2014-06
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drive starter kit quick documentation

ABSTRACT

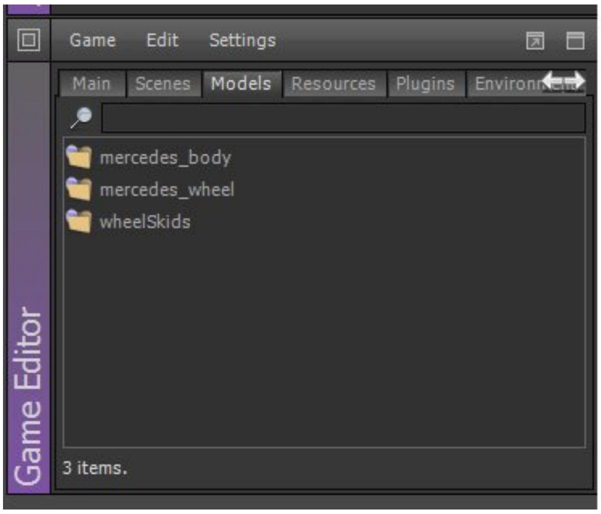
this STE contains an easy solution for arcade-style driving and racing games. a demo with the standard shiva and royalty-free assets is included, so you know where things go and how they are supposed to behave.

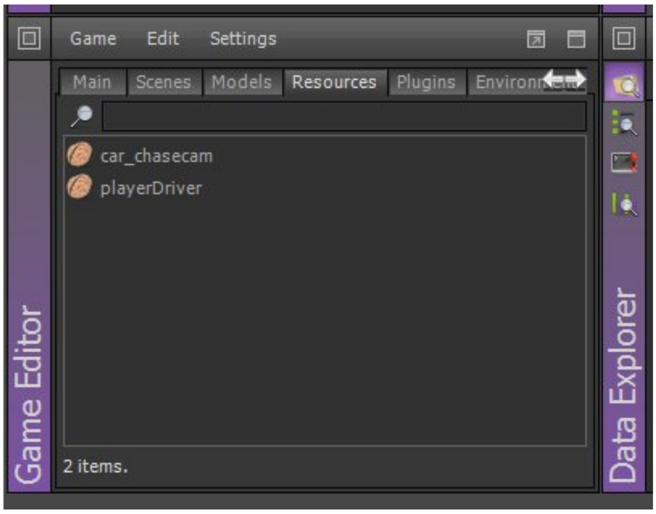
LICENSE

all my code is cc-by, aka ‘do with it as you like and have fun, but credit me’.
shiva assets are copyrighted, do not use them in your game without written permission.
the car model in the demo was downloaded from turbosquid and created by mertcan0403. it is royalty free, but the brand 'mercedes-benz' has been associated with this product. Editorial uses of this product are allowed, but other uses (such as within computer games) may require legal clearances from third party intellectual property owners.
and as always, ‘if it breaks your machine, i am not responsible’. thanks.

