Corrupting Bug Fables and other Unity games

Jack7D1[206920373952970753], May 2021

Abstract:

This paper will discuss the process of corrupting Unity games using the Real Time Corrupter (RTC) and provide documentation of methods and techniques that may be used. This paper largely serves as documentation and as a guide for consequent Unity corruptions. This paper pertains to the use of the RTC and it's Process Stub and largely to the corruption of Bug Fables. However techniques presented therein have been observed to be helpful in corrupting a wide variety of modern Unity games.

Preface:

WARNING: Corrupting programs is likely to cause **LOUD** noises and **FLASHING LIGHTS** from the corrupted program. Assume that corrupting a program will result in **DATA LOSS** for said program, it should be assumed that corruption of a Unity game is destructive in nature in every case. Take this into consideration before corrupting any program.

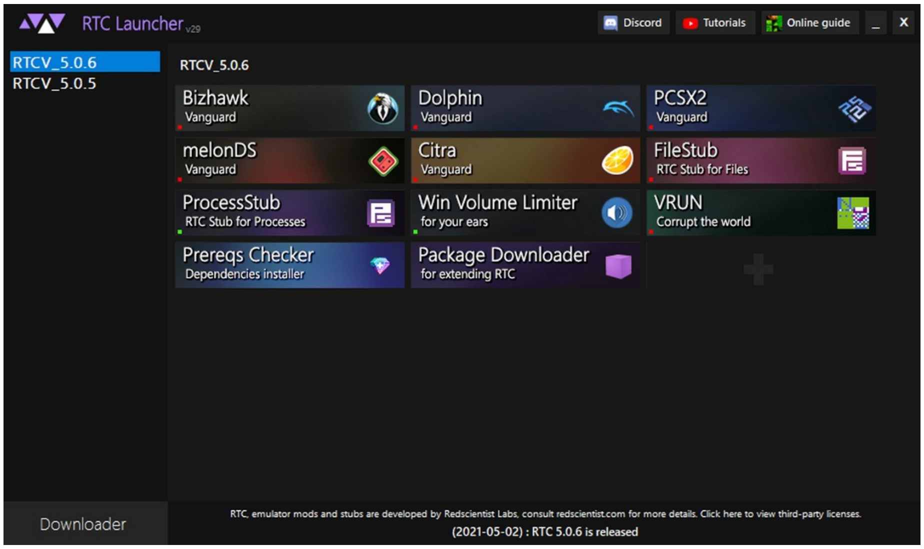
Tools Used:

It has become experimentally apparent that the RTC is best suited for modern, complex games such as Bug Fables. As such this documentation pertains to the use of the RTC with the Process Stub enabled.

Download and install the RTC online. This portion is currently well documented on the aforementioned website and is therefore beyond the scope of this documentation.[1]

Setup:

Begin by opening the RTC Launcher.

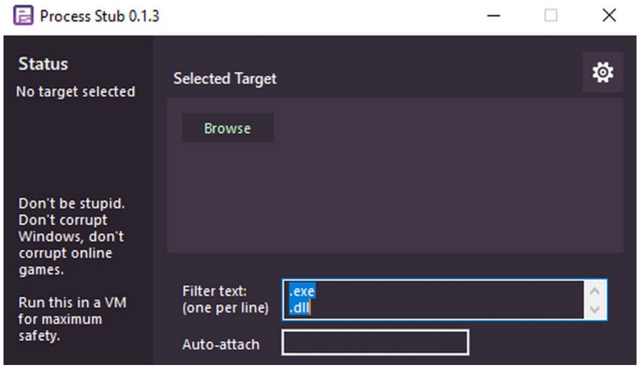


RTC, emulator mods and stubs are developed by Redscientist Labs, consult redscientist.com for more details. Click here to view third-party licenses.

(2021-05-02) : RTC 5.0.6 is released

Figure 1: RTC Launcher after successful start

Ensure that ProcessStub is installed, then click on it’s icon to open the corrupter.



Status

No target selected

Don't be stupid. Don't corrupt Windows, don't corrupt online games.

Run this in a VM for maximum safety.

