Obfuscator (3.7.*)

Technical Documentation

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Best Practices

Buttons

For stronger obfuscation, consider assigning button clicks programmatically:

```
using UnityEngine;
using UnityEngine.UI;
using Beebyte.Obfuscator;
public class Buds : MonoBehaviour
{
    public Button Button;
    public void Start()
    {
        Button.onClick.AddListener(CodedClick);
    }

    //Assigned in the Start() method
    private void CodedClick() //This gets obfuscated
    {
        Debug.Log("Coded Click");
    }

    // Assigned through the inspector within On Click () +
    // so requires [SkipRename] when obfuscating public mono methods
    [SkipRename]
    public void InspectorClick() //Visible
    {
        Debug.Log("Inspector click");
    }
}
```

In this example 'CodedClick' will be obfuscated.

Animation Clips

In the same way as buttons, consider adding these programmatically using AnimationClip.AddEvent(AnimationEvent evt).

Otherwise if assigned through the Unity Inspector, please remember to annotate the methods with [SkipRename]

Methods

More methods result in better obfusation. Following good software practices such as S.O.L.I.D. will not only improve maintainability of your code, but will be tougher to reverse engineer.

Check your protection

It is important to use an assembly inspector to verify the obfuscation and/or tweak Obfuscator options to improve it's quality.

There are many different assembly inspectors available. Examples include DotPeek (by JetBrains & free) and ILSpy (open-source).

You may need to first extract a DLL from your final build and you can find resources online to help with this.

IL2CPP

- A simple way to see effects of obfuscation is to view the global-metadata.dat file in a text editor and search for the names of your methods
- There are no additional steps required to instruct the Obfuscator to obfuscate IL2CPP builds
- Be aware that depending on the Unity version and build target the assemblies in Library/ScriptAssemblies/ will not be obfuscated. To see the obfuscated form then look at the ones in Library/PlayerDataCache/Data/Managed/ or alternatively
- You could also have a peek at Classes/Native/Bulk_Assembly-CSharp_0.cpp to see the obfuscation in action.

Asset Store Publishing / Creating Libraries

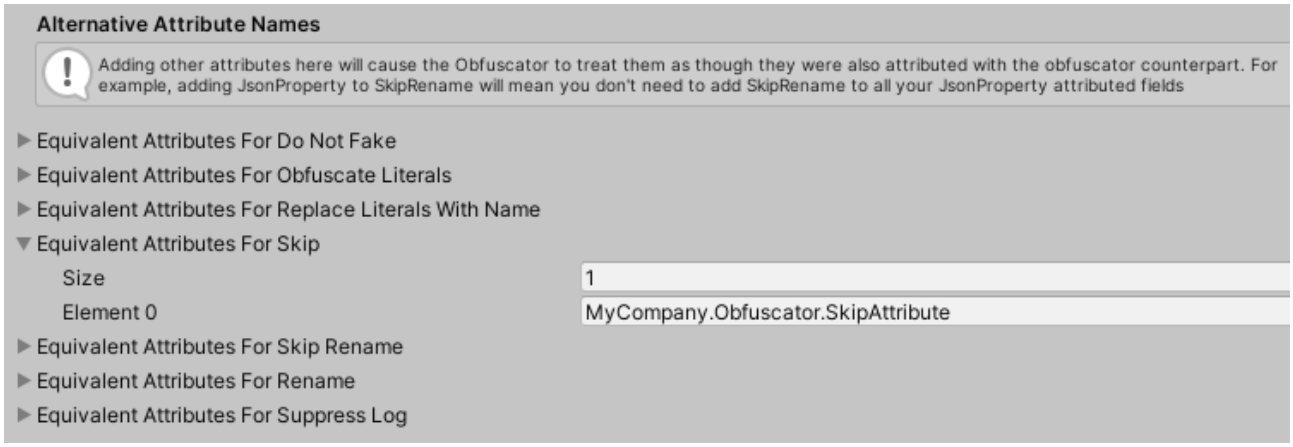
If you intend to obfuscate a library for others to use in their projects then to avoid complications for your users (and possibly help your project heirarchy) it is best to create your own versions of [Skip], [SkipRename] etc as and when you need them.

To do this you should create a class such as:

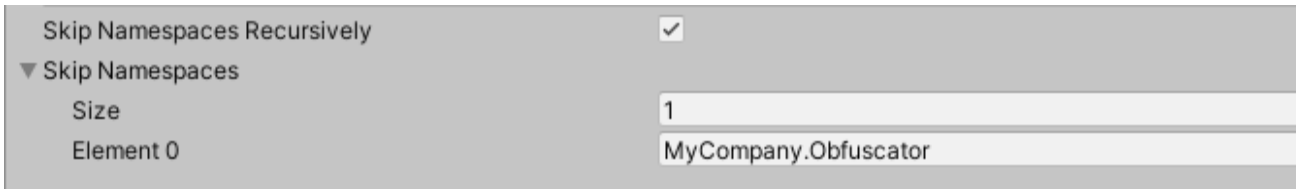
```
using System;

namespace MyCompany.Obfuscator {
   [AttributeUsage(AttributeTargets.Class | AttributeTargets.Interface | AttributeTargets.Struct |
                   AttributeTargets.Method | AttributeTargets.Field | AttributeTargets.Parameter |
                   AttributeTargets.Event | AttributeTargets.Enum | AttributeTargets.Property |
                   AttributeTargets.Delegate)]
   public class SkipAttribute : System.Attribute {
      public SkipAttribute() {
      }
   }
}
```

Then specify this attribute as an equivalent one to use as though it were Beebyte.Obfuscator.SkipAttribute:



Then exclude them from being obfuscated:



Obfuscator Version

It is recommended to always use the latest available Obfuscator version. Backwards compatibility is always a priority to encourage users to update often. The Obfuscator uses a form of semantic versioning for its release numbers:

Obfuscator v**[Major].[Minor].[Patch]**

- [Major]
  Upgrading to a new Major version may require additional configuration steps for your builds to be successful. However this might only needed when certain optional features have been used. Major builds are not necessarily backwards compatible.

- [Minor]
  This build contains new features and possibly bug fixes.

- [Patch]
  This build contains bug fixes.

Configuration

Assemblies

Obfuscate all assembly definitions (2017.3 onwards)

- Significantly strengthens obfuscation when enabled.
- This is an alternative to specifying each assembly definition class in the 'assemblies' list.

