

the GTA V

modding tool kit





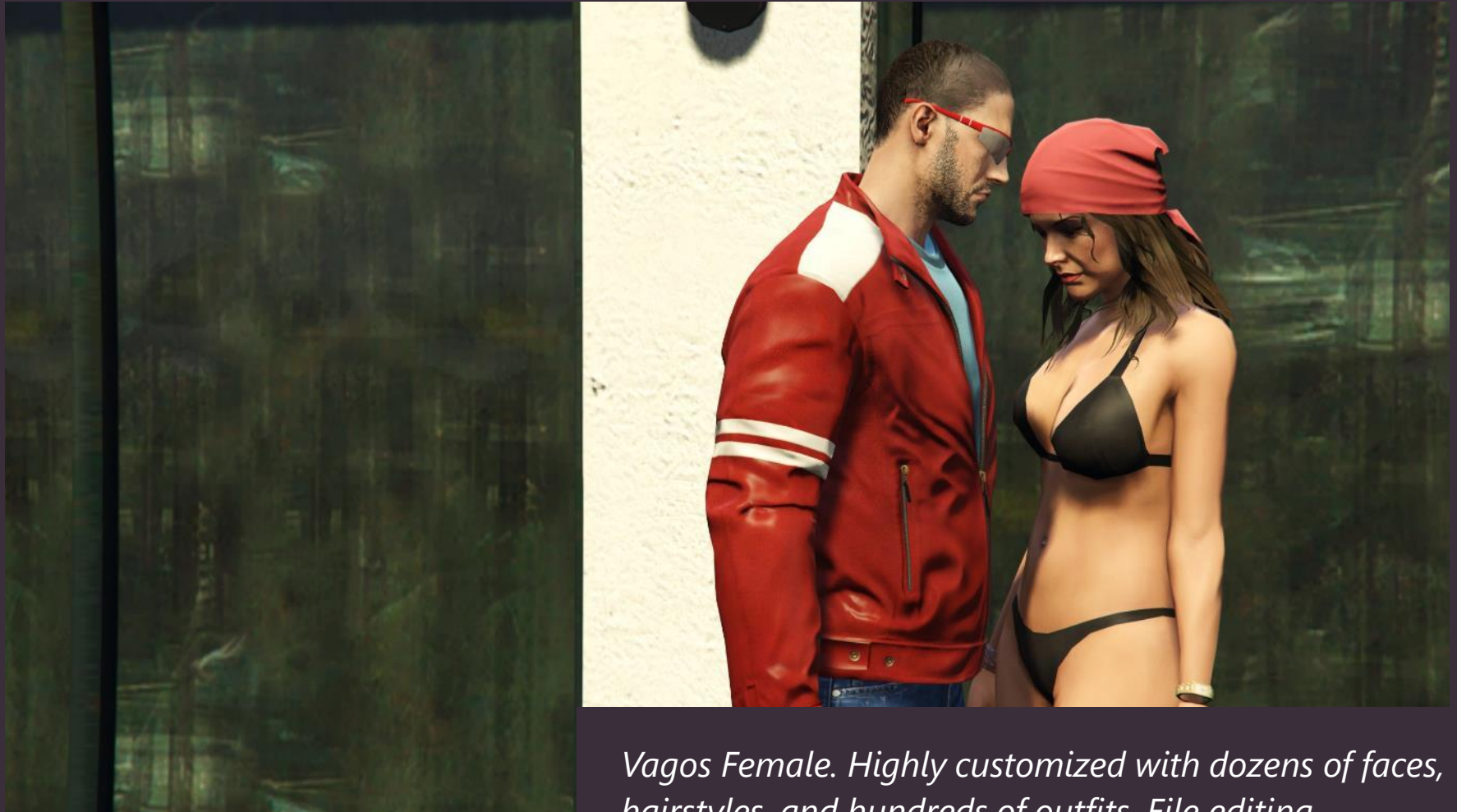
about the author

John From GWN

Content Strategist GTA V 911 Help Desk

Introduction

The ultimate guide for GTA V modding



Vagos Female. Highly customized with dozens of faces, hairstyles, and hundreds of outfits. File editing, texturing and porting into GTA V by JohnFromGWN.

This is possibly the greatest guide ever devoted specifically to GTA V modding. That's because it's very likely the only one that exists. GTA V (Grand Theft Auto V) is an action-adventure game developed by Rockstar North and published by Rockstar Games. It was released in 2013 for multiple platforms including PlayStation 3, PlayStation 4, Xbox 360, Xbox One, Microsoft Windows, and later for PlayStation 5 and Xbox Series X/S. GTA V was released for PC on April 14, 2015. In the game, players control three protagonists who participate in heists and other criminal activities in a fictional version of Los Angeles called Los Santos. It is known for its open-world gameplay, storytelling, and multiplayer modes.

A mod is simply short for modification - something added, removed, or changed that modifies the game. It could be functional, for example a script. Or it could be an entity (or asset) such as players, vehicles, buildings, weapons - in fact any change to any aspect of the game is considered modding.

Get Ready

The essential files required for modding GTA V

SCRIPT HOOK V

Script Hook V is a library that allows the execution of custom scripts in Grand Theft Auto V (GTA) on PC. It provides access to the game's native functions and enables developers to create mods for the game. These mods can range from simple adjustments to gameplay mechanics to completely new features and content.

Script Hook V is an essential tool for modders in the GTA community who want to create and share their own custom content and enhance the game's experience for themselves and other players.

It is installed in the game folder, also called the root folder, where you will also find GTA5.exe. Along with **Script Hook V** (SH5) you install **dinput8.dll** (the asi loader).



*Script Hook V is the library that allows the use of GTA V script native functions in custom *.asi plugins. Note that it doesn't work in GTA Online, script hook closes GTA V when player goes in multiplayer. This distrib also includes the latest Asi Loader and Native Trainer.*

Alexander Blade, author of Script Hook V

open IV



OpenIV (pronounced Open 4, like GTA IV) is a free tool used for modding and editing various aspects of Grand Theft Auto V, including the game's graphics, textures, sounds, and gameplay mechanics. It allows users to modify the game's files, create new content, customize the game's graphics, and add custom vehicles, weapons, and other elements to the game.

OpenIV is also used to load mods, which are custom modifications made by users to enhance or change the game in some way. These mods are called addons and are found in a folder containing a package called dlc.rpf.

Mods can range from simple graphical tweaks to complex gameplay overhauls and offer players a great degree of customization and control over their gaming experience.

OpenIV allows users to edit and modify the game's .rpf files including replacement and addon mods. These files contain a variety of game assets such as models, textures, and other game data. Without OpenIV, it would be difficult or impossible to access and edit these encrypted files, to customize mods, add custom content such as addons, and tweak game settings.

In summary, OpenIV is widely used in the GTA modding community and is considered an essential tool for creating and sharing user-generated content.



With the installed ASI loader and plugin, you will not be able to go into GTA Online. This will keep you from accidentally being banned and GTA Online will be protected from modifications."

Open IV Development Team



new user checklist

If you're new to GTA 5 modding, you have likely installed the absolute essentials: Script Hook V and OpenIV. Now let's take a closer look at what you've installed, where you installed, and the reason why.

In summary, these are the files you absolutely should have, almost all will be in your game installation folder, where you will find GTA5.exe:

1. dinput8.dll (packaged with both Script Hook V and Open IV)
2. HeapAdjuster.asi
3. NoBoundaryLimits.asi
4. OpenIV.asi
5. PackfileLimitAdjuster.asi
6. ScriptHookV.dll
7. ScriptHookVDotNet.asi (and associated xml & dlls)
8. Menyoo.asi, or TrainerV.asi (Simple Trainer).

Trainers are amazing, you could choose one of many, or install more than one. You don't need to install NativeTrainer.asi which comes with Script Hook V.

The last essential file is the **gameconfig.xml** and there are several options. Now let's review what files and mods should be in each folder.

Your Game Folder

Call it the game folder, the root folder, the installation folder, the GTA V folder - whatever you want - this is the folder that contains the file called GTA5.EXE and it's where the magic of modding begins.

Script Hook V

Once you extract/unpack the ScriptHookV zip you will see a folder called bin. Inside are three files. Ignore the one called NativeTrainer.asi and place dinput8.dll (aka asiloader) and ScriptHookV.dll in your game folder. These are the two files that make modding possible.

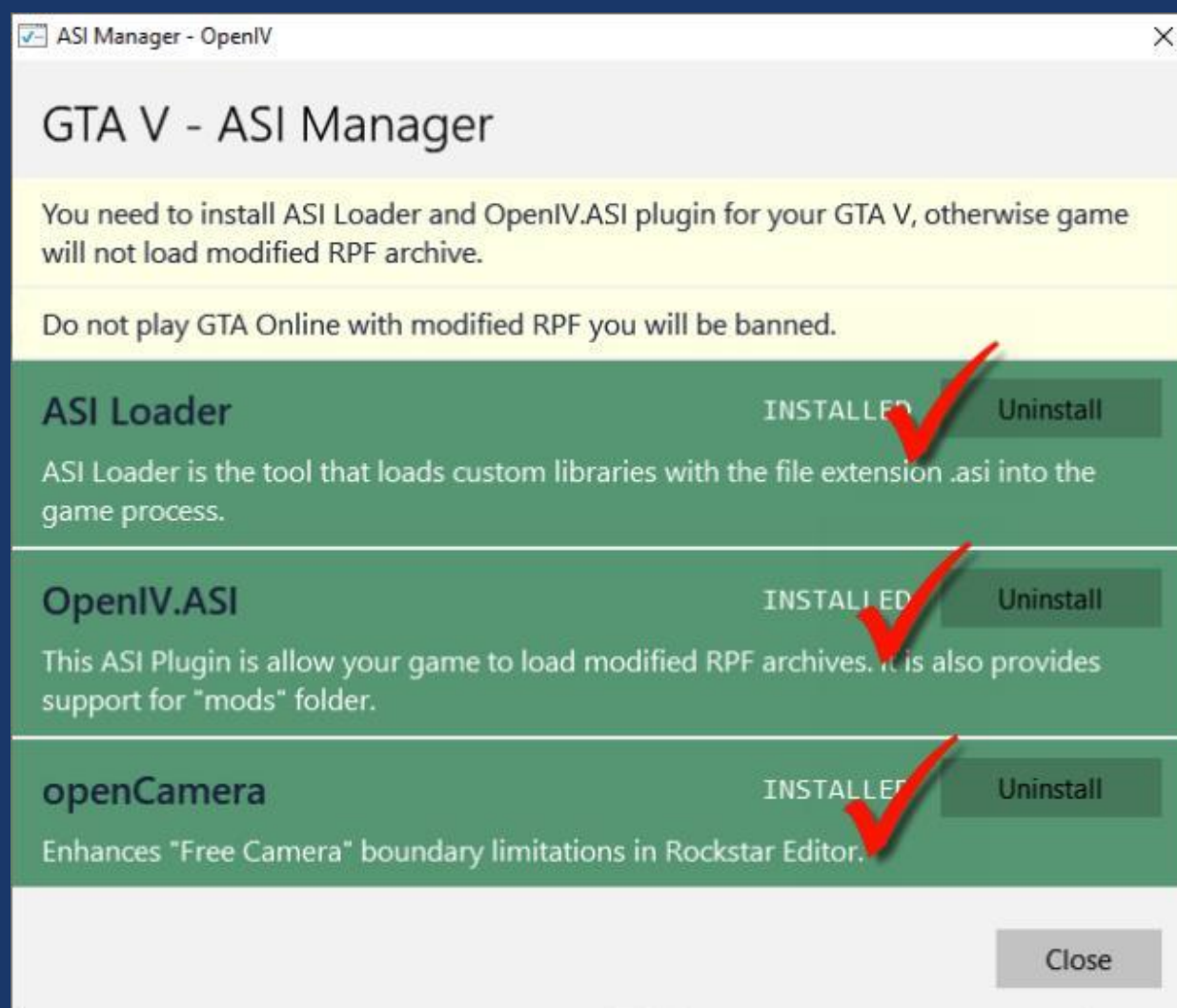
There is also a RAGE Plugin Hook (RPH) which is popular with some GTA5 communities but not important for new users unless required for a specific mod.

Never use the dinput8.dll from the windows system32 folder.

Open IV

When you install OpenIV you are presented with the GTA V - ASI Manager during the installation. It offers you 3 options.

1. **The ASI loader.** You can accept this, but if you installed Script Hook V first you already have it because the ASI loader is dinput8.dll. This file is essential because it loads all files with the asi extension including OpenIV.asi and your Trainer and many others.
2. **OpenIV.asi.** This is the plugin packaged and installed with Open IV (the editor/program) that will load the addons in your Mods folder (your dlcpacks). Again, this file is essential unless you mod the game files and folders directly. You will still need the program itself to make edits.
3. **openCamera.asi.** This file isn't mandatory to install but it can't hurt. It is only used in combination with the Rockstar Video Editor.



Heap and Pack Limit Adjusters

The Heap Limit Adjuster and the Packfile Limit Adjuster are essential if you are installing addon mods as they will help make the game stable.

Without them, always used in combination with a gameconfig.xml mod, your system is very likely to crash, even with only a single vehicle or map addon installed.

Trainers

These are by far the best mods you can install. Trainers allow you to enhance GTA5 in unimaginable ways. Everything from changing your player or NPC clothes and hairstyles, modifying the colour and characteristics of your vehicles, changing the weather and time, and much more. You also will benefit from a host of new functionalities such as teleporting to any location - even beyond the boundaries of San Andreas.

ScriptHookVDotNet

This mod is mandatory if you want to run installed script mods or scripts of your own. Not to be confused with Script Hook V which it depends on.

NoBoundaryLimits

A wonderful plugin that is almost mandatory if you want to install addon worlds and maps. As the name implies, it significantly extends the size of the GTA5 open world.

The gameconfig.xml

One of the most important mods, for stability, is the gameconfig.xml file, which is available as a customized mod. Contrary to the other files mentioned above, this file requires OpenIV for installation. It is located here [\mods\update\update.rpf\common\data](#).

Note: the gameconfig.xml mod is actually a replacement for the game version.

The DlcList.xml

Although not strictly a mod, this editable file is critical to modding. It contains the entries for all your addons, all the mods contained in dlc.rpf packages.

NativeUI.dll and LemonUI.dll

This is the only file mentioned here that goes in the Scripts folder. It is no longer supported but is still required by many mods. It is gradually being replaced by [LemonUI](#) and is primarily used to create mod menus. Optional but very useful.

Weapon Limits Adjuster

This optional mod can prevent crashes if you install too many weapons, including those found on vehicles such as fighter planes. From the mod description page: The game has a hardcoded limit on the number of weapons.meta files that can be loaded and on the total number of weapon components that can be defined. Rockstar increases every time new weapons.meta or weapon components are added in DLCs.

Reaching any of these limits when installing weapon mods makes the game crash while loading. This ASI mod allows you to increase these limits to prevent those crashes and infinite loads that are so annoying and frustrating.

OPTIONAL

Resource Adjuster

A collection of patches (some of which are used by FiveM) to improve stability, reduce texture loss and actually use your system's available resources as much as possible. Please note that this script is designed for high end systems with 8GB or more of GPU memory and more than 8GB of system memory available to be used solely by the game, although this is configurable via the included INI file.

fwBoxStreamerVariable

ThefwBoxStreamerVariable and decals limit patch is a mod that patches ymap load list extent limits - basically when there are too many ymaps running in parallel in a place in the game some part of the map unloads. When you have a lot of map mods with oversized extents or have a mod which adds a lot of assets into the game the LODs disappears. This script patches that issue and patches decal limits.

Issuer Check Bypass

The Issuer Check Bypass Against SocialClub mod is for those with older reverted games. It is to avoid a terminal error called Code 16. This ASI program bypasses/disables the issuer check that GTA5.exe does, which is done by communicating with socialclub.dll.

As a result, you can avoid the game refusing to start with the error code 16 for using a version of the exe older than the game build 2824.





9
49
6

SANIENY
ART FUATS



installing
mods

install mods

step by step

Before we embark on this exciting modding journey, before we start installing any mods, let's take a quick overview of what your game folder looks after your first installation. This fresh version of the game is what we call vanilla. Whether you're on Steam, Epic Game Store, Rockstar, or using physical media like DVDs, this file and folder structure is the starting point., Let's get it right to avoid problems downstream.

RECOMMENDED: take a screenshot, like the one below, immediately after installing the game. This is to document your vanilla files to distinguish them from mods. You will have roughly 44 items (files and folders) in the main game folder. We will also refer to this folder, where GTA5.exe is located, as the root folder or installation folder.



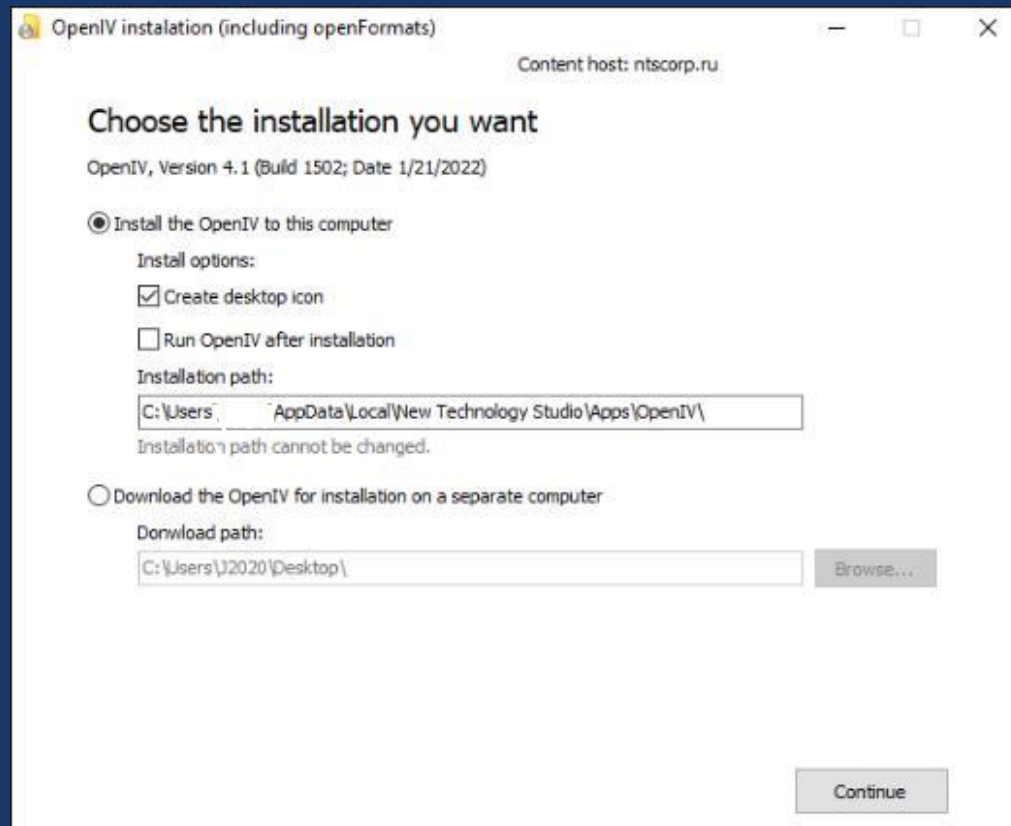
We will start by installing the free program called **Open IV** which was introduced earlier in our guide. It is pronounced Open Four because it was developed originally at the same time as GTA IV but many people call it Open Eye Vee - so call it what you wish, just make sure to install it. You can download Open IV at their Official Site. Just click the download now button at the top of the page and start the installation as you would any Windows software.

NOTE: If the Open IV site is not available, you will need to find an offline version from a reputable website. Always check for viruses or other malware when downloading mods, particularly executable files, the ones with .exe extensions. A good free site to use for scanning files is Virus Total but also use your own anti-virus software.

open IV

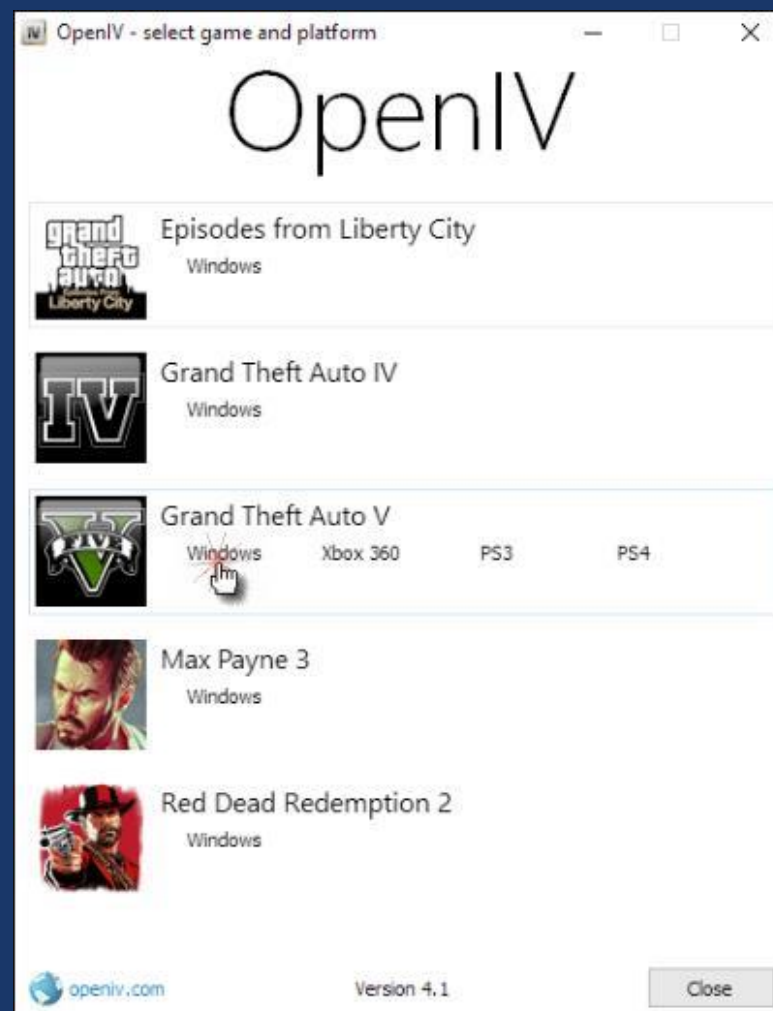
To easily install Open IV, follow the process like any other Windows software. Please note you can't change the installation path, just accept it.

1. Select your language.
2. Accept the EULA (End User License Agreement)
3. Select Install the Open IV to this computer and you will be presented with this dialog box.

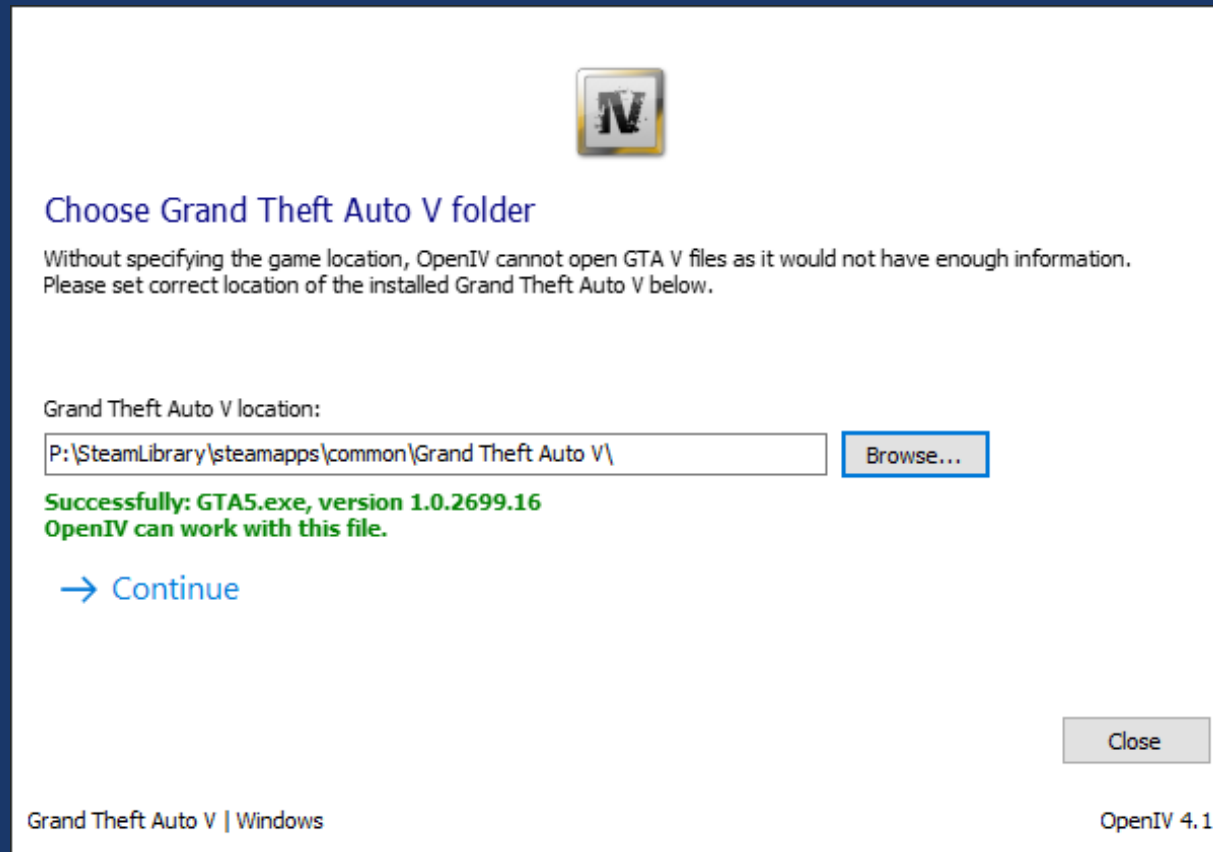


4. Hit Ok to continue and then launch OpenIV from the shortcut on your desktop. If you don't see a shortcut you can start OpenIV.exe from this location: <C:\Users\YourUserName\AppData\Local\New Technology Studio\Apps\OpenIV>

5. Once OpenIV has launched, select Grand Theft Auto V and Windows.



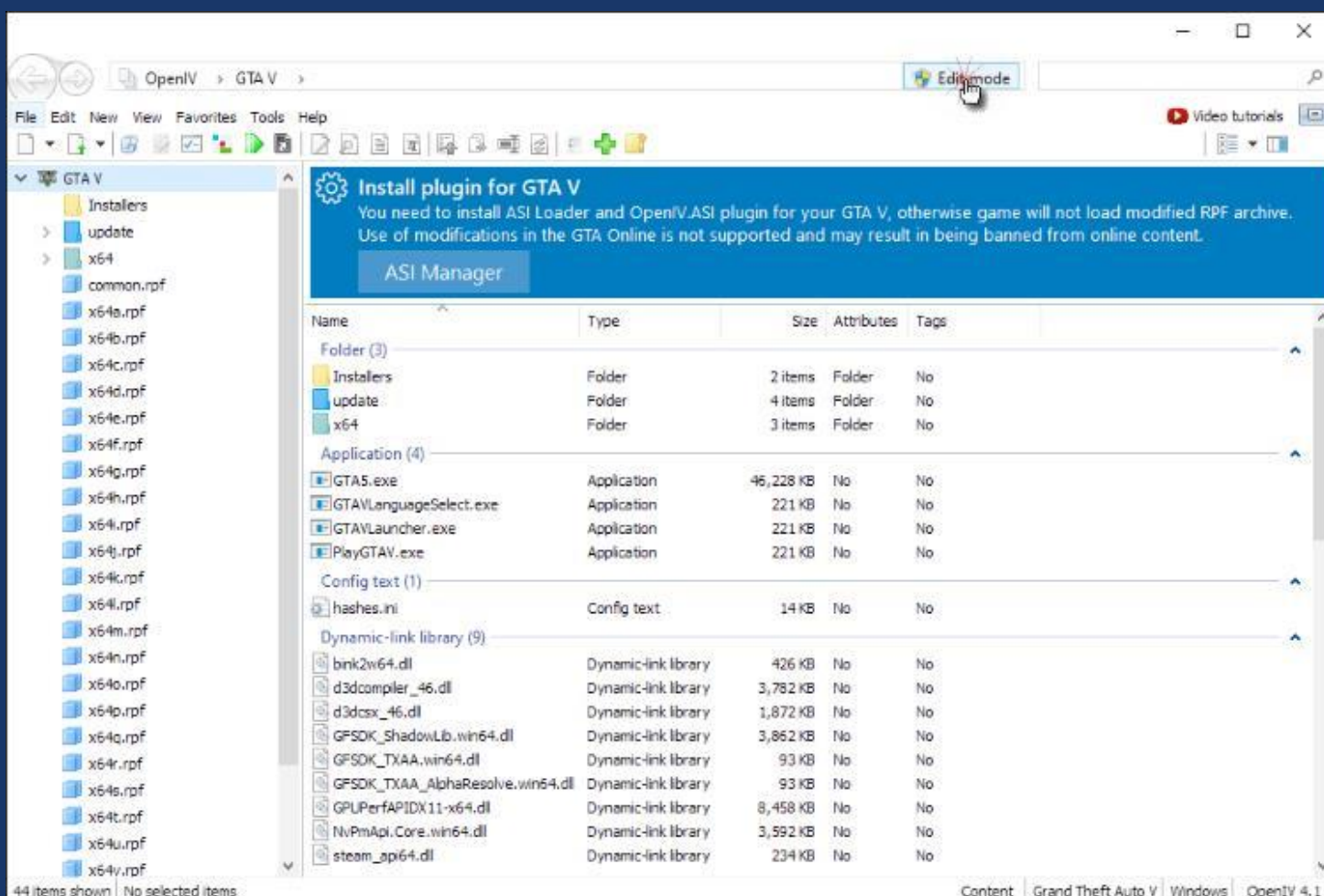
6. From the next dialog, select browse and navigate to your GTA 5 folder.
If you don't know where it is consult this article on our site: [How to find GTA5.exe](#).
7. Click Continue when prompted, twice, and that's it. You've successfully installed OpenIV.



