

## Tutorial modding GT2

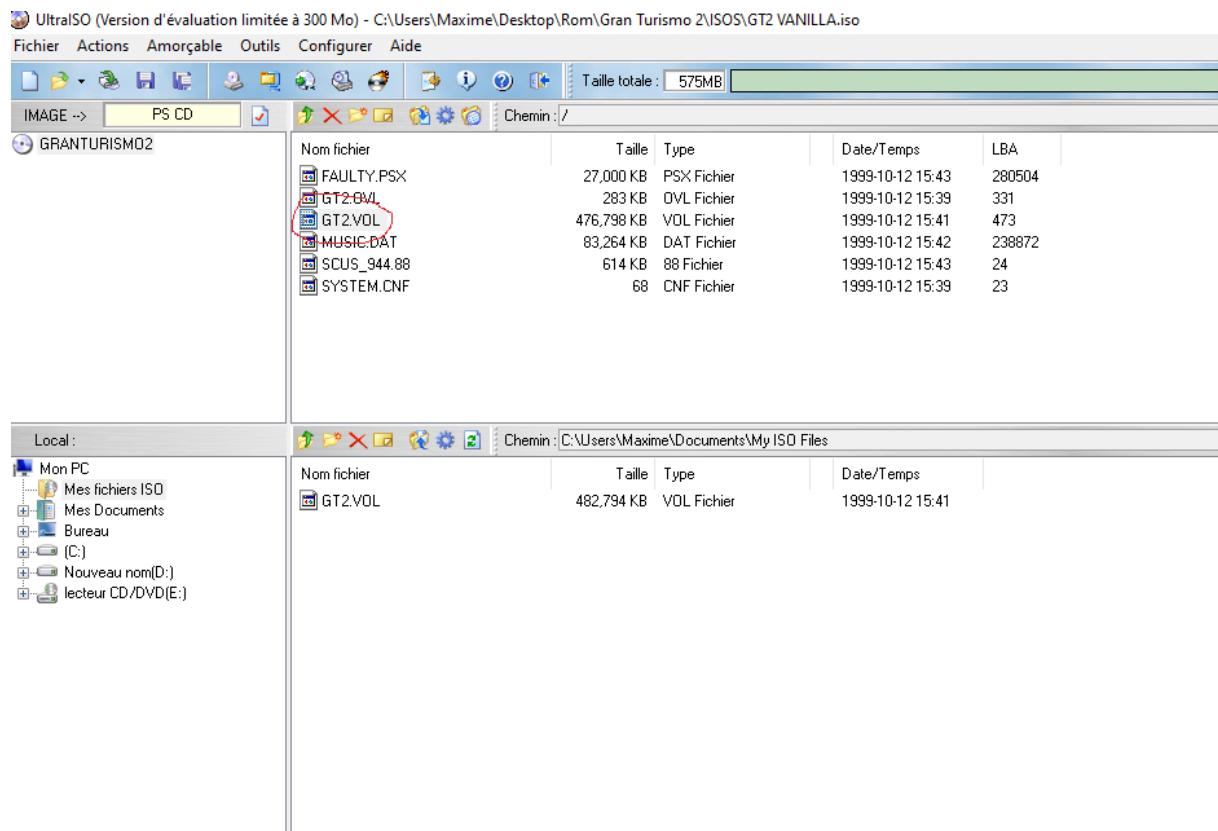
This tutorial is about extracting and modifying data files of Gran Turismo 2. You'll be able to change cars' stats, opponents, tracks in events, AI speed and behaviour, prize cars, number of laps, etc.

You'll need some tools in order to work on it :

- UltraISO<sup>i</sup>, in order to extract files from the ISO copy of the game (mkpxsiso and dumpxsiso are also good options but for this tutorial, I will use UltraISO)
- GTVolTools<sup>ii</sup>, a collection of five apps, only two of them will be used : GTVolToolGui and GT2DataExploder
- Notepad++<sup>iii</sup>, or any code editor

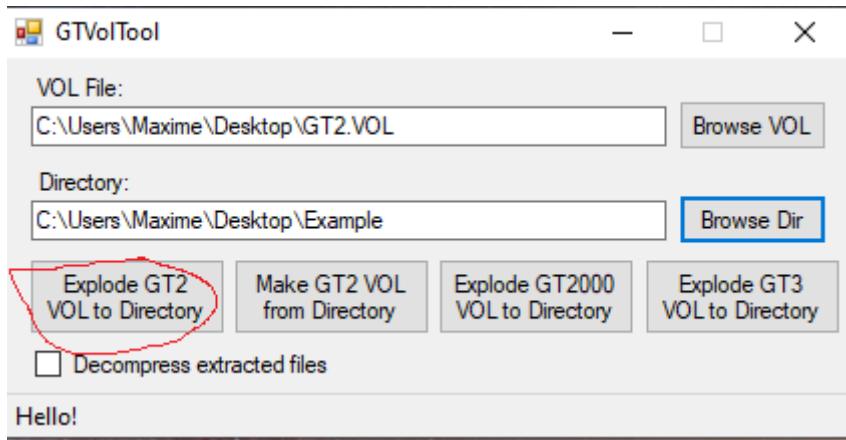
### A) Decomp files

First of all, you need to open UltraISO, then open your ISO GT2 file, and extract the GT2.VOL file (drag'n'drop it in your destination folder).



Once it's done, lauch GTVolToolGui.exe.

Then, enter the path to your .VOL file, the directory file where you want the VOL file being exploded, and click « Explode GT2 VOL to Directory ».



Once your GT2VOL file is exploded, you will have access to a lot of folders, but only one will interest us, the caraparm one.