Assemblies

- A list of assemblies to be obfuscated that are first created by the Unity build process.
- The file extension must be included.
- e.g.:
  - Assembly-CSharp.dll
  - MyAssemblyDefinitionName.dll

Compiled Assemblies

- A list of assemblies to be obfuscated that have been pre-compiled before executing a build.
- The file extension must be included.
- e.g. if you compile a DLL called Wheel through your IDE and place it in the Assets folder then this list would contain Wheel.dll

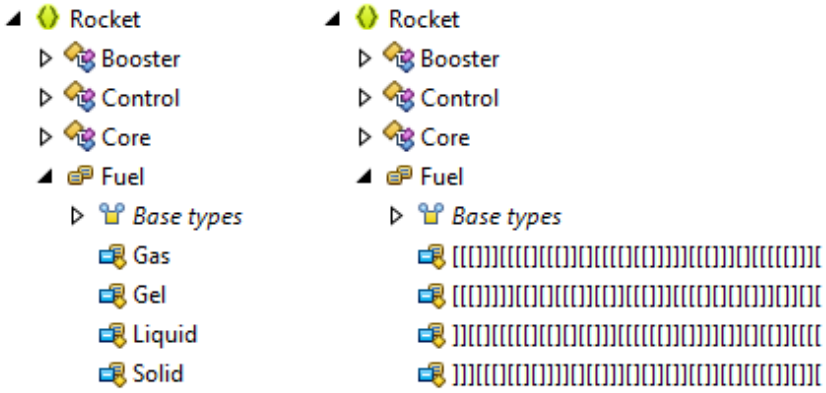
Referenced Assemblies

- If you have an AssemblyResolutionException, find the referenced DLL on your machine and add its file location to this list. The Obfuscator will then check this file or directory when trying to locate the DLL as part of the build process.

Rename

- Significantly strengthens obfuscation when enabled.
- Given only the obfuscated DLL, it is near impossible to reverse engineer the original names.
- Given the obfuscated DLL and the 'Random seed' (Naming Policies) a hacker would need to guess names, hash them, then search the code to see if those hashes are used anywhere. It is near impossible to return the original name without this guessing step.
- Enabling a member type (classes, methods etc) will always obfuscate private instances of that type unless the Obfuscator detects it would cause a conflict.
- Enabling 'Protected' will obfuscate protected instances.
- Enabling 'Public' will obfuscate public instances.

Include enum constants



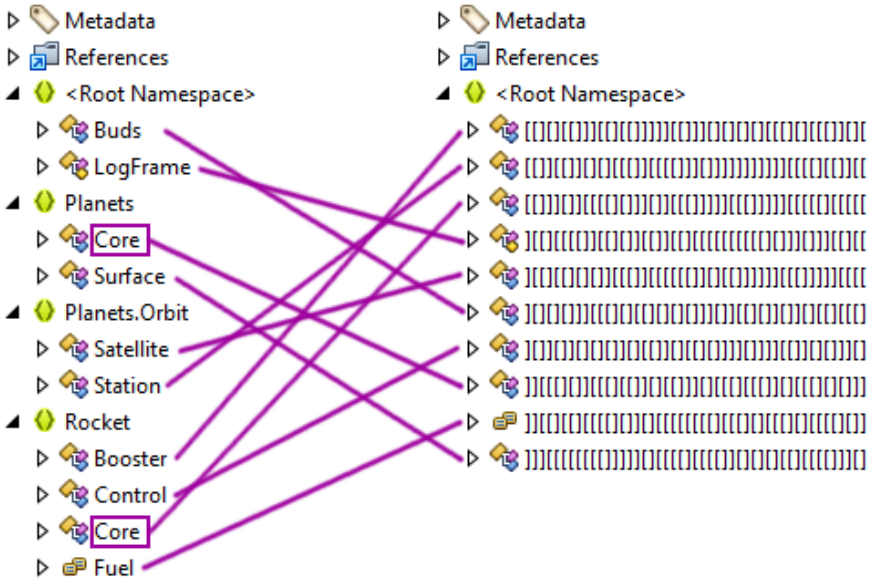
- Strengthens obfuscation when enabled.
- Be careful if you have code like the following:

```
public class Booster {
    private readonly Fuel _fuel;

    public Booster(Fuel fuel) {
        _fuel = fuel;
    }

    public void Ignite() {
        // Ignited ]][[][[[[[][][][][]]][[[[[[]][]]]][][][][][[[ booster!
        LogFrame.WriteMessage("Ignited " + _fuel + " booster!");
    }
}
```

Strip Namespaces



- Strengthens obfuscation when enabled by moving classes into the default namespace.
- 'Skip Namespaces' is always searched before 'Strip Namespaces' is applied.
- Having two classes with the same name in two different namespaces is allowed – the Obfuscator will assign unique names to avoid any conflict.

MonoBehaviours

Include public mono methods

- Strengthens obfuscation when enabled.
- For public methods on MonoBehaviour objects to be obfuscated, this option must be enabled in addition to Rename->Methods->Public.
- Typically you want to enable this but be prepared to use [SkipRename] on methods that have been selected within the Unity Inspector, i.e. Button Clicks and animation clip methods.

Include public mono fields

- Strengthens obfuscation when enabled.
- Streamed assets require this to be disabled. Alternatively annotate streamed asset fields with [SkipRename].

Obfuscate MonoBehaviour Class Names (Unity 2018.2+)

- Significantly strengthens obfuscation when enabled.
- When enabled, obfuscates classes derived from MonoBehaviour.
- Streamed classes will not work with this option enabled unless you annotate them with [SkipRename].
- This obfuscation is only applied for standalone builds (i.e. Windows, Linux, MacOS)

Obfuscate MonoBehaviour Class Names (Unity 4.2 - 2018.1)

- Significantly strengthens obfuscation when enabled.
- When enabled, obfuscates classes derived from MonoBehaviour.
- Streamed classes will not work with this option enabled unless you annotate them with [SkipRename].
- Precompiled DLLs containing MonoBehaviours will not be renamed with this feature. They will be treated as though annotated with [SkipRename]. Consider using Unity's Assembly Definition files instead and adding the assembly reference to temporaryDLLs instead of permanentDLLs in Config.cs.
- This is the only option that has to touch the original source files (renaming), but will restore them after the build.
- In the event of a failed build, the sources are restored.
- In the event of a catastrophic event where the Unity IDE closes, the sources are restored when the project is next opened within the Unity IDE.
- Make a backup of your project before enabling this option for the first time.
- A file called `_monoBehaviourTranslations` will be temporarily created in the root of the project during this build process, and removed on source file restoration.

Non-standard Source Paths (Unity 4.2 - 2018.1)

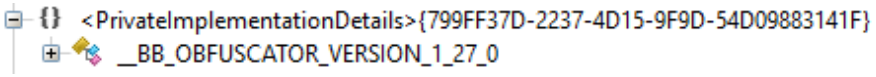
- Used to instruct the Obfuscator where to find certain MonoBehaviours if it gets confused.
- Leave this empty unless prompted by the Obfuscator when building.

