Gkarts! A comprehensive guide for development and addition of vehicles to the add-on.

Or

How the heck do I add vehicles to this shit?

Introduction:

Oh right so you want to add vehicles…right? you better get prepare because we're going to take a look into the requirements and steps to build vehicles.

So, how Gkarts works?

Gkarts it's a vehicle base that works by slapping models like wheels and kart hulls together into a model with physics, the code takes care of selecting and managing the look of the kart, but everything from speed, handling, health, etc. it's the same for all players.

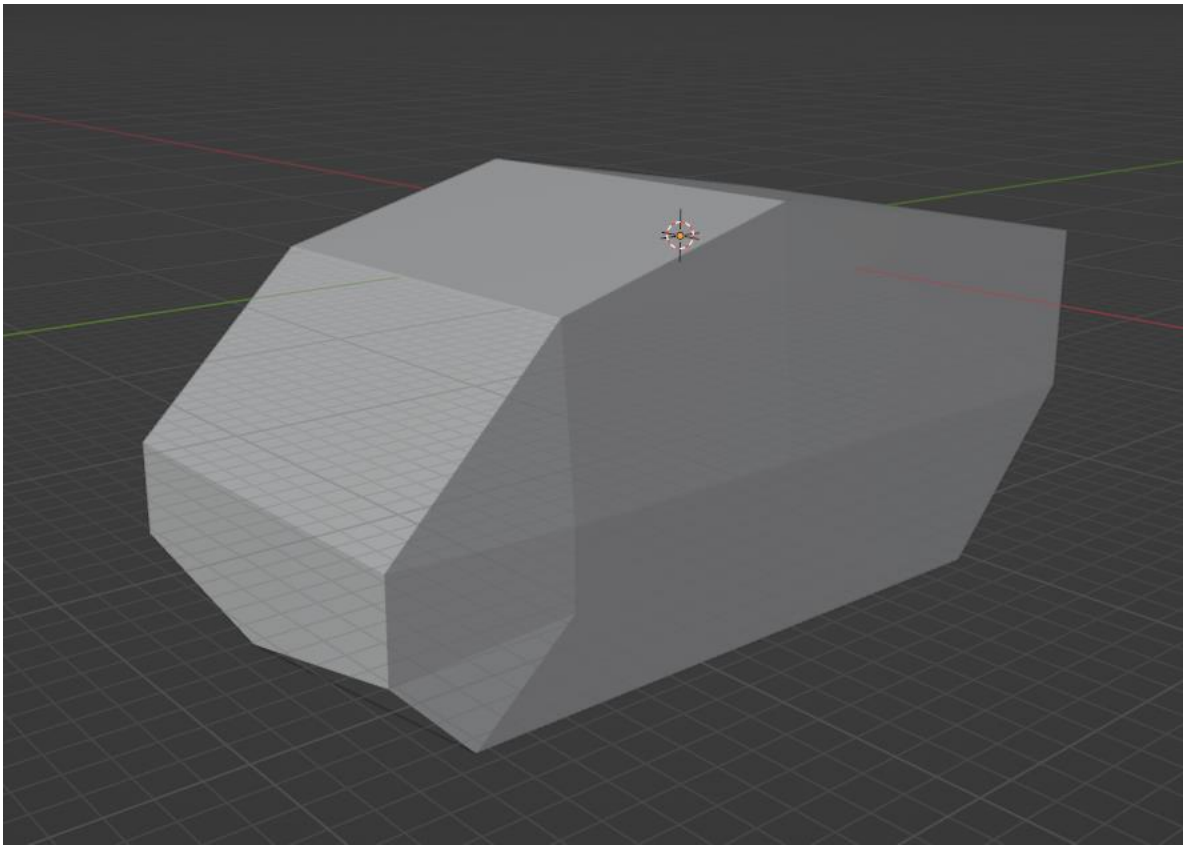


Figure 1 this is the vehicle hull that is keeping this entire operation. Respect and offer a human sacrifice to the hull. because without him, we are nothing.

In Gkarts there are 3 types of vehicles. Karts, Bikes and Micromachines, each one of them might look the same but they have their differences.

