashes { get; }
```

Property Value

[HashSet](#)<[ImmutableArray](#)<[byte](#)>>

IgnoreIfHashAvailable

Instructs agents to ignore fulfilling this dependency if this hash is present in the player's catalog of mods

```
[YamlMember(Order = 8, DefaultValuesHandling = DefaultValuesHandling.OmitEmptyCollections)]  
public ImmutableArray<byte> IgnoreIfHashAvailable { get; set; }
```

Property Value

[ImmutableArray](#)<[byte](#)>

IgnoreIfHashUnavailable

Instructs agents to ignore fulfilling this dependency if this hash is not present in the player's catalog of mods

```
[YamlMember(Order = 9, DefaultValuesHandling = DefaultValuesHandling.OmitEmptyCollections)]  
public ImmutableArray<byte> IgnoreIfHashUnavailable { get; set; }
```

Property Value

[ImmutableArray](#)<[byte](#)>

IgnoreIfPackAvailable

Instructs agents to ignore fulfilling this dependency if the pack identified by this pack code is present (e.g. "EP01" for Get to Work)

```
[YamlMember(Order = 10, DefaultValuesHandling = DefaultValuesHandling.OmitNull)]
public string? IgnoreIfPackAvailable { get; set; }
```

Property Value

[string](#) ↗

IgnoreIfPackUnavailable

Instructs agents to ignore fulfilling this dependency if the pack identified by this pack code is not present (e.g. "EP01" for Get to Work)

```
[YamlMember(Order = 11, DefaultValuesHandling = DefaultValuesHandling.OmitNull)]
public string? IgnoreIfPackUnavailable { get; set; }
```

Property Value

[string](#) ↗

Name

Gets/sets the name of the dependency mod

```
[YamlMember(Order = 1)]
public string Name { get; set; }
```

Property Value

[string](#) ↗

RequiredFeatures

Gets the names of the features of the dependency mod which the dependent mod requires

```
[YamlMember(Order = 5, DefaultValuesHandling = DefaultValuesHandling.OmitEmptyCollections)]
public Collection<string> RequiredFeatures { get; }
```

Property Value

[Collection](#)<[string](#)>

RequirementIdentifier

Gets/sets an identifier that, when shared with a group of other dependency mods for a single dependent, indicates that only one member of the group need be present for the dependent to be satisfied

```
[YamlMember(Order = 6, DefaultValuesHandling = DefaultValuesHandling.OmitNull)]
public string? RequirementIdentifier { get; set; }
```

Property Value

[string](#)

Url

Gets/sets the URL to which players can go to find more information about this dependency mod

```
[YamlMember(Order = 4, DefaultValuesHandling = DefaultValuesHandling.OmitNull)]
public Uri? Url { get; set; }
```

Property Value

[Uri](#)

Version

Gets/sets the version of this dependency mod

```
[YamlMember(Order = 3, DefaultValuesHandling = DefaultValuesHandling.OmitNull)]
public string? Version { get; set; }
```

Property Value

[string](#) ↗