Nom	Modifié le	Type	Taille
.text	11/08/2024 17:16	Dossier de fichiers	
arcade	11/08/2024 17:16	Dossier de fichiers	
bgsobj	11/08/2024 17:16	Dossier de fichiers	
carlogo	11/08/2024 17:16	Dossier de fichiers	
carobj	11/08/2024 17:16	Dossier de fichiers	
carparam	11/08/2024 17:34	Dossier de fichiers	
carwheel	11/08/2024 17:16	Dossier de fichiers	
crsmap	11/08/2024 17:16	Dossier de fichiers	
crsobj	11/08/2024 17:16	Dossier de fichiers	
dirt	11/08/2024 17:16	Dossier de fichiers	
engine	11/08/2024 17:16	Dossier de fichiers	
font	11/08/2024 17:16	Dossier de fichiers	
gtmenu	14/12/2023 12:44	Dossier de fichiers	
license	11/08/2024 17:16	Dossier de fichiers	
replay	11/08/2024 17:16	Dossier de fichiers	
sound	11/08/2024 17:16	Dossier de fichiers	
.carcolor	02/11/2023 12:17	Fichier CARCOLOR	12 Ko
.carinfoa	02/11/2023 12:17	Fichier CARINFOA	48 Ko
.carinfoe	02/11/2023 12:17	Fichier CARINFOE	47 Ko
.carinfoj	02/11/2023 12:17	Fichier CARINFOJ	47 Ko
.ccjapanese	02/11/2023 12:17	Fichier CCJAPANE...	35 Ko
.cclatain	02/11/2023 12:17	Fichier CCLATAIN	22 Ko
.crsinfo	28/12/1999 17:39	Fichier CRSINFO	4 Ko
.crstims.tsd.gz	08/12/1999 09:56	Fichier GZ	58 Ko
.usedcar	21/12/1999 14:25	Fichier USEDCAR	66 Ko
.usedcar_jpn	10/12/1999 08:44	Fichier USEDCAR_...	65 Ko
.usedcar_usa	26/09/2023 00:15	Fichier USEDCAR_...	66 Ko
crsttim.arc	23/10/1999 15:33	Fichier ARC	29 Ko

In this carparam folder, three files will interest us if you're using an NTSC version :

- usa\_gtmode\_data.dat.gz
- usa\_gtmode\_race.dat.gz
- usa\_unistrdb.dat.gz

Nom	Modifié le	Type	Taille
arcade_data.dat.gz	26/11/1999 21:09	Fichier GZ	14 Ko
eng_arcade_data.dat.gz	19/12/1999 20:12	Fichier GZ	14 Ko
eng_gtmode_data.dat.gz	19/12/1999 21:55	Fichier GZ	186 Ko
eng_gtmode_race.dat.gz	19/12/1999 21:55	Fichier GZ	38 Ko
eng_license_data.dat.gz	20/12/1999 07:27	Fichier GZ	12 Ko
eng_unistrdb.dat.gz	19/12/1999 21:55	Fichier GZ	6 Ko
fra_gtmode_data.dat.gz	19/12/1999 22:08	Fichier GZ	186 Ko
fra_gtmode_race.dat.gz	19/12/1999 22:08	Fichier GZ	38 Ko
fra_unistrdb.dat.gz	19/12/1999 22:08	Fichier GZ	6 Ko
ger_gtmode_data.dat.gz	19/12/1999 22:19	Fichier GZ	186 Ko
ger_gtmode_race.dat.gz	19/12/1999 22:19	Fichier GZ	38 Ko
ger_unistrdb.dat.gz	19/12/1999 22:19	Fichier GZ	6 Ko
gtmode_data.dat.gz	29/11/1999 01:08	Fichier GZ	184 Ko
gtmode_data_dev.dat.gz	29/11/1999 01:08	Fichier GZ	72 Ko
gtmode_race.dat.gz	29/11/1999 01:08	Fichier GZ	38 Ko
gtmode_race_dev.dat.gz	29/11/1999 01:08	Fichier GZ	1 Ko
ita_gtmode_data.dat.gz	19/12/1999 22:31	Fichier GZ	186 Ko
ita_gtmode_race.dat.gz	19/12/1999 22:31	Fichier GZ	38 Ko
ita_unistrdb.dat.gz	19/12/1999 22:31	Fichier GZ	6 Ko
jpn_unistrdb.dat.gz	29/11/1999 01:08	Fichier GZ	6 Ko
license_data.dat.gz	28/11/1999 19:10	Fichier GZ	12 Ko
spa_gtmode_data.dat.gz	19/12/1999 22:44	Fichier GZ	186 Ko
spa_gtmode_race.dat.gz	19/12/1999 22:44	Fichier GZ	38 Ko
spa_unistrdb.dat.gz	19/12/1999 22:44	Fichier GZ	6 Ko
usa_arcade_data.dat.gz	05/12/1999 03:39	Fichier GZ	14 Ko
usa_gtmode_data.dat.gz	10/12/1999 16:36	Fichier GZ	185 Ko
usa_gtmode_race.dat.gz	10/12/1999 16:36	Fichier GZ	38 Ko
usa_license_data.dat.gz	08/12/1999 16:41	Fichier GZ	12 Ko
usa_unistrdb.dat.gz	10/12/1999 16:36	Fichier GZ	6 Ko

Drag'n'drop those files in another folder, with the GT2DataSplitter executable, then drag'n'drop one of these files in the GT2DataSplitter executable, and let the program do it's work.

You will obtain those files :

Nom	Modifié le	Type	Taille
ActiveStabilityControl	22/09/2024 18:04	Dossier de fichiers	
Brake	22/09/2024 18:01	Dossier de fichiers	
BrakeController	22/09/2024 18:01	Dossier de fichiers	
Car	22/09/2024 18:05	Dossier de fichiers	
Chassis	22/09/2024 18:01	Dossier de fichiers	
Clutch	22/09/2024 18:02	Dossier de fichiers	
Computer	22/09/2024 18:02	Dossier de fichiers	
Displacement	22/09/2024 18:02	Dossier de fichiers	
Drivetrain	22/09/2024 18:02	Dossier de fichiers	
EnemyCars	22/09/2024 18:05	Dossier de fichiers	
Engine	22/09/2024 18:02	Dossier de fichiers	
EngineBalance	22/09/2024 18:02	Dossier de fichiers	
Event	22/09/2024 18:05	Dossier de fichiers	
Flywheel	22/09/2024 18:02	Dossier de fichiers	
Gear	22/09/2024 18:03	Dossier de fichiers	
Intercooler	22/09/2024 18:03	Dossier de fichiers	
Lightweight	22/09/2024 18:01	Dossier de fichiers	
LSD	22/09/2024 18:04	Dossier de fichiers	
Muffler	22/09/2024 18:03	Dossier de fichiers	
NATune	22/09/2024 18:02	Dossier de fichiers	
PortPolish	22/09/2024 18:02	Dossier de fichiers	
PropellerShaft	22/09/2024 18:02	Dossier de fichiers	
RacingModify	22/09/2024 18:02	Dossier de fichiers	
Regulations	22/09/2024 18:05	Dossier de fichiers	
Steer	22/09/2024 18:01	Dossier de fichiers	
Strings	22/09/2024 18:05	Dossier de fichiers	
Suspension	22/09/2024 18:03	Dossier de fichiers	
TireCompound	22/09/2024 18:04	Dossier de fichiers	
TireForceVol	22/09/2024 18:04	Dossier de fichiers	
TiresFront	22/09/2024 18:04	Dossier de fichiers	
TireSize	22/09/2024 18:04	Dossier de fichiers	
TiresRear	22/09/2024 18:04	Dossier de fichiers	
TractionControlSystem	22/09/2024 18:04	Dossier de fichiers	
TurbineKit	22/09/2024 18:02	Dossier de fichiers	
Wheel	22/09/2024 18:05	Dossier de fichiers	
GT2DDataSplitter.exe	02/02/2023 17:52	Application	460 Ko
usa_gtmode_data.dat.gz	12/12/2023 10:37	Fichier GZ	185 Ko
usa_gtmode_race.dat.gz	12/12/2023 10:42	Fichier GZ	41 Ko
usa_unistrdb.dat.gz	12/12/2023 10:42	Fichier GZ	7 Ko

Most of those folders contains files which refers to cars parts (stock or tuned ones), you can modify their stats, but the most interesting folders are :

- « Enemy Cars », which refers to opponents
- « Event », which refers to... Events, yes
- « Cars », which lists all cars used ingame, with parts they use (that you can find in the appropriate folders), and their ingame prices.