Filter text: (one per line) .exe .dll

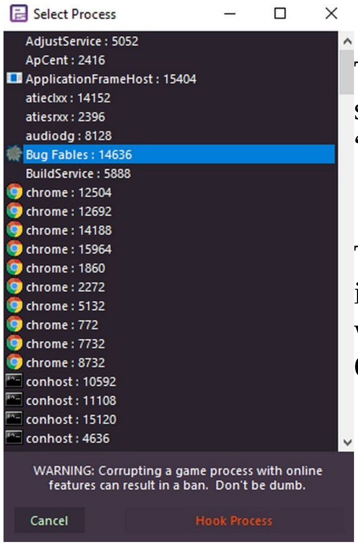
Figure 2: Initial configuration of a fresh started Process _Stub

It is imperitive to heed all warnings presented by the tools. However the use of a Virtual Machine (VM) is generally not required as Windows provides ample security against collateral damage from process failure.

[1] See Extra Resources #1

It is important that the target game is fully started and in the run state before proceeding.[2][3] Attaching the stub prior to completely loading the game may result in the game hanging or otherwise failing to start or load, as such the use of Auto-attach is highly discouraged.[4] In the game Bug Fables this is achieved by running the game, awaiting the main menu and then loading/creating a save. Once all loading is completed the process stub may be attached.

Attaching the stub can be done simply. Click Browse and select the game in the resulting menu.



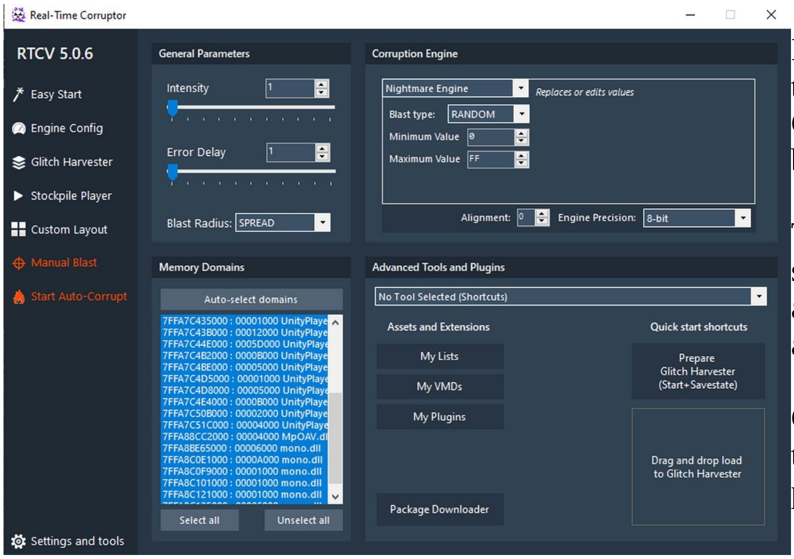
```
AdjustService : 5052
ApCent : 2416
ApplicationFrameHost : 15404
atieclxx : 14152
atiesrxx : 2396
audiodg : 8128
Bug Fables : 14636
BuildService : 5888
chrome : 12504
chrome : 12692
chrome : 14188
chrome : 15964
chrome : 1860
chrome : 2272
chrome : 5132
chrome : 772
chrome : 7732
chrome : 8732
conhost : 10592
conhost : 11108
conhost : 15120
conhost : 4636
```

WARNING: Corrupting a game process with online features can result in a ban. Don't be dumb.

Figure 3: Process Stub Browse Window, Bug Fables selected.

This Figure is largely an example, and appearance can vary widely. In this scenario the desired program is:
"Bug Fables : 14636"

The number following the process name is the Process ID (PID) and can be ignored for this purpose, however may prove useful for cross identification with a Command Line Interface.
Once the desired game is selected click Hook Process to proceed.