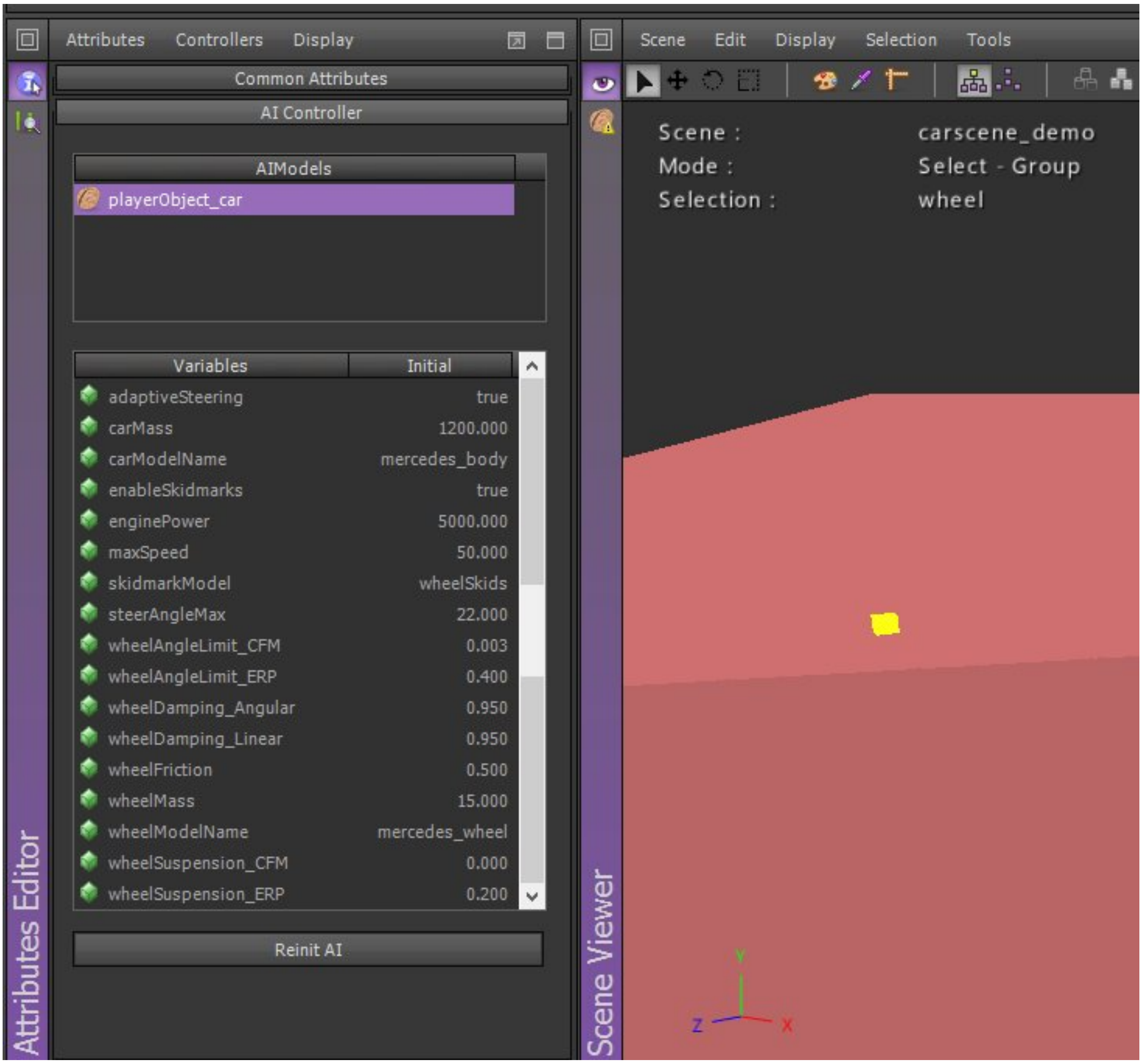
RESOURCES

- drag the camera ai, the playerDriver, the car and the sfx models into the game explorer, since our code relies on these assets





- create a helper object and drag it into your scene. assign the ‘playerObject_car’ AI to the helper. if you click on the helper, you are presented with a number of public variables to play around with:



Scene : carscene_demo
Mode : Select - Group
Selection : wheel

Variables	Initial
adaptiveSteering	true
carMass	1200.000
carModelName	mercedes_body
enableSkidmarks	true
enginePower	5000.000
maxSpeed	50.000
skidmarkModel	wheelSkids
steerAngleMax	22.000
wheelAngleLimit_CFM	0.003
wheelAngleLimit_ERP	0.400
wheelDamping_Angular	0.950
wheelDamping_Linear	0.950
wheelFriction	0.500
wheelMass	15.000
wheelModelName	mercedes_wheel
wheelSuspension_CFM	0.000
wheelSuspension_ERP	0.200

adaptiveSteering: make steering dependent on car speed, for better control at high speeds

carMass: mass of the car, in kg

carModelName: string of the model name for the main car body. must be referenced

enableSkidmarks: leave tire tracks when sliding. careful: performance intensive

enginePower: influences acceleration

maxSpeed: speed limit in m/s

skidmarkModel: the SFX model with the skidmark polytrail. must be referenced. also, enableSkidmarks must be TRUE

steerAngleMax: max angle for the steerable wheels. will be additionally limited dynamically if adaptiveSteering is enabled

wheelFriction: between 0.1 and 1. lower values allow for sliding, higher values make the car more agile at the cost of more unintentional car flipping wheelMass: mass of each wheel, in kg