Important note : all those files are by default, opened with Excel. I strongly recommend to use a code editor such as Notepad++, because Excel doesn't consider the punctuation (the

semicolons between every different value in the file). Excel is only convenient about display all the values in front of what they refers to :

A	B	C	D	E	F	G	H	I	J	K	L
CarId	Brake	BrakeController	Steer	Chassis	Lightweight	RacingModif	Engine	PortPolish	EngineBalance	Displacement	Computer
a2aan	Brake\\a2aan	BrakeController\\00000	Steer\\00000	Chassis\\a2a	Lightweight\\0	RacingModif\\a2aa	Engine\\a2aa	PortPolish\\0	EngineBalance\\0	Displacement\\0	Computer\\0

```
a2aan.csv
1 "CarId";"Brake";"BrakeController";"Steer";"Chassis";"Lightweight";"RacingModify";"Engine";"PortPolish";"EngineBalance";"Displacement";"Computer";
2 "a2aan";"Brake\\a2aan\\1_stage0.csv";"BrakeController\\00000\\0_stage0.csv";"Steer\\00000.csv";"Chassis\\a2aan.csv";"Lightweight\\00000\\0_stage0.csv";"R
```

But remember : when you want to modify values in any file, do it only using a code editor !

In order to simplify things, I will display indifferently examples using Excel or Notepad, dependently of what I want to show.

## B) Files content

### I) Cars

This folder contains all the files representing the cars in game.

Obviously, one file = one car.

All the files are named by the carID, unique to each car.

Submaniac93 did an amazing work, identifying all carID's with cars they refers to<sup>iv</sup>.

This ID is extremely important as it is used to identify everything related to a defined car : enemy cars files, car parts, prize cars in events...

Every file is structured the same way :

- First of all the CarID
- All the carparts listed with their associated file
- RimsCode 3 : see detailed description
- The manufacturer ID
- A parameter which determines if the car comes with all tyres or not (usually it's activated for race cars)
- An unknown parameter
- The price of the car

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
1	CarId	Brake	BrakeController	Steer	Chassis	Lightweight	RacingModif	Engine	PortPolish	EngineBalance	Displacement	Computer	NATune	TurbineKit	Drivetrain	Flywheel
2	a2aan	Brake\\a2aar	BrakeController\\00000	Steer\\00000	Chassis\\a2a	Lightweight\\0	RacingModif\\a2aa	Engine\\a2aa	PortPolish\\0	EngineBalance\\0	Displacement\\0	Computer\\0	NATune\\000	TurbineKit\\a	Drivetrain\\a2	Flywheel\\000
3	Clutch	PropellerSha	LSD	Gear	Suspension	Intercooler	Muffler	TiresFront	TiresRear	ActiveStabili	TractionCont	RimsCode3	Manufacture	HasAllTiresB	Unknown	Price
	Clutch\\a2aa	PropellerSha\\a2aan\\2	LSD\\a2aan\\2	Gear\\a2aan\\2	Suspension\\a2aan\\2	Intercooler\\a2aan\\2	Muffler\\0000	TiresFront\\a2	TiresRear\\a2	ActiveStabili\\a2	TractionCont\\a2	RimsCode3\\a2	Manufacture\\a2	HasAllTiresB\\a2	Unknown\\0	Price\\10500

RimsCode 3 : it's a value that points towards a file present in the "Wheel" folder that contains all the aftermarket wheels and 16 premade variants for stock rims, each with a different set of 2 parameters, one which is isn't well known, the second changes the depth of the rim's inset.

The value in cars files (or enemycars ones) is between 16 and 196, from 17 to 196 it refers to custom wheels in the wheels dealer.

```
1 ["WheelId", "StageMaybe", "Unknown", "Unknown2", "Unknown3"]
2 "", "0", "0", "3", "3"
```

```
1 | "WheelId", "StageMaybe", "Unknown", "Unknown2", "Unknown3"  
2 | "bb001--s", "1", "0", "1", "2"
```

All the wheel files are based on the same scheme :

- First variable refers to the ID of the wheel. If there's nothing as in the first screen, it refers to stock wheels. If there's a particular name, it's a custom wheel.
  - Second variable refers to the upgrade stage, so basically every stock wheel from 1 to 16 will have a 0 in this case, and every custom wheel a 1.
  - Third variable is always equal to zero, but we don't know what it does for the moment.
  - Fourth variable vary from 0 to 3, but we don't know what it does for the moment.
  - Fifth variable changes the depth of the rim's inset, which vary from 0 to 3.

The 16 variants of empty wheelID which corresponds to the stock ones are defined by their combination of the last two variables described here.

Due to the fact that we don't really know what the fourth variable does, for stock wheels, the only aim of those 16 wheels is to vary wheel's depth.

The stock wheels are directly modeled with the car's model, so applying a 1 to 16 preset will basically only change it's depth : you can't apply a stock wheel on another car with those files, it only works for custom wheels.

## II) Car Parts

It refers to all the folders that refers to parts that can be tuned, and also core parts of the car such as the engine or the chassis.

All files (or folders, depending if there's multiple stages for a specific part) are named by the car ID.

Every file has multiple values that can be modified, for example a chassis one, with different values that can be modified :

It would be too tedious to develop every part, feel free to explore by yourself and try modifying values ! There is also an annex with the work of Submaniac93, detailing the newest discoveries about various parameters.

**Warning :** the pattern for the tuning parts name isn't always the same : for example concerning the brakes, sometimes the names will be :

0\_stage1.csv – 1\_stage0.csv

Sometimes, it will be :

0\_stage0.csv – 1\_stage1.csv

Parts stage order is random, due to PD's own tooling. (But technically, if one were to spend the required time, it would be possible to clean up everything and order the parts in a logical way...)