CONFIGURING open iv

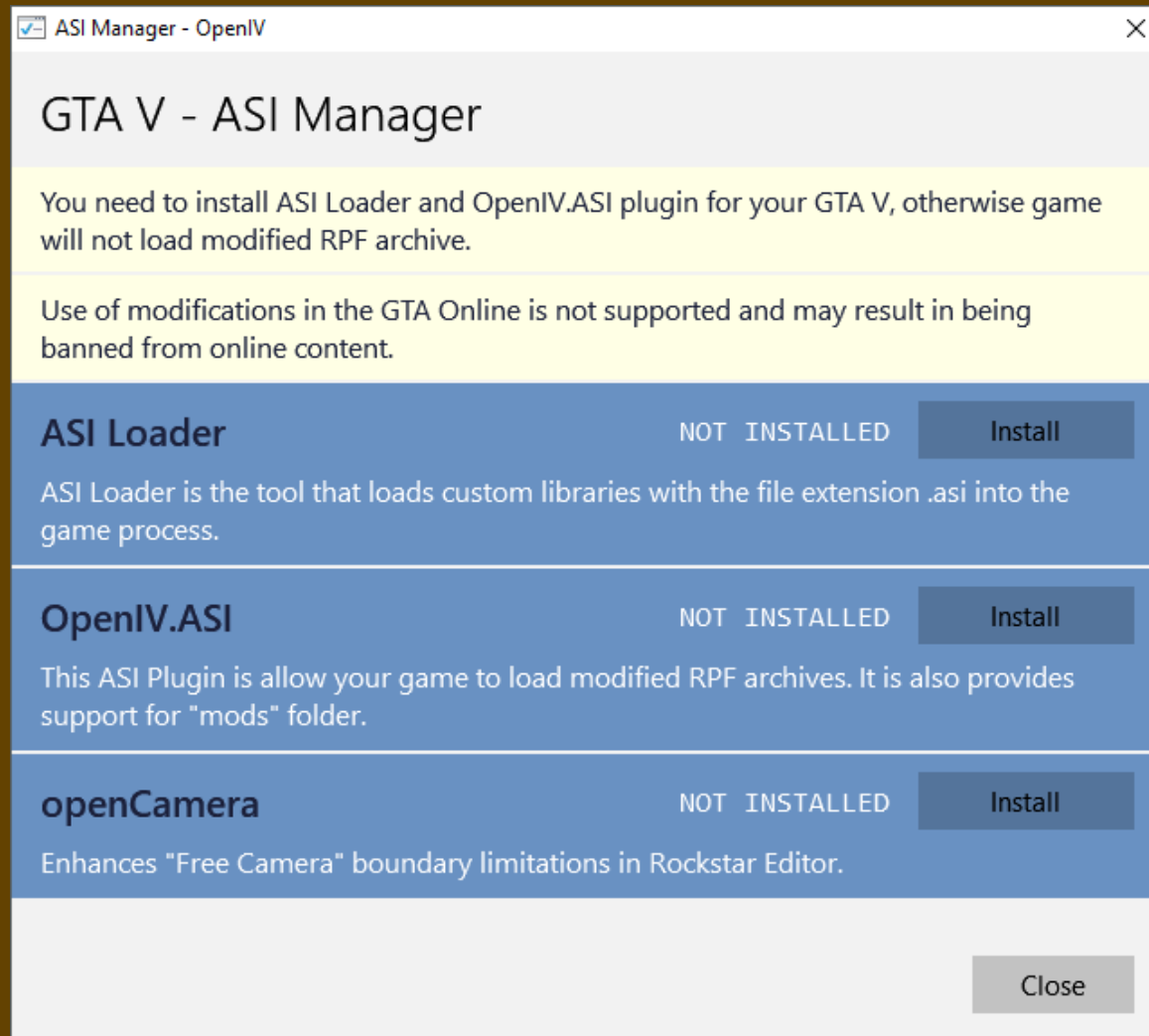
Now that you've installed OpenIV, let's do some basic setup and configuration.

1. Launch OpenIV and hit the Edit button at the top. Select Ok when you get the warning. Another message in blue will appear to install plugin for GTA V. Click on the ASI Manager button to continue.

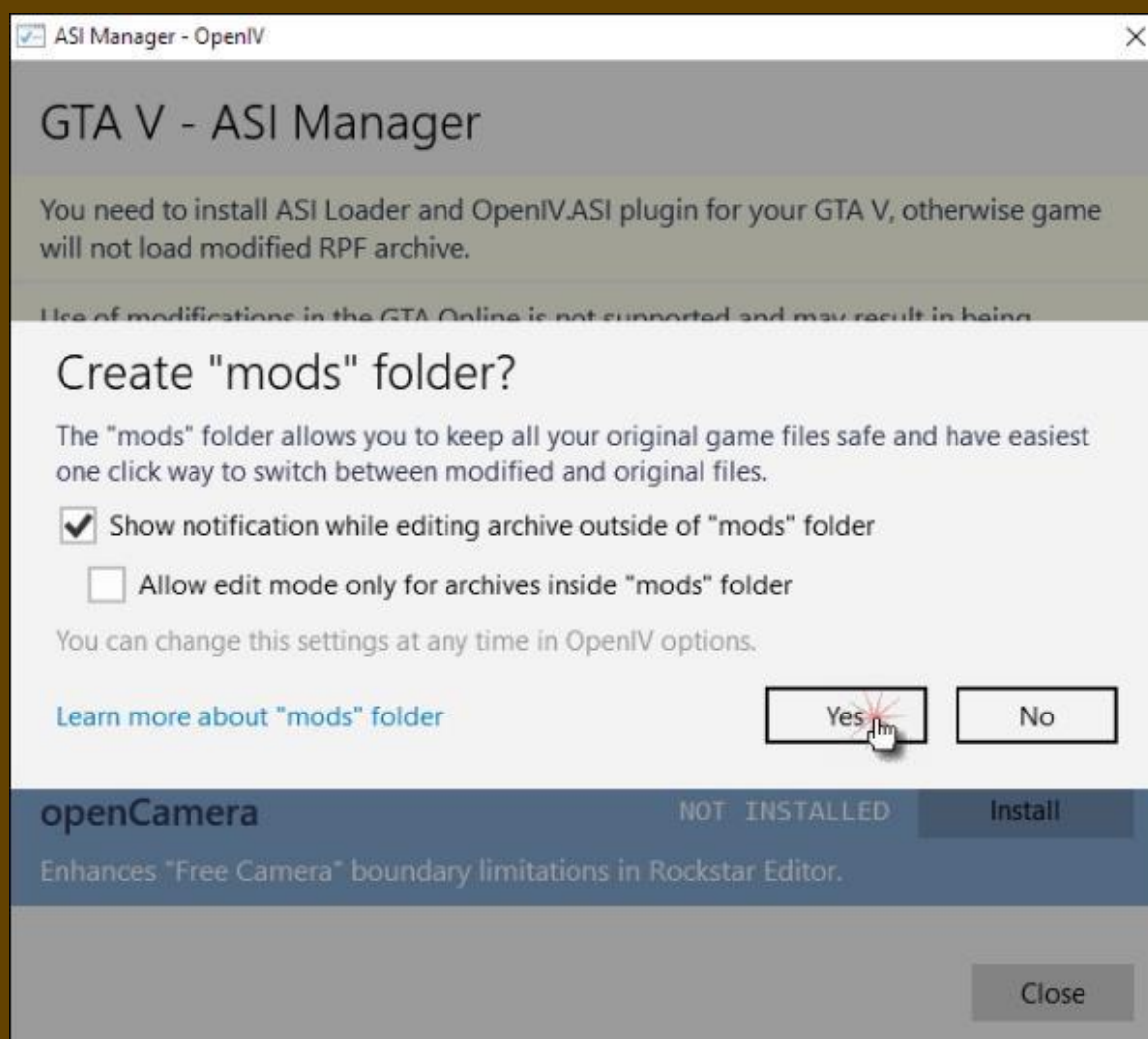


CONFIGURING open IV

2. When the GTA V - ASI Manager pops up, install all 3 selections: The ASI Loader, OpenIV.asi, and openCamera. Notice the warning about getting banned if you play GTA online with mods. There is very little danger of that happening.



3. You will get a message to create a Mods folder, select yes and accept the defaults. Note that the folder created by OpenIV will be empty, this is normal.



Essential mods

We will now install 3 absolutely essential mods - one that enables us to hook into the GTA 5 game engine known as RAGE and 2 for stability. All 3 of these mods are copied to your root folder where GTA 5.exe is found and where your game was installed.

Script Hook V

Download Script Hook V from [this link only](#). Once extracted you will see a folder called bin. Install 2 of the 3 files in the bin folder of the zip archive. The 2 files to install are: ScriptHookV.dll and dinput8.dll. You don't need to install NativeTrainer.asi. Copy these files to your root folder. Note if you installed OpenIV you will already have dinput8.dll installed. Two files below will be installed:

ScriptHookV.dll

dinput8.dll (also installed by OpenIV as ASI loader)

Heap Limit Adjuster

This mod which increases heap memory can be [downloaded here](#). It is packaged with 2 files and will generate a log file. Extract (unzip) and install in the root folder, same as the other files here. These are the files that will be installed:

HeapAdjuster.asi

HeapAdjuster.ini

HeapAdjuster.log (generated after first run)

Packfile Limit Adjuster

This mod increases stability for addons such as vehicles and all addons that are packaged as dlc.rpf which we will discuss later on. It includes one plugin asi file and a configurable ini file.

Download it from this link. Extract (unzip) and install in the root folder, same as the other files here. These are the two files that will be installed:

PackfileLimitAdjuster.asi

PackfileLimitAdjuster.ini



trainers

Our next installation project will be installing a Trainer, probably the best mods ever. Unlike our essential mods, which don't really have any alternatives, there are dozens of excellent trainers you can choose from.

We will just discuss two of the most popular, Menyoo and Simple Trainer. They often are both installed and they seem to play and behave well together. You can read more [here](#).

Menyoo

Download Menyoo from this link only ([download latest release](#)). Once extracted you will see a folder called menyooStuff and a file called Menyoo.asi. Install both the file and the folder in the root folder. In passing, all files with the asi extension will be installed in the root folder. Files installed:

Menyoo.asi

menyooStuff (folder)

menyooLog.txt (log file generated after first run)

Note: Menyoo also has a configuration file, menyooConfig.ini, in the menyooStuff folder.

Simple Trainer

This trainer mod, which is very popular as well, can be [downloaded here](#). It is packaged with 2 files. Extract (unzip) and install in the root folder, same as the other files here. Files installed:

TrainerV.asi

trainerv.ini



mods folder

With most of the essential files out of the way, let's look at setting up and configuring the Mods Folder. In passing, you can name it mods or Mods, Windows doesn't care. Why are we creating a Mods folder rather than modding the game directly? We do it for three main reasons. First it prevents us from damaging, deleting, or corrupting game files. If we did damage the original game files we would need to do a verify integrity or a full reinstall to fix our game - both taking time.

Secondly, it allows us to keep all our mods intact after each Rockstar GTA 5 patch/update. It doesn't guarantee our game will work, but at least none of our mod files will be overwritten or replaced by the update. Finally, we can think of the game folder as a backup for our Mods folder. Now let's look at what goes into our Mods folder. We will take the minimalist approach for simplicity and to save disk space. Contrary to what many people advise, you only need a few folders and files for a successful Mods folder.

Here is a step by step installation guide, done manually to familiarize yourself with the file and folders.

Step 1. We create a sub folder called Update inside the Mods folder. It will look, depending on your own installation, something like this: Grand Theft Auto V\Mods\update

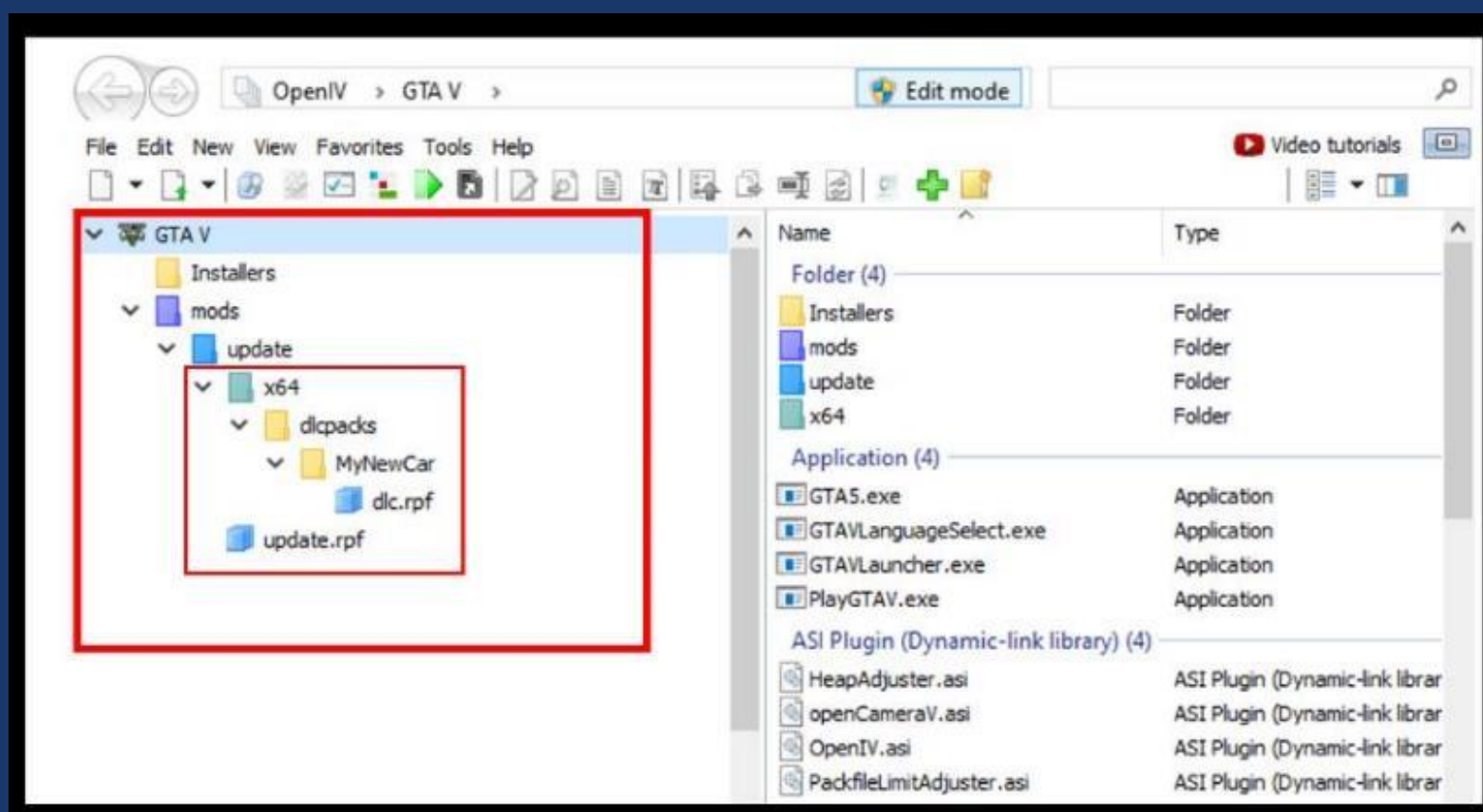
Step 2. We now create a sub folder called x64 inside the Update folder. It will look, depending on your own installation, something like this: Grand Theft Auto V\Mods\update\x64\

Step 3. We create a sub folder called dlcpacks inside the x64 folder. It will look, depending on your own installation, something like this: Grand Theft Auto V\Mods\update\x64\dlcpacks

Step 4. We go back to our folder called Update inside the Mods folder. There we copy update.rpf from the game to our Update sub folder. With the April 2022 update, a new folder called update2.rpf was added which should be copied as well. It will look, depending on your own installation, like this:

Grand Theft Auto V\Mods\update.rpf and Grand Theft Auto V\Mods\update2.rpf

The screenshot below, cropped from OpenIV, hopefully is worth a thousand words. The Mods folder contains an **Update** sub folder which itself contains the **x64** subfolder and a file called **update.rpf**. Inside **x64** we have a sub folder called **dlcpacks** where you will install your addon mods for example MyNewCar. Each of those addon mod folders will contain a file called **dlc.rpf**.



gameconfig

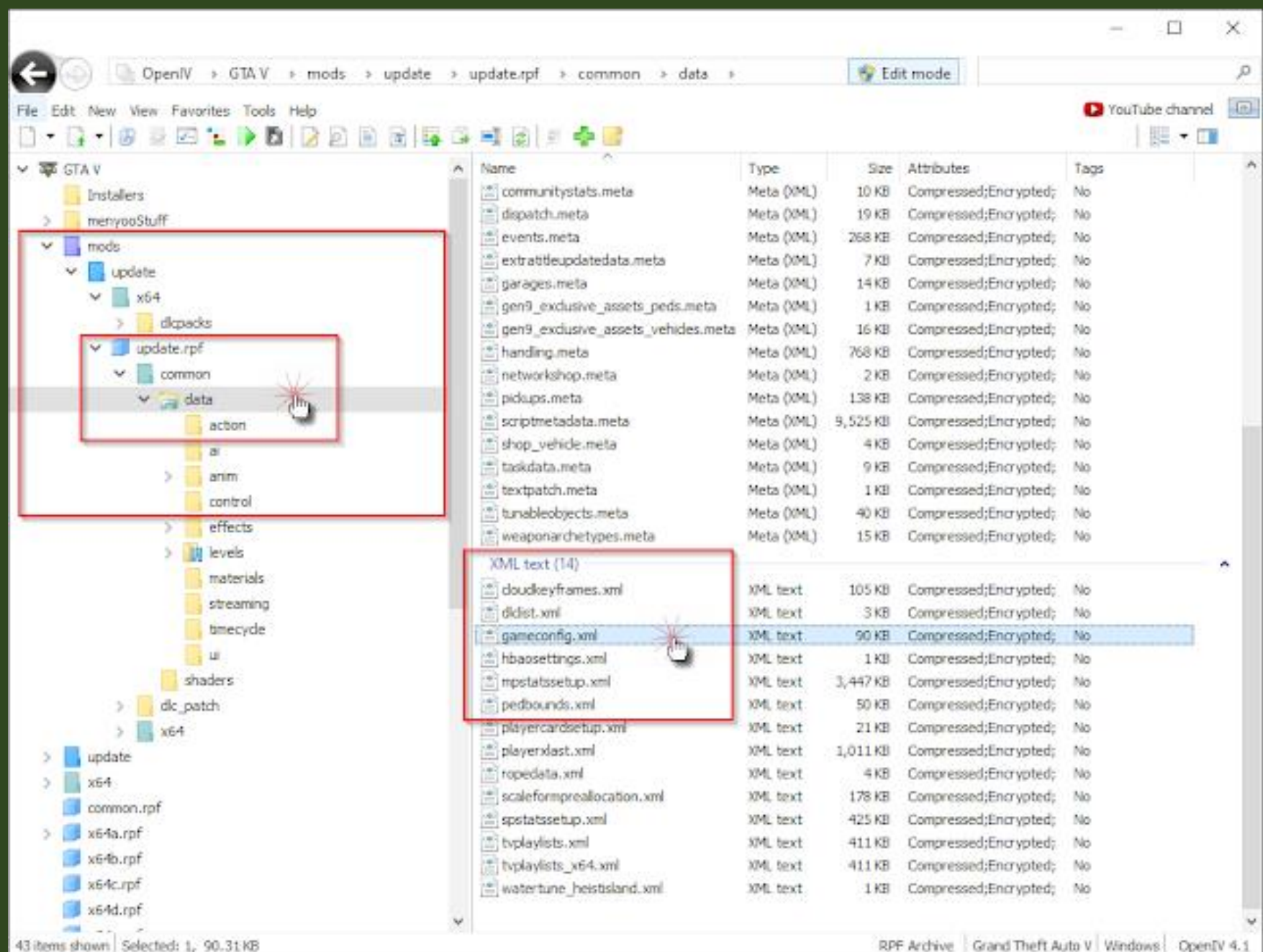
To ensure your GTA 5 game runs well, without crashing, without loading infinitely, you need to have what we call the **GTA 5 Stability Trinity**. This unholy alliance is comprised of 3 mods. The first two are the Heap and Packfile limit adjusters which we've already and installed. The third mod, to be discussed here, is gameconfig.xml and it is absolutely critical for a modded GTA 5.

There are several important difference between the gameconfig and all the other mods we've covered so far. First, unlike all the other mods discussed, the gameconfig can't be installed with Windows Explorer. It can only be installed with OpenIV (or another program called **CodeWalker RPF Explorer**) because it is located in the package called update.rpf which is encrypted.

Secondly, gameconfig.xml is actually a modified version of an existing game file. Finally, it is a text file whereas the asi and dll files we installed previously are all binary files. Being plain text, this file can be easily edited but with appropriate caution as it is best left to the experts. The game (vanilla) version of gameconfig.xml is located at: Grand Theft Auto V\update\update.rpf\common\data

There are many gameconfig.xml mods available. An excellent mod version of gameconfig.xml can be [downloaded here](#). It should then be installed, with OpenIV, just by dragging and dropping the file, at this location: Grand Theft Auto V\mods\update\update.rpf\common\data

When properly installed in the path above, this is the view from OpenIV. Note: when doing editing in OpenIV make sure the **Edit Mode** button at the top of the screen is toggled on.



dlclist

The dlclist.xml mod also has a few differences with the other mod files we've covered so far. First, unlike all the other mods discussed except the gameconfig.xml, the dlclist.xml can't be installed with Windows Explorer. It can only be installed with OpenIV (or CodeWalker RPF Explorer) because it is located in the package called update.rpf which is encrypted.

Secondly, like the gameconfig.xml, dlclist.xml is also just a modified version of an existing game file. Similarly, it is again a plain text file and it will certainly be the file you edit the most.

This is the first file we discuss that isn't downloaded because it's already part of your game and unlike gameconfig.xml which also exists as a game file, you'll be responsible for all the edits to dlclist.xml. These edits will be adding entries for mod addons such as vehicles and maps, informing the game to load these dlc addons.

You don't need to do anything at this point because the dlclist.xml creation was part of what we covered when we created our Mods folder. We will explore this critical file in more detail when we install our first addon. The game (vanilla) version of dlclist.xml is located along side of gameconfig.xml at:

Grand Theft Auto V\update\update.rpf\common\data

The mod version folder of dlclist.xml is also located in the same place as your gameconfig.xml at:

Grand Theft Auto V\mods\update\update.rpf\common\data

There is also a dlclist.xml which is inconsequential in a package called common.rpf at:

Grand Theft Auto V\common.rpf\

Remember when editing in OpenIV make sure the **Edit Mode** button at the top of the screen is toggled on.





installation

01

Open IV

Install OpenIV accepting all defaults and include the 3 options from the ASI Manager Screen. Just follow the sequence as you would installing any other software

02

Script Hook V & Dinput8

Install these two essential mod files in your game installation folder, the root folder, where GTA5.exe is located. You can overwrite dinput8.dll if it has already been installed by OpenIV

03

Heap and Packfile Limit Adjusters

Install the Heap Limit Adjuster to better manage memory and the Packfile Limit Adjuster to increase the number of addons (packfiles). Both of these will be in your root folder. Keep the default values for the ini files for now

04

Mods Folder

Create a Mods folder, or mods, as a subfolder of the GTA 5 root folder and copy over Update.rpf from the game's Update folder into your Mods folder



05

Gameconfig

Install a gameconfig.xml mod, using OpenIV in edit mode, for your version of the game. Initially start with the Base Traffic and leave all values as default until you have more experience

06

Trainers

Install a trainer mod, Menyoo or Simple Trainer, or you can install both if you prefer. Follow the instructions but trainers go in the root folder as do all asi mods

07

Community Script Hook V .NET

Install the latest release of Script Hook V Dot Net (SHVDN) in your root folder. It will allow you to run scripts mods including those you write yourself if you're inclined to do so

08

Scripts Folder

Create a Scripts, or scripts, folder and install a simple script for testing purposes. When adding scripts, do them one by one until you're comfortable your game is stable

A woman with long brown hair, wearing a black leather motorcycle jacket, a white crop top with a graphic, black leather shorts, and black leather boots, is walking down a city street. The street is lined with buildings, including one with a green awning and a sign that says "HUNTER". A vintage car is parked on the right side of the street. The background shows a city skyline under a clear blue sky.

trouble shooting

FIX ISSUES

Reading this article in full will allow you to fix all problems, including those that occur after GTA 5 updates. The most common causes for Single Player Story Mode loading infinitely, crashing to desktop, or related issues are:

1. **Missing the essential files required for stable modding. They are not installed or not updated for the user's version of GTA5 or no longer working after a patch or update.**
2. **Improperly installed mods/scripts: broken, outdated or conflicting with other mods.**
3. **Improper edits or customizations on any GTA5 files (syntax or other errors)**
4. **Unwanted replacement of files by certain OIV installers.**
5. **PC Hardware or software. Your rig might play the vanilla (no mods) game, but it also has to be powerful enough, and configured properly, for modding.**

The process below is not a magic solution, but rather a proven guide towards a fix. It is exclusively for mod related problems and assumes your game runs fine without any mods installed. Unfortunately there aren't any quick fixes nor guarantees, just common sense approaches. If this guide doesn't help, read the article entitled [Game Failures - Common Causes](#). As I wrote above there aren't any guarantees but honestly this method is foolproof to isolate at least where your issues are hiding.

If your game does not, or never did run, without any mods installed you can also check the official [Rockstar support page](#) for possible solutions. Remember that modding hardware requirements often exceed those of an unmodded game. This means you may require additional horsepower from GPU, CPU, memory, and adequate drive storage.