Abstract MonoBehaviours (Unity 4.2 – 2018.1)

- Holds a list of abstract MonoBehaviours that can't be renamed.

Miscellaneous

Add Obfuscation version attribute



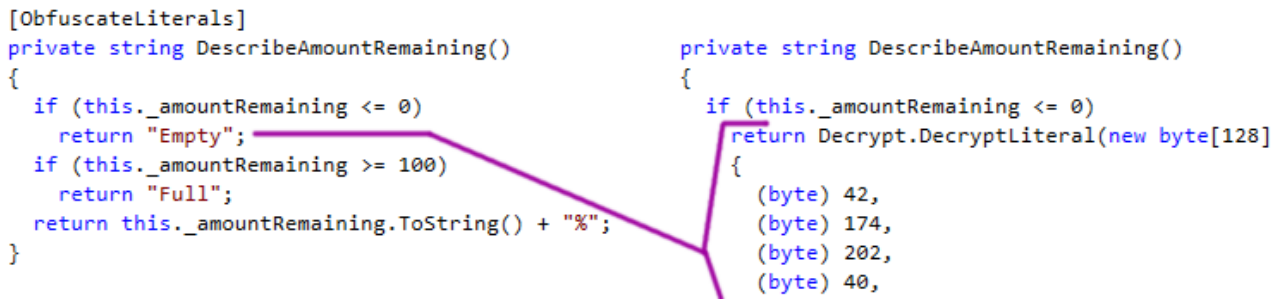
- Prevents a DLL from being obfuscated twice which would otherwise cause many things to stop working.
- If you have a custom build script that launches obfuscation, it's recommended to enable this. Otherwise it can be safely disabled.

Progress Bar Detail

- Shows the obfuscation status during a build.
- The "Detailed" setting has been known to increase the build time of large projects by around 40% but provides the most informative progress.

String obfuscation

Obfuscate String Literals



- Strengthens obfuscation when enabled and annotations are present in your code
- There are two ways to obfuscate literals
  - [ObfuscateLiterals] on a method (recommended):

```
[ObfuscateLiterals]
private string DescribeAmountRemaining() {
    if (_amountRemaining <= 0) {
        return "Empty";
    }
    if (_amountRemaining >= 100) {
        return "Full";
    }
    return _amountRemaining + "%";
}
```

  - Using a marker:

```
private string DescribeAmountRemaining() {
    if (_amountRemaining <= 0) {
        return "^Empty^";
    }
    if (_amountRemaining >= 100) {
        return "^Full^";
    }
    return _amountRemaining + "^%^";
}
```

- String literals obfuscation (two-way obfuscation) is not as strong as member renaming (one-way obfuscation).
- Given only the obfuscated DLL it is possible to reverse engineer the original string.
- The application needs to read the original string (two-way obfuscation) so a hacker could, in theory, apply the same technique to read it too. Original source class and method names are not required by the application and so a one-way obfuscation is applied to those.
- Caching is NOT applied to string obfuscation due to security considerations when memory is dumped.

Obfuscation Marker Unicode

- If using a marker to obfuscate, the marker can be changed using this value.
- The value is in decimal notation
- The default value is 94: ^

Use RSA

- Strengthens obfuscation when enabled.
- In theory this requires more CPU to run, but in the majority of cases it is imperceptible.
- When enabled, the length of the obfuscated byte arrays are the length of the string rounded to the nearest (keyLength / 8). This makes it hard to guess which string is being obfuscated based on its length alone.
- When disabled, the length of the obfuscated byte arrays are equal to the length of the string.
- When disabled, no cryptographic libraries are used for string obfuscation.

RSA Key Length

- Slightly strengthens obfuscation when using higher lengths.
- A higher value typically means more bytes are used, so it's less clear which strings are being obfuscated.

Obfuscate Literals in all Methods

- Strengthens obfuscation when enabled.
- Equivalent to annotating every method with [ObfuscateLiterals]

Only Obfuscate Literals in Obfuscated Methods

- Weakens obfuscation when enabled.
- When enabled literals that would normally be obfuscated will not be obfuscated if its parent method is excluded from obfuscation.

Strip Markers on Non-Obfuscated Literals

- If enabled then any string that starts and ends with the obfuscation marker unicode

character will have that character removed from both ends.

- This is to allow disabling of string obfuscation without the need to change all occurancies of the obfuscation character within your source code.
- If you have never used string marker obfuscation and never intend to, you can safely disable this option.

Fake Code

Add fake code

- Strengthens obfuscation when enabled.
- Increases file size.
- Increases obfuscation build time.
- Does not change the code flow.
- Clones existing methods and subtly modifies the copy in ways to misdirect people.

Min false methods per class

- A class capable of having fake methods will attempt to have this minimum number of cloned methods.
- The recommendation is to stick with the default value.

Max false methods per class

- A lower value reduces file size and build time.
- A higher value can increase security, but benefits soon become negligable.
- A single class will not exceed this number of injected fake methods.
- The recommendation is to stick with the default value.

Max instructions for cloning

- Another way to limit the filesize and build time, useful if you have only a few large methods.
- The recommendation is to stick with the default value.

Naming Policies

Unicode start in decimal

- Strengthens obfuscation when changed to unusual characters.
- The value is in decimal notation.
- The default value is 65 'A'.
- Some special unicode values can't be input to avoid lots of things breaking.
- Be careful changing this if you also use the 'Obfuscate MonoBehaviour Class Name' feature, since part of that feature involves temporarily renaming files to names using these characters. Some older or uncommon operating systems might not like unusual characters, however many will accept them.

N, where Number of characters = (2^N)

- Strengthens obfuscation when lowered.
- Lowering the value increases the length of obfuscated names and reduces the number of different characters used.
- Seeing [[]]]]][[]]][[][]]][[]]]]]]]][]][[[[[]][]]]][][(character 91, N = 1) is visually much harder to recognise than AGTNEHWK (character 65, N = 4)
- The default value is currently 4, but may change to 1 in a future release.

Hash Salt

- Randomly generated when the Obfuscator is installed.
- The value directly changes obfuscated names.
- A team of developers using the same salt building the same source code will generate DLLs that have the same obfuscated names.

- The salt is printed within created 'nameTranslation.txt' files unless configured otherwise (See Name Mapping History).
- The salt should be at least 16 characters in length using a random mix of characters from a good set (e.g. [a-zA-Z0-9]). Such a salt would take a dedicated machine (~25,000 USD) by 2020 standards an average of approximately 10 trillion years to brute force!
- Keep the salt private and within your organisation

Regenerate Hash Salt Every Build

- If enabled a new hash salt is randomly chosen each time a build is performed.
- If you don't need the Obfuscator to be idempotent then you might as well enable this.