It will have a significance for enemy cars files, due to the fact that you have to change car parts names with the correct stage ones if you want to apply tunes to it.

### III)      Enemy Cars

This folder contains all the files about opponents, used in the game.

Each file corresponds to a particular build of an opponent. It means that one file doesn't match with every type of build of a particular car.

For example, if you want a stock Lister Storm for a particular event as an opponent, and a modified one for another event, you'll need to create two different files.

You'll need to create as much files as different builds you want to put in opponents in game.

On the contrary, if you want the same stock Lister Storm as an opponent in two, three or whatever different events, you can use the same opponent file. It also means that when you modify an pre-existing opponent file, you must be aware of all the events that are using this particular file.

There's also an important limit about the total amount of opponents in the game : you can only create a maximum of 1332 different enemycars (so 1332 different files), the game crashes from 1333 opponents. Choose wisely 😊

BUT : You can in fact give any number between 0 and 65535 for your opponents, the total amount of files in the folder is all that's limited.

All the files have the same naming system : 4 numbers (or more) that represents the opponent ID, an underscore, and the car ID.

All the files have the same structure :

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
CarID n2man	Brake	BrakeContro	Steer	Chassis	Lightweight	RacingModif	Engine	PortPolish	EngineBalanc	Displacemer	Computer	NATune	TurbineKit	Drivetrain	Flywheel	Clutch	Propshaft	LSD
	Brake\n2mai	BrakeContro	Steer\00000.Chassis\n2n	Lightweight\1	RacingModif\ Engine\02m	PortPolish\0	EngineBalanc\ Displacemer\ Computer\00	NATune\000	TurbineKit\01	Drivetrain\02	Flywheel\000	Clutch\n2ma	Propshaft\ LSD\n2manu					
Gear Gear\02man	Suspension	Intercooler	Muffler	TiresFront	TiresRear	ActiveStabili	TractionCont	RimsCode3	FinalDriveRa	GearAutoSet	LSDInitialFro	LSDAccelFro	LSDDecelFro	LSDInitialRe	LSDAccelRe	LSDDecelRe	DownforceFr	
	Suspension\	Intercooler\0	Muffler\0000	TiresFront\0	TiresRear\02	ActiveStabili\ TractionCont\0		6	4056	255	0	0	0	0	0	0	0	10
DownforceRi CamberFront	CamberRear	ToeFront	ToeRear	RideHeightFr	RideHeightRi	SpringRateFr	SpringRateRi	DamperBour	DamperBour	DamperReb	DamperReb	DamperBour	DamperReb	DamperReb	StabiliserFro	StabiliserRe	ASMLevel	
19	0	0	128	128	150	150	23	18	1	1	1	1	1	1	1	1	1	
TCSLevel	Unknown3	Unknown4	PowerMultipl	Opponentid														
			145	1														

- The CarID
- All the car parts with the path to their files, you can modify here your enemy car by applying tuned parts : just select the desired stage of your part by searching in the appropriate part folder and replace in the right case the new name of the car part.
- The RimsCode3 case.
- Then you have all the parts settings : you can refer to the settings of the car ingame to duplicate the values.

Some values need explanations :

- o Gear auto set : GearAutoSet is a value as kmh/10 (24 is 240kmh) that allows the game to auto-calculate gear ratios for a car to reach. It's the same as the Auto Level bar in the car's gear ratios settings. 255 means it's not in use, which also means that there are defined individual ratios for the car, most likely because it's a road car you're looking at.  
Auto level is used only on stage 4 transmission (Fully Tuned), as those have unlocked ratios, stock-stage3 gearboxes will use the ratios setup on them, hence why auto level is set to 255 (or -1 if it's a signed value)
- o Power multiplier : It multiplies the car's current power output by this % value. 100 means 100%, or a 1.00 multiplier. Nothing to do with rubberbanding, just a pure power multiplier. For example : a 300hp car with a 110% power multiplier will be 330hp. It takes every torque curve points and multiplies it by this % value.  
That's the lazy way to increase car power, and you can also find this value with the same mechanism in the engine files for each car, which allows to quickly modify hp value without dealing with the power curve and rpm points values.

The rest is pretty transparent with what you can find in the setting parts menu ingame.

- Eventually, the opponent ID : you are free to give the number you want to this value, as long as its value is between 1 and 1332 and the number ID you assign isn't already used for another opponent (obviously).

Generally speaking, all the « boosted » opponents created by PD are using the same pattern : there's no upgraded car parts applied to those models (except the racing modification for some cars and obviously, the one-make events, custom tires and for the Test Course in the Turbo Event, stage 4 transmission for obvious reasons which explains opponents' top speed), the only way the power is increased is by the power multiplier, which cause without applying proper upgrades on handling values (such as better tyres, racing brakes, improved suspensions, weight reduction...) difficulties for AI to handle those cars (causing goofy situations such as AI which can't brake properly on some turns, leading them to come off the track).

Modifying tuned parts is easy :

```
0315_a2spn.csv x
1 "CarId";"Brake";"BrakeController";"Steer";"Chassis";"Lightweight";"Racing";
2 "a2spn";"Brake\0000\0_stage0.csv";"BrakeController\00000\0_stage0.csv";
```

In this example you will see that when you want to edit your opponent car file in your code editor, all the displayed car parts codes will have the same structure :

« name of the part\car ID\name of the csv stage file », which refers to the path which leads to the corresponding file.

You will also see that sometimes, the car ID isn't mentioned in the code : it means that the car part isn't installed, for example the brake controller which isn't given with your car when you buy it, and that you must buy in the tune shop.

If you want to set your opponent car with a car part which isn't there when you buy it (in this example the brake controller), be sure to type the right csv file name AND add the car ID between the two backslash.

For example :

```
0315_a2spn.csv x
1 "CarId","Brake";"BrakeController";"Steer";"Chassis";"Lightweight";"RacingModify";"Engine";"PortPolish";"EngineBalance";"Displacement";"Computer";"NATune";"TurbineKit";"Drivetrain";"Fl
2 "a2spn";"Brake\0315_a2spn\0_stage0.csv";"BrakeController\00000\0_stage0.csv";"Steer\00000.csv";"Chassis\0315_a2spn.csv";"Lightweight\00000\0_stage0.csv";"RacingModify\0315_a2spn\0_stage0_a2spn.csv";
```

- The name of the file shows that this opponent has the opponent ID n°315
  - The car ID refers to the Savanna RX-7 Cabriolet '90 (using the spreadsheet of Submaniac which correlates those codes with the displayed car ingame)
  - Brakes are original
  - There's no brake controller nor steer or weight reduction

You can notice that even if there's no racing modification applied to the car, the game considers that road cars stock version is a stage 0 racing modification, which explains why the car ID is written between the two blackslash.