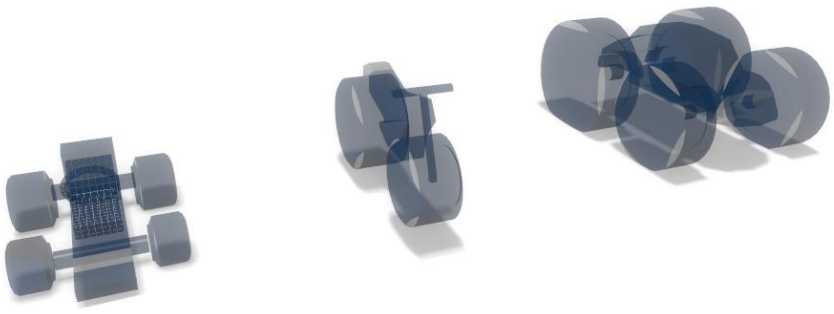


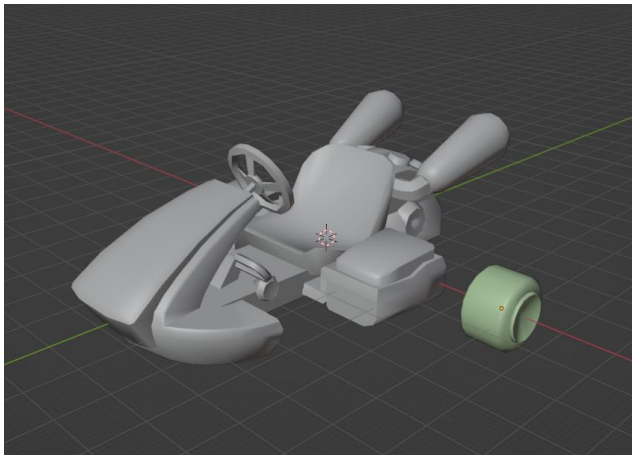
Figure 2 we can see here the 3 types of vehicles that users can create.

Like mention before these vehicles works the same but the way that they are set up each other is the $attachment on the QC file of each kart and wheel. In this document we are going to get into details how to make the right type of vehicle for the right model. On the add-on workshop I will include the blend files as well the QC files of each dev. kart created.

Vehicle Creation Overview.

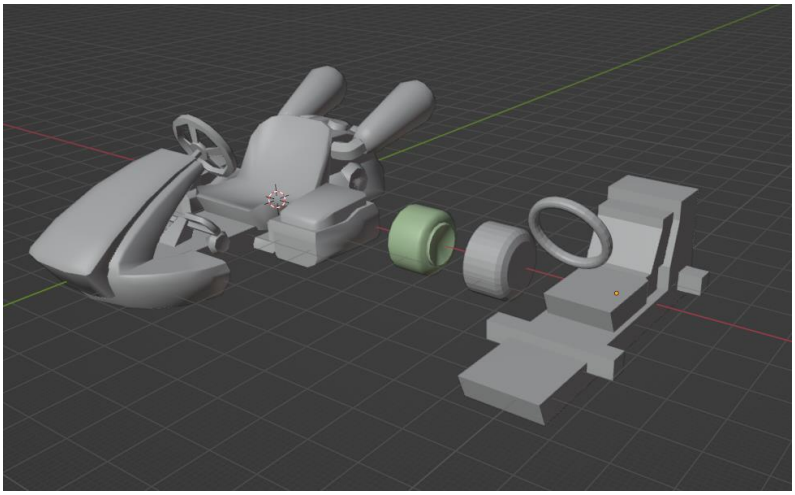
Let's assume that you have already a model created and ready to be ported to Gkarts *(and you also know the basics of port models into source as well how to use blender).*

Let's take for example the MK8 Kart



The left image is the kart in game, nice. On the right we can see the kart in blender, ok.

For the sake of size and gameplay, you have to work around the approximated dimension of the vehicle show on the right of this image.



My recommendation is use the blend files with the models on it to get an accurate size.

Vehicle $definebone and $attachment

Here comes a really important part, Gkarts models are special because they are composed of one $definebone and 5 or 4 $attachments. These ones are.