Name Mapping History

Create name translation file

- Creates a file in the root of the project containing the seed used along with a mapping of newly obfuscated names to old.
- Required to translate stack traces reported by your clients.

Name Translation File

- The name of the name translation file!

Include Hash Salt

- If enabled, the hash salt will be printed on the header line '#Hashes'

Reverse arrow order per line

- If enabled, mappings are new -> old
- If disabled, mapping are old -> new
- This was a backwards compatibility feature added for customers who had already started to write automated stack trace parsing tools.

Name padding delimiter

- Only change this if you intend to create a tool that parses stack traces.
- It provides a way for an automated tool to recognise a string that should be translated.
- The default value is 0
- Changing this can cause issues with <Insert issue>

Translate fake methods

- If enabled the names of injected fake code is also shown in nameTranslation.txt.
- Since fake code would never normally be executed, it's common to leave this option disabled.

Reflection and RPC

Search for Unity reflection methods

- Prevents runtime errors when enabled.
- Unity reflection methods are methods such as StartCoroutine that take a string and look for a method in your code with the same name.
- This option may be removed in the future (with a default of enabled).

Obfuscate Unity reflection methods

```
public void LogStatus()
{
  LogFrame.WriteMessage("[Status] Control");
}

private void Start()
{
  ((Component) this).get_gameObject().SendMessage("LogStatus");
}
```

```
public void ][][]][[[]][[]]][[]][][[]]]]][[]]][[[[[]][]]]][[ ()
{
  LogFrame.[[[[[][[[[[[]][[[]]]]][[][[[[]][[[]]]]][[][[]]]]("[Status] Control");
}

private void Start()
{
  this.gameObject.SendMessage("][][]][[[]][[]]][[]][][[]]]]][[]]][[[[[]][]]]][[");
}
```

- Strengthens obfuscation when enabled.

Obfuscate and replace literals for RPC methods

- Strengthens obfuscation when enabled, but may restrict seed changes.
- When disabled, [RPC] annotated methods are not renamed.
- If enabled then changing the random seed would mean old clients won't be able to talk to newly built servers and visa-versa.

Alternate RPC Annotations

- Some assets provide their own annotations that act like [RPC]. This is a way to tell the Obfuscator to treat such annotations in the same way it handles [RPC].

Replace literals even on skipped classes

- It's recommended to leave this enabled to protect against runtime errors.
- If disabled and a class annotates a method called 'StartLevel' with [ReplaceLiteralsWithName], then a string literal of "StartLevel" would only be replaced with its obfuscated counterpart if the container class would normally be obfuscated too.
- The use cases for wanting this disabled this is very limited.

Replace Literals

- Methods declared here will change any string containing that method name with the obfuscated counterpart.
- This is used for assets that use reflection to look up methods they've asked you to create in MonoBehaviours that aren't known to the base MonoBehaviour class.
- This is equivalent to annotating each declared method with [ReplaceLiteralsWithName]

Deletion

Attributes to remove if obfuscated member

- Strengthens Obfuscation when used
- If your code looks like this:

  [Custom("Launches Drone")]
  private void SomeMethod() { ..

  Then adding "Custom" to this list means that it will obfuscate to something like:

  private void JEQQKAEFJJ() { ..

  i.e. the [Custom] attribute will have been deleted.
- "Custom" will still work even if the attribute class is called CustomAttribute (C# maps Custom to CustomAttribute and the Obfuscator handles this)
- If SomeMethod() is skipped and not obfuscated then the [Custom] attribute will NOT be removed.
- This was introduced for Unity's attributes that interact with the Unity Inspector Window or Menu Bar that took string parameters that described what the method or class did.
- Works for types, methods, parameters, fields, properties, and events.
- Note that Beebyte attributes are always removed.
- [System.Obfuscation.Reflection] attributes are also removed unless their StripAfterObfuscation property is set to True.

Preservation

Only Obfuscate Specified Namespaces

- When enabled, no namespaces are obfuscated apart from those declared in 'Obfuscate Namespaces'.
- It can be useful if you have a gigantic project and want to gradually introduce obfuscation.

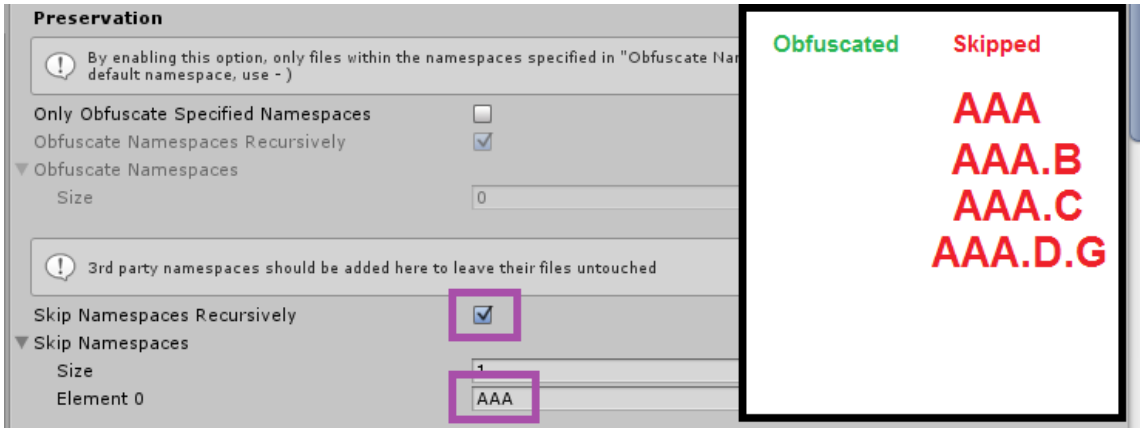
Obfuscate Namespaces Recursively

- When enabled, child namespaces are also obfuscated.

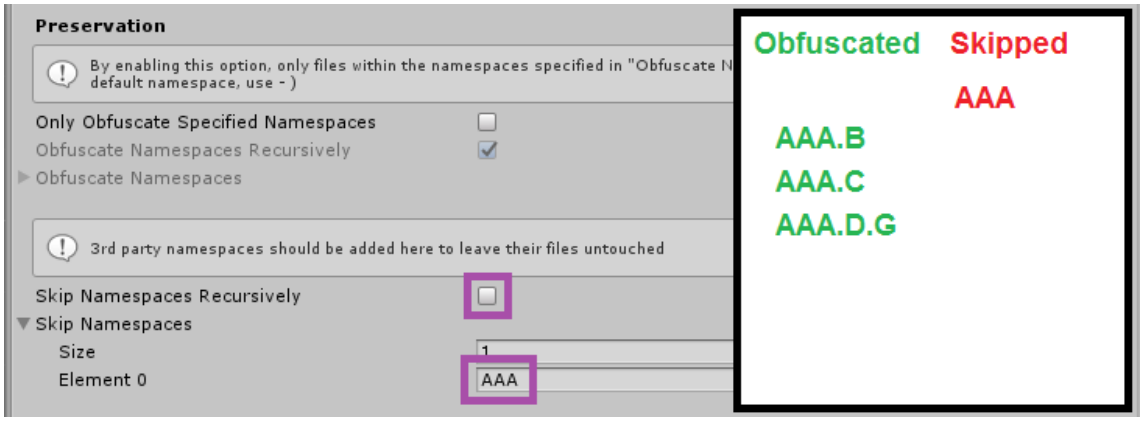
Obfuscate Namespaces

- The list of namespaces that will be obfuscated.
- If you only want to obfuscate the default namespace, use the hyphon/minus '-' character.