## IV) Events

This folder contains all the files about events in the game.

Each file corresponds to one race. It means that obviously, one race events matches with one file, but also races included in championships are ruled by separated files. For example, a five races championship will be ruled by five different files, one per race.

Again, thx to Submaniac93 for listing all the filenames of the tracks<sup>v</sup>.

All the files have the same naming system : the event name, an underscore, and the track name.

All the files have the same structure:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
EventName 4WD0001	TrackName seatt_s,seatt	Opponent1 EnemyCars\EnemyCars\EnemyCars\EnemyCars\EnemyCars\EnemyCars\EnemyCars\EnemyCars\None	Opponent2 None	Opponent3 None	Opponent4 None	Opponents None	Opponent6 None	Opponent7 None	Opponent8 None	Opponent9 None	Opponent10 None	Opponent11 None	Opponent12 None	Opponent13 None	Opponent14 None	Opponent15 None	Opponent16 None

RollingStartLaps	AutoDrive	Licence	AIFrontGripR	AIFrontGripL	AIFrontGrip4	AIFrontGripS	AIFrontGripV	AIFrontGripF	AIFrontGrip4V	AIFrontGripSf	AIAcceleratic	AIAcceleratic	AIAcceleratic	AIThrottleLift	AIThrottleLift	AIThrottleLift	AIRubberBar
0	2	0 A	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

AIRubberBar	AIRubberBar	AIRubberBar	AIRubberBar	AIRubberBar	TireWearOra	TireWearOra	TireWearUnk	TireWearBlu	TireWearBlu	TireWearGre	TireWearGre	Unknown1	Unknown2	Unknown3	Unknown4	
0	0	10	1566	10	1566	0	0	100	0	0	0	0	0	0	0	0

IsRally	EligibleCars	DrivetrainRe	PrizeMoney1	PrizeMoney2	PrizeMoney3	PrizeMoney4	PrizeMoney5	PrizeMoney6	PrizeCars	TrackBanner	PSRestriction	SeriesChamp	CarRestrictionFlags			
0	None	4WD	50	20	15	10	5	3	slgan,-----, General01	350	0	0				

- The event name
- The track name
- The opponents : there's a limit of 16 opponents per race. If you want to add an opponent, the structure is this one : EnemyCars\name file of the opponent car.csv : for example : EnemyCars\0252\_slgbn.csv  
If you don't want to add an opponent, just type « None ».
- Rolling starts : allows you to change from the default standing start. If you type 0, it will be a standing start, and if you type another number, it will determine the speed where you start the race (for example, in the GT500 championship, the value is set to 80, which corresponds to 80 km/h).
- Number of laps
- Auto drive
- Licence required
- AI values : allows you to modulate finely AI behaviour, in two ways :
  - o Increasing or decreasing multiple car stats such as grip, acceleration, throttle...  
All those base stats are equal to 100%.
  - o increasing or decreasing the rubberbanding : it defines the ability of the game to :
    - Maintain or not AI opponents packed, which is regulated by two values : AI Rubberband TrailingScalingDistance and LeadingScalingDistance : the higher the value, the closer to reality AI cars performance are, which means there will be no pack.  
In opposite ways, the lower the value, the stronger the rubberbanding effect (meaning the ability to maintain AI opponents packed) will be.
    - Maintain or not AI opponents artificially near from you during races, independently of the difference of performance, which is regulated by two values : AIRubberBandLeadingSlowdownPercentage and AIRubberBandTrailingSpeedupPercentage. The higher the value, the closer AI cars will stay to you during the entire race (even if your car is better than others), and vice versa.
- Tire wear values : allows you to modulate tire duration and grip loss induced by the tyre wear :
  - o Tire duration : three values regulates this, depending on the color displayed on screen : TireWearOrangeDurationMultiplier, TireWearBlueDurationMultiplier and TireWearGreenDurationMultiplier. The lower the value, the faster the wear of tyres in each phase, and vice-versa.
  - o Grip loss : as for duration, three values regulates this, depending on color : TireWearOrangeGripLoss, TireWearBlueGripLoss and TireWearGreenGripLoss. The higher the value, the higher the grip loss, and vice-versa.

- TireWearUnknown : this value isn't really understood, but it's value vary, depending if there's tyre wear or not. In the vanilla game, the value is equal to 100 when there is no wear and 9 when there is wear.

WARNING : if you plan to introduce tyre wear (and as a consequence, pit-stops), be aware that AI pitstop paths aren't really well coded, resulting in some tracks being unusable for those type of races. Please check the spreadsheet related to tracks for further details.

- Eligible cars : points to regulations files that lists up to 32 cars that are allowed to enter the event. It allows you to create entry lists of authorized cars for an event.
- Drivetrain restrictions : if the event is restricted to 4WD, FR, FWD...
- Prize money : cash prize allowed for each place
- Prize cars : if there's a prize car allowed, there's a maximum of 4 prize cars per race, randomly determined.
- HP restriction : pretty clear...
- Series champ bonus : cash prize at the end of a championship.
- Car restriction flags : see detailed description below.

Car restriction flags :

Only four known (Turbo, NA, Non-RM, RM) atm.

They are binary values written in decimal mode : it is supposed that it's coded in 16bits mode, each bit corresponds to a flag.

For example, the 4 known flags are :

- Turbo : it's value is equal to 2, which is equal in binary value to 0000000000000010
- NA : value = 1, binary value = 0000000000000001
- Non-RM : value = 256, binary value = 0000001000000000
- RM : value = 512, binary value = 0000001000000000

You can combine flags, for example RM Turbo cars, it would be equal to  $512 + 2 = 0000001000000010$  in binary language.

It isn't possible to force a restriction about brand nationality or area.

### C) Recomp files

Re-compiling files : when you're done with edits, drag and drop your GT2datasplitter executable into the folder containing all the splitted datas, double click on the program and let it do it's work.