Intensity: 1
Error Delay: 1
Blast Radius: SPREAD
Nightmare Engine — *Replaces or edits values*
Blast type: RANDOM
Minimum Value: 0
Maximum Value: FF
Alignment: 0
Engine Precision: 8-bit
No Tool Selected (Shortcuts)

```
7FFA7C435000 : 00001000 UnityPlaye
7FFA7C43B000 : 00012000 UnityPlaye
7FFA7C44E000 : 0005D000 UnityPlaye
7FFA7C4B2000 : 0000B000 UnityPlaye
7FFA7C4BE000 : 00005000 UnityPlaye
7FFA7C4D5000 : 00001000 UnityPlaye
7FFA7C4D8000 : 00005000 UnityPlaye
7FFA7C4E4000 : 0000B000 UnityPlaye
7FFA7C50B000 : 00002000 UnityPlaye
7FFA7C51C000 : 00004000 UnityPlaye
7FFA88CC2000 : 00004000 MpOAV.dl
7FFA8BE65000 : 00006000 mono.dll
7FFA8C0E1000 : 0000A000 mono.dll
7FFA8C0F9000 : 00001000 mono.dll
7FFA8C101000 : 00001000 mono.dll
7FFA8C121000 : 00001000 mono.dll
```

Figure 4: RTC window after successful attach with Bug Fables.

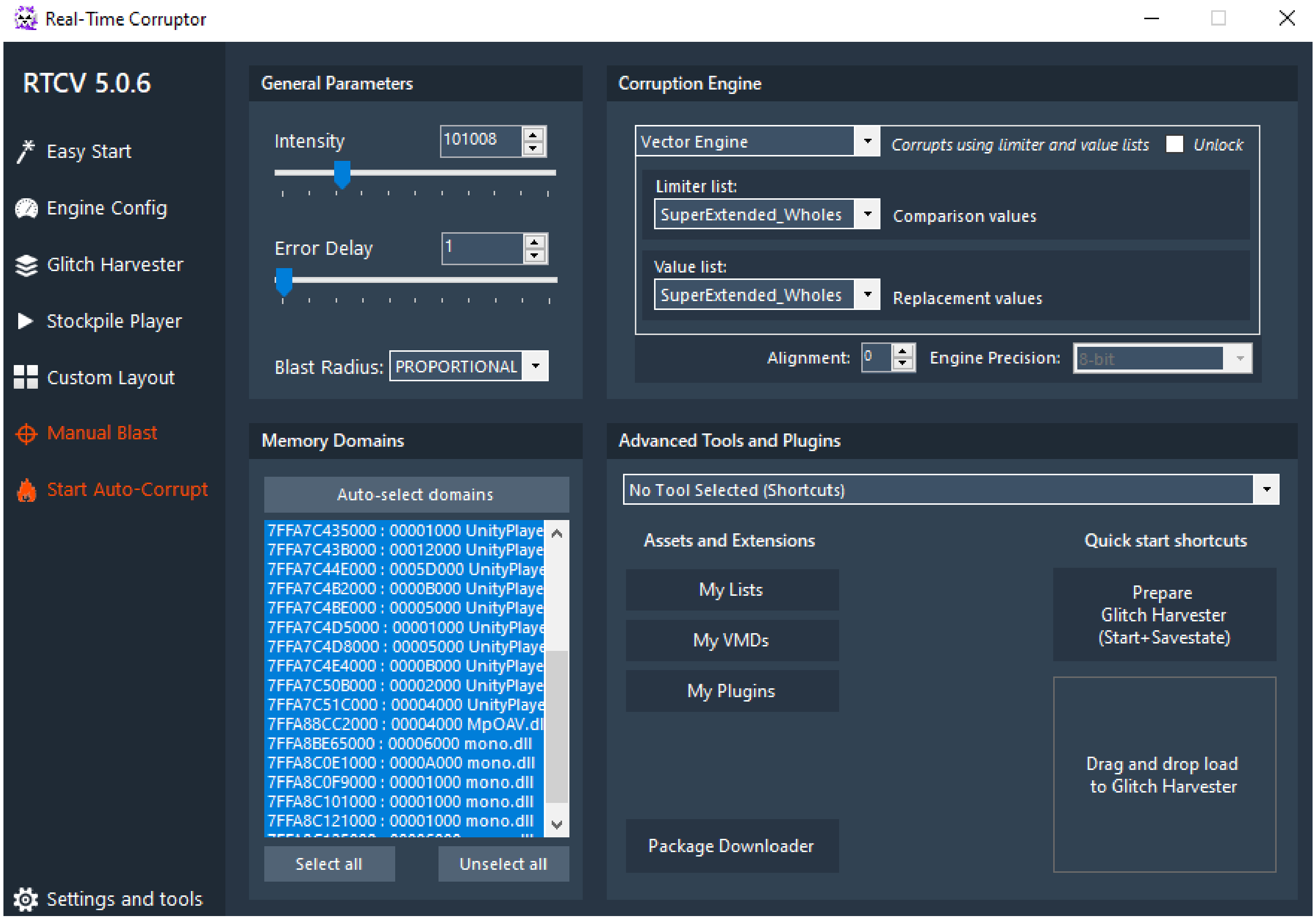
If the corrupter window does not look like this ensure it is not in Easy mode by Clicking the 'Normal Mode' button in the bottom right.