Skip Namespaces Recursively

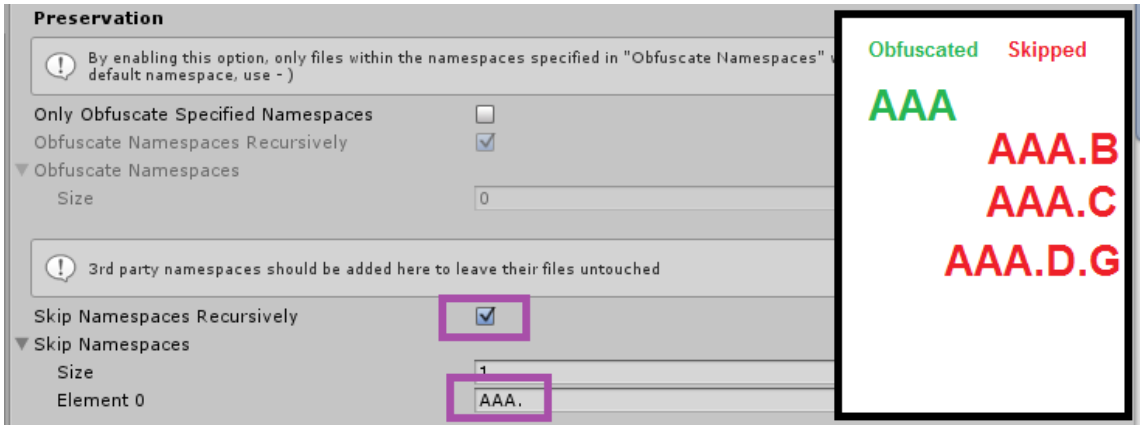


When enabled, child namespaces are also skipped.



- When disabled, only exact namespaces are skipped

Skip Namespaces



- The list of namespaces that will not be obfuscated.
- If you want to exclude the default namespace, use the hyphon/minus '-' character.

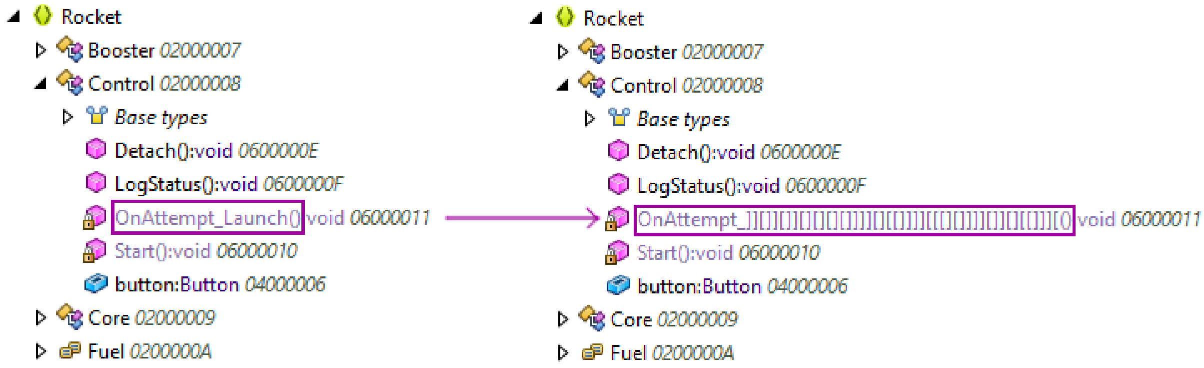
Skip Classes

- A list of classes that will not be obfuscated.
- Equivalent to annotating the class with [Skip].

Unity Methods

- Methods declared here that exist on a class derived from MonoBehaviour will not be obfuscated.
- Equivalent to annotating the declared methods with [SkipRename] if they are on a class derived from MonoBehaviour.
- Only event style methods that are found using reflection should be declared here. There is no need (but no harm) in declaring methods that are extended from the base class.

Preserve Prefixes



- Methods starting with the declared strings will use them as a mask when obfuscating.
- Useful for assets that expect methods to start with a particular string.

Alternative Attribute Names

- Any attribute declared in one of the lists will be treated as the Beebyte.Obfuscator attribute counterpart.
- e.g. Adding JsonProperty to the Skip Rename list will mean you no longer have to annotate each property with [SkipRename] if [JsonProperty] was already present.

Attributes

.NET Framework

[System.Reflection.Obfuscation]

- Equivalent to [Skip]

[System.Reflection.Obfuscation(ApplyToMembers=false)]

- Equivalent to [SkipRename]

[System.Reflection.Obfuscation(Exclude=false)]

- Instructs the Obfuscator to obfuscate the annotated target where it might not have otherwise done so.
- It is ignored if the Obfuscator knows renaming will definitely cause failures.

Beebyte.Obfuscator

[Skip]

- Instructs the Obfuscator not to obfuscate the target or any of its children.
- Usable on classes, methods, interfaces, structs, fields, parameters, events, enums, properties, and delegates.
- When used on a class, it's equivalent to declaring it in the "Skip Classes" list in options.

[SkipRename]

- Instructs the Obfuscator not to obfuscate the target's name, however children may be obfuscated.
- Usable on classes, methods, interfaces, structs, fields, parameters, events, enums, properties, and delegates.

[ReplaceLiteralsWithName]

- Instructs the Obfuscator to replace all string literals within the obfuscated assemblies that match the target's name with the newly obfuscated name.
- Usable on classes, methods, interfaces, structs, fields, properties, events, enums, and delegates.

[Rename]

- Instructs the Obfuscator to change the target's name to the argument passed into this annotation.
- Usable on classes, methods, interfaces, structs, fields, properties, enums, and delegates.

[ObfuscateLiterals]

- Instructs the Obfuscator to apply string obfuscation on all string literals declared within the annotated method.
- Usable only on methods.