Once it's done, an output folder will appear

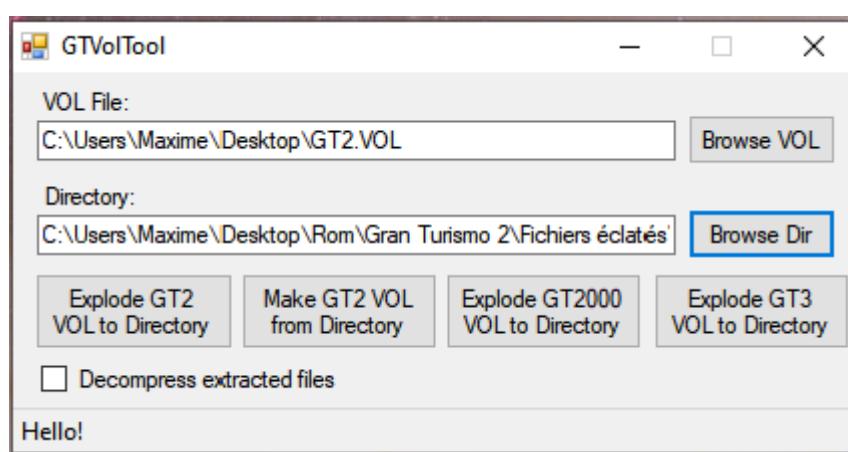
Nom	Modifié le	Type	Taille
ActiveStabilityControl	09/06/2024 22:08	Dossier de fichiers	
Brake	09/06/2024 22:05	Dossier de fichiers	
BrakeController	09/06/2024 22:05	Dossier de fichiers	
Car	09/06/2024 22:08	Dossier de fichiers	
Chassis	09/06/2024 22:05	Dossier de fichiers	
Clutch	09/06/2024 22:06	Dossier de fichiers	
Computer	09/06/2024 22:05	Dossier de fichiers	
Displacement	09/06/2024 22:05	Dossier de fichiers	
Drivetrain	09/06/2024 22:06	Dossier de fichiers	
EnemyCars	09/06/2024 22:09	Dossier de fichiers	
Engine	09/06/2024 22:05	Dossier de fichiers	
EngineBalance	09/06/2024 22:05	Dossier de fichiers	
Event	09/06/2024 22:09	Dossier de fichiers	
Flywheel	09/06/2024 22:06	Dossier de fichiers	
Gear	09/06/2024 22:06	Dossier de fichiers	
Intercooler	09/06/2024 22:07	Dossier de fichiers	
Lightweight	09/06/2024 22:05	Dossier de fichiers	
LSD	09/06/2024 22:07	Dossier de fichiers	
Muffler	09/06/2024 22:07	Dossier de fichiers	
NATune	09/06/2024 22:05	Dossier de fichiers	
<b>Output</b>	<b>29/08/2024 21:37</b>	Dossier de fichiers	
PortPolish	09/06/2024 22:05	Dossier de fichiers	
PropellerShaft	09/06/2024 22:06	Dossier de fichiers	
RacingModify	09/06/2024 22:05	Dossier de fichiers	
Regulations	09/06/2024 22:08	Dossier de fichiers	
Steer	09/06/2024 22:05	Dossier de fichiers	
Strings	09/06/2024 22:09	Dossier de fichiers	
Suspension	09/06/2024 22:07	Dossier de fichiers	
TireCompound	09/06/2024 22:07	Dossier de fichiers	
TireForceVol	09/06/2024 22:07	Dossier de fichiers	
TiresFront	09/06/2024 22:08	Dossier de fichiers	
TireSize	09/06/2024 22:07	Dossier de fichiers	
TiresRear	09/06/2024 22:08	Dossier de fichiers	
TractionControlSystem	09/06/2024 22:08	Dossier de fichiers	
TurbineKit	09/06/2024 22:06	Dossier de fichiers	
Wheel	09/06/2024 22:08	Dossier de fichiers	
<b>GT2DataSplitter.exe</b>	02/02/2023 17:52	Application	460 Ko

It will contains the three modified .dat.gz files exploded before (just ignore the .dat files), that you will have to replace in the carparam folder.

Once it's done, open GTVolToolGui.exe, click on browse VOL in order to show the path where you want your GT2.VOL file be created (don't forget to name the file GT2.VOL when you do that).

Click on browse directory and search the folder where all your exploded files from GT2.VOL are.

Then, click on « Make GT2 VOL from Directory ».



You will obtain a brand new GT2.VOL file.

Then open Ultra ISO, open your GT2 ISO file with it and replace the original GT2.VOL file with your new created one, save the GT2 ISO file, and now, enjoy your modified GT2 !

Special thanks to pez2k, Submaniac93, and everyone involved in modding community, for all the stuff created, the discovery about GT2 mechanisms...

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<sup>i</sup> <https://www.ultraiso.com/>

<sup>ii</sup> <https://www.airesoft.co.uk/gt2volexploder>

<sup>iii</sup> <https://notepad-plus-plus.org/downloads/>

<sup>iv</sup> <https://docs.google.com/spreadsheets/d/1sm-4ND12lmFx3YeJtiqmKBINAp3snNSxTCh2dM-VOgo/edit?gid=1946666014#gid=1946666014>

<sup>v</sup> [https://docs.google.com/spreadsheets/u/0/d/15gqtU6hOL-Y\\_k7bpX\\_aHBed6I4xjeRF4tTFuY19AoUI/htmlview#](https://docs.google.com/spreadsheets/u/0/d/15gqtU6hOL-Y_k7bpX_aHBed6I4xjeRF4tTFuY19AoUI/htmlview#)

## ANNEX : LATEST DISCOVERIES ABOUT PARAMETERS

(Made by Submaniac93, reproduced with it's permission)

Datasplitter Unknowns cleaning:

- Brake: "GT6 DB equivalent" (description)

BrakingPower: "BraketorqueF"

FrontBrakesUnknown: "BraketorqueR"

RearBrakesUnknown: "Sidebraketorque"

- Brake Controller: "GT6 DB equivalent" (description)

MaxFrontBias: "ABSLevelF"

Unknown: "ABSMinF" (Minimum range\*10 player selected level, in-game 1 = 10)

Unknown2: "ABSMaxF" (Max range\*10 player selected level, in-game 24 = 240)

DefaultBias: Default Level (applies to both front and rear)

MaxRearBias: "ABSLevelR"

Unknown3: "ABSMinR"

Unknown4: "ABSMaxR"

- Car: "GT6 DB equivalent" (description)

RimsCode3: "Wheel" Part ID (for default wheel dish offset / default aftermarket rim)

Unknown: Padding? (0 on all cars)

- Chassis: "GT6 DB equivalent" (description)

FrontWeightDistribution: "percentageF"

Unknown2: ? (set to 1 on race cars, some flag?)

FrontGrip: "performanceF"

RearGrip: "performanceR"

Length: "dlength"

Height: "dheight"

Wheelbase: "wheelbase" (not displayed in the car stats, unused?)