-$definebone "gmk_xxx" This one is the bone that defines the vehicle itself

Attachments wheels and driver

-$attachment "wheel_fl" Front Left

-$attachment "wheel_fr" Front Right

-$attachment "wheel_rl" Rear Left

-$attachment "wheel_rr" Rear Right

- $attachment "driver_seat" Kart Seat (if you want a kart)

- $attachment "biker_seat" Biker Seat (If you want a bike)

-You can also add no $attachement seat and it should works with no problem with the exception that there is not going to be a driver render on the kart as well other features...

This is something important that I need to provide you about "$Attachment", each structure of this attachment with the name of the attachment, the bone that the attachment will be parent and location - rotation. Usually this structure is.

$attachment "Type of attachment" "Define bone to attach" 0 0 0 rotate 0 0 0

We are going to use the blender 3d cursor as a reference point to annotate the coordinates in which our wheels and driver seat are going to be placed, like the next example that shows all the attachments necessary for the kart base to work.

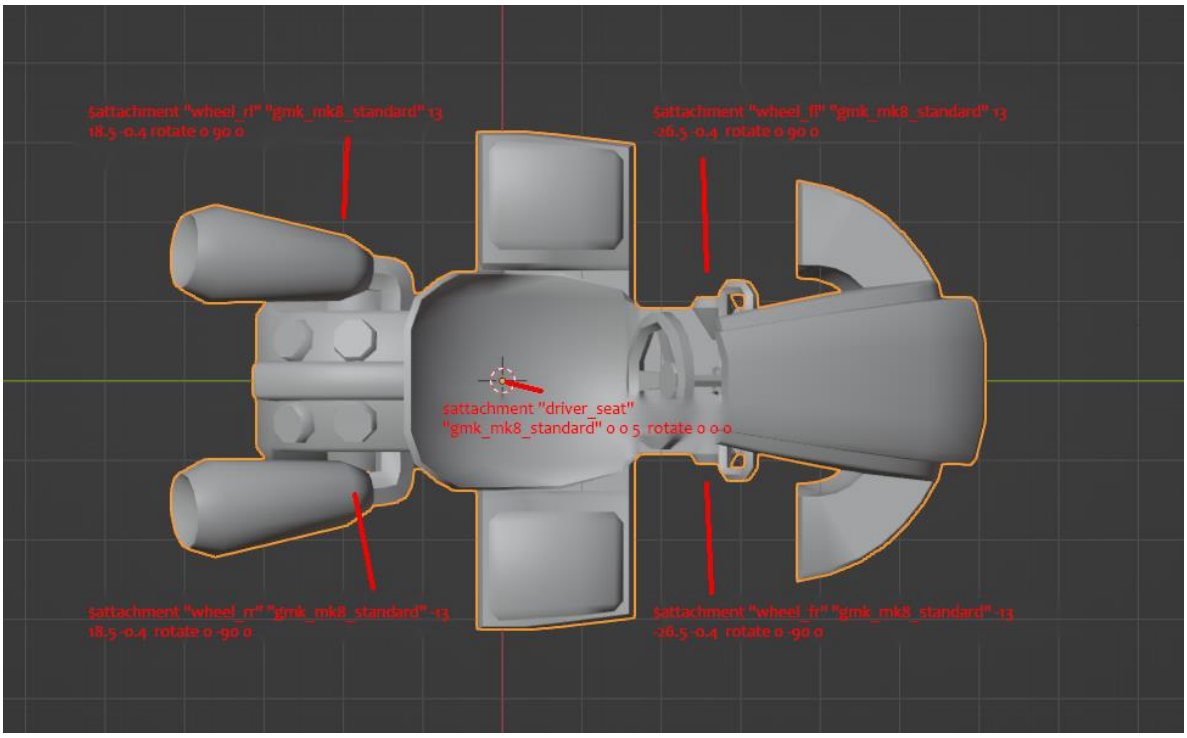


Figure 3 the kart is composed in total of 5 attachments (4 if you are doing a micromachine)

On the next example we are looking to get the right coordinates for each part of the kart. We are going to annotate the wheel coordinates to each 4 wheels and driver.