The following suggestions will give you a great starting point for troubleshooting a GTA5 game that was working but no longer works. If your issue started after a patch or R* update ensure you have updated essential mods. Remember that Rockstar updates don't usually break vanilla GTA5, but they definitely break GTA5 modded games - that's your challenge.

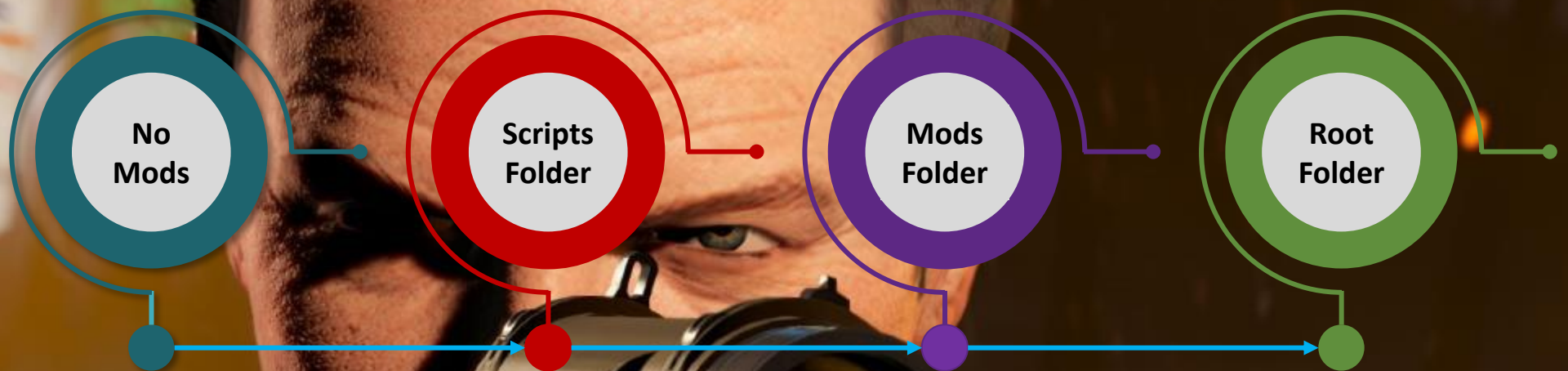
If your game never worked properly in the first place, check links above. Most importantly, make sure your folder structure is correct and the installations are in the right folders and paths. If your game is now suddenly broken (crash, hangs, won't load), after an update, after installing more mods, or randomly, try this process to isolate the issue. Follow these steps faithfully and this systematic approach will help you discover, not necessarily what the problem is, but almost certainly where the issue lies.

Important: always start with the last change or changes you made. This is the most likely cause for issues that just happened and the first item to investigate.

Before you start

Often the last mod you installed, or the last edits you made to the game, will be the reason your game now has issues. Before starting the process below check your game folder (root folder) where GTA5 is installed to find a few log files that can help you determine what is going wrong with your modded game. The two most important files are: ScriptHookV.log and the asiloader.log.

the fix PROCESS



01

no mods

Disable all mods and test vanilla game. Rename dinput8.dll to dinput8.bak. We want to rule out any hardware, PC software, or GTA V file issues to verify the game runs stably without installed mods. Generally the last change you made caused your issue



02

scripts

Disable everything in the Scripts Folder by renaming it XScripts. What are we doing? We are going to run the game without scripts folder. Why? We want to rule out any script conflicts



03

mods

Disable everything in the Mods Folder by renaming it XMods. What are we doing? We are going to keep all mods in our mods folder from running. Why? We want to rule out addon or mod conflicts



04

root

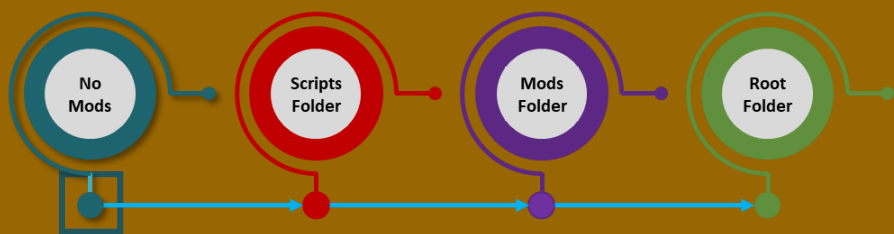
Disable asi mods in the Game Folder by renaming them with .bak extension. What are we doing? Troubleshooting root mods. Why? To ensure it is not an asi mod, or any root folder mod, causing issues





FOUR step ultimate guide

Step 1. Disable all mods and test in plain vanilla



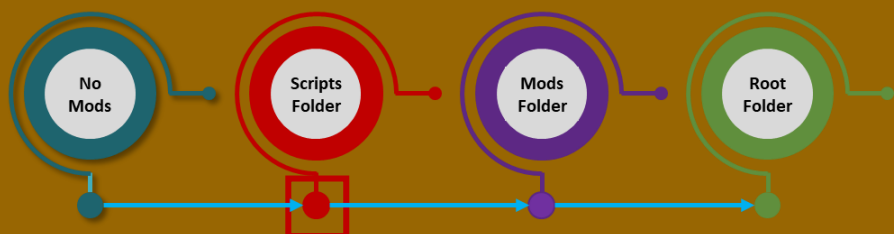
What are we doing? We're going to run the game without any mods. Why are we doing this? We want to rule out any hardware, PC software, or game file issues and ensure your game runs stably in vanilla mode - without any mods - no scripts, no addons, no trainers, no customizations at all. This assumes you didn't mod game files directly, that you used a mods folder. You don't need to uninstall anything at this point.

Instructions

Simply temporarily rename `dinput8.dll` which you will find in your root folder (where `GTA5.exe` is) to `dinput8.bak` and start your game. This is an easy way to disable all mods and can also be used to play GTA online. If your game now runs properly without mods and without incident, move to the next step.

You now know your game itself is fine. If it doesn't run, start with a Verify Integrity, and worst case a complete reinstall with a new saved game file as well. Remember not to mod your game directly, use a mods folder. Important: reinstalling a game more than once is a complete waste of time.

Step 2. Disable your scripts folder



What are we doing? We are going to run the game without any scripts from the scripts folder. Why are we doing this? We want to rule out any script or script conflict issues.

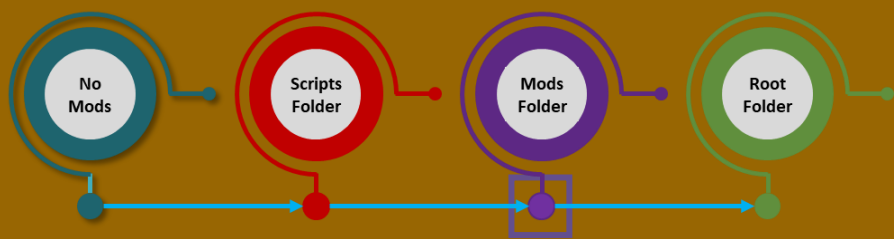
Instructions

First ensure `dinput8.dll` has been renamed to its original name after you changed it to `dinput8.bak`. Next, temporarily rename your scripts folder to `Xscripts` and once more start your game. This will keep any scripts in the Scripts folder from loading (but not any scripts or asi mods in your root folder).

You may want to reboot between steps to ensure clean and available memory. If your game runs stably with the scripts folder disabled, you know the problem is with one or a combination of scripts - possibly outdated, conflicting, or problems after a patch. Uninstall your scripts, one by one or in small groups, and reinstall them one by one until you find the problem.

If your game still doesn't run while all your scripts are disabled, you can now suspect the Mods Folder.

Step 3. Disable your mods folder



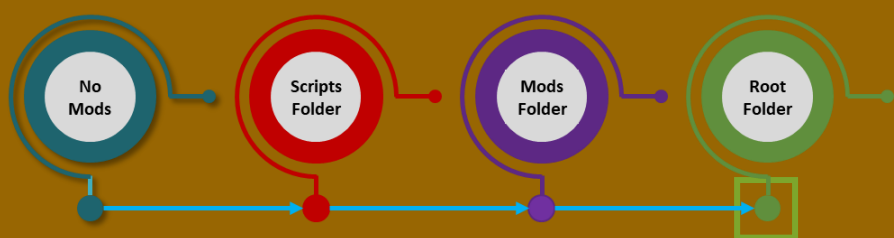
What are we doing? We are going to keep all mods in our mods folder from running. Why are we doing this? We want to rule out addon mod or mod conflict issues. The mods folder includes key files such as `dlclist.xml`, `gameconfig.xml`, and your `Dlcpacks` folder with addon peds, vehicles, maps, interiors, etc. It also has vehicle replaces and file customizations, such as editing meta and xml files. You may not have edited any files, but an OIV installer may have replaced or added or deleted some.

Instructions

First temporarily rename the scripts folder back to its original name and now rename the Mods folder to `Xmods`. This will ensure no addons or replaces load. If your game runs with this folder disabled, then you have an issue with one or more mods from this folder. Once more, uninstall them, one by one, or in small groups, and reinstall until you find the problem. If necessary replace edited files with the vanilla originals. Ensure you do not have any syntax errors in `dlclist.xml` and that your `gameconfig` is installed. Also check you have heap and pack limit adjuster mods - in your root folder. You may also need to check for improperly or problematic replace mods, peds, or vehicles or changes to metadata files.

Finally also ensure it's not faulty ycd animation mods, textures, weapons, or any other mods or changes within this folder. As a safety measure, temporarily remove new dlc from `dlclist.xml` (your mod version) after a patch as this dlc, particularly if it is just a placeholder for the console versions, might cause conflicts and issues. Keep in mind that a single mod, texture change, or edit to a meta file can crash your system.

Step 4. Disable your asi and root folder mods



What are we doing? We are going to troubleshoot the root folder mods. Why are we doing this? This last step is to ensure it is not an asi mod, or any root folder mod, that is causing issues. It is very unlikely to be your trainer, but it could be an `.asi` script mod that is outdated, conflicting, or just not right for your system. Or something may have broken after a patch. It is also unlikely to be an essential file such as the heap and packfile mods, or `ScriptHookVDotNet.asi`, but anything is possible.

Instructions

Use the same process of temporarily renaming the mods, but go one by one. Don't rename `OpenIV`, it's not necessary. Also make sure to change the `.asi` extension to something like `.bak`, if you keep the extension as an `.asi` it will still try to be loaded by `dinput8.dll` and could cause issues.

AFTER UPDATE FIX

SH5

Game
Config

SHVDN

??

01

SCRIPT HOOK V

After a GTA 5 patch or update, unless you're reverting, you will need to update SH5. If you don't, you'll get an error message as it does its version check and GTA 5 won't load. SH5 is backwards compatible but you can keep its old version if you're reverting



02

gameconfig

It's very common to require an updated gameconfig.xml mod after a Rockstar update. If your game is crashing or hanging in an infinite loop this is probably the first step to take assuming the game is still running stable without any mods enabled



03

SHVDN

Script Hook V .NET (SHVDN) should be updated regularly and particularly after a Rockstar update. However if script mods are outdated because of changes to the RAGE engine, you may need to uninstall them and wait for a possible update



04

when all else fails

If the steps above don't help, you might need to post for additional help on the GTA 5 Mods forums, or consult the Common Causes for Game Failures article on the following page



Game Failures

Common Causes

There are so many factors or combinations of factors which is why patience and a step by step approach is required. The following is a list of common issues, however this list is in no way complete as there are too many different setups out there involving PC hardware, software, game settings, installed mods, mod settings, etc.

1. **PC hardware** (GPU, CPU, System RAM, available storage/HDD). Your system may not be powerful enough to meet requirements for modding. Particularly true for laptops. For example, if you are running Windows 7 on a laptop with integrated graphics go real easy on the type and quantity of mods you install. If you can't upgrade your components or the PC itself, again add mods one by one and see if you can handle them before adding others.
2. **PC Software** such as video or other PC drivers. Make sure drivers are up to date, particularly if you are experiencing texture issues like flickering, tearing, texture losses, or low FPS. Set graphic settings to default or lower if necessary. DirectX and NET Framework versions can cause issues as well, so keep them updated.
3. **GTA5 Version** (Steam, Epic, Retail) not updated or using warez version. GTA5 should be uncracked and kept updated with most recent mods when available. Support for cracked versions is not available on this site. Installing more than one copy of GTA 5 on the same PC can cause conflicts and crashes.
4. **Scripthook V** (latest version) not properly installed. Must be installed in root folder with GTA5.exe (same location for asi mods). Extract the package, remove ScriptHookV.dll and dinput8.dll from the bin folder, and place them in the root folder. You don't need and don't want the trainer file. Don't confuse scripthook with scripthook dot net. See point 8.
5. **OpenIV** not properly installed, use its default settings and you shouldn't have any issues.
6. **Gameconfig.xml** missing this mod or improperly installed. You need OpenIV to install it. Use base settings to start. Don't modify this file based on some random post you read. It should work fine even with 300+ cars or peds installed right out of the box. Note: OIV installers can delete this file and replace it with an outdated one. The vanilla version of gameconfig.xml is not suited to support modding.
7. **Heap and packfile limit adjusters**. Use the Heap mod recommended for your gameconfig to start, keep default settings. Both these asi files go in root folder with GTA5.exe
8. **Script Hook V .NET, NativeUI, and LemonUI**. These important and often required mods could be missing or not installed properly. Follow mod instructions carefully. These are not required by all mods. The dot net files go in the root folder but most .dll files go in the scripts folder. Additionally, updates to Script Hook V .NET and LemonUI could break scripts as they are not always backwards compatible. NativeUI is no longer updated.
9. **Mod File Structure**. Ensure all folders are correctly implemented. There are YT videos which actually have the wrong structure. For example update.rpf in wrong folder. You also may need to set folder permissions given many mods will write or save information on your PC. Watch the videos in this thread if unsure or to confirm proper setup.
10. **Dlclist.xml**. New addons must be added to this file, with the correct folder names and correct syntax. Best to copy a working entry and edit it. Make sure you have opening and closing tags for example. Note: OIV installers can delete this file and replace it with an outdated one.

FAILURES

continued

11. **Improper installation** of mods in the wrong folder/wrong path, or missing mod requirements. Note: OIVs are better installed manually. Caution is required for replace mods as they often involve more than one path/location. Always use a Mods folder. The root folder is where your .asi and many .dll files are installed (e.g. dinput8.dll, ScriptHookV.dll) but generally speaking the .dll from script mods will be in the scripts folder.
12. **Quantity.** Too many mods installed, particularly high polygon count vehicles or massive maps/MLOs. GTA5 was not designed for modding. Push too far, too much and you will crash. You can mitigate issues with properly configured gameconfig, visual settings, and the proper hardware.
13. **Currency.** Outdated or defective mods may no longer work with new versions of GTA5 or other mods. Old mods do die.
14. **Corrupt or missing game files.** This may happen with or without meaningful error messages. The save game file may also be corrupted, particularly if autosaving during a crash. A verify integrity (or reinstall) will fix most issues, but not corrupt save files, so backup. If necessary start a new game. Editing any files, particularly ped components, may cause issues.
15. **Customizing mods.** As you are more experienced, you will likely customize yourself. Making edits to files such as handling.meta, converting replace vehicles to addons, adding or replacing textures, renaming files, and consolidating dlcs into one rpf. All of these actions require attention to detail. Mistakes will lead to possible issues which is why keeping track of changes will help troubleshoot if something goes wrong.
16. **Reinstalling.** Doing a complete reinstall rather than a verify integrity is not usually necessary. Many users are under the wrong impression that this will fix broken mods as well. A reinstall only impacts GTA5 files, it does nothing to your saved games or mod files. Which is why a clean reinstall is the way to go when all else fails. This means uninstalling and then manually deleting any remaining files and folders in documents as if game never existed.
17. **Editing Wrong File.** Duplicate file and folder names exist throughout both the Games and Mod folders. Always ensure you are editing the proper file or folder from the proper path. For example dlclist.xml can also be found in common.rpf and that's not the file you want to edit. You want the one in mods, update, update.rpf.
18. **Game Updates.** These are notorious for breaking games completely or specific mods. Remember that Rockstar updates and patches don't break GTA5, they only break modded GTA5.
19. **OIV Installations.** As mentioned in points 6,10, and 11, automatic installers such as OIVs can replace new files with outdated ones. Avoid them if possible, do a manual installation.
20. **Update.rpf updates.** Copying a new version of Update.rpf after a game update, from the game folder to your mods folder, either manually or as prompted to do so by OpenIV will result in gameconfig.xml, dlclist.xml, and any of your customizations to be deleted and replaced, causing crashes and preventing addons from loading if you don't replace these files from backups. Some users fixed their issues by copying over Update2.rpf which was introduced in April 2022.
21. **Bad Advice.** Be wary of morons on YouTube who claim 100% fixes for GTA5 crashes. Particularly the ones advising you wrongly to replace dinput8.dll with the one from the Windows system32 folder. It won't load any mods, giving you a false impression game is fixed.

troubleshooting

GTA 5 modding can be simple but when things go wrong, things can get complicated and frustrating as hell. This guide is devoted to help you fix your GTA 5 crashes and infinite loops and become a better troubleshooter in the process. So let's start.

When troubleshooting a broken game you should consider the following:

1. Does your game run properly and is it stable without any mods? We call this Vanilla mode or unmodded.
2. Did you ever get your game to run with any mods installed?
3. Did your game start to crash after installing one or more specific mods of any type?
4. Did your game crash after you made Hardware or Software changes to your computer?
5. Did your game start to crash after a Rockstar GTA5 update or patch?

This site is organized to examine many factors and possibilities in a systematic and chronological order, moving through the Menu Items from left to right. This is updated for GTA 5 2023.

Structure

In this section, we will examine the following topics, explaining what can go wrong and focusing on the most common causes for failures first.

Hardware: is your computer powerful enough to run with the additional resources required to run a modded game?

Software: is your Windows system properly setup for modding? Are your in-game settings appropriate for your computer, particularly your Graphics Settings?

Essentials: did you install all the necessary essential mods required for stable modding?

Tools and Visuals: what have you installed with respect to tools and visual mods such as ENBs, NVE, QuantV, etc.

Mods: we will examine what can go wrong with various types of addons and replaces.

Meta Data: have you customized or edited meta data files?

Scripts: are you installing asi scripts in your root folder and dll scripts in your scripts folder?

YOUR COMPUTER

Hardware

Is your computer powerful enough to run GTA 5 with the additional resources required to run a modded game? Without crashing, without texture loss, and with proper FPS? Gaming in general takes adequate Computing Power and GTA 5, especially when modded, is no exception. PC hardware includes your GPU, CPU, System RAM, and available HDD storage.

If you're experiencing crashing or an infinite loading loop at launch, it could be that your PC hardware is not powerful enough to meet requirements for modding. This is particularly true for laptops. For example, if you are running Windows 7 on a laptop with integrated graphics go real easy on the type and quantity of mods you install. If you can't upgrade your components or the PC itself, again add mods one by one and see if you can handle them before adding others. Ensure your PC at least meets the Recommended System Requirements below for GTA 5. If you are installing many mods, you will often need to exceed those requirements.

OS: Windows 8.1 64 Bit, Windows 8 64 Bit, Windows 7 64 Bit Service Pack 1

Processor: Intel Core i5 3470 @ 3.2GHZ (4 CPUs) / AMD X8 FX-8350 @ 4GHZ (8 CPUs)

Memory: 8GB

Video Card: NVIDIA GTX 660 2GB / AMD HD7870 2GB

Sound Card: 100% DirectX 10 compatible

HDD Space: 65GB

One word of caution. Even with a Super Computer, you can't install an infinite number of mods. The game will not be able to handle it, it was never designed to be modded in the first place.

Software

Is your Windows system properly setup for modding? Are your in-game settings appropriate for your computer, particularly your Graphics Settings? Your Windows environment plays an important part in ensuring a stable modded game. PC Software such as video drivers should be up to date, particularly if you are experiencing texture issues like flickering, tearing, texture losses, or low FPS. DirectX and NET Framework versions can cause issues as well so keep them updated. In rare instances folder permissions can cause issues requiring security setting adjustments.

Another possible source to check is your anti-virus software. One user solved a problem with the Rockstar Video Editor not saving clips, but only when Menyoo was loaded. On inspection it turned out that it was Windows Defender causing the issue. When Defender was temporarily disabled, the saving functionality was restored. This is unexpected, but it does happen.

In-Game Settings: when encountering crashes or visual issues, start by setting the in-game display and advanced graphic settings to default or lower if necessary - even if you exceed system requirements.

Game Version: unless you are using a reverted/downgraded version of GTA 5, you should keep your game updated to ensure newer mods are compatible. Whether your GTA 5 Version is Steam, Epic, or Retail keeping it updated may solve some issues although updates invariably cause their own issues. If you're using a warez and/or cracked version of GTA 5 don't expect these guides to help you.

Essential mods

Software Continued...

Installations: Always use a Mods folder. Improper installation of mods, in the wrong folder or wrong path, or missing mod requirements are frequent causes of crashing. Caution is required for replace mods as they often involve more than one path/location. Automatic installers such as OIVs can replace new files with outdated ones. Avoid them if possible. OIVs are better installed manually, you unzip them. Copying a new version of Update.rpf after a Rockstar game update, from the game folder to your mods folder, either manually or as prompted to do so by OpenIV will result in gameconfig.xml, dlclist.xml, and any of your customizations to be deleted and replaced, causing potential crashes and preventing addons from loading if you don't replace these files from backups.

Corrupt or missing game files may happen with or without meaningful error messages. The save game file may also be corrupted, particularly if autosaving during a crash. A verify integrity (or reinstall) will fix most issues, but not corrupt save files, so backup. If necessary start a new game.

Reinstalling: Doing a complete reinstall rather than a verify integrity is not usually necessary. Many users are under the wrong impression that this will fix broken mods as well. A reinstall only impacts GTA 5 files, it does nothing to your saved games or mod files. Which is why a clean reinstall is the way to go only when all else fails. This means uninstalling and then manually deleting any remaining files and folders in documents as if game never existed.

Game Updates: These are notorious for breaking games completely or specific mods. Remember that Rockstar updates and patches don't break GTA5, they only break modded GTA 5.

Essential Mods

Did you install all the necessary essential mods required for stable modding? Do you have the proper file and folder structure required for modding? Did you the right structure, that all modding related folders are correctly implemented. Beware, there are YouTube videos which have the wrong structure. For example update.rpf placed in wrong folder. You also may need to set folder permissions given many mods will write or save info on your PC.

Scripthook V. SH 5 must be the latest version and is installed in the root folder with GTA5.exe. Extract the package, remove ScriptHookV.dll and dinput8.dll from the bin folder, and place them in the root folder. You don't need and don't want the trainer file. Don't confuse scripthook with scripthook dot net. OpenIV. It will be properly installed if you follow its instructions. Follow all the steps, use its default settings, and you shouldn't have any issues.

Gameconfig.xml. Make sure it is properly installed and most of all updated. You need OpenIV to install it. Use base settings to start. Don't modify this file based on some random post you read. It should work fine even with 300+ cars or peds installed right out of the box. Note: OIV installers can delete this file and replace it with an outdated one.

Heap and packfile limit adjusters. Use the Heap mod recommended for your gameconfig mod, keep the default settings until you have experience. These files go in root folder with GTA5.exe. Script Hook V .NET, NativeUI, and LemonUI. These important and often required mods could be missing or not installed properly. Follow mod instructions carefully. These are not required by all mods. The scripthook V dot net files go in the root folder but most .dll files go in the scripts folder. Additionally, updates to Script Hook V .NET and LemonUI could break scripts as they are not always backwards compatible.

TOOLS & VISUAL MODS

Tool and Visual Mods

What have you installed with respect to tools and visual or graphic mods? Mods such as Graphics Enhancers, ENBs (Enhanced Natural Beauty), reshades, NVE (Natural Vision Evolved), QuantV, and dozens more are very popular with GTA 5 modders. Possibly the most popular mods, especially with children and novices.

Unfortunately they are notorious for causing issues, particularly those which replace many game files and those which use OIV installers. Uninstalling them will often fix issues. Install at your own risk. Visual mods can be a dog's breakfast of ReShade presets and ENB components. Many combinations are possible. Simple presets are easy to uninstall but mods installed with executables (.exe) or mods that replace game files may cause issues and are very hard if not impossible to uninstall.

Many new, and even experienced modders, will install multiple visual mods, not realizing the problems which will result from having too many "same purpose" mods overwriting each other's files or just plain conflicting with each other. Do your research, and ensure compatibility before installing every Visual Mod under the sun. Most graphics professionals will shun these visual mods for the following reasons:

1. The in-game graphics, with the proper hardware, are excellent and are the way the game was meant to be played visually, as designed for GTA 5, not Skyrim.
2. High resolution textures may cause FPS drops and instability, particularly on lower end computers.
3. Visual mods often boost contrast and colour saturation much too high, particularly for the sky and vegetation, resulting in unnatural, fake looking, deep blue skies and deep green grass and leaves.
4. Visual mods often sharpen way too high
5. Skin tones are never realistic, often tinted yellow, green, red, or orange.

So exercise caution and restraint when installing various tools and particularly visual mods. They are often the cause of your problem and they are frequently impossible to uninstall.

What is reshade? "ReShade is a generic post-processing injector for games and video software developed by crosire. Imagine your favorite game with ambient occlusion, real depth of field effects, color correction and more. ReShade exposes an automated and generic way to access both frame color and depth information (latter is automatically disabled during multiplayer to prevent exploitation) and all the tools to make it happen." Reshade mods are generally just presets for ReShade itself, which must be installed. It is an executable installer while the mods are .ini text files.

What is ENB? "ENBSeries is the project of graphic modifications for games. The main idea is to allow every gamer to configure [what a] game looks like [suited] their own taste, so every player could share settings with others. Many games may look much better and ENBSeries is the easiest way to improve them."

mods folder check

Mods

What have you done within the mods folder? So many things can happen here. We will examine what can go wrong with various types of addons and replaces. First let's talk about quantity. Too many mods installed, particularly high polygon count vehicles or massive maps and MLOs. GTA5 was not designed for modding. Push too far, too much and you will crash no matter how powerful your PC and your GPU specifically.

You can mitigate issues with properly configured gameconfig, visual settings, and the proper hardware but at some point too many mods and the game will cry Enough! and crash. Secondly, let's talk about currency or recency. By that we mean, are the mods updated? Outdated mods can be defective mods, they may no longer work with new versions of GTA 5. Old mods do die.

There are so many things that can go wrong inside the mods folder. It could be addons, replaces, or customizations to the meta data files, as we shall see in the next section. Peds have their own issues because they require proper entries in the peds.meta file - whether they are normal or streaming, male or female, etc.

Remember that your mods, addons and replaces, aren't the only DLC. The game DLC, particularly after a patch or update may conflict with installed addons. Removing the new DLC from dlclist.xml is often a quick way to test for these potential conflicts.

So in summary troubleshooting mods, due to the complexity and variability, entails renaming the mods folder and testing to see if the game runs or not. That's the surest way to rule out issues with mods if your game doesn't load or crashes quickly or randomly.

Prevention is key: An ounce of prevention is worth a pound of cure. This means not installing too many mods, following instructions, installing mods one by one and then testing, care with editing configuration and meta data files, and backups. Backups are so important.

meta data

Meta Data

Have you customized or edited meta data and similar configuration files?

There are so many files that can be customized in GTA 5. There are settings for essentially all components from weather, to time, to populations, and of course all the files relating to vehicles and peds. We can't cover all these files, most of which are just plain text so we will just provide some words of caution.

As you are more experienced with Open IV's editor, you will likely customize GTA 5 yourself. Making edits to files such as vehicles.meta, handling.meta, converting replace vehicles to addons, adding or replacing textures, renaming files, and consolidating dlcs into one rpf - all of these are part of the modding adventure.

Beware that duplicate file and folder names exist throughout both the Games and Mod folders. Always ensure you are editing the proper file or folder from the proper path. For example dlclist.xml can also be found in components.rpf and that's not the file you want to edit. You want the one in mods, update, update.rpf.