Weight: "mass"

TurningResistance: "yaw" (rotation on the Vertical axis, left-right)

PitchResistance: (rotation on the lateral axis, forward-back)

RollResistance: (rotation on the longitudinal axis, clockwise-anticlockwise)

Unknown8: ? (a few values, some are unique to specific types of cars)

- 46 All RUF models

- 48 Lotus Elise GT1 only (iolln)

- 50 DTM only (bvcdr, gmd2r, gocdr, ia5dr)

- 52 Honda NSX JGTC + DelSol LM only (h-err, h2cnr, h2n1r, h2ncr, h2nrr,h2ntr)

- 56 Default / General

- 60 Some muscle cars only (dcc1n, dcchn, ulcun, ulgxn, ulrrn, ulsbn, us35n, us36n, us50n, us51n)

- Clutch: "GT6 DB equivalent" (description)

RPMDropRate: "enginebrake" (higher = stronger)

InertiaDisengaged: "iflywheel" (lower = faster)

InertiaEngaged: "iwheelF"

InertialWeight: "iwheelR"

InertiaBraking: "stclutchtq"

Unknown1: padding? (always 0)

Unknown2: padding? (always 0)

- Drivetrain: "GT6 DB equivalent" (description)

Unknown: padding?

Unknown2: "param4WDMIN" (Min range for VCD setting)

Unknown3: "param4WDMAX" (Max range for VCD setting)

Unknown4: "param4WDDF" (Default value for VCD setting, front% torque split)

AWDBehaviour: "type4WD"

- 0: Kei cars "FWD" 4WD (4WD with FWD behaviour and extra grippy handbrake: Minica pj, Daihatsu cars, Vivio...)

- 1: Standard 4WD behaviour (Familia BG, Calibra DTM, S4, Evo 5 WRC...)

- 2: SUBARU Impreza models (AWD?)
- 3: ATTESA (Skyline GTR, Stagea...)
- 254: Anything else FF, MR, RR, FR

DefaultClutchRPMDropRate: "enginebrake" (no unit match)

DefaultClutchInertiaEngaged: "iwheelf" (no unit match)

DefaultClutchInertialWeight: "iwheelR" (no unit match)

DefaultClutchInertiaDisengaged: "iflywheel" (no unit match)

- Flywheel: "GT6 DB equivalent" (description)

RPMDropRate: "enginebrake" (higher = stronger)

ShiftDelay: "iflywheel"? (lower = faster)

InertialWeight: "iwheelf"/"iwheelR"

- Lightweight: "GT6 DB equivalent" (description)

Unknown: "yaweffect" (yaw reduction)(rotation on the Vertical axis, left-right)

- LSD: "GT6 DB equivalent" (description)

Unknown: padding? (always 0)

Unknown2: padding? (always 0)

Unknown3: padding? (always 0)

FrontUnknown: "difftypeF" (102, 104, 109, 110, 116, 118)

RearUnknown: "difftypeR" (102, 104, 109, 110, 118, 121)

- 102 OPEN/NO DIFF?: is pretty general, half the cars use that in all stages. Standard Front LSD upgrade.

- 104 TORSEN/HELICAL DIFF?: is on sporty models: Puma, 106 S16/Rallye, Accord/Integra Type R, Lancer Evo 5 and 6 GSR/RS, FTO, Mine's Skylines... as stage 0 or stage 5 (AYC)

- 109 LIMITED-SLIP DIFF?: seems pretty standard as stage 1-4 on a bunch of cars. Standard Rear LSD upgrade. Standard Rally Car LSD

- 110 ACTIVE DIFF?: is stage 0 or 5 of many other cars, from Ruf to VW polo, to Galant, to Nismo 400R, standard Impreza front LSD.

- 116 ATTS: is specific to the Honda Prelude Type-SH (aka Type-S(J) '96) hpnv in both stage 0 and 5. that's the one with 4WS or something, right?

- 118 VISCOUS/MECHANICAL CLUTCH DIFF?: is stage 0 of 70 cars, alfa 155, 156, Mitsu Mirage, 3000GT Rear, Nissan Pulsar VZR, R34 GT-T, Focus, 406 Coupe/Sedan..

- 121 TORQUE VECTORING DIFF: is stage 0 or 5 only on the rear on Mitsubishi models with AYC, so some Galant and Legnum, Evo 4-6

- PropellerShaft: "GT6 DB equivalent" (description)

RPMDropRate: "enginebrake" (higher = stronger)

Inertia: "ipropF"

Inertia2: "ipropR"

- RacingModify: "GT6 DB equivalent" (description)

BodyRollAmount = RollResistance%multipier: (rotation on the longitudinal axis, clockwise-anticlockwise)

Drag: "cd" (cd/10, from chassis part)

Unknown3: "treadF" part 2 (Unknown3 and Unknown4 are one value, e.g. nv34n 200 & 5 = C8 05 => 05C8 = 1480, treadF = 1480 in GT6)

Unknown4: "treadF" part 1

Unknown5: "treadR" part 2 (Unknown5 and Unknown6 are one value, e.g. nv34n 210 & 5 = D2 05 => 05D2 = 1490, treadF = 1490 in GT6)

Unknown6: "treadR" part 1

Width: "dwidth" (from chassis part)

Note: front and rear tread aren't displayed in car stats, unused?

- Steer: "GT6 DB equivalent" (description)

Unknown1: ?

Unknown2: ?

- Suspension: "GT6 DB equivalent" (description)

MinCamberFront: "camberMINF"

MaxCamberFront: "camberMAXF"

DefaultCamberFront: "camberDFF"

MinCamberRear: "camberMINR"

MaxCamberRear: "camberMAXR"

DefaultCamberRear: "camberDFR"  
MinToeFront: "toeMINF"  
MaxToeFront: "toeMAXF"  
MinToeRear: "toeMINR"  
MaxToeRear: "toeMAXR"  
MinHeightFront: "rideheightMINF"  
MaxHeightFront: "rideheightMAXF"  
DefaultHeightFront: "rideheightDFF"  
MinHeightRear: "rideheightMINR"  
MaxHeightRear: "rideheightMAXR"  
DefaultHeightRear: "rideheightDFR"  
DampingFront: "brmarginF" ? (unsure about these, could be "brtouchF")  
DampingRear: "brmarginR" ? (unsure about these, could be "brtouchR")  
TravelFront: "brtouchF" ? (unsure about these, could be "limrF")  
TravelRear: "brtouchR" ? (unsure about these, could be "limrR")  
MinSpringRateFront: "springrateMINF"  
MaxSpringRateFront: "springrateMAXF"  
DefaultSpringRateFront: "springrateDFF"  
MinSpringRateRear: "springrateMINR"  
MaxSpringRateRear: "springrateMAXR"  
DefaultSpringRateRear: "springrateDFR"  
SpringFrequencyFront: "leverratioDFF" (spring frequency)  
SpringFrequencyRear: "leverratioDFR" (spring frequency)  
Unknown7: "bumprubberF" ?  
Unknown8: "bumprubberR" ?  
MaxDamperBoundFront: "damplevelBF"  
Unknown9: "dampF1BMINF" (Bound1 MIN Front)  
Unknown10: "dampF1BMAXF" (Bound1 MAX Front)  
DefaultDamperBoundFront: "dampF1BDFF"  
Unknown11: "dampF2BMINF" (Bound2 MIN Front)  
Unknown12: "dampF2BMAXF" (Bound2 MAX Front)