The Addresses in the Memory Domains section can vary greatly on circumstance and are largely non-useful for the purpose at hand.

Configure the Corruption Engine to Vector Engine and the Blast Radius to Proportional.

[2] Unity performs most all file integrity checks during program initialization, the use of Process Stub during runtime serves to bypass these checks.
[3] Hooking prior to full load will result in malformed address spaces as the data block domains are too small
[4] Auto attach uses the window title as a discriminator.

The window should now look like this.



Intensity: 101008

Error Delay: 1

Blast Radius: PROPORTIONAL

Vector Engine — *Corrupts using limiter and value lists* □ *Unlock*

Limiter list: SuperExtended_Wholes — Comparison values

Value list: SuperExtended_Wholes — Replacement values

Alignment: 0 Engine Precision: 8-bit

```
7FFA7C435000 : 00001000 UnityPlaye
7FFA7C43B000 : 00012000 UnityPlaye
7FFA7C44E000 : 0005D000 UnityPlaye
7FFA7C4B2000 : 0000B000 UnityPlaye
7FFA7C4BE000 : 00005000 UnityPlaye
7FFA7C4D5000 : 00001000 UnityPlaye
7FFA7C4D8000 : 00005000 UnityPlaye
7FFA7C4E4000 : 0000B000 UnityPlaye
7FFA7C50B000 : 00002000 UnityPlaye
7FFA7C51C000 : 00004000 UnityPlaye
7FFA88CC2000 : 00004000 MpOAV.dl
7FFA8BE65000 : 00006000 mono.dll
7FFA8C0E1000 : 0000A000 mono.dll
7FFA8C0F9000 : 00001000 mono.dll
7FFA8C101000 : 00001000 mono.dll
7FFA8C121000 : 00001000 mono.dll
```

At this time setup is complete and a corruption can be properly applied.

Corrupting:

The proper use of Memory Domains is important for successful corrupting, each dll and data block is considered a domain, however they should be organized into two “Super-Domains”.

This table has been determined experimentally.

Super-Domain Name	Dll	Resources
Filter text:	.dll	“UNKNOWN”
Corruption effects:	Physics, loading zones, base logic, numerical handling, events and story progression, movement.	Sprites and textures, sounds and music, normal maps, lighting maps, animations, text, events, level geometry, movement.
File Domains:	All .dll files.	“data.unity3d” or ∑ ”level###” files
Stability:	Exceptionally touchy, responsible for all computation, corruption is likely to lead to crashes, however opens many corruption possibilities.	Very stable, to the point of requiring a large bolus of intensity for observable effect to be noticed.
Suggested Blast Radius:	SPREAD, EVEN, PROPORTIONAL	PROPORTIONAL, BURST, NORMALIZED
Suggested Intensity:	~2000	~100000
Mode Size:	0x1000 bytes	0x401000 bytes

Corrupting both super-domains simultaneously is highly unstable and a proper method had not been found.

Switching between them can be done by entering the filter text of the target super domain into the filter text entry of the Process Stub.
Experimentation is highly encouraged by excluding certain domains via deselection or by adjusting intensity, blast radius, limiter list, and value list.
To apply the corruption click Manuel Blast, the corruption should now be applied. If a success then this guide is complete and may be repeated for an additional corruption.[5]

If the game crashes upon application then consider reducing the intensity, changing other settings or simply trying again.

[5] Manual blasts stack, however additional corruptions exponentially increase the risk of crash.

Extra Resources:

https://redscientist.com/rtc

For aquiring the RTC.

https://corrupt.wiki/corruptors/rtc

Further guides and documentation that are outside of the scope of this paper.