All of these modding and customization actions require attention to detail. Mistakes will lead to possible issues which is why keeping track of changes will help troubleshoot if something goes wrong. And of course backup!

A note about Dlclist.xml. This is the most frequently edited file by GTA 5 modders. New addons must be added to this file, with the correct folder names and correct syntax. It's always best to copy a working dlclist entry and then edit it. Syntax errors with this file are common reasons for addons not spawning. Make sure you have opening and closing tags for example. Note: OIV installers can delete this file and replace it with an outdated one.

A note about gameconfig.xml. Unless you understand exactly what you're changing, leave the default values for essential files such as gameconfig.xml and the heap limit adjuster. Increasing these limits is no guarantee at all that your game will allow you to install more mods. On the contrary, they could lead you to believe that they will allow more mods than your hardware can support - inevitably ending in a crash.

SCRIPTS

Script Mods

Are you installing asi scripts in your root folder and dll scripts in your scripts folder? Scripts, after visual mods, are probably the most problematic mods. They are often outdated and often break after GTA 5 patches and updates. They may conflict with other scripts. Many users install dozens and dozens of scripts, not realizing the potential for conflicts between scripts.

ASI Scripts

The first place to look, when troubleshooting, is in the root folder. Disabling your asi files by renaming them or moving them out of this folder is an important step towards resolving issues. Because the asi loader (dinput8.dll) will try to load any file with an asi extension, it is best to rename the extension to .bak for example (or simply move or delete the asi).

You shouldn't have to worry about Trainers like Menyoo, or Simple Trainer, or ENT. They rarely cause issues but don't go crazy and install all of them. Two is a good limit.

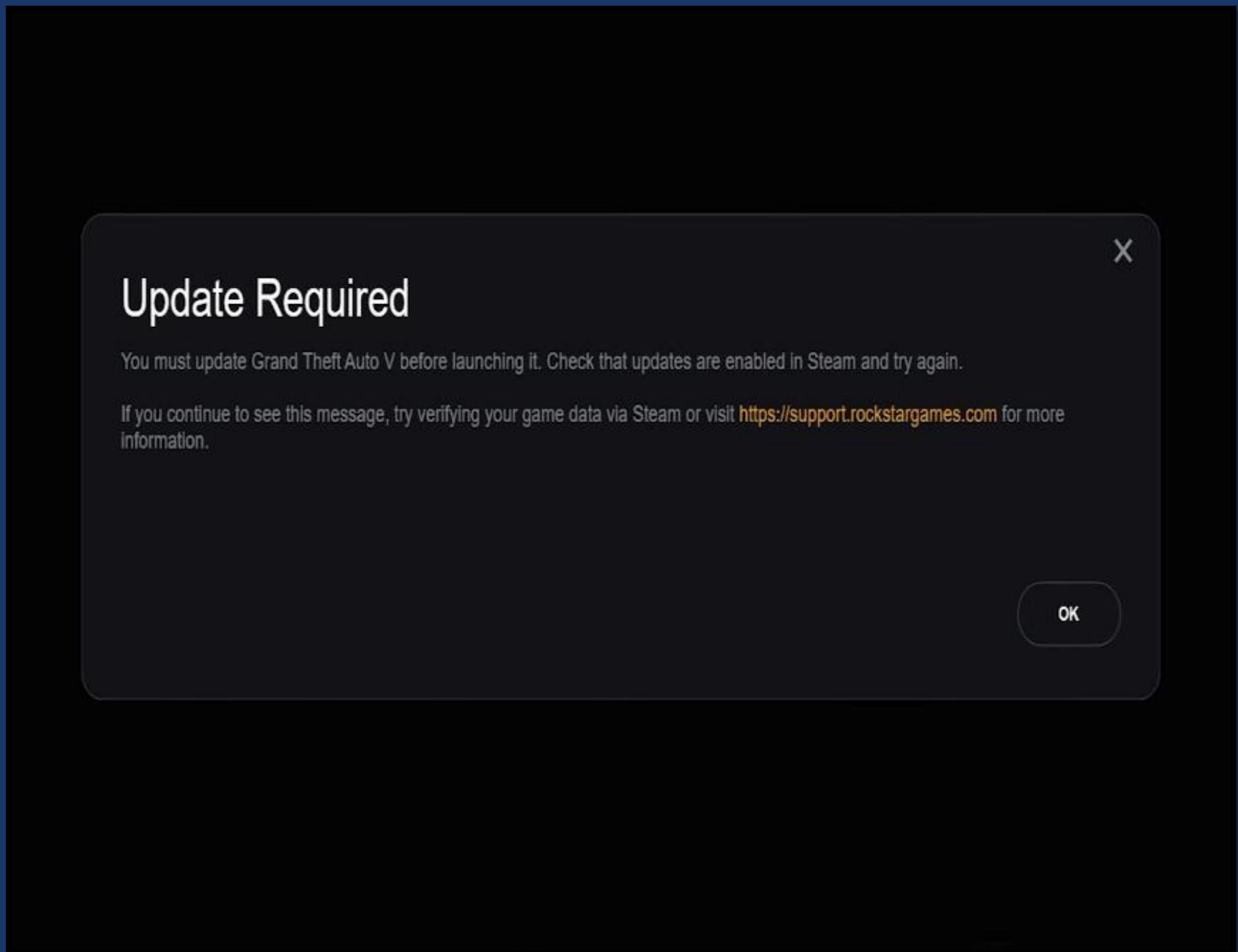
DLL Scripts

The other scripts to troubleshoot are the one in your Scripts folder, which you can also name scripts, Windows is not case sensitive for folder names. The simplest way to test for Scripts as your problem is to rename the Scripts folder. For example, simply call it xScripts.

Log Files

The log files in your root folder, particularly ScriptHookV.log and asiloader.log can be very useful to identify issues. You can read more about log files in this article: [Importance of GTA 5 Log Files](#)

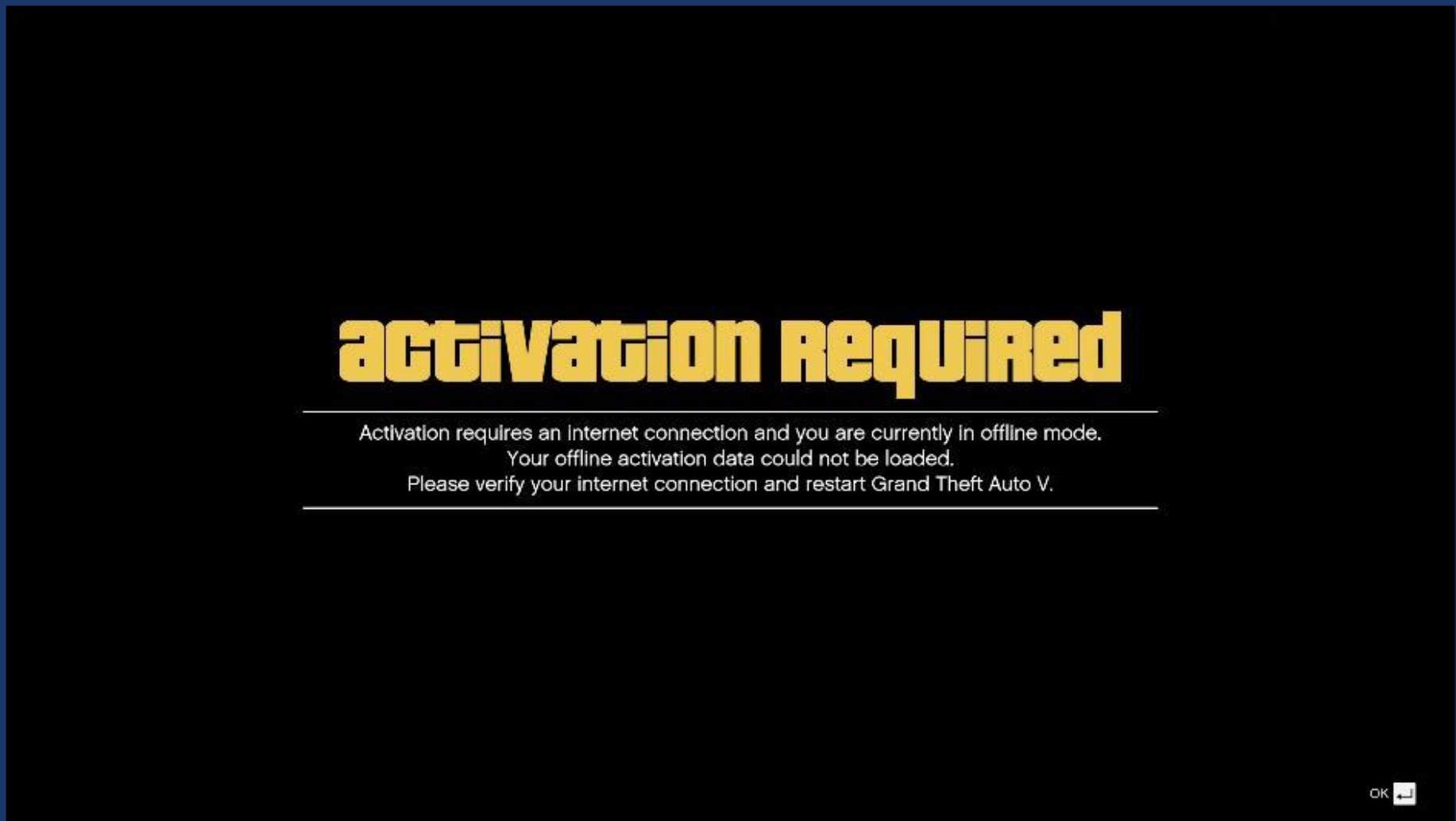
ERROR SCREENS



This was a common error after the 3407 Agents of Sabotage Update. Here is the fix.

1. After you have done your forced update, replace the GTA5.exe V3407 with your reverted GTA5.exe (for example 2372 or whatever your preferred version is)
2. Add this line: " -scOfflineOnly" to the Steam GTA V Game - Properties, General, Selected launch options.
3. Start your game and you can now once more play reverted
4. After a week or whatever, you will be once more forced to update because the Rockstar Police want you to update. When that happens, simply swap back V3407 of GTA5.exe and start your game to make the morons at Rockstar happy. They now know you've updated and you have a legal copy. Note: you will need to disable dinput8.dll temporarily if not Scripthook V will give you an error that your Scripthook V version is wrong.
5. Exit the updated game, and go back to step 1 - swap back your reverted GTA5.exe and also reenable dinput8.dll so Scripthook V and all mods can run.

ERROR SCREENS



With the Agents of Sabotage update, Rockstar once more is trying to end modding GTA 5. This time their approach is forcing updates on users who have downgraded games, reverting to previous versions such as 2372 for better single player experiences. Many users try to bypass these draconian measures by going offline. You can see how this is done in our previous article. However going offline is only a temporary measure, eventually the Rockstar Police will clamp down on offline users because they make their money on GTA Online. When that happens you'll get this error message. Thankfully the solution is simple. As requirements you need to keep your reverted copy of GTA5.exe, for example 2372, and you also need a copy of the most current GTA5.exe, which at the time of this video is 3411. The process is essentially to fool Rockstar into thinking you have updated. So all you need to do is copy the GTA5.exe from 3411 back into your game, remove the command to play offline, and finally start your game which will auto validate. Rockstar will now be happy. As a last step you exit GTA 5, swap back your downgraded GTA5. exe, again 2372 as an example, and put the command line option to play offline. That's it. When Rockstar once more does its check, likely a week or so later, you simply repeat the process. One final note, if you are on a new patch and scripthook 5 has not yet been released, obviously you will get the usual wrong version error message and the game won't start. If that happens, just rename or remove dinput 8 so your game can start and validate. Rename it dinput8.bak for example.

A FEW MORE WORDS

Final Words

An important thing to remember is that GTA 5 games don't break randomly. Generally speaking they break due to user error or after a Rockstar Update. We have zero control over Rockstar, but we can control our modding.

If your game suddenly breaks for no apparent reason, look to the last mod or mods you installed, the last file or files you edited in OpenIV, or changes to your Windows environment. They will likely point to the culprits. Always follow mod or script installation instructions carefully and double check how you've installed. So many forum posts swear that the mods were installed properly but on further investigation, you guessed it, there was user error.

Beware of bad advice. Be wary of morons on YouTube who claim 100% fixes for GTA5 crashes. Particularly the ones advising you wrongly to replace dinput8.dll with the one from the Windows system32 folder. It won't load any mods, giving you a false impression game is fixed.

Reinstalling

Reinstalling is generally a total waste of time. Error messages will often lead you to the wrong conclusion that game files are corrupted - that's almost never the case.

If you suspect issues with vanilla game files, do a Verify Integrity. It is much faster and is generally all it takes to fix your game. Keep the reinstall process only when everything else has failed and you've run out of all other options.







modding
101

the more you know

The more you understand about the modding process, the more likely you are to fix your own issues. Hopefully it will also help identify terrible advice from YouTube videos, for example telling you to replace `dinput8.dll` with other files. It's also important, particularly when things go wrong, to use a mods folder for modding - leave the original game files intact.

ScriptHook5 and Dinput8

So, ever wonder why we need files like ScriptHook5 or what it does? GTA 5, and DirectX games in general, looks for certain Windows files when at launch. One of which for GTA 5 is a Microsoft file called `dinput8.dll`. This file is installed automatically with the Windows OS and is a component of DirectX. It is found in the Windows System 32 folder.

However as it starts, GTA5 looks for `dinput8.dll` in its root folder first (the folder where GTA5 is installed). In the root folder, thanks to a programmer named Alexander Blade and once installed, it will find a different version of `dinput8.dll` (not the one in System 32) and it will load that file.

So in reality, it is `dinput8.dll` (also called the asi loader) that starts the mod process. It is a modified version of the Microsoft Windows dll of the same name and it works with functions in another Alexander Blade creation called `ScriptHookV.dll` - it is this Script Hook file which allows a hook into the GTA5 RAGE game engine and as a result makes the magic of modding possible.

The mod version of `dinput8.dll` works with the Windows version of `dinput8.dll` (peek at the file called `asiloader.log`) and also loads programs called asi plugins. These plugins include `OpenIV.asi`, `ScriptHookVDotNet.asi`, `Menyoo.asi`, `TrainerV.asi`, `HeapAdjuster.asi`, `PackfileLimitAdjuster.asi`, and `NoBoundaryLimits.asi` - just to name some of the most important and common ones.

Your trainer requires `dinput8.dll` to be loaded and Script Hook V for functionality. `ScriptHookVDotNet` (SHVDN) is also loaded by `dinput8.dll` and requires Script Hook V. The SHVDN will allow you to run your own scripts or mod scripts written in dot net versions of languages such as C# and VB.

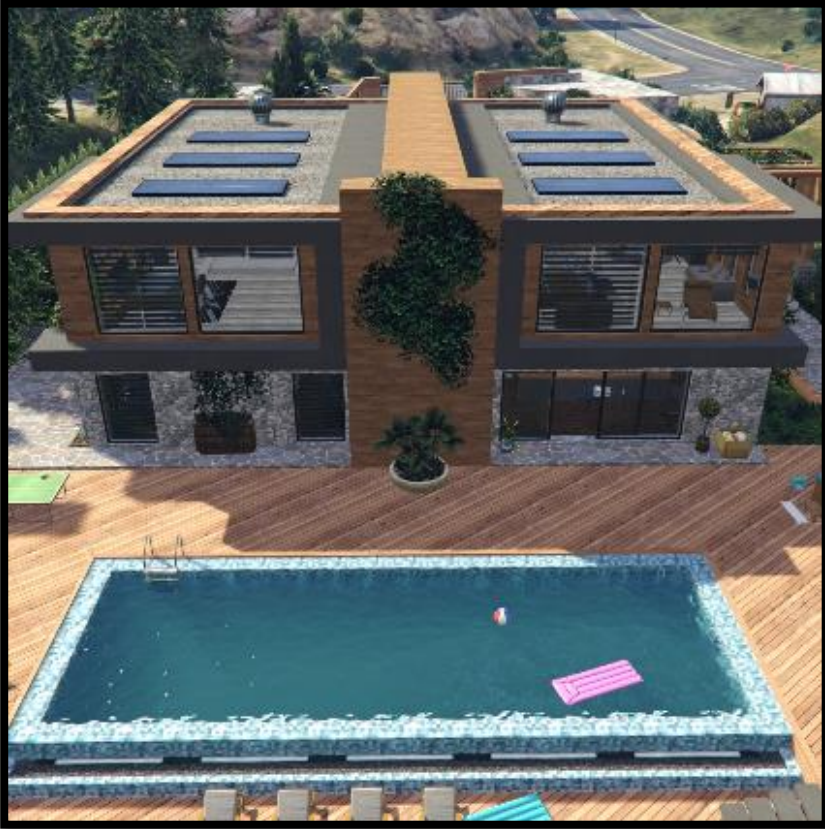
OpenIV

Now what about OpenIV? Think of it as two separate programs, working together. The OpenIV you mod with allows you to install and edit files. The `OpenIV.asi` which is loaded by `dinput8.dll` will load your addons such as vehicles and maps and MLOs - in fact anything called `dlc.rpf`. OpenIV gives you the option to install `dinput8.dll` (which it calls the asiloader), but you likely have already installed it with Script Hook V first.

Another very powerful tool that can be used for editing GTA 5 files is Code Walker and its RPF Explorer. It allows edits and changes but it can't load addons (`dlc.rpf`).

Without getting into further detail, mod files such as heap limit adjusters, packfile limit adjusters, and the `gameconfig.xml` modded version are there to extend the limits of the game - they allow modders to increase the assets (peds, cars, MLOs, etc.) beyond what the game can handle by default. Without them the game could crash due to memory issues. Of course there is no guarantee that your PC hardware can handle additional dlc - a common reason for why the game crashes.

What is an MLO?

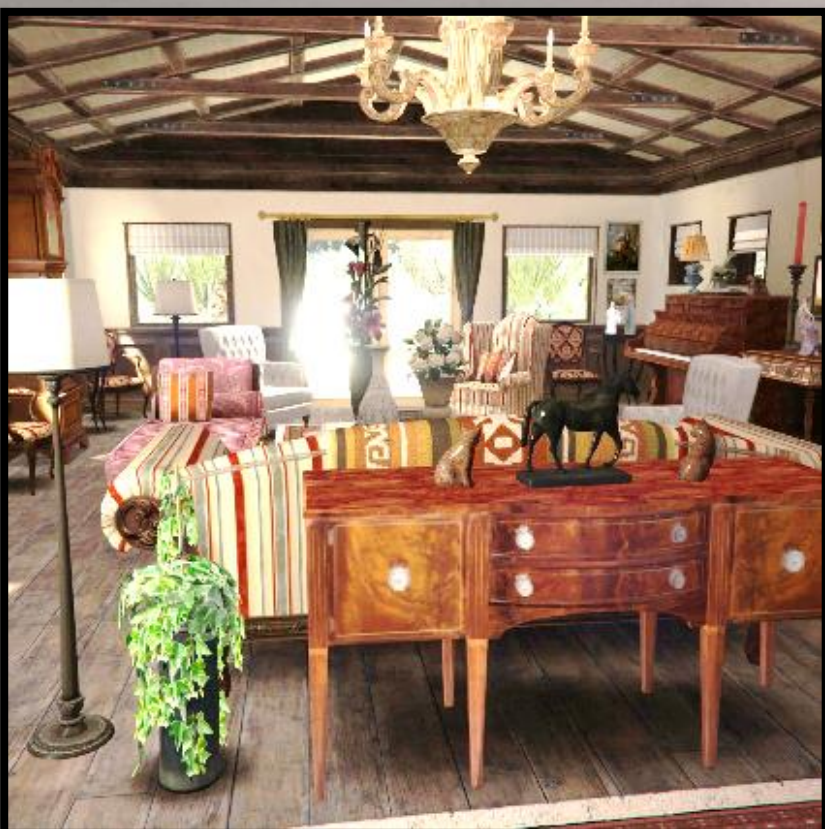


MLO or MiLO. Exact acronym definition is unknown but it refers to buildings with interiors. It possibly stands for Moveable Interior Loader given they can be moved anywhere (mobile) on the GTA5 map and they load interiors. The O could possibly also stand for Online although they are common in Single Player mode.

Other possibilities are that an MLO building in Grand Theft Auto V stands for Multi-Level Object. It is a type of building interior that was originally meant to be created using multiple levels or floors and could be entered by the player. MLO buildings are often used to add more detail and depth to the game world and provide more interactive environments for the player to explore.



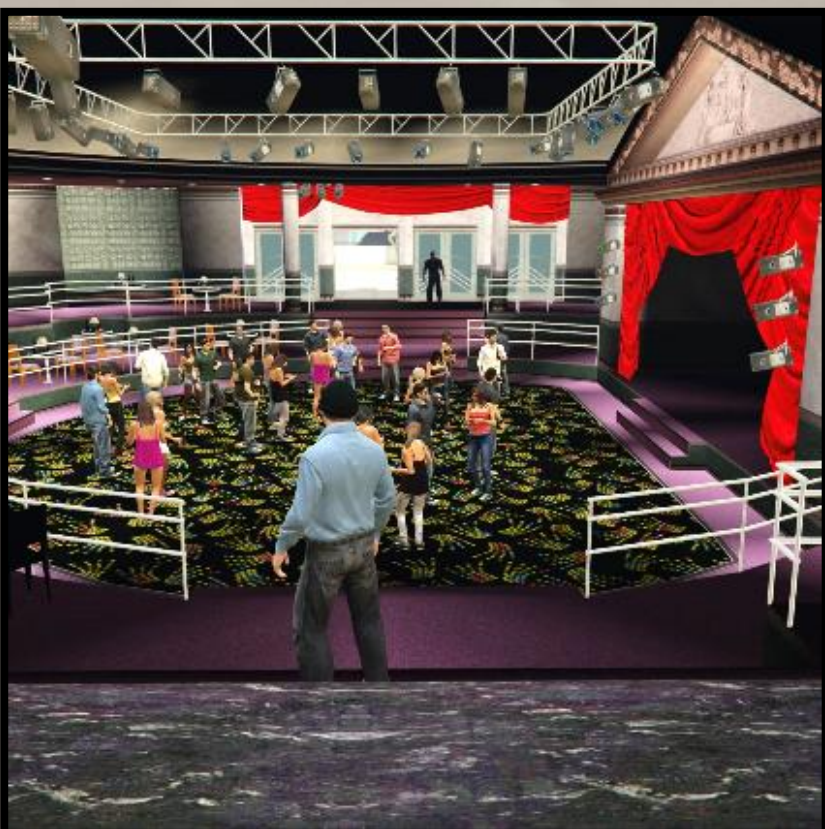
MLOs can range from simple additions like new buildings or rooms to more complex builds like entire cities or islands although the latter are generally called maps. These mods require a thorough knowledge of game mechanics, 3D modeling, and scripting to create, and can greatly enhance the gameplay experience for those who enjoy exploring the game world beyond the standard content.



What is a map?



GTA 5 even has mods to recreate the worlds of other games in the Grand Theft Auto franchise including Liberty City (above), San Fierro (opposite), and Vice City (below). Liberty City is based on New York City. San Fierro on San Francisco. Vice City is based on Miami.



There are hundreds of mod maps that can be installed in GTA 5. These enhance gameplay, adding a new level of excitement to the game, providing players with an opportunity to explore different environments. The map in GTA 5 is vast, but after playing it for a while, it can feel repetitive. Mod maps provide players with new environments to explore and brings much-needed variety to the game. Modding is a huge part of the GTA 5 community, and maps help foster a vibrant and exciting community of players and modders.

Peds & NPCs

GTA V populations

GTA 5 has many varieties of entity mods such as weapons, props, interiors (MLOs), and entire world maps such as Liberty City and Vice City. Here we explore two very popular mods, peds and vehicles and common files that can be edited to customize these entities. Let's start with peds (pedestrians) and NPCs (non-player characters).

Popgroups refers to the game's system for managing the population of pedestrians and vehicles in the game world. It determines which types of pedestrians and vehicles spawn in certain areas and at certain times, and can also affect the frequency of certain types of events or activities. Popgroups can be customized through mods or editing of game files to change the game's overall atmosphere.

Popgroups.ymt and **popcycle.dat** are both files that control the spawning of vehicles and pedestrians in the game. The main difference between them is that **Popgroups.ymt** governs the specific groups of vehicles and pedestrians that spawn in a particular area, while **popcycle.dat** controls the overall frequency of these spawns and how they change over time.

Popgroups.ymt contains a list of vehicle and pedestrian groups that spawn in specific areas of the game world. It determines which vehicles and pedestrians will spawn in each area and how often they will spawn. It can be modified to change the types and amounts of vehicles and pedestrians that spawn in any given area.

On the other hand, **popcycle.dat** controls the general frequency of vehicle and pedestrian spawns throughout the entire game world. It determines the likelihood of different types of vehicles and ped spawning, as well as how often they will appear. The file is also responsible for determining how these spawns change over time - for example, whether the frequency of certain types of vehicles or pedestrians will increase or decrease over the course of the game.

Overall, **Popgroups.ymt** and **popcycle.dat** both work together to control the spawning of NPCs and vehicles in GTA 5, but **Popgroups.ymt** is more specific to certain areas while **popcycle.dat** controls the overall frequency of spawns.

Pedpersonality.ymt. Pedpersonality in GTA 5 refers to the characteristics and behaviors assigned to the non-playable characters (NPCs) that populate the game world. Each pedpersonality has a unique set of traits, such as aggression, intelligence, and courage, that determine how they interact with the player and other NPCs.

For example, some NPCs may be more likely to attack the player while others may be more cautious and avoid conflict. Pedpersonalities also influence how NPCs respond to different situations, such as being pursued by the police or witnessing a crime.

Ped mods have a ymt file, for example **lara.ymt**, but there is also a file called **peds.ymt** in **update.rpf**. This file is also an xml file but it isn't encrypted so it can be easily edited from OpenIV (or a text editor).

It contains metadata for all vanilla peds. If you are using an addonpeds template mod then you will edit a similar file for addon peds rpf but the file is called **peds.meta**. With OpenIV you will find **peds.ymt** at the following paths or locations:

`\update.rpf\x64\data` and also at `\update.rpf\x64\data`

Note: Peds mods can be addons, but generally they are installed with 4 files, **YFT**, **YTD**, **YDD**, **YMT** as was described in the glossary section. There may also be props and a yld (cloth dictionary).

vehicles

GTA V populations

GTA 5 has an incredible variety of vehicle mods. These include cars, ranging from a Honda Civic right through to exotics like the Bugatti Veyron and Koenigsegg Agera. Vehicles aren't limited to cars, they can also be planes, ships, motorcycles, bicycles, etc. Vehicles can be installed as replace mods or addon mods.

Carcols.meta is the file that contains data about the colors of the game's vehicles. This file is used by the game's engine to determine what color options are available for each vehicle in the game, and how those colors are applied to different parts of the vehicle. The file contains information about the base colors, pearlescent colors, and wheel colors that can be applied to each vehicle, as well as information about how those colors interact with the game's lighting and reflection systems. Players can modify this file to add new color options or modify existing ones, allowing them to customize the appearance of vehicles in the game to their liking.

Carvariations.meta is the file that contains data about the variations of the game's vehicles. This file is used by the game's engine to determine what different versions of each vehicle are available in the game, and how they are customized with different parts and accessories. The file contains information about the different components that can be added or removed from each vehicle, such as spoilers, exhausts, and body kits, as well as information about how those components affect the vehicle's performance and handling.

Dlctext.meta is the file that contains data about the text and language used in the game's downloadable content (DLC). This file is used by the game's engine to determine what text and language resources are required for each DLC, and how those resources are organized and accessed. The file contains information about the different languages that are supported by the game, as well as information about how the game's text is translated and displayed in those languages.