[DoNotFake]

- Instructs the Obfuscator to not spawn fake methods for the given target.
- Usable on classes or individual methods.
- You might want to use this on a single gigantic method so that you can benefit from having many fake methods for smaller methods without too much impact on file size. However you should strongly consider refactoring that large method into new classes and methods for cleaner code and stronger obfuscation results.

[SuppressLog]

- Prevents the specified warning message from being output by the Obfuscator for the target it's applied on.

Asset Compatibility

Beebyte is not affiliated with these products or companies.

Anti-Cheat Toolkit

This plugin focuses on preventing code tampering and memory manipulation and complements the Obfuscator well. No changes are needed and ACTK_EXCLUDE_OBFUSCATION does not need to be defined, so simply install and enjoy!

NGUI 2

No action required.

Default settings within Obfuscator options already handle this asset from the following method names being added to the "Replace Literals" section:

```
OnHover
OnSelect
OnInput
OnScroll
OnKey
OnPress
OnDrag
OnClick
OnDoubleClick
OnDrop
OnTooltip
```

Behaviour Designer

Shared variables need to have the same name, so be careful if you annotate one with [SkipRename] or [Rename("someCrypticName")] and remember to annotate its other instances with the same annotation.

Tasks you create should have their classes annotated with [SkipRename].

If you use behaviorTree.GetVariable("MyVariable"), or the equivalent Set methods, then you either need to add [SkipRename] or [ReplaceLiteralsWithName] on the variable definition.

Odin

AOT Generation to avoid code stripping

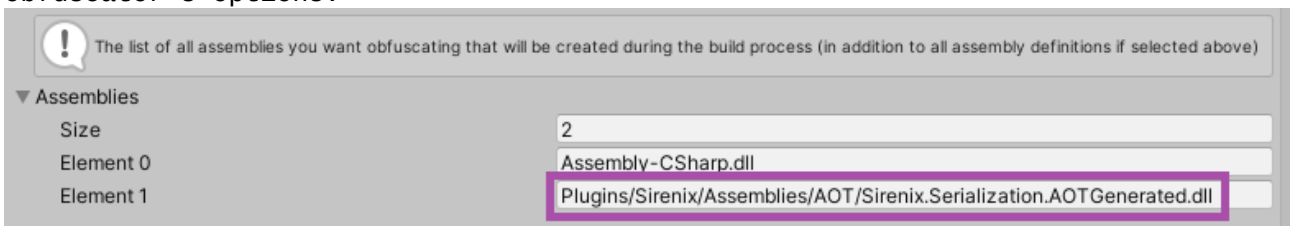
If you have AOT Generation enabled to protect against asset stripping then you may come across the following error:

```
IL2CPP error for method 'System.Void
Sirenix.Serialization.AOTGenerated.PreventCodeStrippingViaReferences::.cctor()'
in assembly '<project_dir>\Temp\StagingArea\assets\bin\Data\Managed\
Sirenix.Serialization.AOTGenerated.dll'
Additional information: Exception has been thrown by the target of an
invocation.
...
...
...
Unhandled Exception:
System.Reflection.TargetInvocationException: Exception has been thrown by the
target of an invocation. ---> System.InvalidOperationException: Unable to
resolve a reference to the type 'SomeType' in the assembly
'Sirenix.Serialization.AOTGenerated, Version=0.0.0.0, Culture=neutral,
PublicKeyToken=null'. Does this type exist in a different assembly in the
project?
```

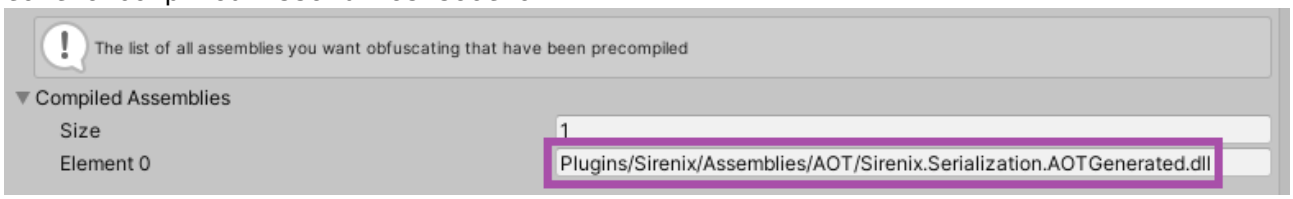
This is because Odin generates a DLL containing original references to your types and the Obfuscator was not instructed to obfuscate this generated DLL along with your normal ones.

To resolve this you must do **one** of two things.

If you have configured Odin to delete this DLL after building (preferred) then add Plugins/Sirenix/Assemblies/AOT/Sirenix.Serialization.AOTGenerated.dll to Assemblies within Obfuscator's options:

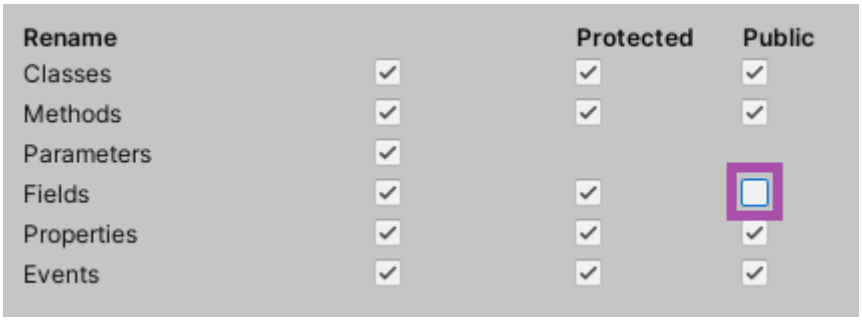


Alternatively if you have configured Odin to not delete this generated DLL on build then you must instead add Plugins/Sirenix/Assemblies/AOT/Sirenix.Serialization.AOTGenerated.dll to the Compiled Assemblies section:



Editor Windows Serialization

If you make use of Odin's Editor serialization (quite likely if you're using Odin), then as a first pass it's recommended to disable obfuscation of public fields:



For a more obfuscated solution you will want to re-enable this but preserve the name of any SerializedMonoBehaviour fields that are serialized by Odin such as bool[,] or Dictionary<a, b> etc.

Additionally, the field names of any classes used as types of SerializedMonoBehaviour fields must also be preserved. For example:

```
using System.Collections.Generic;
using Beebyte.Obfuscator;
using Sirenix.OdinInspector;

namespace Astral
{
    public class SolarSystem : SerializedMonoBehaviour
    {
        [SkipRename] // This is required if obfuscating public MonoBehaviour field names
        public Dictionary<string, Planet> planets;
    }

    public class Planet
    {
        [SkipRename] // This is ALWAYS required if obfuscating public fields
        public int Radius;
    }
}
```

Serializer

If using Odin's SerializationUtility.SerializeValue(..) or SerializationUtility.DeserializeValue(..) methods, it is important to annotate any serializable classes with [Serializable]. This is because Odin's serialization mechanism (like many others) embed class and field names into the resulting binary data file.