Unknown13: "dampF2BDFF" (Bound Default Front)  
MaxDamperReboundFront: "damplevelRF"  
Unknown14: "dampF1RMINF" (Rebound1 MIN Front)  
Unknown15: "dampF1RMAXF" (Rebound1 MAX Front)  
DefaultDamperReboundFront: "dampF1RDFF"  
Unknown16: "dampF2RMINF" (Rebound2 MIN Front)  
Unknown17: "dampF2RMAXF" (Rebound2 MAX Front)  
Unknown18: "dampF2RDFF" (Rebound Default Front)  
MaxDamperBoundRear: "damplevelBR"  
Unknown19: "dampF1BMINR" (Bound1 MIN Rear)  
Unknown20: "dampF1BMAXR" (Bound1 MAX Rear)  
DefaultDamperBoundRear: "dampF1BDFR"  
Unknown21: "dampF2BMINR" (Bound2 MIN Rear)  
Unknown22: "dampF2BMAXR" (Bound2 MAX Rear)  
Unknown23: "dampF2BDFR" (Bound Default Rear)  
MaxDamperReboundRear: "damplevelRR"  
Unknown24: "dampF1RMINR" (Rebound1 MIN Rear)  
Unknown25: "dampF1RMAXR" (Rebound1 MAX Rear)  
DefaultDamperReboundRear: "dampF1RDFR"  
Unknown26: "dampF2RMINR" (Rebound2 MIN Rear)  
Unknown27: "dampF2RMAXR" (Rebound2 MAX Rear)  
Unknown28: "dampF2RDFR" (Rebound Default Rear)  
MaxStabiliserFront: "stabilizerFlevel"  
Unknown29: "stabilizerMINF"  
Unknown30: "stabilizerMAXF"  
DefaultStabiliserFront: "stabilizerDFF"  
MaxStabiliserRear: "stabilizerRlevel"  
Unknown31: "stabilizerMINR"  
Unknown32: "stabilizerMAXR"  
DefaultStabiliserRear: "stabilizerDFR"

Unknown33: "ActiveSuspensionType" maybe? (Xantia and Mini Cooper/Mini 1.3 only - hydraulic/hydropneumatic suspension type?)

- TireCompound: "GT6 DB equivalent" (description)

0x00 "Mu" ?

0x04: "weightgripx1" ? speed

0x05: "weightgripx2" ?

0x06: "weightgripx3" ?

0x07: "weightgripx4" ?

0x08: "weightgripy1" ? Longitudinal grip level

0x09: "weightgripy2" ?

0x0A: "weightgripy3" ?

0x0B: "weightgripy4" ?

0x0C: "sideforcecx1" ? X / Speed

0x0D: "sideforcecx2" ?

0x0E: "sideforcecx3" ?

0x0F: "sideforcecx4" ?

0x10: "sideforcecx5" ?

0x11: "sideforcecx6" ?

0x12: "sideforcecx7" ?

0x13: "sideforcecx8" ?

0x14: "sideforcey1" ? Y / lateral grip level, G?

0x15: "sideforcey2" ?

0x16: "sideforcey3" ?

0x17: "sideforcey4" ?

0x18: "sideforcey5" ?

0x19: "sideforcey6" ?

0x1A: "sideforcey7" ?

0x1B: "sideforcey8" ?

0x1C: "slipmuAx1" ? -

0x1D: "slipmuAx2" ?

0x1E: "slipmuAx3" ?

0x1F: "slipmuAx4" ?

0x20: "slipmuAx5" ?

0x21: "slipmuAx6" ?

0x22: "slipmuAy1" ? -

0x23: "slipmuAy2" ?

0x24: "slipmuAy3" ?

0x25: "slipmuAy4" ?

0x26: "slipmuAy5" ?

0x27: "slipmuAy6" ?

0x28: "sidemuAy1" ? -

0x29: "sidemuAy2" ?

0x2A: "sidemuAy3" ?

0x2B: "sidemuAy4" ?

0x2C: "sidemuAy5" ?

0x2D: "sidemuAy6" ?

0x2E: "slipmuBx1" ? -

0x2F: "slipmuBx2" ?

0x30: "slipmuBx3" ?

0x31: "slipmuBx4" ?

0x32: "slipmuBx5" ?

0x33: "slipmuBx6" ?

0x34: "slipmuBy1" ? -

0x35: "slipmuBy2" ?

0x36: "slipmuBy3" ?

0x37: "slipmuBy4" ?

0x38: "slipmuBy5" ?

0x39: "slipmuBy6" ?

0x3A: "sidemuBy1" ? -

0x3B: "sidemuBy2" ?

0x3C: "sidemuBy3" ?

0x3D: "sidemuBy4" ?

0x3E: "sidemuBy5" ?

0x3F: "sidemuBy6" ?

- TiresFront: "GT6 DB equivalent" (description)

SteeringReaction1: (always 0)

SteeringReaction2: (always 0)

TireForceVolMaybe: (always 0)

SlipMultiplier: (always 0)

GripMultiplier: (always 0)

- TCS: "GT6 DB equivalent" (description)

0x00:

0x01:

0x02:

0x03:

0x04-07: (part price)

0x08-09: (stage level)

0x0A: "TCSgrad" ?

0x0B: "TCStarget"

0x0C: "TCSUserValueDF"

0x0D: "TCSUserValueMin"

0x0E: "TCSUserValueMax"

0x0F:

- TurbineKit: "GT6 DB equivalent" (description)

BoostGaugeLimit: "wastegate" (must be equal to boost1 + boost2 to make full power, otherwise acts as an air restrictor)

LowRPMBoost: "boost1" (0 = no boost, NA feel, no gauge)

HighRPMBoost: "peakrpm1" (rpm/100)

SpoolRate: "response1"  
Unknown1: "boost2"  
Unknown2: "peakrpm2" (rpm/100)  
Unknown3: "response2"  
HighRPMPowerMultiplier: (max rpm torque %increase; base 0%)  
LowRPMPowerMultiplier: (idle rpm torque %; base 100%)

- Wheel

WheelId: (blank for stock rims, otherwise aftermarket rim filename)  
Unknown: (always zero)  
Unknown2: (unknown effect)  
Unknown3: (rim dish depth, 4 steps, 3 being deepest, 0 being none)