Handling.meta is a file in GTA 5 that contains data about the handling and physics of the game's vehicles. This file is used by the game's engine to determine how each vehicle behaves in terms of acceleration, braking, top speed, grip, weight distribution, suspension, and other factors. Players can modify the handling.meta file to tweak the performance of vehicles in the game, which can affect how they handle, drive, and respond to different types of terrain and driving conditions. The handling.meta file is a critical component of the game that helps to create a realistic and immersive driving experience.

Vehicles.meta is a data file in GTA 5 that contains information about all the vehicles in the game, including their handling, physics, engine sounds, and other technical details. This information is used by the game engine to control how the vehicles behave and interact with the game world. It can also be edited by modders to modify the performance or appearance of vehicles in the game. So essentially, the purpose of the vehicles.meta file is to provide technical data for all the vehicles in GTA 5.

DLC.rpf is the container for all vehicle addons but its structure varies greatly from model to model. In fact, there aren't any clear standards and if you inspect different addon cars using OpenIV you will be surprised by how much the folder structure can differ from model to model. However, generally speaking there will be one vehicles.rpf containing one or more 3d models (yft) and textures (ytd). There could also be a second rpf for vehicle mods containing multiple 3d models (yft) for different components.

Note: the meta files will all be found in a folder called data which can be found directly under the dlc.rpf or in some cases it will be a subfolder of common.

modding 102

Reading posts on various GTA 5 Help Forums I'm no longer surprised by the misinformation you'll find there. Foremost are posts blaming SH5 (Script Hook V) for game crashes when in reality it's really other mods or user errors that cause problems. This article goes a bit beyond my original Modding 101 article and tries to address some common misconceptions.

Does Script Hook V Crash Games?

No, it doesn't crash games. SH5 is an enabler, the cornerstone of the modding foundation. It isn't responsible for causing any GTA 5 crashes in properly modded games running on the appropriate hardware. ScriptHookV.dll contains code that allows many other mods to communicate and exploit GTA 5 functions (called native functions).

For example Trainers like Menyoo and mods like Community Script Hook V .NET (SHVDN) both depend on SH5 and share its code and the native functions from the RAGE Engine.

Do I need both dinput8.dll and the Asi Loader from OpenIV?

Even experts often get this wrong because dinput8.dll, the one bundled with SH5, is exactly the same file as the Asi Loader offered as an option with OpenIV. This file should never be replaced with the one from the Windows System32 folder which shares the same name - it doesn't support GTA 5 mods.

How can Menyoo crash when I did everything right?

A common help or complaint post contains "An exception occurred while executing 'Menyoo.asi' ". The poster then goes on to write he did everything right and has all the essential files installed: SHVDN and packfile limit adjuster and heap limit adjuster and gameconfig.xml mods. So how is this possible? Of course the user then blames SH5 and everything else except himself or herself.

Well first Menyoo is an excellent Trainer and very stable. It rarely crashes randomly. Secondly, Menyoo doesn't use SHVDN only SH5. It also doesn't depend directly on any of the other mods mentioned above which are primarily to ensure stability.

What crashes Menyoo? Users do. By installing mods that aren't compatible or by not having updated versions of Menyoo. Or it could be a combination of clothes or vehicle parts that just don't make sense and cause the crash. Either way, it has nothing to do with SH5.

What is the difference between dinput8.dll, SH5, and SHVDN?

Any file with an asi extension, for example ScriptHookVDotNet.asi and Menyoo.asi, are loaded by dinput8.dll and obviously that's why it's called the Asi loader. Script Hook V shares its code with asi files such as the two above. This allows them to interact with the RAGE game engine to spawn vehicles, teleport, and all kinds of fun things. As for SHVDN, it allows the modding community to further expand the game by creating and running custom programs called scripts.

the 3 REASONS GTA 5 BREAKS

After years of modding and troubleshooting you'll likely come to the irrefutable conclusion that there are 3 reasons that summarize just about every single cause for game crashes, infinite loads, texture loss, or FPS drops. Here we go.

Reason 1 - Change Happens

You the gamer, or Rockstar the developer, made changes to your GTA 5 game. This could be a game patch, the installation of an addon, replace, script dll, asi mod, a meta or xml file edit, an OIV installation, or changes to your hardware or Windows software. Changes could also be that a file, for example your save game file, somehow got corrupted.

Any change, particularly the most recent one (the last one), can break the delicate equilibrium between vanilla and modded games, regardless of whether the change was done as per the instructions. Correctly or incorrectly implemented, changing the game or its environment opens the door for problems.

Step by step is the best advice, so keep track of those last changes, even the apparently innocuous ones. If you can revert the changes you undo the damage.

Reason 2 - Setup and Configuration

Maybe your game was never going to run GTA5 modded in the first place. Perhaps you didn't install all the essential files such as ScriptHook5, or the heap and packfile adjusters. Maybe you tried but didn't install them properly. Finally, you might not have the proper hardware and software, or all of the above.

The proper modded game setup, on hardware exceeding recommended vanilla requirements, is an absolute must to ensure a solid modding foundation.

Reason 3 – More is Less

GTA 5 was not developed by Rockstar to be modded. Thankfully it can. However, you shouldn't push the game beyond its modding limits and/ or beyond the limits of your hardware.

Installing 100s of mods and scripts and tools and visual mods, even on the most powerful hardware, even tweaking gameconfig.xml and installing all the pool managers and resource adjusting mods, will in no way enable you to abuse the game. At some point it will scream, Enuf!

Go slowly and act judiciously if you want a stable game environment. One sure method is to enable or disable mods selectively by simply renaming them before a session.

FIX SOCIAL CLUB CODE 16 ERROR

There is only one permanent working solution for the Code 16 Social Club error associated with GTA5 games that have been reverted or downgraded. It is an asi bypass mod and it can be downloaded here:

Issuer Check Bypass Against SocialClub

Background

A Rockstar update in April 2023 caused a Code 16 Social club error. It only affected games that had been downgraded (reverted to a previous version of GTA5). There was incredible misinformation posted about this issue, on forums and on YouTube videos. Mostly regarding temporary or illusionary solutions involving installing old launchers (RGL), old social club installers (RGSC), blocking internet access through a firewall, or disconnecting completely from the net. None of these will work permanently, if at all.

We knew at the start, from Rockstar official pages, that the Code 16 was caused by RGSC due to what they termed an "incomplete installation". From my own hours trying for a workaround, I can vouch that fixing this issue could be done, at least on Steam, by updating one file, and only one file was necessary, and that was GTA5.exe. At the time I mistakenly assumed R* had done this intentionally, not to stop modding, but to ensure all GTA5 games were kept updated. I was only partially right. Ironically Rockstar had made this verification easier, not harder, as posted by @alloc8or. Unfortunately easier may have been well intentioned for vanilla games, but it broke all reverted games, no longer loading unless updated.

The Solution for Reverted Games

1. The best and easiest solution is to install the Issuer Check Bypass Against SocialClub mod. Not the most appropriately descriptive name - it doesn't mention Code 16 - but it does exactly what's stated and does it perfectly (in 99% of cases based on comments).
2. Update your game. I initially did this before installing the bypass mod above. In my case the only issue I had was with map collisions, but unfortunately there were dozens of maps to fix. I fixed all the major ones, started to fix many minor ones, and then realized it just wasn't worth it. By this time the bypass mod had proven itself to be the best solution. One good thing is that the maps I fixed will work reverted or updated. [How to Update Easily](#).

The Solution for non Reverted

This particular code 16 error is associated with reverted versions of GTA5.exe and nothing else. If your vanilla game or updated modded games throw a Code 16 at you it is unlikely the bypass mod will work for you. Something else is at play. In those cases, and honestly I've only seen one case since modding GTA5, you should try the remedies offered here:

Social Club Error Code 16

Note: The bypass mod above is an excellent solution. So don't waste your time with trying to block or downgrade the RGL (which isn't the culprit) or the RGSC (which is to blame). Worst of all, don't install cracked versions of either file - you might get much more than you bargained for in the form of malware. It's not always a false positive.

FIX your game after a patch

How to fix your game after this patch update, or any update for that matter. If you want the quick fix, 100% guaranteed, only takes 10 seconds, stop reading this post and check out YouTube for Saving Grace Bullshit. If you want the truth, read on and remember: Slow but steady wins the race. There are no magic bullets, no quick fixes, just patience and logic.

Here are the steps to troubleshoot your game. This process assumes you have SH5 updated.

1. Update your gameconfig.xml. There are 751 versions in the most popular one, so select the right one.
2. Backup your existing dlclist.xml and any customized files with OpenIV.
3. Copy the new update.rpf and update2.rpf from your GTA5 Update folder to your Mods Update folder. Backup your mod versions first.
4. Now restore the entries for your dlc addons in your dlclist.xml from the backup you made in step 2. Do this carefully.
5. Disable all your mods by renaming dinput8.dll (in your game/root folder) to dinput8.bak and start your game. If your game doesn't load, or if it crashes, contact Rockstar Support because your problem has nothing to do with mods. This step can be skipped, but it is recommended to ensure that it wasn't other factors that broke the game.
6. If your game runs properly in Vanilla, without any mods, then as the next step follow the steps in this Troubleshooting Guide. After following all the steps in that guide, without skipping any, move to the next steps:
7. If you found a problem with an asi mod in your game/root folder, disable it by moving it out or renaming it without the .asi extension, post your issue on a GTA forum or contact the mod author if still around and wants to help.
8. If you found a problem with your scripts folder, reinstall your scripts one by one until you find the issue or issues. Scripts can conflict with the update or be outdated because of changes in the update.
9. If you found a problem with your mods folder, reinstall your mods one by one until you find the issue or issues. Remember that peds and vehicles can conflict with each other, whether mods or R* game dlc.

Optional step: The steps above pertain to your mods only. However it's also possible that the new DLC is conflicting with existing addon mods. In this case you can simply remove the new dlc entries from dlclist.xml, the mod folder one, and see if that solves your problems. This is an example from a past update, so you would need to remove the new update accordingly as well.

```
<Item>dlcpacks:/patchday28ng/</Item>
```

```
<Item>dlcpacks:/patchday28g9ecng/</Item>
```

Gameconfig.xml

Generally speaking, an updated gameconfig.xml mod is required after a Rockstar GTA V patch. An excellent one is linked below. [**Gameconfig Download**](#)

As written above, the author prefers the more is more approach, so provides you with an excellent selection of 751 files, all neatly organized. Start with one in the GTA Config for your version. For More Mods\Stock Traffic (Means GTA base) for the sake of stability. You can change it later.

Sanity Check

Ok, if you have 100s or 1,000s of addons and scripts, you may not want to reinstall one by one. In that case there are other methods. For example, remove half and test. If you have a problem you know you have an issue in that half, so take those and halve them again. Rinse and Repeat.

This method, while much faster, doesn't work for everything because the second half in your initial pass may also have issues. Or a mod from half 1 could conflict with a mod from half 2.

So a combination of methods might work best for you. If you're a new user, with just a few mods and scripts, definitely go one by one.

Summary

After the update, can someone on forums or You Tube fix your broken game with 100% certainty? It's highly unlikely someone on the web will be able to fix your game remotely. They can help you fix it, but only if you follow their advice to the letter, without skipping steps.

Some users are lucky and have their game up and running after a patch simply by updating SH5 and their gameconfig.xml. Why do their games work while yours, despite having updated the 2 files/mods above? The answer is simple. Your setup is unique. You have different hardware, different versions of GTA5, and most importantly you have different mods, configured differently.

The simple steps listed above will work for the majority of you. For the more challenging problems you will need to educate yourself (read Modding 101) to better understand how all the different modding puzzle parts work together to eventually find a specific solution to your specific problem.

For the best results, troubleshoot systematically, with laser focus. A shotgun approach is not recommended, particularly for new users.



A woman with short blonde hair is walking towards the camera on a city street during sunset. She is wearing a black lace-trimmed bikini. The scene is bathed in warm, golden light from the setting sun, which is visible as a bright orb behind her. In the background, there are palm trees, utility poles, and a classic car parked on the left. The word "GLOSSARY" is overlaid in large, bold, yellow letters across the center of the image.

GLOSSARY

The gameconfig.xml

This is a modified version of a GTA 5 file that contains important configuration settings for the game. It controls various parameters related to the game engine, graphics, audio, and other game features. This file is necessary for the proper functioning of the game and any modifications made to it may affect the gameplay and performance of the game. Players may need to modify this file when installing mods or adding custom content to the game.

The heap limit adjuster

This is a tool for modifying the game's memory allocation settings on PC. This can help to increase the game's stability and performance, especially in mods that require a lot of memory. The heap limit adjuster allows the game to allocate more memory to certain processes, reducing crashes and other issues.

The packfile limit adjuster

This is a tool used to modify the limit of the game's .rpf files (aka packfiles), which are used to store game assets such as textures, models, and scripts. By increasing the limits, more mods can be installed. Without the packfile limit adjuster, the game would not be able to load the additional mods. This tool is essential for modding the game and making the most out of the game engine's capabilities. It also fixes errors such as ERR_FIL_PACK_1.

CTD

CTD stands for "Crash To Desktop." This occurs when the game unexpectedly crashes and returns the user to their desktop or home screen without any warning or error message.

The DLCLIST.XML

This is a configuration file that lists all the downloadable content (DLC) that the game can load. The file contains the names of DLC packages that the game should load when it starts up. This file is important because it determines which DLC content is accessible in the game. Players can modify this file to add or remove DLC packages from the game.



Essential Mods

The Stability Trinity

Not to be confused with Grand Theft Auto: The Trilogy, there is also a Grand Theft Auto: The Stability Trinity.

For a Modded GTA 5 game to be stable, for it not to crash, 3 mods are essential: The trinity of GTA5 modding. These are, in no particular order:

1. An updated gameconfig.xml to match GTA 5 version
2. A Heap Limit Adjuster (hasn't been updated, ever)
3. A Packfile Limit Adjuster (has only been updated once)

You can search this guide for more information about these mod files. And remember that you need a properly configured PC or Laptop with enough computing power to run mods, not just the recommended system requirements published by Rockstar. You want to exceed those if possible to ensure a fun and stable gaming experience.

Mod

Mod is short for "modification." GTA 5 mods are user-created modifications or alterations made to the game to add new features, change gameplay mechanics, or improve graphics. Installing mods typically requires downloading third-party software which can lead to issues with stability or performance.

DLC

DLC stands for "Downloadable Content". It refers to additional content that can be downloaded and added to the game, often for a fee, after the main game has been released. This can include new game modes, vehicles, weapons, or even entirely new storylines.

Downgrading

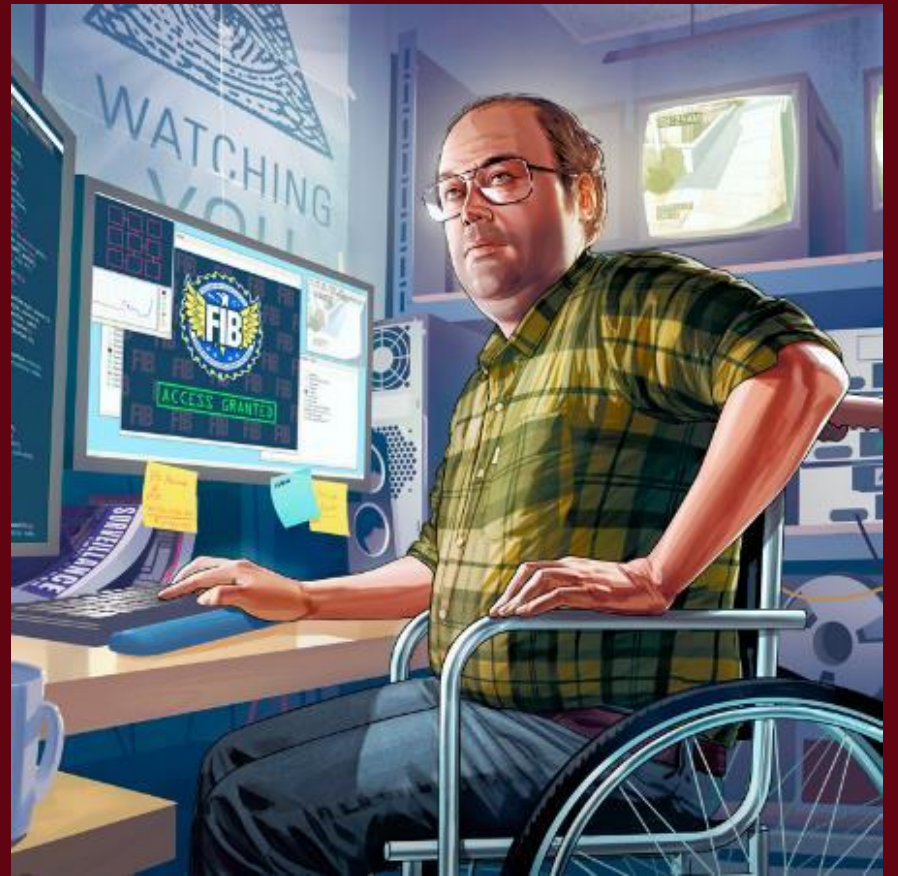
A downgrade refers to the process of reverting back to a previous version of the game. This is often done to access certain mods or cheats that are not available in the current version of the game or are no longer supported resulting in lost functionality or crashes.

Patch

In the context of GTA 5 and other games, a patch refers to a software update that fixes bugs, glitches or adds new features to the game. Patches may also adjust gameplay mechanics, rebalance weapons and vehicles, or improve overall performance.

RAGE

RAGE stands for the Rockstar Advanced Game Engine that powers the game. A video game engine is a software framework designed to aid in the creation and development of video games. It typically includes a set of tools, libraries, and resources to help developers create, design, and program various elements of a video game, such as graphics, physics, sound, AI, networking, and more. Some popular game engines include Unity, Unreal Engine, and Source.



An Enabling Mod

SHVDN

The Community Script Hook V .NET (SHVDN) created by Crosire, is a tool that enables developers to create and use scripts in the game. It is a plugin for the Script Hook V that allows users to create custom scripts using the .NET Framework. It is commonly used to create mods, trainers, and other modifications for the game. The Community Script Hook V .NET also offers an API (Application Programming Interface) for developers to access game data and functionality.

Scripts are commonly written in C# and VB dot net. Although strictly not an essential mod, SHVDN is required to run all script mods that are in the scripts folder.

Scripts

A script refers to a set of instructions or code that dictates certain events, behaviors or actions within the game. Scripts are programmed by game developers to allow players to interact with the environment, characters, and objects in various ways, such as triggering events or unlocking hidden features.

Libraries

In programming, a library is a collection of pre-written code and resources that developers can use to enhance their application's functionality without having to write everything from scratch.

Native Functions

GTA V native functions are predefined functions or methods provided by its programming interface that can be used by developers to create custom mods and scripts. These functions allow access to various game features and mechanics such as vehicles, pedestrians, weapons, graphics, and more. Examples of GTA V native functions include `CreateVehicle`, `SetPedHealth`, `GetPlayerPed`, and `IsEntityDead`. These functions can be called from scripting languages such as C++ and C#.

RPF Files

RPF stands for "Rage Package Format," which is the file format used by Rockstar Games to store game assets, such as models, textures, and other game data. RPFs are encrypted to prevent unauthorized access and modification. This is done to protect the game's intellectual property and prevent cheating in multiplayer modes. However, there are software tools available that can decrypt and modify these files including OpenIV and another tool called Code Walker.



An Essential File

The ASI Loader

The file `dinput8.dll` is the ASI Loader for GTA V: an ASI plugin loader that allows users to load custom plugins and mods into the game. These plugins can range from graphical enhancements, to gameplay modifications, to performance optimizations. The ASI Loader is often required to run many mods in GTA V, and it is an important tool for the modding community.

This file is a library file used by some mods and trainers for GTA V. It enables the mods/trainer to inject custom code into the game, allowing users to customize or enhance their gameplay. It is a modified version of the Windows file of the same name and is packaged with both SH5 and OpenIV.

Trivia: The original asi loader was a file called `dsound.dll`.

Spawning

Spawning refers to creating a new instance of a vehicle, character, or object in the game world. This is typically done by inputting specific codes or using in-game menus, which can allow players to quickly access what they need without having to search for it manually.

Addon Mods

Addon mods refer to user-created mods that add new content, items, or features to the game. These mods are created by modifying the game files and can range from adding new vehicles, weapons, or characters to changing game mechanics or adding new game modes. Addon mods can be downloaded and installed to enhance the gaming experience. They are generally in files called dlc.rpf within folders.

Replace Mods

A replace mod is a type of mod that replaces a specific file within the game. This can include replacing vehicles, weapons, or character models with new ones created by modders. These mods can enhance visual quality or add new content, but they may also negatively affect the game's performance or stability.

ENB

An ENB (Enhanced Natural Beauty) is a mod that improves the game's graphics, lighting, and overall visual presentation. It adds various effects such as depth of field, motion blur, and color correction to make the game look more realistic and immersive. ENBs can also add new features not available in the vanilla version.

IG

In GTA 5, "IG" refers to "In Game." It is often used to describe something that is happening within the game or in reference to a feature/function of the game itself.



Story Mode Open World

The term "Open World" in GTA 5 refers to a virtual game environment where players are free to explore at their own leisure without any set path or objective. It's a sandbox-style game that allows players to interact with the environment and complete missions or goals in whatever way they choose. The open-world nature of the game gives players a sense of freedom and autonomy that is not found in linear games, where there is only one set path to follow.

Free roam in GTA V refers to a mode where the player can explore the game's open world without any set goals or missions. In this mode, players can roam around the game map, check out different locations, interact with non-player characters, and cause havoc. Sandbox style in GTA 5 refers to the open-world gameplay in which the player is free to roam and interact with the environment without following a linear storyline or completing objectives in a specific order.

Trainers

A trainer is a mod allowing players to access a variety of cheats, mods, and enhancements not found in the base game. These trainers can be used to tweak various settings, spawn vehicles or characters, and give players an unfair advantage in the game. Trainers should be used with caution, as using them in online multiplayer can result in a ban or account suspension.

Menyoo

Menyoo is a Trainer mod menu that allows players to add new vehicles, weapons, and objects to the game, customize their character, change the weather and time of day, and access various cheat codes and other in-game features. It can also be used for general modding and scripting purposes and is a popular tool among the GTA V modding community.

Peds

A PED in GTA 5 is a pedestrian, which refers to the non-playable characters (NPCs) that roam around the game's world. They are usually civilians who provide life and realism to the game's environment.

NPC

An NPC refers to Non-Player Characters. These are characters that are controlled by the game's artificial intelligence (AI) and are not controlled by the player. NPCs can be seen walking or driving around in the game's open world, and they can also be interacted with by the player in various ways.

SKINS

A skin refers to a character model that can be worn by the player's avatar, modifying the appearance of the character in the game. Skins can be unlocked or purchased through various means, and they can range from individual clothing items to entirely new character models with unique abilities or animations.



Rockstar The GTA Franchise

Rockstar Games is the developer and publisher of GTA 5. They are known for creating popular and critically acclaimed titles such as the Grand Theft Auto series, Red Dead Redemption, and Max Payne. Take-Two Interactive is the parent company. The Rockstar Game Launcher is a digital distribution platform that allows players to purchase, download, and manage their games from a single location. It also includes social and community features, such as a friend list and achievements. In addition, the launcher provides automatic updates for games and access to support for issues. The Social Club is a website and online community created by Rockstar for players. It provides features such as tracking player progress and statistics, creating and joining crews, and accessing exclusive in-game content and rewards. It also serves as a hub for news, announcements, and events related to Rockstar Games.

MP Freemode

This means Multiplayer Freemode, where players can explore and interact with the game world in an open environment with other players. In this multiplayer mode players are free to do various activities without any set objectives or storyline. Players can engage in different activities like racing, shooting, stunts, and challenges with other players.

Vanilla Mode

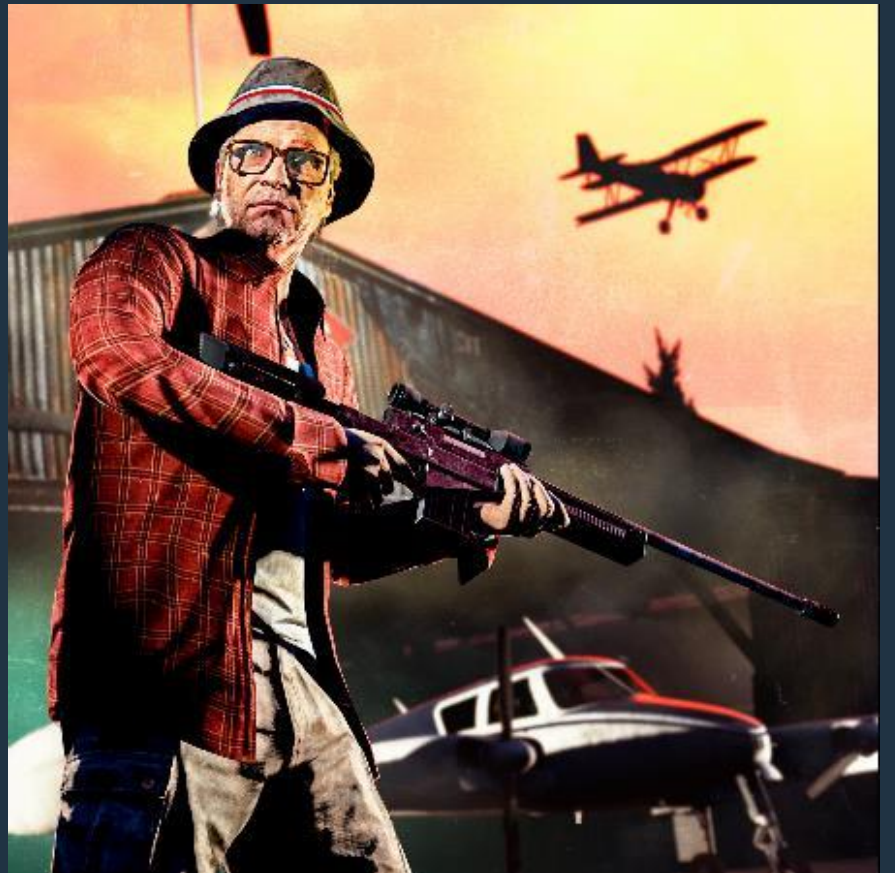
This doesn't refer to the flavour of ice cream. Vanilla, as in the expression plain vanilla, refers to the GTA 5 game without any mods - no changes at all, nothing modified, exactly as it was when first installed or after being updated by Rockstar. Same applies to vanilla files, meaning original game files without edits.

Cutscenes

A cutscene is a short pre-rendered video sequence that occurs at certain points during gameplay or between missions in GTA 5. They are used to convey story elements or to show events that cannot be shown in real-time gameplay. Cutscenes are often used to advance the plot, introduce characters, or provide context for the player's actions. They are usually triggered by colliding with certain objects, walking into certain areas, or completing certain objectives.

Scenarios

In GTA 5, a scenario refers to a specific situation or event that occurs in the game, often involving the player character and other characters or entities within the game world. Scenarios can be scripted or emergent, and may involve tasks such as completing a mission, engaging in a car chase, or simply exploring the game world.



Game Modes

SP and MP

What are GTAO, MP, SP, RP, and FiveM?

GTAO refers to GTA 5 Online. It is also called MP (multiplayer) or even Co-op when playing as a team or with friends. SP means Single Player (as opposed to MP). RP means role playing and takes place on servers. Finally FiveM is a popular multiplayer GTA 5 platform hosted on servers - similar in many ways to GTAO and other RP server platforms.

Other related terms are Story Mode, which means playing the game in SP mode. Sandbox or Open World or Free Roam are terms that can be used when you explore the game either taking a break during Story Mode or just for fun, with or without playing the game and missions.

Mods aren't allowed in GTAO, only in SP. RP or FiveM servers are modded but don't necessarily allow you to be modded while playing on their server.