[Serializable] will instruct the Obfuscator to skip renaming both class names and field names.

UFPS

Where you use vp_Timer.CancelAll("SomeMethod"), either add [SkipRename] or [ReplaceLiteralsWithName] on the SomeMethod definition.

If you choose to exclude the core UFPS scripts from obfuscation, make sure you add [SkipRename] on method events that originate from the core UFPS, i.e. If you create a class and define a method OnStart_Reload, you probably want to use [SkipRename] on that method. Note that if the class you created explicitly inherits from the original UFPS class then this step is not required.

Default have been set up within Preserve Prefixes to cater for the UFPS reflection callbacks:

```
OnMessage_
OnValue_
OnAttempt_
CanStart_
CanStop_
OnStart_
OnStop_
OnFailStart_
OnFailStop_
```

Photon

Photon uses ToString() often with its enums, so if you choose to obfuscate enums, make sure to skip the enums in PhotonNetwork/Enums.cs. For a more obfuscated approach you could annotate each enum value with [SkipRename] instead.

Defaults of 'ExitGames' and 'Photon' have been added to the list of Skipped Namespaces.

For convenience the default settings have been updated to include this list of enums to skip:

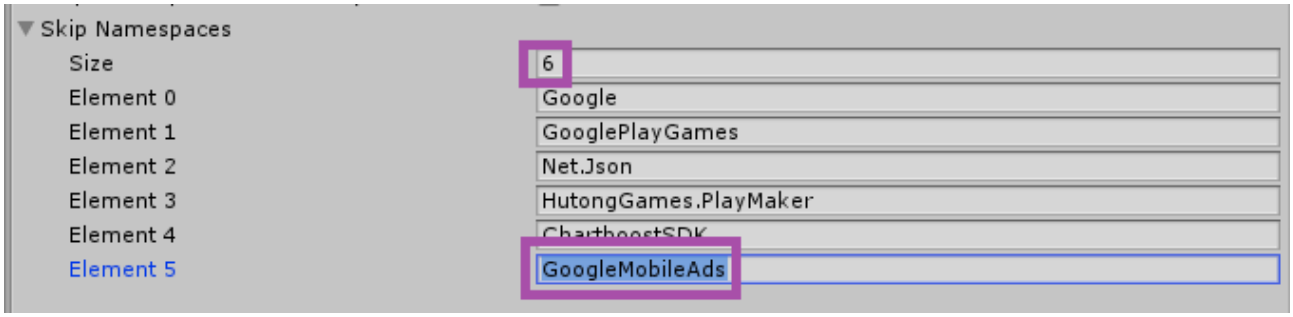
```
CloudRegionCode
PhotonNetworkingMessage
PhotonLogLevel
PhotonTargets
CloudRegionFlag
ConnectionState
EncryptionMode
EncryptionDataParameters
ClientState
ClientState/JoinType
DisconnectCause
ServerConnection
MatchmakingMode
JoinMode
ReceiverGroup
EventCaching
PropertyTypeFlag
LobbyType
AuthModeOption
CustomAuthenticationType
PickupCharacterState
CharacterState
OnSerializeTransform
ViewSynchronization
OnSerializeRigidBody
OwnershipOption
JoinType
OpJoinRandomRoomParams
```

Default options have added PunRPC and Photon.Pun.RPC to the 'Alternate RPC Annotations' section.

Troubleshooting

Parts of my game no longer works!

If you know the problem relates to a specific plugin, you might consider adding that plugin's namespace to the list of Skip Namespaces:



This can fix issues where that plugin's code is compiled alongside your project's code. Usually the plugin relies on reflection in some way.

If you're obfuscating a large complex project, start with only a small set of options enabled (i.e. start with only obfuscating class names) then gradually re-introduce more options.

Keep in mind you can choose to prevent entire namespaces being obfuscated by using the Skip Namespaces section in options.

Serialization

The Obfuscator will skip over class and field names of [Serializable] because when these are serialized the class and fields names are often written into the data and obfuscating these would mean existing data would no longer match when deserializing and cause errors. Similarly, if the random seed was changed then the new obfuscated names would no longer match data that were embedded with old names.

Some serialization implmentations (protobufs for example) can be a nice exception to this (depending on the implementation). Since their design can be independent of the class and field names you may decide you want to force obfuscation of these classes and you can do that with the following:

```
[System.Reflection.Obfuscation(Exclude = false, ApplyToMembers = true)]
public class MyProtobufClass {
}
```

Generally you can try to force the Obfuscator to obfuscate something by annotating it with [System.Reflection.Obfuscation(Exclude=false)].

ScriptableObjects are treated as Serializable in the same way but can also be forced if you are sure you're not making use of the serialization part of ScriptableObjects. For ScriptableObjects you can choose to set the hidden option options.treatScriptableObjectsAsSerializable = false; on your ObfuscatorOptions.asset file as an alternative to using the attribute.

Forcing obfuscation may result in runtime errors, so strong testing is recommended.

AssemblyResolutionException

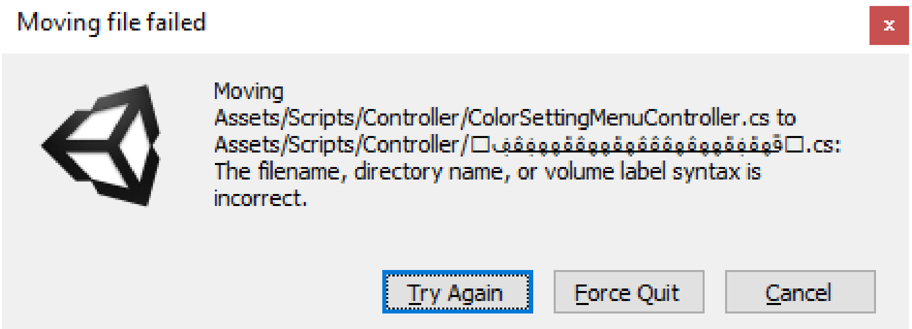
This means the Obfuscator could not find the referenced DLL by default. Check the following:

- You can instruct the Obfuscator where to find this DLL by adding either the DLL's file path or its directory to the list of "Referenced Assemblies" defined in Obfuscator Options in the Assemblies section.
  The Obfuscator will now consider that file or directory when looking for referenced assemblies.
- DLLs that have been renamed are sometimes hard for the Obfuscator to find by default. However adding its file path to "Referenced Assemblies" will resolve this.
- If you use a custom build process other than the default (PipelineHook.cs), you may find it appropriate to make a call such as

```
Obfuscator.AppendReferenceAssemblies(
    AssemblyReferenceLocator.GetAssemblyReferenceDirectories().ToArray()
);
```