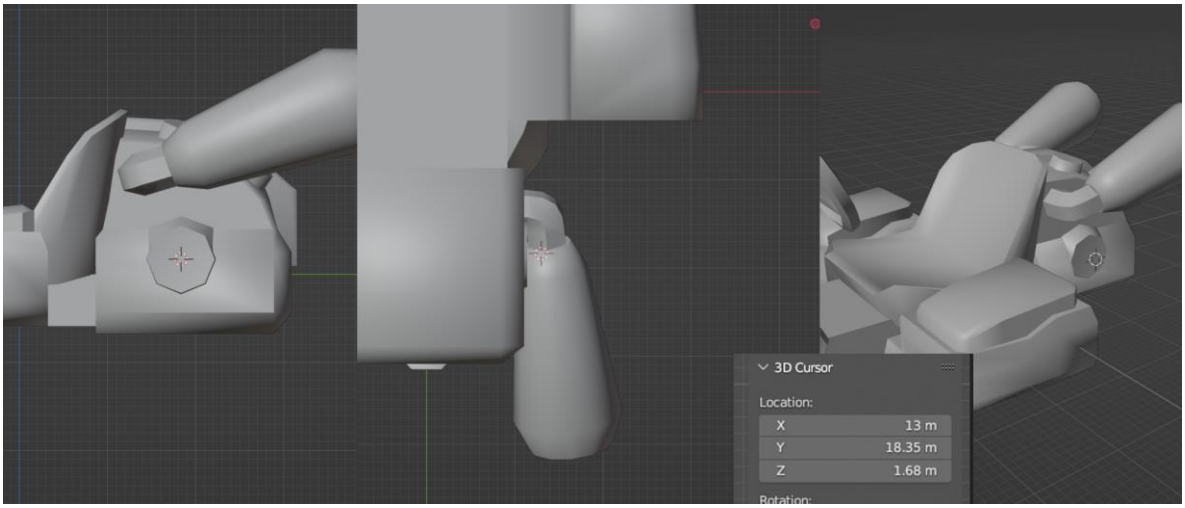


Figure 4 this is how the 3d cursor should look like when you look at the coordinates.

Figure 5 Driver Seat Attachment with coordinates

So just put a note apart of every location mention and then move on with the wheels. The wheels are composed of 2 parts $definebone and $attachment "wheel_radius"

- $definebone "gmk_xxx"

- $attachment "wheel_radius" Sets the height of the wheels.

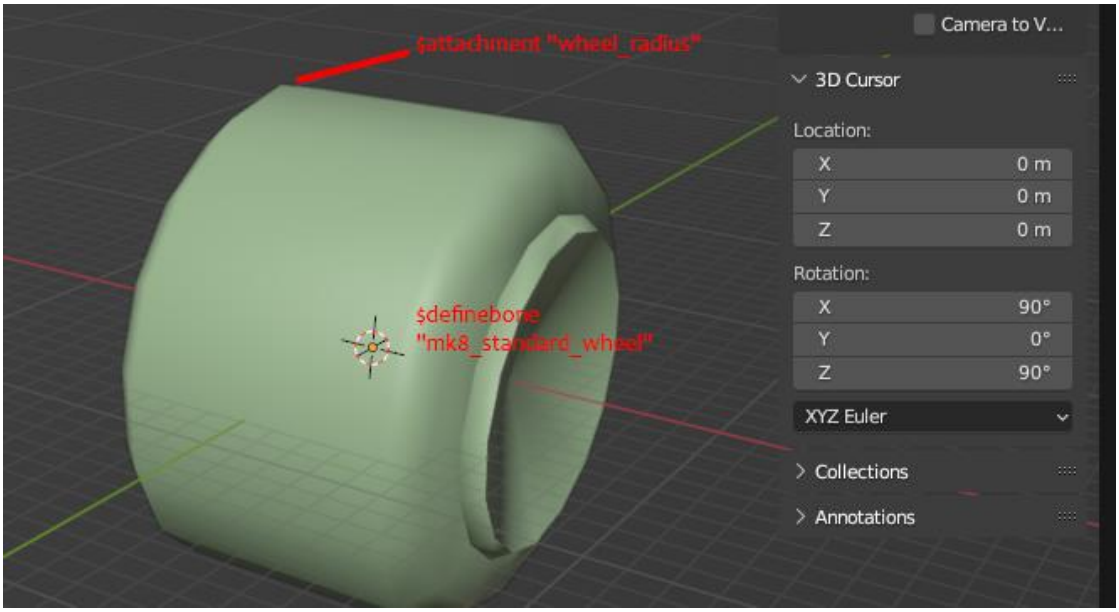


Figure 6 WARNING: Wheel radius can be tricky to setup due the calculations of the add-on.