YFT, YTD, YDD, YMT

The yft (fragment model) file is a 3D model file format used for in-game models such as peds, vehicles, weapons, and props. A ytd (texture dictionary) file is a texture file format used for in-game textures such as skins, logos, and decals. A ydd (drawable models) file is a 3D model file format used for in-game models that have animation, such as characters and animals. A ymt (meta files) file is a file format used to store meta-data for various in-game entities such as ped components or vehicle related data.

Ped mods generally are comprised of the four files above. Additionally there could be a prop file with a _p suffix and a YLD cloth dictionary.

Update.rpf

The Update.rpf is a file in GTA V that contains all of the game's updates and modifications. It includes code, textures, models, and other resources that the game needs to function correctly. This file is essential for the proper functioning of the game and any mods or updates that are installed on top of it. The update.rpf file is typically located in the game's installation folder as well as in the mods folder. It can be edited to introduce new content or changes to the game.

Modkits

The vehicle modkit is a feature in GTA 5 that allows players to modify their vehicles by adding various customizations, such as new rims, paint jobs, spoilers, and engine upgrades. The modkit is available in several vehicle custom shops found throughout the game, and players can purchase mods. Modifying a vehicle can improve its performance and appearance, making it more desirable and valuable to players.



GTA V Files

Meta and Dat

DAT is the extension used for general data files for GTA. They are commonly plain text files (although there are binary ones) and many have different structures. For example, visualsettings.dat stores initial values for configuration of in game visual elements.

Meta .meta files are XML files and can be opened and edited by standard text editors. For example, handling.meta stores information about vehicle handling. A variation, .ymt files are compiled meta files and can't currently be opened directly.

In general, meta files contain information about the game itself, such as game options, settings, and various configurations, while dat files store data related to the game's assets, such as textures, models, and audio files. These files are essential for the game to run properly and for players to have a satisfying gaming experience.

More GTA 5 Y files

The Y refers to PC platform

YLD: The cloth dictionary.

YDR: a single drawable object (3D model) file, whereas YDD can contain many drawables in one single file (or many YDR files). The YDR file is common in YMAPs and even some vehicles (wheels for example). A YDR may contain a texture dictionary and LODs for the model (up to 4 LODs - level of detail).

YND: These are path nodes, they define a traffic path for vehicles. They are binary files, not directly viewable.

YTYP: text file containing a group of MapTypes (Archetypes), each defining where a object will be placed in GTA5 map. Also known as definition entries.

YMAP: file containing the metadata for the placements of Archetypes, each defining an entity in GTA5. This file is useful to view (it's plain text) if you don't know the location of an MLO or YMAP as it will give you the x, y, z coordinates on the map.

YBN: bounds file, more commonly referred to as collisions or static collisions. These are used, as an example, to keep you from falling through the floor of an interior. You can view YBN files with OpenIV.

YMF: These are metadata text files for MLOs (interiors) and YMAPs.

YCD: These are animation files including poses.

YNV: These contain nav (navigation) meshes for traffic.

YSC: These are script resource files.

YPT: contain particle effect data and textures, found in dlcpacks and also under effects in core.ypt.

YED: these are expression dictionary files for humans and animal peds

Audio and Video

AWC. These are audio files.

BIK. These are video files, for example during loading.



GTA V Files

Common Files

Common GTA 5 file types include:

1. Script files: These files contain the game's core programming scripts and are vital for modding.
2. Texture files: These files are responsible for displaying the graphics and textures used in the game. Modding these files can enhance the game's aesthetics.
3. Audio files: These files contain the game's sound effects, music, and spoken dialogue. Modding these files can improve the game's audio experience.
4. Configuration files: These files contain various game settings and configuration options. Modding these files can alter the gameplay mechanics in a game.
5. Save files: These files contain the player's progress and statistics. Modding these files can help players unlock achievements or access new features in the game.

Rage Multiplayer

This is a multiplayer mod for GTA V. It allows players to connect and play with each other in a customized and separate multiplayer environment within the game. RAGE Multiplayer provides additional features and functionality not available in the official GTA Online multiplayer mode. It allows players to create and join custom servers, modify game modes, add custom scripts, and interact with other players in a variety of ways. RAGE Multiplayer is developed by a third-party team and is not affiliated with Rockstar

RPH

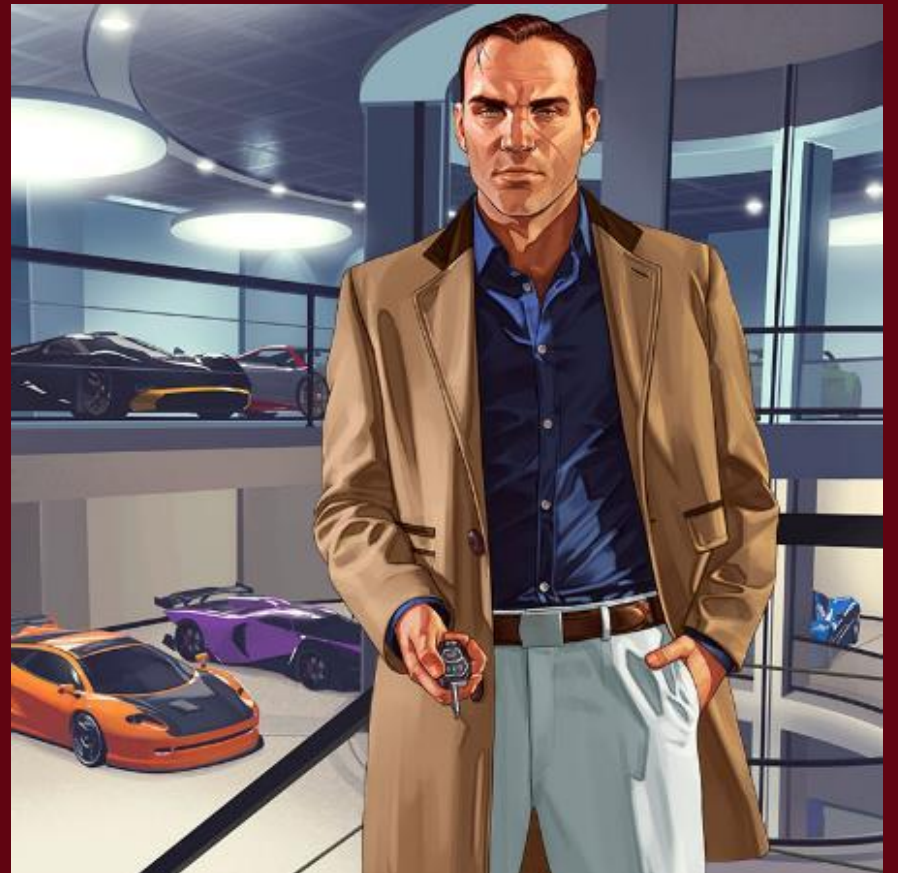
RPH (Rage Plugin Hook) is a mod for GTA V. It is a tool that allows users to load custom plugins and modifications into the game. RPH provides additional functionality and customization options for players and modders. It acts as a hook or bridge between the game and third-party modifications, enabling the use of custom scripts, trainers, and other mods that enhance or alter the gameplay experience. RPH is commonly used in conjunction with other mods, such as LSPDFR

LSPDFR

LSPDFR stands for "Los Santos Police Department First Response." It is a mod that allows players to experience being a police officer in the game. LSPDFR adds various law enforcement features, such as patrolling the streets, responding to calls, conducting traffic stops, and more. It is a popular mod among GTA V players who enjoy role-playing as police officers.

ELS

GTA 5 ELS (Emergency Lighting System) enhances the game's emergency vehicle lighting system, allowing players to have more realistic and customizable emergency strobe patterns and lighting effects. It is often used in conjunction with LSPDFR or other police-related mods. ELS adds a level of realism to the emergency vehicles' lighting, making them more similar to real-life police, fire, and ambulance vehicles.



GTA 5 MP Role Playing

Role Playing refers to a type of gameplay where players assume the roles of various characters and engage in role-playing scenarios within the game. It typically takes place on custom servers or platforms that offer role-playing experiences and additional mods or frameworks, such as FiveM or RageMP. In GTA 5 RP, players create and develop their own characters, follow specific rules and guidelines, and interact with other players to create immersive and realistic role-playing scenarios.

These scenarios can range from being a police officer, criminal, business owner, or any other role that players choose to portray within the game world. GTA 5 RP has gained popularity due to its immersive and collaborative nature, allowing players to create unique and dynamic stories within the GTA V game environment.





enhanced

modding enhanced

Modding GTA V Enhanced is still very much in its infancy at time of writing. New tools are being developed almost daily but obviously none have passed the test of time - yet. This article will do its best to summarize the state of the art for modding GTA V enhanced at time of writing.

GTA V Legacy versus GTA V Enhanced

The original GTA V is now called Legacy. The executable is still called GTA5.exe. The new version of GTA V is called Enhanced or Gen 9 and its executable has a different name, it's called **GTA5_Enhanced.exe**

GTA V Legacy (why not call it Classic?) uses a tool called OpenIV (pronounced Open 4, like GTA 4) to load mods. The file is called **OpenIV.asi** and is in the root folder (or game folder) where you can find GTA5.exe. This older tool is not compatible with GTA V Enhanced which has a new tool called **OpenRPF.asi**. To install it you place the file **OpenRPF.asi** in the root folder of GTA V Enhanced where you can find GTA5_Enhanced.exe.

ASI Loaders

As the name indicates these tools load mods written in C++ that end in the *.asi extension. Examples are your trainers as well as the OpenIV and OpenRPF tools mentioned above. For **GTA V Legacy**, the ASI loader is a file called dinput8.dll (not to be confused with the Windows system 32 version). This tool is packaged with both Scripthook V as well as with Open IV. It's exactly the same file and hasn't changed since 2015.

For **GTA V Enhanced**, there is a new ASI Loader called **dsound.dll**, which is a modified version of the original dsound.dll that was around before dinput8.dll. This file is packaged with OpenRPF. There is a second ASI loader for GTA V Enhanced that is packaged with ScripthookV called **xinput1_4.dll**. You can install one or the other but not both, so experiment. Whichever ASI Loader you select, it is installed in the root folder.

Scripthook V

A new ScripthookV (pronounced Scripthook 5 like GTA 5) has been released by Alexander Blade. It has the same name as before and is installed in the root folder as it was before. The trainer called NativeTrainer.asi can be installed until new compatible trainers are available..

Mods

According to the developers of OpenRPF, the mods you created with OpenIV are compatible with OpenRPF.asi, so based on their instructions you can create a Mods folder for GTA V Enhanced and copy over your mods from GTA V Legacy. Time will tell which mods work and which don't yet.

Scripts

At this time, very little is know about dot net scripts (.dll, .cs, .vb) created with Scripthookvdotnet. We assume they are being developed and tested at time of writing. You can test an asi script but caution is required as you may crash your game.

GENERAL FAQ

General FAQ

Which ASI Loader should I use with GTA V Enhanced?

You have a choice between dsound.dll, which is packaged with OpenRPF, or xinput1_4.dll which is packaged with ScripthookV. Only install one and if it works, stick with it. If not, try the other one.

I kept a version of dsound.dll from the old days. Should I use it?

No. The version of dsound.dll which was used before dinput8.dll should no longer be used, it's not the same ASI Loader as the one from OpenRPF.

Why is dinput8.dll packaged with xinput1_4.dll?

This is confusing, but dinput8.dll is only meant for the GTA V Legacy. Do not install it with GTA V Enhanced.

Can I use the Ultimate ASI Loader with GTA V Enhanced?

No, it is not compatible and was never proven to be any better.

Can I use OpenIV to edit my files like I did in the past?

Yes, but the recommended option is now CodeWalker. However if you do need functionality unique to OpenIV the editor, you must have OpenIV.asi temporarily installed in your root folder (as usual) but when you launch GTA V you need to remove OpenIV.asi because if not the ASI Loader will attempt to load it together with OpenRPF.asi and your game will likely crash.

Are all my mods in .rpf compatible with Enhanced?

At this time the answer is mostly no, they aren't compatible with Enhanced and they may cause the game to hang or crash. It will take time for mods to be converted from Legacy to Enhanced so caution is advised when installing mods from Legacy.

Are textures and drawables in Enhanced the same as those in Legacy?

From what we know today, the answer is no. Textures and drawables (ydr) are different in Legacy and Enhanced which explains why the majority of existing mods are not compatible between the two GTA V versions.

INSTALL MODS

GTA V ENHANCED

STEP 1

Download and install OpenRPF

There are 2 files, [OpenRPF.asi](#) and [dsound.dll](#) in the downloaded file. Extract them and put them in the game folder for GTA V Enhanced. This is the folder where your game is installed and where you will find the file called [GTA5_Enhanced.exe](#). Do not put [dinput8.dll](#) or [OpenIV.asi](#) or old mods in this folder.

STEP 2

Download ScripthookV

Disregard the instructions as they are inaccurate. You do not want to install [dinput8.dll](#). You only want these two files: [ScriptHookV.dll](#) and [NativeTrainer.asi](#). You do not install [xinput1_4.dll](#) unless your game doesn't load or run properly. If that's the case you delete [dsound.dll](#) (from Step 1) and replace it with [xinput1_4.dll](#). These files are both ASI Loaders. **You do NOT install the Ultimate ASI Loader.** You can optionally install the file called [args.txt](#) to disable anti-cheat BattleEye.

STEP 3

Disable BattleEye

Delete or remove the file called [GTA5_Enhanced_BE.exe](#). You have other options. You can start the game offline with this command `-scOfflineOnly` or disable BattleEye with `-nobattleeye`. These parameters are under Settings Launch Options for Steam but there are similar options for Epic and RGL. Or you can try the [args.txt](#) from Step 2.

STEP 4

Create your Mods Folder

You need to create a Mods Folder. The process is identical to the one you used for Legacy but this time you will use [update.rpf](#) and other vanilla files from Enhanced as your starting point. You can't use your existing Legacy Mods folder, it isn't compatible. Similarly, most of your addons and mods will not work without conversion or updates by the creators.

STEP 5

Install a gameconfig.xml

If one is available and tested, install this file using codewalker

STEP 6 (Optional)

If Mods don't appear

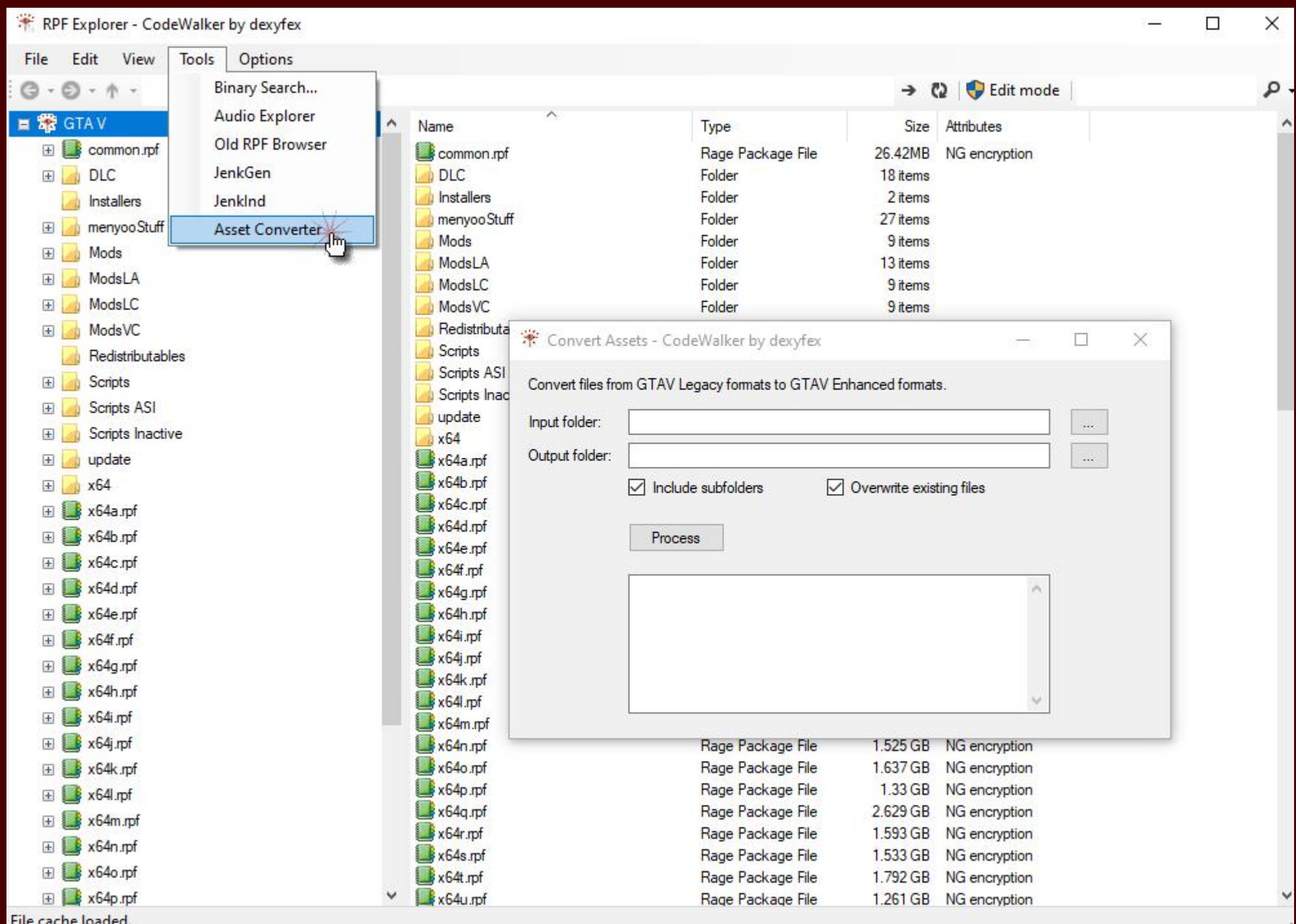
If you have mods "certified" to be compatible for GTA V Enhanced that don't appear, you can try this fix. Create a blank new text file and rename it [rpf.cache.disable](#). Note that the extension `.txt` is removed and replaced with `.disable`

converting mods

While modding GTA V Enhanced may not be ready for prime time, those adventurous souls who want to pioneer can download a new version of CodeWalker either from the source on the github page (will require compilation) or more easily as a release on the discord server. From the RPF explorer, under Tools, you will see a new option called Asset Converter. This will allow you, successfully or not, to attempt to convert Legacy mods (or components) to Enhanced.

At time of writing, there is very little documentation available: R30_dev48 - GTAV Enhanced (Gen9) support. Asset converter to convert YTD,YDR,YDD,YFT,YPT files to Gen9 (in RPF Explorer Tools menu). XML conversion support for the new Gen9 formats.

If you venture down this exciting new path, make sure you back up your legacy files and expect crashes. This is still in a very preliminary phase – more trial by experimentation than anything else.



Troubleshooting

Troubleshooting FAQ

My modded GTA V Enhanced doesn't load or crashes, what do I do now?

The first rule of troubleshooting is to ensure the game runs in vanilla mode. You can easily do this by renaming your ASI Loader from .dll to .bak. For example if you use dsound.dll, rename to dsound.bak. If the game in vanilla mode runs and is stable, the next step is to remove all the .asi mods except for OpenRPF.asi. Keep in mind that your game needs to meet the minimum system requirements set by Rockstar. These are more demanding than those for Legacy. And of course, the mods you install must be compatible with Enhanced.

My game launches but the mods don't appear, why?

Try this from the devs. In the Enhanced root/game folder, create a new text file and leave it empty. Now rename this file as [rpf.cache.disable](#) and restart your game. Do not keep the .txt extension, it has to be .disable.

Will BattleEye stop me from playing Enhanced SP with mods?

No, but you need to have the args.txt installed in your root folder. If you still have problems read the following FAQ, just below.

I still get BattleEye blocking dsound.dll errors when launching GTA V Enhanced?

You can force play offline using -scOfflineOnly or play with -nobattleeye in the setting, launch options.

Worst case you can remove or delete GTA5_Enhanced_BE.exe.

Caution: never try to play GTAO with mods installed as you may get banned although ScripthookV is designed not to allow you to play GTAO.

Are there any log files for OpenRPF?

Yes OpenRPF creates two files: asi-loader.log and OpenRPF.log. To view them you need to ensure that View Hidden Items is checked in Windows Explorer. You can find them at: [C:\Users\YourName\AppData\Roaming\Los Santos Multiplayer](#).

Substitute your own username for [YourName](#) and make adjustments to drive if necessary.



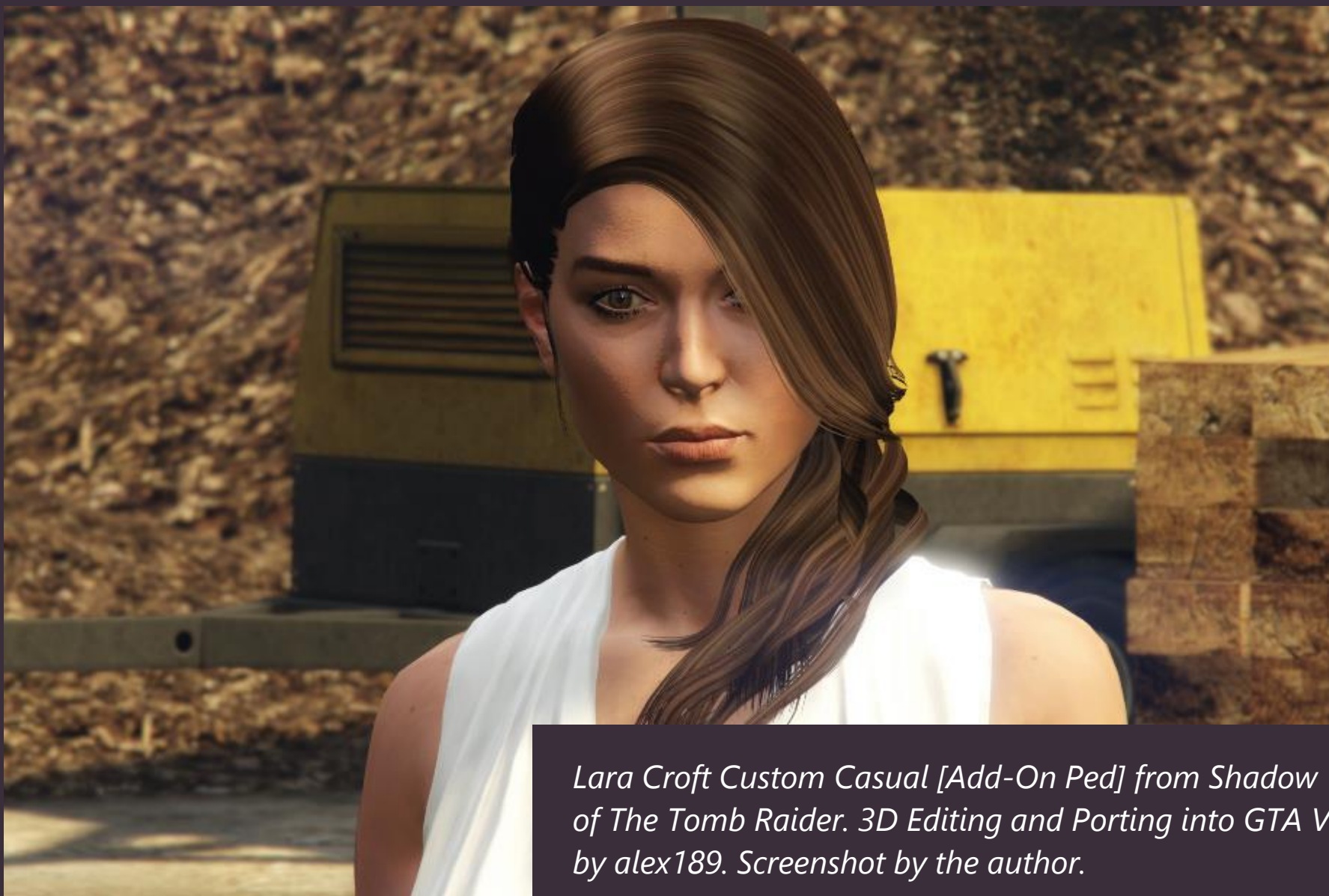
Section End

modding peds



PREFACE

The ultimate guide for GTA V modding



Lara Croft Custom Casual [Add-On Ped] from Shadow of The Tomb Raider. 3D Editing and Porting into GTA V by alex189. Screenshot by the author.

This guide will teach you how to customize peds without the need for 3D modeling software. It will give you all the background knowledge necessary to understand terms such as components, drawables, and textures. Don't worry about these for now, everything will be explained simply and clearly.

You will also be introduced, with easy to follow tutorials, to a new and powerful tool called the ymt editor. It greatly facilitates the process of editing ped files. The ped ymt files are files containing data about ped body parts and clothes.

Editing the ped files allows you to customize models, enabling you to change their physical features and clothing. Of course that's just one important part of the process.

The guide explains what's going on "under the hood" - how all the parts work together. Follow the articles and you'll become comfortable at making your peds unique to your own taste.

INTRODUCTION

In the sprawling, vibrant world of Grand Theft Auto V (GTA V), the term "peds" refers to "pedestrians," representing the diverse array of non-player characters (NPCs) that inhabit the game's urban and rural landscapes. These NPCs are crucial for creating a dynamic and immersive environment, contributing to the game's realism and variety. Peds in GTA V can be categorized into two main types: **streamed** and **non-streamed**.

Both types of peds are character models that populate the game world dynamically, appearing based on the player's location and actions. This system allows for a rich variety, from everyday citizens going about their lives to unique individuals with distinct appearances and behaviors – from hookers to construction workers and everything in between.

Within the world of GTA V, peds not only enrich the gameplay experience but also fall into various genres, including but not limited to, civilians, police officers, gang members, and characters central to missions and storylines.

Among the most significant peds are the protagonists: **Michael De Santa**, **Franklin Clinton**, and **Trevor Philips**. These three characters drive the narrative of GTA V, each with their unique backgrounds, motivations, and abilities that impact the story and gameplay.

In this guide, we will delve into the process of editing existing peds, whether they are streamed or non-streamed. We will explore how to utilize tools such as OpenIV, as well as simple text editors like Notepad++ for editing data files. Additionally, we will cover how to modify textures and visual elements with image editing software such as Photoshop, Paint.net, and GIMP.

It is important to note that this guide will not cover the full creation of 3D ped models from scratch using 3D modeling software. Instead, our focus will be on customizing existing models to suit your preferences. Whether you're looking for simple texture tweaks or complete makeovers, this guide will provide step-by-step instructions to navigate the editing process effectively.

PED TYPES

As mentioned in the introduction, GTA V peds are categorized as **streamed** and **non-streamed** (or component) peds. As we shall see, the term component is misleading as all peds are made up of components such as heads, hairs, torsos, and legs.

Non-streamed peds are easily recognizable because they are characterized by four files with these extensions: **ydd**, **ymt**, **ytd**, and **yft**. We will discuss these further, as well as other associated files, such as **yld** and **yed**. Most GTA V vanilla peds and downloaded ped mods are non-streamed peds. Modded peds are generally meant to replace existing peds, but they can easily be renamed to keep the original vanilla peds intact.

Streamed peds, on the other hand, are composed of one folder and two files. The folder contains the **ydd** and **ytd** files while the two files on their own are the **yft** and **ymt**. If the ped has a **yld** file, it will be in the folder as well. Examples are the **MP Freemode** male and female as well as the three player protagonists, Michael, Franklin, and Trevor.

In both streamed and non-streamed peds, the file and folder names are consistent and are the same names used to spawn the ped. For example, for the vanilla ped named **a_f_m_bevhills_02** all the files will have that name such as **a_f_m_bevhills_02.ytd**. However this isn't necessarily true for addon peds which are in **dlc.rpf** packages. As we shall see later these peds may have spawn names different from their folder names as is the case for vehicle mods.