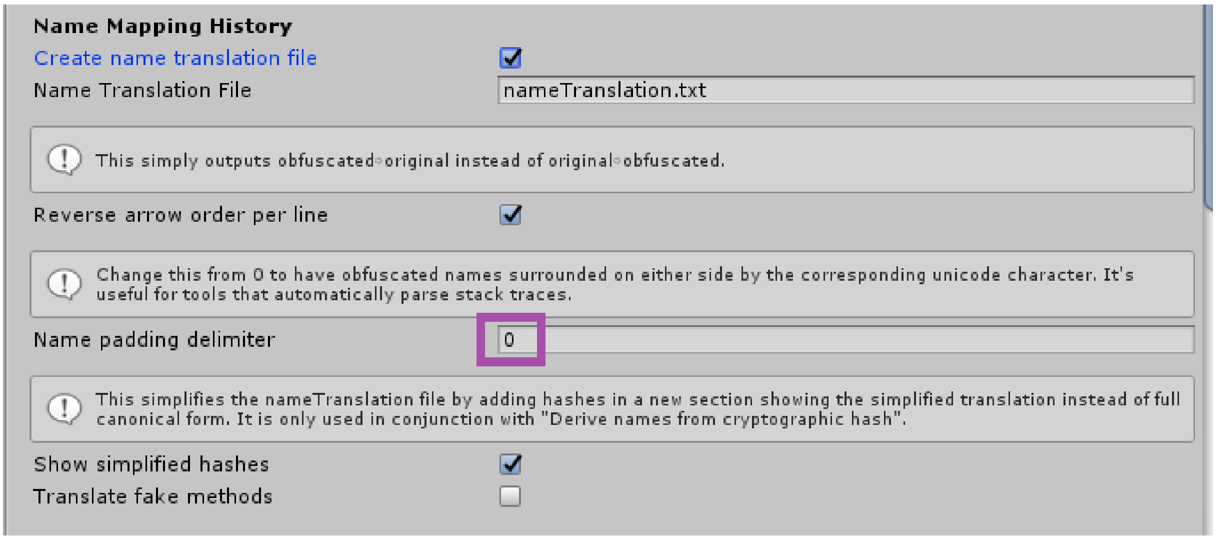
  before any call to Obfuscate().

Moving file failed

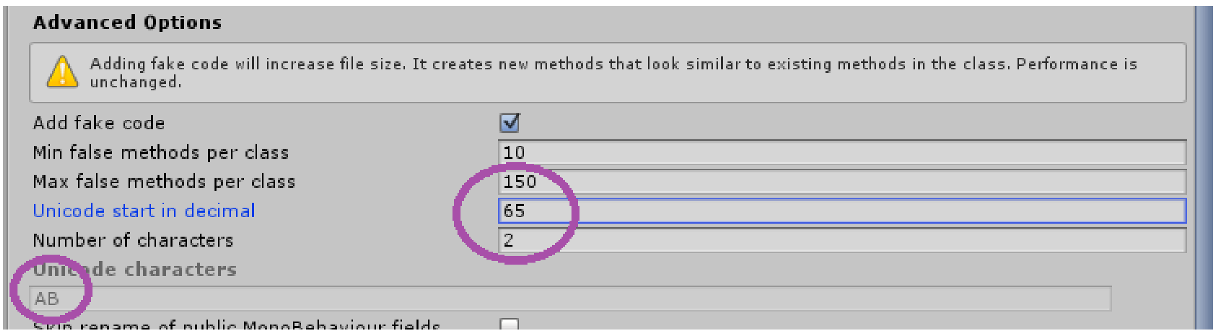


This can happen when obfuscating MonoBehaviour class names on old Unity versions (2018.1 and older).

Try resetting the name padding delimiter (or change it to a file-format-friendly character):



If the error still occurs then change the character codes too:



MonoSymbolFileException

If you come across this error, please email us with as much information as possible to support@beebyte.co.uk including your Unity version, build target, and whether it was run in development mode.

It has been known to occur when the "Obfuscate literals in all methods" option is enabled.

A workaround that might work for you is to edit the Postbuild.cs file and make the following IgnoreSymbols call:

```
Obfuscator.IgnoreSymbols(true);
Obfuscator.Obfuscate(dlls, compiledDlls, _options,
EditorUserBuildSettings.activeBuildTarget);
```

Alternatively, disable the option "Obfuscate literals in all methods".

It takes too long to obfuscate in the build process

The culprit is almost always "Fake Code". Consider reducing the values within its options, or disable it.

If it still takes a long time to obfuscate, you can get a clearer idea of the cause by calling Obfuscator.SetPrintChronology(true) just before calls to Obfuscate() (See Postbuild.cs). Then on successful builds you will see additional information in the success message:

```
Obfuscation successful! (total time: 1831ms)
Initialisation: 1481ms
Parameters: 8ms
Methods Part 2: 162ms
Fields: 5ms
Properties: 1ms
Events: 1ms
Types: 2ms
References: 4ms
References 2: 1ms
LiteralObfuscation: 61ms
Finalisation: 82ms
NameTranslationFile: 16ms
```

Messages sent from Android aren't working

If in Java code you have:

```
public void SayHello() {
    UnityPlayer.UnitySendMessage(UNITY_GAMEOBJECT_HOOK, "OnSayHello", EMPTY);
}
```

then you need to annotate the OnSayHello method within your C# project with [SkipRename] to instruct the Obfuscator to leave that method untouched.

I need anonymous classes to be skipped

In the source code anonymous classes look like the 'anon' variable shown here:

```
public class NewBehaviourScript : MonoBehaviour
{
    public Text uiTextPanel;

    void Start ()
    {
        var anon = new {count = 1};

        uiTextPanel.text = anon.ToString();
    }
}
```

When compiled, they'll be given a name like <>__AnonType0`1

If you need these anonymous classes to be skipped, then add the following line to the "Equivalent Attributes for Skip" section:

System.Runtime.CompilerServices.CompilerGenerated

This works because anonymous classes will have the [CompilerGenerated] attribute applied.

I need help!

If you are struggling and haven't find an answer in this documentation, or you think you've found a bug, please email support@beebyte.co.uk and include the following information:

- Sales Order Number or Invoice Number for your Asset Store purchase
- Unity IDE version
- Obfuscator version
- Build Target (the platform you are building to, e.g. Windows Standalone, Android)
- Scripting backend if you know it (Mono or IL2CPP)
- If you are seeing exceptions, please provide a full stack trace

If you think you have found a bug with the Obfuscator then providing a new tiny project that can reproduce the issue is extremely useful and much appreciated.