Vehicle Compilation

So you have your Hull and your wheels ready to be compiled (make sure everything is at the right scale and rotation), we are going to port the model to gmod. So Gkarts QC's are not something unusual the only thing that you need to know how is that models have no collision mesh or physics mesh.

Figure 7 as you can see, no collision, no phys. only hull, same with wheels

With that on mind we going to compile this model, here is how the dev_kart model looks in the QC.

```
$modelname "vehicles\gmkart_base\dev_kart.mdl"

$bodygroup "1"
{
        studio "dev_kart_body.dmx"
}

$surfaceprop "Default_silent"

$contents "solid"

$illumposition 0 -10.147 9.013

$definebone "mesh_kart_hull" "" 0 0 0 -0 0 0 0 0 0 -0 0 0
$attachment "wheel_fl" "mesh_kart_hull" 13 -25 0 rotate 0 90 0
$attachment "wheel_fr" "mesh_kart_hull" -13 -25 0 rotate 0 -90 0
$attachment "wheel_rl" "mesh_kart_hull" 13 14 0 rotate 0 90 0
$attachment "wheel_rr" "mesh_kart_hull" -13 14 0 rotate 0 -90 0
$attachment "driver_seat" "mesh_kart_hull" 0 0 5  rotate 0 0 0

$cdmaterials "models\vehicles\gmkart_base\"

$sequence "ref" {
        "dev_kart_body.dmx"
        fadein 0.2
        fadeout 0.2
        fps 1
}
```

And this is how the wheels QC looks like:

```
$modelname "vehicles\gmkart_base\mesh_kart_wheel.mdl"

$bodygroup "1"
{
        studio "mesh_kart_wheel.dmx"
}


$surfaceprop "metal"

$contents "solid"

$illumposition 0 -10.147 9.013

$cdmaterials "models\vehicles\gmkart_base\"

$definebone "mesh_kart_wheel" "" 0 0 0 -0 0 0 0 0 0 -0 0 0
$attachment "wheel_radius" "mesh_kart_wheel" 0 0 -17  rotate 0 90 0

$sequence "idle" {
        "mesh_kart_wheel.dmx"
        fadein 0.2
        fadeout 0.2
        fps 1
}
```

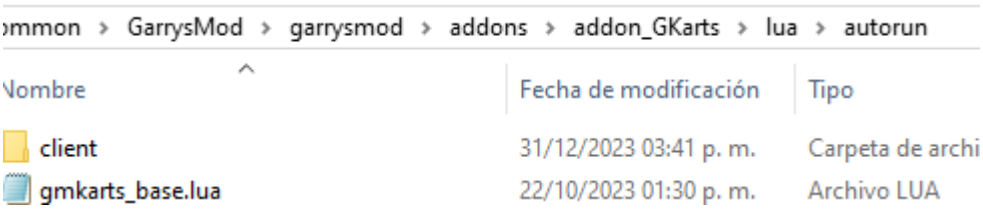
You can copy the QCs included on the source files and toy around to look for the proper kart and wheel height.

Once everything is ready compile it and we prepare ourselves to add it to the game.

Vehicle Addition:

NOTE: While the add-on is currently being developed, I'm planning to add customization free of any scripting but for now we have this method.

Once you compile your model with all textures and models, we are going to create a lua file on an add-on "lua\autorun\gmkarts_xxx.lua"



The only thing that you have to do now is just to create a list.add to add both kart and wheels to the add-on, for example:

Kart Hull.

list.Add("gmkarts_hull", "models/vehicles/gmkart_base/dev_kart.mdl")

Kart Wheels.

list.Add("gmkarts_wheel", "models/vehicles/gmkart_base/mesh_kart_wheel.mdl")

For vehicle sounds, you have to just drag and drop your kart sounds inside of the folder.

"sound\vehicles\gmkarts\engines\"

So after that you should be able to see your kart on the spawn menu.