Vanilla Peds

Vanilla peds can further be classified based on the role they play in the game. Generally speaking these are the categories:

- **Ambient males & females**
- **Animals**
- **Cutscene**
- **Gang males & females**
- **Multiplayer**
- **Scenario males & females**
- **Story**
- **Story scenario males & females**

PED NAMING CONVENTIONS

Peds are named according to their role in game, as well as their gender, race and age. The structure in general is: **Game Role_Gender_Age_Description_Number**

Regarding age, we have: **y=Young**, **m=Middle Aged**, **o=Older**

Ambient Peds

The peds you encounter around the GTA V map, called ambient peds, follow this structure:

a_f_m_beach_01. This can be deciphered as an ambient female, middle aged, likely to hang around the beach. She is also given a number as a suffix, even if she is one of her kind.

Animals

Peds of the animal variety, always start with **a_c** as in **a_c_chickenhawk**.

Cutscene

Cutscene peds are recognized by a **cs** prefix as in **cs_janet**

Gang

Gang peds start with the prefix **g** as in **g_f_y_vagos_01**

Multiplayer

These peds that start with the prefix **mp** as in **mp_m_fibsec_01**

Scenario

The peds that start with the prefix **s** as in the **s_f_y_hooker_01**

Story

The peds that start with the prefix **ig** (meaning in game) like **ig_Abigail** and also a few that start with the prefix **hc**, for example **hc_gunman**

Story Scenario

These final peds start with the **u** prefix as in **u_m_y_rsranger_01**



PED FILES

While we will get into more detail, let's take a quick look at the **Y files** which both streamed peds and non-streamed peds have in common. The naming conventions are those seen in OpenIV (pronounced Open 4 as in GTA 4).

The prefix Y is for the PC version of GTA V whereas GTA IV used W. For example the GTA V textures are in **ytd** versus **wtd** for GTA IV.

YFT – Fragment Object

The YFT file is the 3D model skeleton of the ped. It contains the geometry of the character that defines its shape and structure. This file is essential for rendering the character within the game environment.

Example for all peds: g_f_y_vagos_01.yft

In OpenIV, you can export this file as a .skel (skeleton) file and view it in a text editor. It can't be edited directly without 3D software.

YDD – Drawable Dictionary

The YDD file contains drawables, these are 3D meshes for the 12 ped components such as hair, uppers (torsos), and lowers (legs). A typical ped will have 3 meshes: high, medium, and low. These are levels of detail (LODs) and high is the most complex 3D geometry.

Non-streamed peds have YDD files with many components bundled together in the ydd file.

Example: g_f_y_vagos_01.ydd

Streamed peds have their YDD files in a separate folder and each YDD has only one component, for example a mesh for one hair style.

Example: hair_000_u_1.ydd

Both types of peds can be exported to what is called open formats as we will see later on. YDD files can have embedded textures, use YTD files, or have both embedded and YTD textures.

Finally, other GTA V models such as props or car components such as wheels are generally YDR files (single drawables).

PED FILES

YTD – Texture Dictionary

The YTD files store textures for peds that define how surfaces of 3D models appear. The terms diffuse, normal, and specular refer to different types of texture maps included in a YTD file.

Diffuse Map

This is the most basic texture and represents the base color of a surface. It determines what color the surface will appear and is vital for giving an object its overall visual characteristics. It doesn't account for any lighting, shadows, or surface details beyond color.

Example: `head_diff_000_a_whi`

Normal Map

A normal map is used to give textures a more detailed appearance without increasing the polygon count of a 3D model. It achieves this by simulating small surface details such as bumps, wrinkles, or grooves using RGB information. By altering the way light interacts with the surface, normal maps provide an illusion of depth and complexity.

Example: `head_normal_000`

Specular Map: This type of map defines how shiny or glossy a surface appears by affecting the specular reflection of light. It determines the highlights and shine on an object's surface, allowing for realistic rendering of materials like metals, plastics, or wet surfaces. The specular map can inform the rendering engine of which areas are more reflective and to what extent.

Example: `head_spec_000`

Non-streamed peds have all textures bundled together in the ytd file.

Example: `g_f_y_vagos_01.ytd`

Streamed peds have YTD files in a separate folder and each YTD has only the textures for the its ydd component, for example a mesh for one hair style.

Example: `hair_000_u_1.ytd`

Textures can be imported, exported, renamed, deleted, etc. The native format is .dds (DirectDraw Surface) format. To edit textures you can use essentially any image format, OpenIV will convert them to dds but often dds will give the best results. We will discuss this further.

PED FILES

YTD – Texture Dictionary

You can view examples of diffuse (diff), normal, and specular (spec) below.

Example.ytd - OpenIV Texture editor

+

Import

⌂

Properties

⌵

Rename

↺

Replace

🗑

Delete

Size:

1x1

2x2

4x4

8x8

16x16

32x32

64x64

128x128

256x256

512x512

1024x1024

🔍

View:

📄

📊

📈

📉


📏

📐


📏

📐


✓



head_diff_000_a_whi
512x512, DXT1, MipMaps: 8



head_normal_000
512x512, DXT1, MipMaps: 8



head_spec_000
256x256, DXT5, MipMaps: 7

Export all textures

Export selected

Save

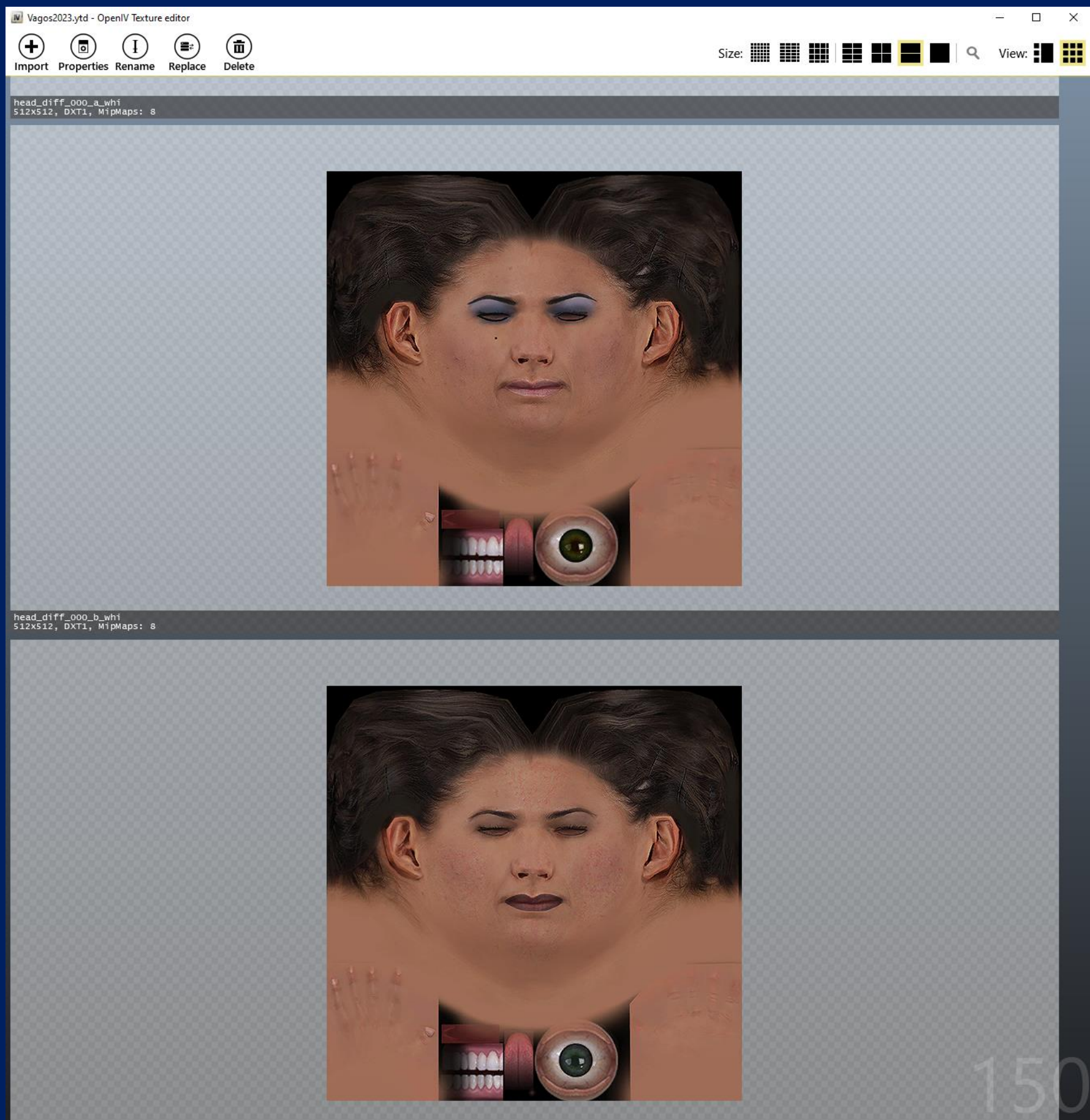
Cancel

3

PED FILES

Anatomy of a Texture

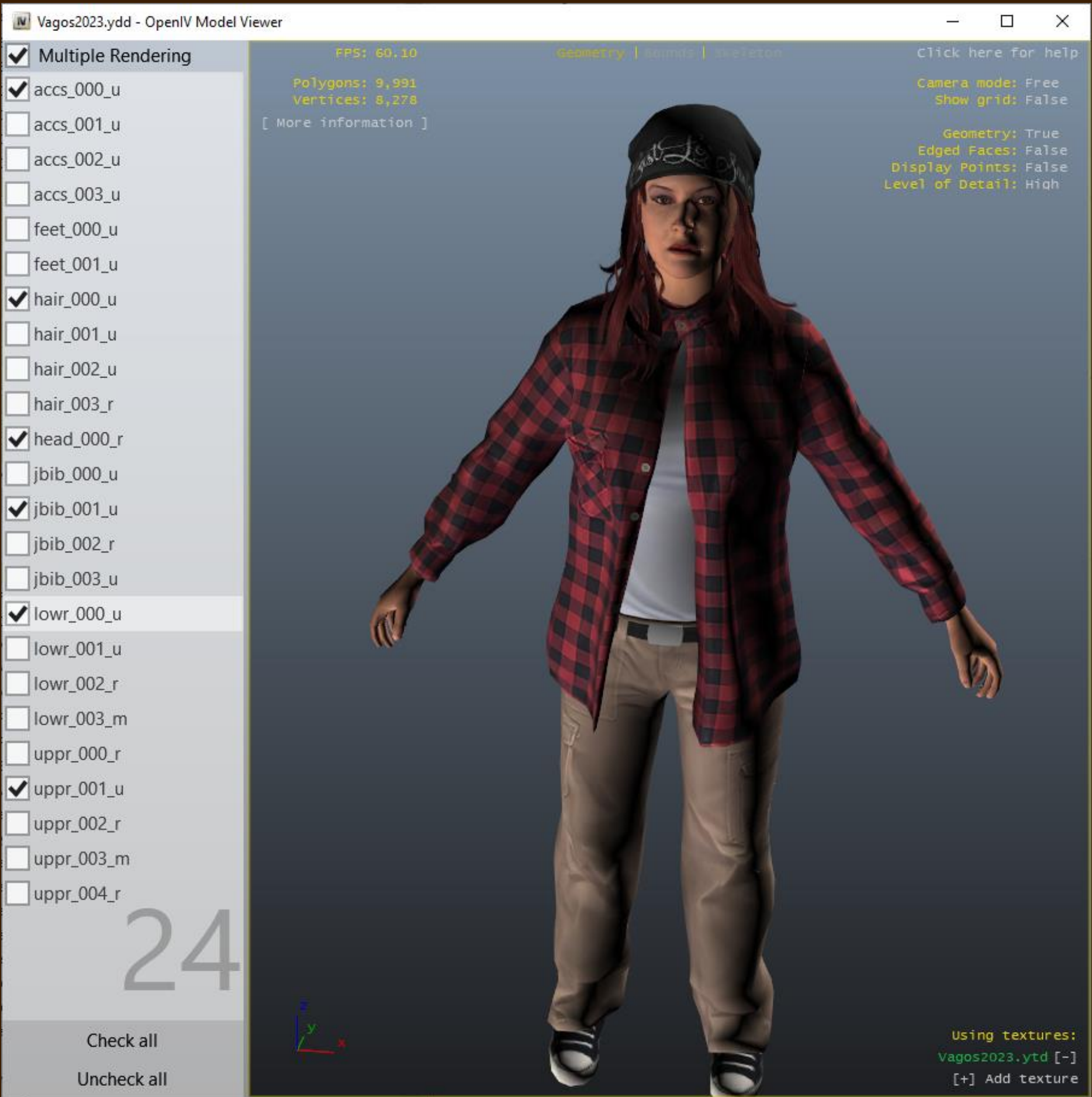
The screenshot below is from OpenIV (Open 4) and is zoomed in to display two head images. The naming convention follows a specific structure. If we consider **head_diff_000_a_whi** we have: The **component** Head (slot 0), the **texture type** (diff = diffuse), the **drawable** (000 is the first, 001 would be second), the drawable first **texture variation** (ranges from a to z), and finally the race, which in this case is whi for white. You'll notice, if you look closely, that this particular ped texture not only has the head (face) but also the hands, teeth, and eyeballs.



PED FILES

YMT – Metadata

This file contains metadata for the character model. It is the most important file in this guide and it will be covered in depth. To examine this file, in the past, it needed to be exported as an xml file – allowing it to be viewed as text. Thankfully now there is a free tool mod called the ymt editor which greatly simplifies the process. The YMT file contains data for all 12 ped components and their textures. The screenshot below, from OpenIV, shows a typical non-streamed ped along with different components which we will discuss in the next section.



YMT AND COMPONENTS

So why exactly are ymt files that important for customization? The Ped ymt files are manifest files containing metadata about Peds. They allow you to customize models by changing their physical features and clothing where applicable. Not to be confused with the single file called peds.ymt.

Example for all peds: g_f_y_vagos_01.ymt

Components

There are 12 wardrobe components, as described in the table below. They are numbered from 0 to 11 and each component can have multiple drawables, often referred to as their slots. These are the same components with your ped outfits using Trainers like Menyoo.

Native Name	Description	Menyoo Name
PV_COMP_HEAD	0. Head	Head
PV_COMP_BERD	1. Masks	Beard/Mask
PV_COMP_HAIR	2. Hair Styles	Hair
PV_COMP_UPPR	3. Torsos	Torso
PV_COMP_LOWR	4. Legs	Legs
PV_COMP_HAND	5. Hands/Bags/Parachutes	Hands/Back
PV_COMP_FEET	6. Shoes	Shoes
PV_COMP_TEEF	7. Accessories	Teeth/Scarf/Necklace
PV_COMP_ACCS	8. Undershirts	Accessory/Tops
PV_COMP_TASK	9. Body Armor	Task/Armour
PV_COMP_DECL	10. Decals	Emblem
PV_COMP_JBIB	11. Tops	Tops2 (Outer)

YMT AND COMPONENTS

Drawables and Textures

If you consider the component called upper (torso), then its drawables would refer to clothing such as a shirt, or a sweater, or a t-shirt. For the component lower (legs), the drawables could be pants or a skirt. Remember that each component can have multiple drawables. Also, each drawable can have multiple textures (up to 26, from A to Z). A texture on the other hand could allow one t-shirt to be red or black or sport a cool logo. These different texture options are called texture variations. Together with drawables they are called component variations and apply to the player and all peds.



The Wardrobe in Scripts

Just a side note as to how wardrobe components are changed in script mods. As you're aware, changing clothes and outfits is easily done with trainer mods like Menyoo and Simple Trainer. The trainers use what are called native functions to allow you to make these wardrobe changes in game. For example GTA 5 has the following native function:

```
void SET_PED_COMPONENT_VARIATION(Ped ped, int componentId, int  
drawableId, int textureId, int palettId)
```

As an example, the function below would set the hair (component 2) to hairstyle 3 (ex. Long hair) and texture 2 (ex. Blonde hair). The last variable is always set to the value 2.

```
Function.Call(Hash.SET_PED_COMPONENT_VARIATION, PedName, 2, 3, 2, 2);
```

So in summary, each component, for example a torso, has id's for the torso component itself as well as for the drawables and textures.

TUTORIAL

Add Drawables and Textures to Peds

In this tutorial you will learn, step by step, how to add drawables such as hairstyles or jackets or pants as well as different texture variations for those drawables. The process here applies to both normal and streaming peds, the most important difference being normal peds have drawables in one ydd file whereas streaming peds have individual drawables in their own ydr files.

What you will need:

1. Basic understanding of working with Windows files
2. Open IV
3. YMT Editor
4. Code Walker RPF Explorer
5. A text editor (Notepad, Notepad++, Visual Studio Code, etc.)
6. Image Editor (Photoshop, GIMP, etc.)

What you won't need:

1. Knowledge of 3D Modeling (although it can't hurt)
2. 3D Modelling Software (ZModeler3, Blender, 3ds Max, etc.) - this is optional

So the best part is all you need to know is how to edit text and of course an understanding of how components, drawables, and textures are the foundation of ped models.

Step 1

The first step is to backup your ped files in case you make a mistake or want to restore them. We will be working with only 3 of the 4 files present for most Normal Peds, but backup all four. The ones we will work with are: ytd, ydd, and ymt. We will not preoccupy ourselves with yft.

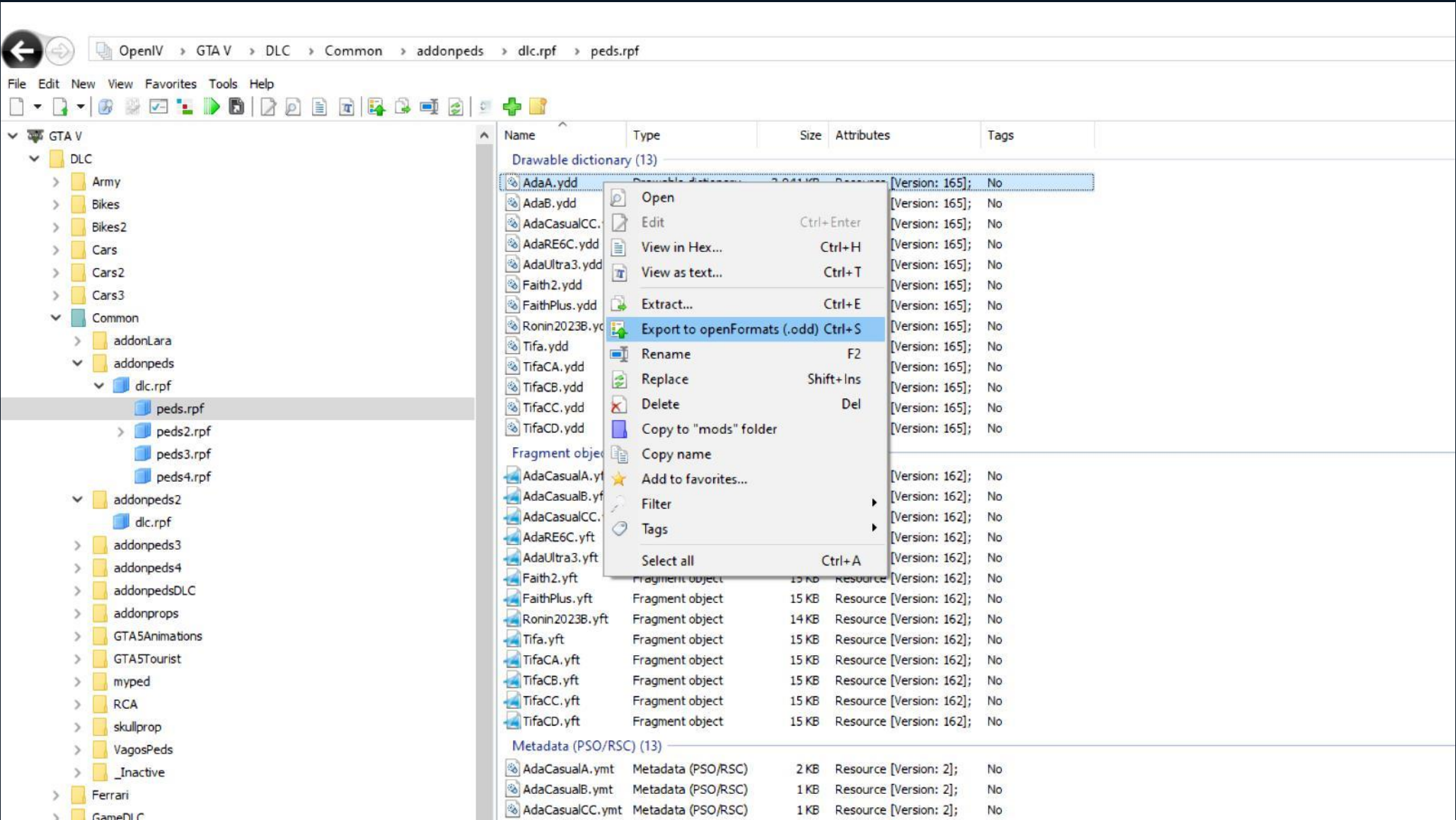
TUTORIAL

Step 2 - Export to Open Format

Although many of these steps can be taken in different chronological order, stick with this sequence for now until you're comfortable with the process. We will learn how to transfer hair drawables, in ydd files, from ped AdaB to ped AdaA.

To accomplish this we will obviously need to have the peds properly installed and then we will use OpenIV to export both ydd files (from two similar peds) to the openFormats (.odd). This operation will provide us access to all the drawable components such as hair, lowr, uppr, etc. In our demo we will be focusing on hair alone.

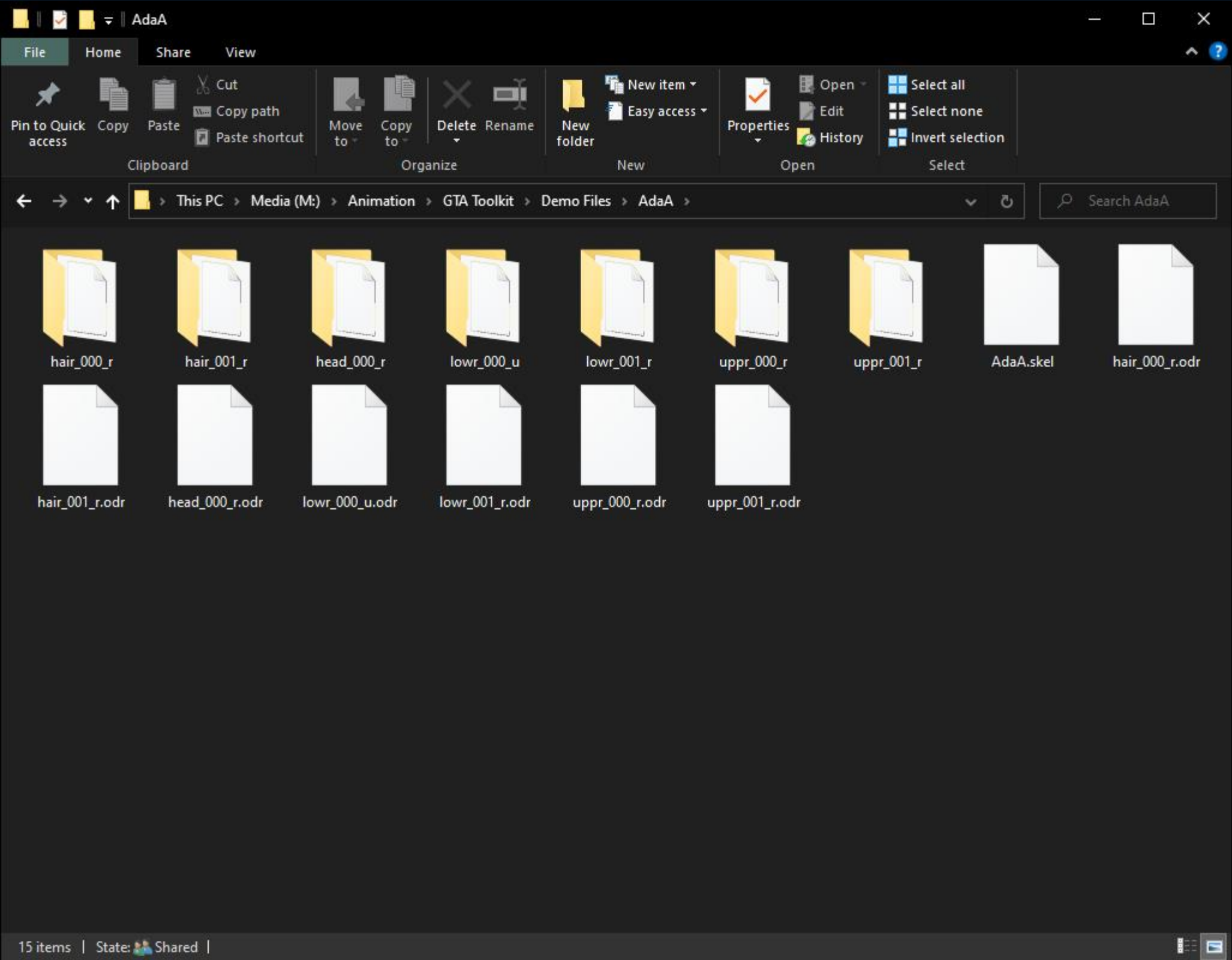
From OpenIV, select the AdaA.ydd, right click, and from the context menu select Export to openFormats. If you don't have AdaA installed (Ada Wong mod) use any non-streamed ped. Repeat this process for a second ped, in our example it will be AdaB.ydd.



TUTORIAL

If you successfully exported the ydd file to openFormats you will end up with one .odr file and a folder. The folder contents will look like the screenshot below, depending on the model you customized. You need to do this for both your peds.

If the ydd file is locked, you will get an error message, when attempting to export to OpenIV. In that case you will need another step to easily unlock the ydd file. First close OpenIV so that the ydd file is free to use. Next use RPF Explorer, from CodeWalker, to export as xml and lastly import back as xml. This will unlock the file and restore it as ydd.



TUTORIAL

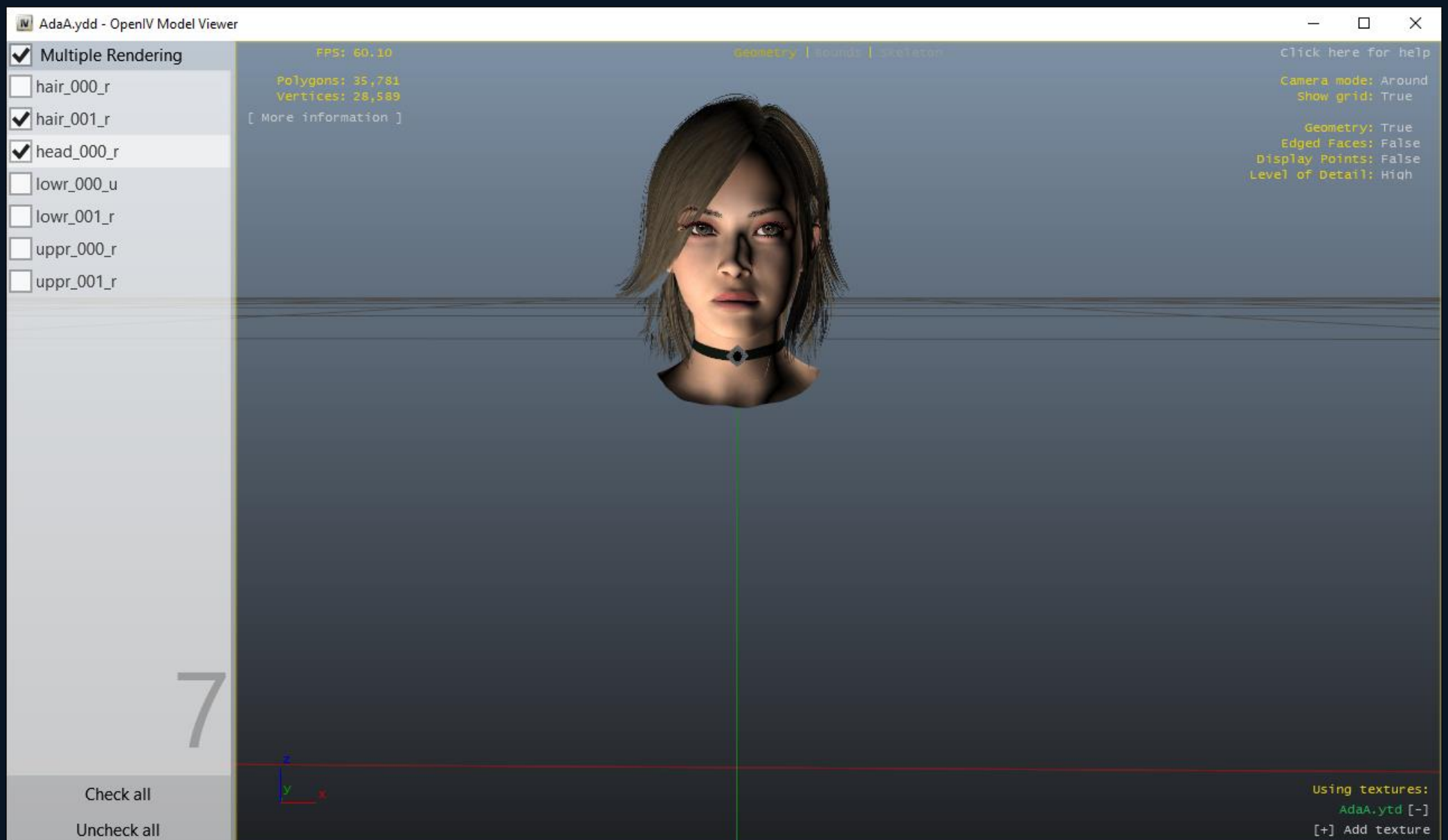
Step 3 - Editing the YMT file

While YMT files can be edited manually with tools that convert the file to editable text, a recent mod called the YMTeditor simplifies the process and reduces the risk of errors. In passing you should note, that we can't edit YMT files directly from Open IV.

Now that we've successfully exported drawables in the openformat, this next step consists of editing the YMT file (metadata) to add a new drawable. Once more, in our demo this is a new hairstyle. We are going to take a hairstyle from Ped AdaB and add it to Ped AdaA.

AdaA already has 2 hairstyles (drawables), one numbered 000 and the other numbered 001. The hairstyle we will add will be numbered 002. Before we can add the hairstyle from one ped to the other, we need to edit AdaA so that she can receive the new hairstyle.

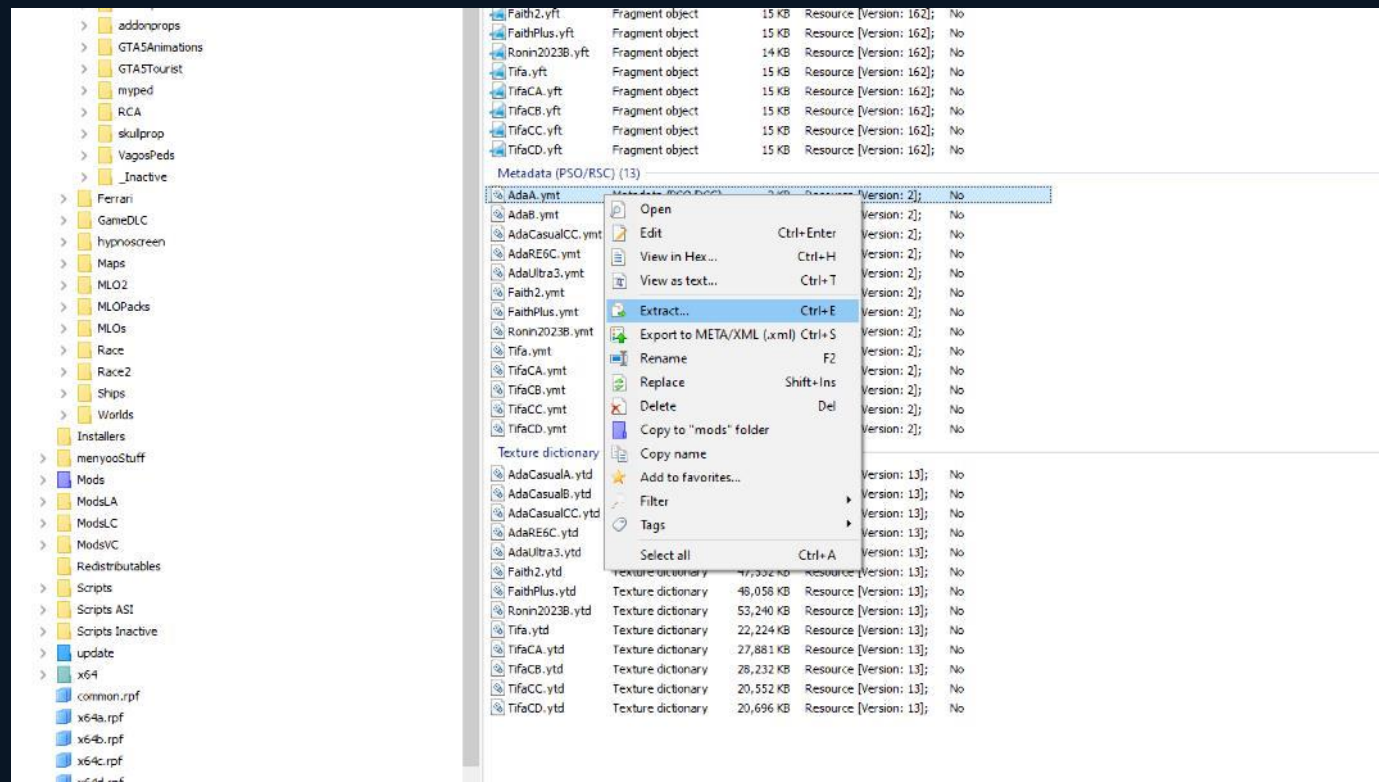
From Open IV, by clicking on the YDD (Drawable Dictionary) you can see the drawables for your ped model such as the head, hair, uppers, and lowers. Notice hair 000 and hair 001 in the screenshot below from OpenIV.



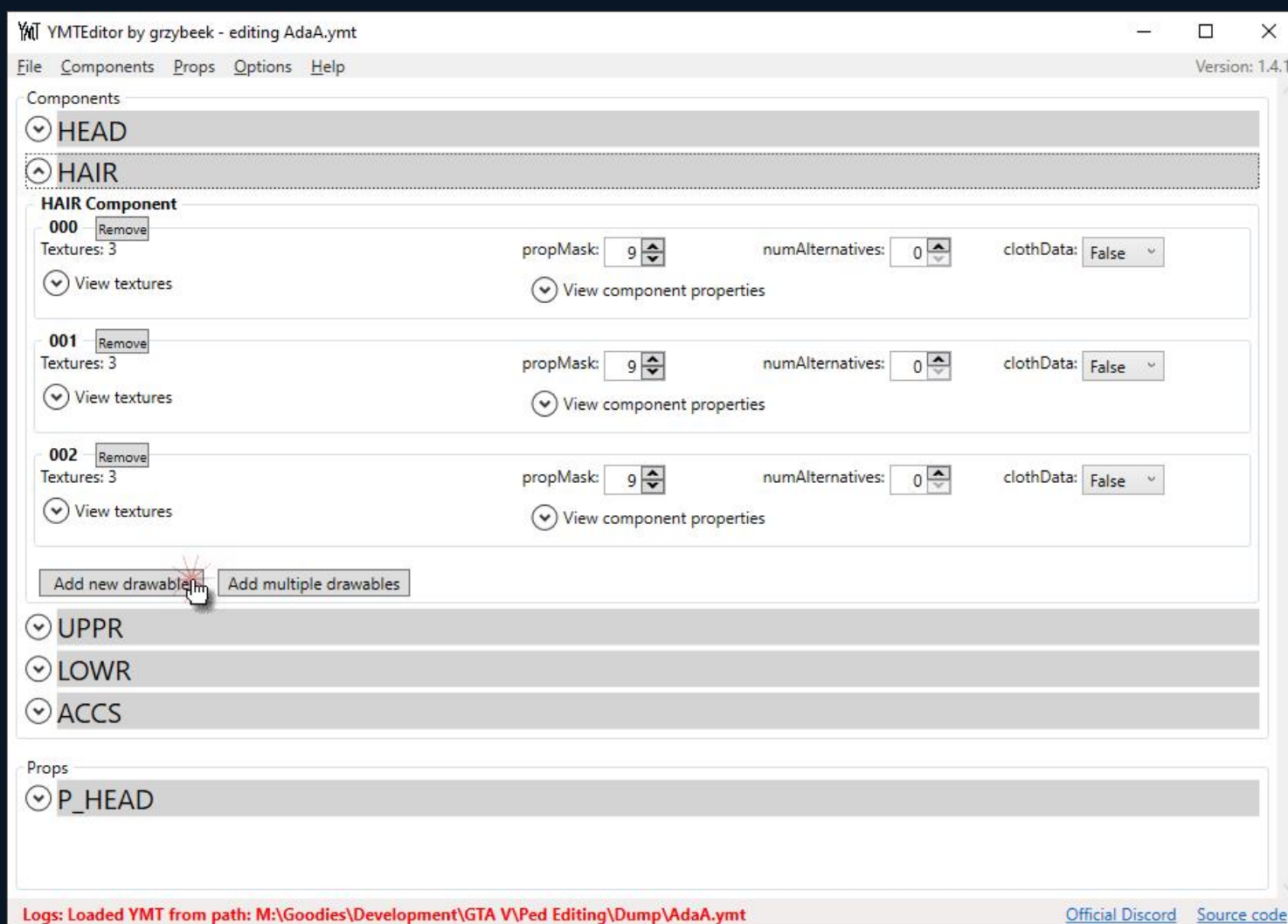
TUTORIAL

Step 3 Continued

We have to extract our ymt to a folder on our computer. This is done from OpenIV and we only need to do this for one ped, AdaA.ymt in our example.



We can then drag our extracted ymt onto the YMTEditor. Next we select, **HAIR** from the components and then **Add New drawable** which will be numbered automatically as 002. We don't need to add a texture entry as there is one already by default. Finally we save our modified ymt file and drag it back into OpenIV to replace the original one.



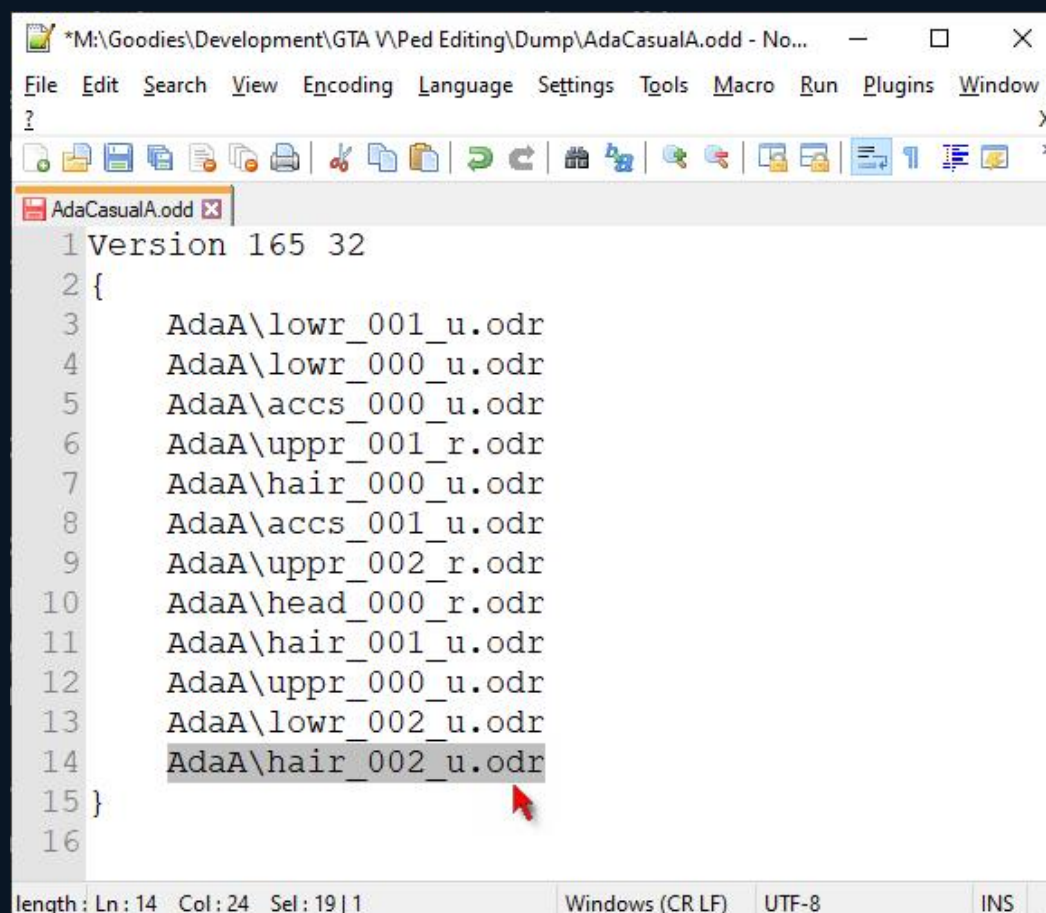
TUTORIAL

Step 4

In this step we add 1 hairstyle drawable from AdaB to AdaA, renaming it 002. We then bring the odd file back into Open IV to create a new YDD file for our ped Ada A. This is simply done, once we've completed our renaming/edits, by dragging and dropping the .odd file back into OpenIV. We don't worry about the folders, OpenIV will take care of the updating process.

The files that need renaming are:

1. The Folder (AdaA) containing subfolders with meshes. For example, hair_000_u.
2. Inside hair_000_u, which we will rename hair_002_u, there will up to 3 meshes. We will rename these as well. For example, hair_000_u_high.mesh to hair_002_u_high.mesh.
3. We will also rename the odr file, for example hair_000_u.odr to hair_002_u.odr
4. With a text editor such as Notepad (or Notepad ++) we now do edits inside the odr file. As examples, DiffuseSampler hair_diff_000_a_uni will be renamed DiffuseSampler hair_diff_002_a_uni. Also, near the bottom of this file we will rename hair_000_u\hair_000_u_high.mesh 0 to hair_002_u\hair_002_u_high.mesh 0
5. Finally, we will edit the odd file that is outside the AdaA folder. We will make an entry for the new hair drawable as in screenshot below. And as a last action, we will drag that odd file, and only that file, into OpenIV where it will make all the adjustments necessary.



```
*M:\Goodies\Development\GTA V\Ped Editing\Dump\AdaCasualA.odd - No...
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window
AdaCasualA.odd
1 Version 165 32
2 {
3     AdaA\lowr_001_u.odr
4     AdaA\lowr_000_u.odr
5     AdaA\accs_000_u.odr
6     AdaA\uppr_001_r.odr
7     AdaA\hair_000_u.odr
8     AdaA\accs_001_u.odr
9     AdaA\uppr_002_r.odr
10    AdaA\head_000_r.odr
11    AdaA\hair_001_u.odr
12    AdaA\uppr_000_u.odr
13    AdaA\lowr_002_u.odr
14    AdaA\hair_002_u.odr
15 }
16
length: Ln: 14 Col: 24 Sel: 19 | 1 Windows (CR LF) UTF-8 INS
```

TUTORIAL

Step 5 Add Textures

In our final step, we will now import the textures for the hairstyle drawable we just added. The textures will also include the specular (spec) and normal maps. These last steps will be entirely done in Open IV with the ytd files. Of course you can create your own textures using an image editor like Photoshop or GIMP or even Microsoft Paint.

Once more we will use OpenIV. We will export the 3 textures above from AdaB, rename them, and Import them into Ada A - it is important to rename the textures to match our new hair drawable which is 002 (numbering starts at 000).

Final Notes

In our process we ensured we were consistent in renaming all our files correctly. As you gain experience you will notice that you have some flexibility in naming files and folders. This is not really a good thing and you will find some lazy and sloppy developers abuse this. You will find some ped mods with heads named feet, legs named torsos, and numbering systems that don't make any sense. Even Rockstar vanilla peds often don't follow best practices.

A few more points about ped terminology. Components have a `_u` suffix for universal or `_r` for race. You will also see `_m` which might mean mixed, that the ped model may have white and black components for example. Textures have the extension `dds`: the image file type, DirectDraw Surface. And what about ped props?

If you take a peek with Menyoo or a similar trainer, you will see 5 ped props are used in GTA5: Hats (helmets), Glasses, Ear Pieces, Watches, and Bangles. Or, respectively, `p_head`, `p_eyes`, `p_ears`, `p_lwrist`, `p_rwrist`. Unless I'm mistaken, R* assumes that watches will always be worn on the left wrist (`p_lwrist`) while bangles/bracelets will be worn on the right (`p_rwrist`).

As an example, the ped `g_m_y_korean_01` has its prop textures in **`g_m_y_korean_01_p.ytd`**. Opening that file we would find a texture called **`p_eyes_diff_000_a.dds`**, as an example, for glasses. Notice the **p suffix** for the ytd file, and **p prefix** for the texture dds file.

YMT Files – Advanced Topics

YMT Files – in Depth

As we saw previously, a relatively new tool called the YMTEditor allows you to easily modify ymt files. It is perfect for beginners and even expert modders. However there are times where you might need to get your hands dirty and modify the ymt file without this tool.

There is an issue that needs to be addressed before you do any editing. YMT files need to be decrypted and exported as xml (text) files before they can be modified or edited. There are two principal tools that will allow you to do this: The Meta Toolkit and CodeWalker's RPF Explorer. Both have their advantages and disadvantages although RPF Explorer is much more user friendly than its older counterpart.

Exporting YMT to XML

As stated above, ymt files can't be edited directly, they need to be exported into the xml format which is a text format. In summary, this is how the two tools work.

Meta Toolkit. Export the ymt file to your desktop or any folder from OpenIV. Then just drag the ymt file on top of the executable MetaTool.exe and it will automatically generate your xml file.

RPF Explorer. Run the explorer and let it scan your game installation. When ready, right click your file and select export to xml.

Terminology

The two tools use different terminology, one is more cryptic than the other but you will quickly familiarize yourself with either tool as you edit your exported xml file.

YMT Components	Meta Toolkit	RPF Explorer
Components	<hash_E2489C4F>	CPVComponentData
Drawables	<hash_68AC8351>	CPVDrawblData
Texture Variations	<hash_4A92222A>	CPVTextureData

YMT Files

YMT Files – Manual Edits

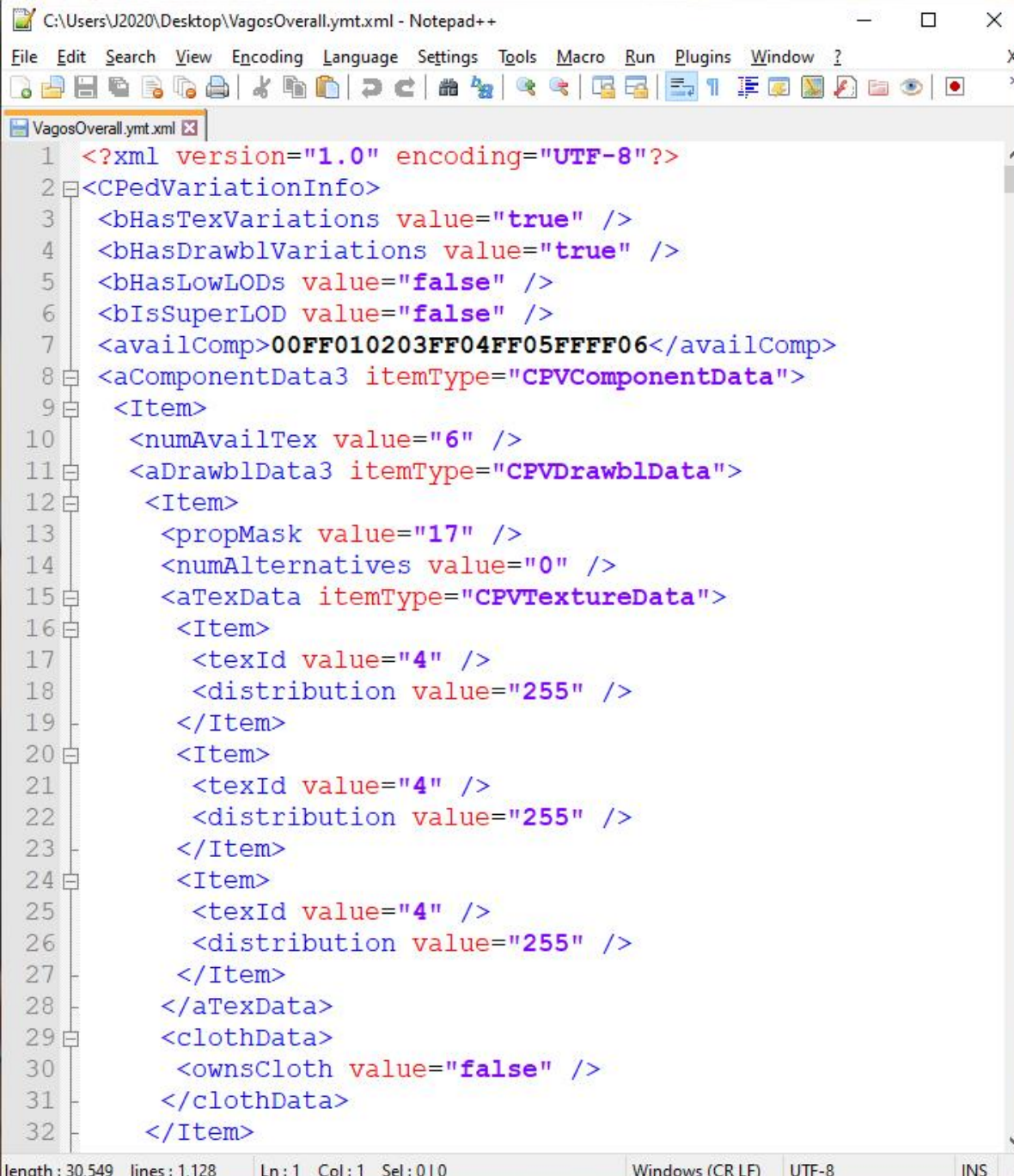
With our two tools, the available component items will also use different terminology.

Meta Toolkit: `<hash_B29BE228>0 255 1 2 3 4 255 5 6 255 255 255</hash_B29BE228>`

RFP Explorer: `<availComp>00FF01020304FF0506FFFFFF</availComp>`

Of course `CPVTextureData` is much easier to understand and relate to than `<hash_4A92222A>`, but you will definitely get used to the jargon in no time at all. When 255 appears it means that item is not being used by the model, RFP Explorer uses the hex FF instead. The single digits in Meta Toolkit refer to the item numbers, 0 being the head and 1 the hair. RFP Explorer uses 00 and 01 for the same items respectively. Notice that in this example hair is numbered 1 rather than 2 because component 1 isn't being used in that particular model.

Editing the ymt file can allow you, depending on the models, to add both drawables (a new jacket for example) and new textures. While drawables are in ydd files, textures will generally be found in the YTD file. Textures can also be embedded in ydd files. The screenshot below displays a section of a ymt file that has been exported to xml with RFP Explorer.



```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <CPedVariationInfo>
3   <bHasTexVariations value="true" />
4   <bHasDrawblVariations value="true" />
5   <bHasLowLODs value="false" />
6   <bIsSuperLOD value="false" />
7   <availComp>00FF010203FF04FF05FFFF06</availComp>
8   <aComponentData3 itemType="CPVComponentData">
9     <Item>
10      <numAvailTex value="6" />
11      <aDrawblData3 itemType="CPVDrawblData">
12        <Item>
13          <propMask value="17" />
14          <numAlternatives value="0" />
15          <aTexData itemType="CPVTextureData">
16            <Item>
17              <texId value="4" />
18              <distribution value="255" />
19            </Item>
20            <Item>
21              <texId value="4" />
22              <distribution value="255" />
23            </Item>
24            <Item>
25              <texId value="4" />
26              <distribution value="255" />
27            </Item>
28          </aTexData>
29          <clothData>
30            <ownsCloth value="false" />
31          </clothData>
32        </Item>
```


For Developers

Native Database

The Native Database lists 14 component variables rather than 12.

Additions, just for documentation purposes are:

PV_COMP_INVALID = -1 //easy to understand as it will return nothing or an error.

PV_COMP_MAX // not documented, max is always 12 so unsure why it's there.

Ped Component Types in SHVDN3

Just to make things even more complicated, here is how scripthookvdotnet treats the 12 components, these are displayed in alphabetic order:

Native Database	SHVDN
<pre>componentId: enum ePedVarComp { PV_COMP_INVALID = -1, PV_COMP_HEAD, PV_COMP_BERD, PV_COMP_HAIR, PV_COMP_UPPR, PV_COMP_LOWR, PV_COMP_HAND, PV_COMP_FEET, PV_COMP_TEEF, PV_COMP_ACCS, PV_COMP_TASK, PV_COMP_DECL, PV_COMP_JBIB, PV_COMP_MAX };</pre>	<pre>namespace GTA { public enum PedComponentType { Face, Head, Hair, Torso, Legs, Hands, Shoes, Special1, Special2, Special3, Textures, Torso2, } }</pre>

For Developers

Native Function Example Code

```
Function.Call(Hash.SET_PED_COMPONENT_VARIATION, CurrentPed, 0, 0, 0, 2);
Function.Call(Hash.SET_PED_COMPONENT_VARIATION, CurrentPed, 1, 0, 0, 2);
Function.Call(Hash.SET_PED_COMPONENT_VARIATION, CurrentPed, 2, 0, 0, 2);
Function.Call(Hash.SET_PED_COMPONENT_VARIATION, CurrentPed, 3, 0, 0, 2);
Function.Call(Hash.SET_PED_COMPONENT_VARIATION, CurrentPed, 4, 0, 0, 2);
Function.Call(Hash.SET_PED_COMPONENT_VARIATION, CurrentPed, 5, 0, 0, 2);
Function.Call(Hash.SET_PED_COMPONENT_VARIATION, CurrentPed, 6, 0, 0, 2);
Function.Call(Hash.SET_PED_COMPONENT_VARIATION, CurrentPed, 7, 0, 0, 2);
Function.Call(Hash.SET_PED_COMPONENT_VARIATION, CurrentPed, 8, 0, 0, 2);
Function.Call(Hash.SET_PED_COMPONENT_VARIATION, CurrentPed, 9, 0, 0, 2);
Function.Call(Hash.SET_PED_COMPONENT_VARIATION, CurrentPed, 10, 0, 0, 2);
Function.Call(Hash.SET_PED_COMPONENT_VARIATION, CurrentPed, 11, 0, 0, 2);
}
```

SHVDN Example Code

```
CurrentPed.Style[PedComponentType.Face].SetVariation(0, 0);
CurrentPed.Style[PedComponentType.Head].SetVariation(0, 0);
CurrentPed.Style[PedComponentType.Hair].SetVariation(2, 0);
CurrentPed.Style[PedComponentType.Torso].SetVariation(15, 0);
CurrentPed.Style[PedComponentType.Legs].SetVariation(21, 0);
CurrentPed.Style[PedComponentType.Hands].SetVariation(0, 0);
CurrentPed.Style[PedComponentType.Shoes].SetVariation(1, 0);
CurrentPed.Style[PedComponentType.Special1].SetVariation(0, 0);
CurrentPed.Style[PedComponentType.Special2].SetVariation(0, 0);
CurrentPed.Style[PedComponentType.Special3].SetVariation(0, 0);
CurrentPed.Style[PedComponentType.Textures].SetVariation(0, 0);
CurrentPed.Style[PedComponentType.Torso2].SetVariation(0, 0);
```