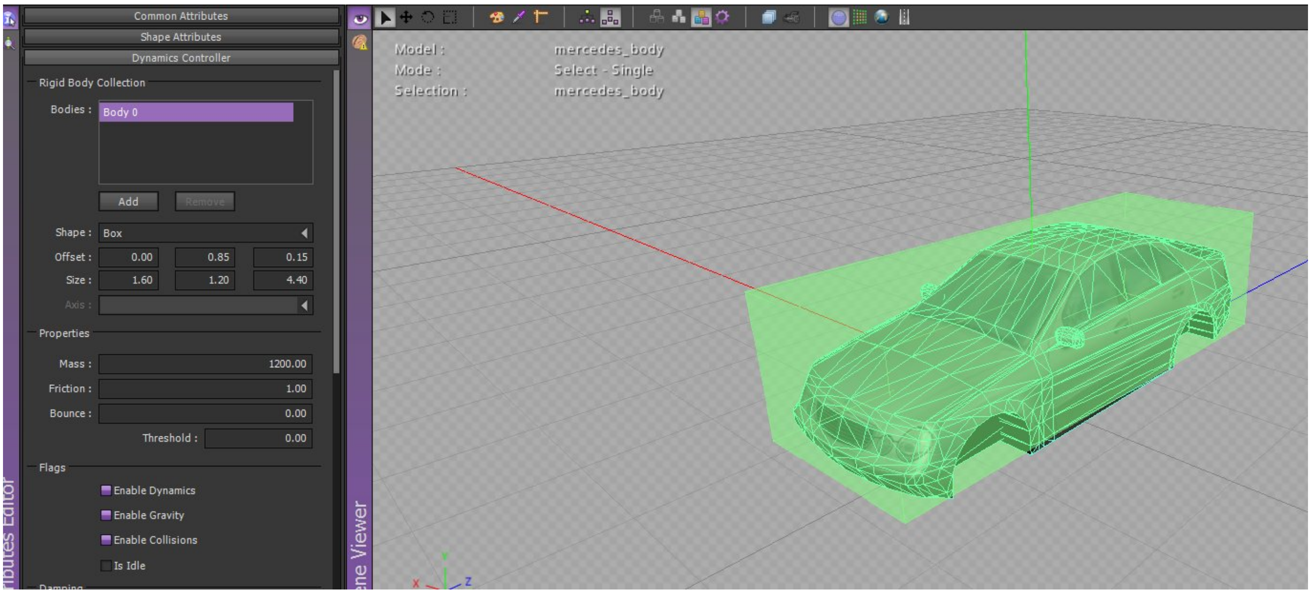
wheelModelName: model for one wheel. must be referenced.

wheelAngleLimit_CFM, wheelAngleLimit_ERP, wheelSuspension_CFM, wheelSuspension_ERP: ODE values for angles and suspension, play around with them until they feel good or read the ODE documentation for more information

CAR SETUP

the car needs to be set up a certain way to work with the starter kit. it consists of 2 main components: the main body and the wheels.

please orient the main body towards -z and scale it accordingly (1 shiva unit = 1 meter). furthermore, it needs a dynamic controller. this can be as simple as a box, or a compound body made up of different shapes to appropriate the car body better. collision category and masking bits need to be at the default 0. all other values can be ignored, since they are set in script.



Model : mercedes_body
Mode : Select - Single
Selection : mercedes_body

Rigid Body Collection

Bodies : Body 0

Shape : Box

Offset : 0.00 0.85 0.15

Size : 1.60 1.20 4.40

Axis :

Properties

Mass : 1200.00

Friction : 1.00

Bounce : 0.00

Threshold : 0.00

Flags

☑ Enable Dynamics

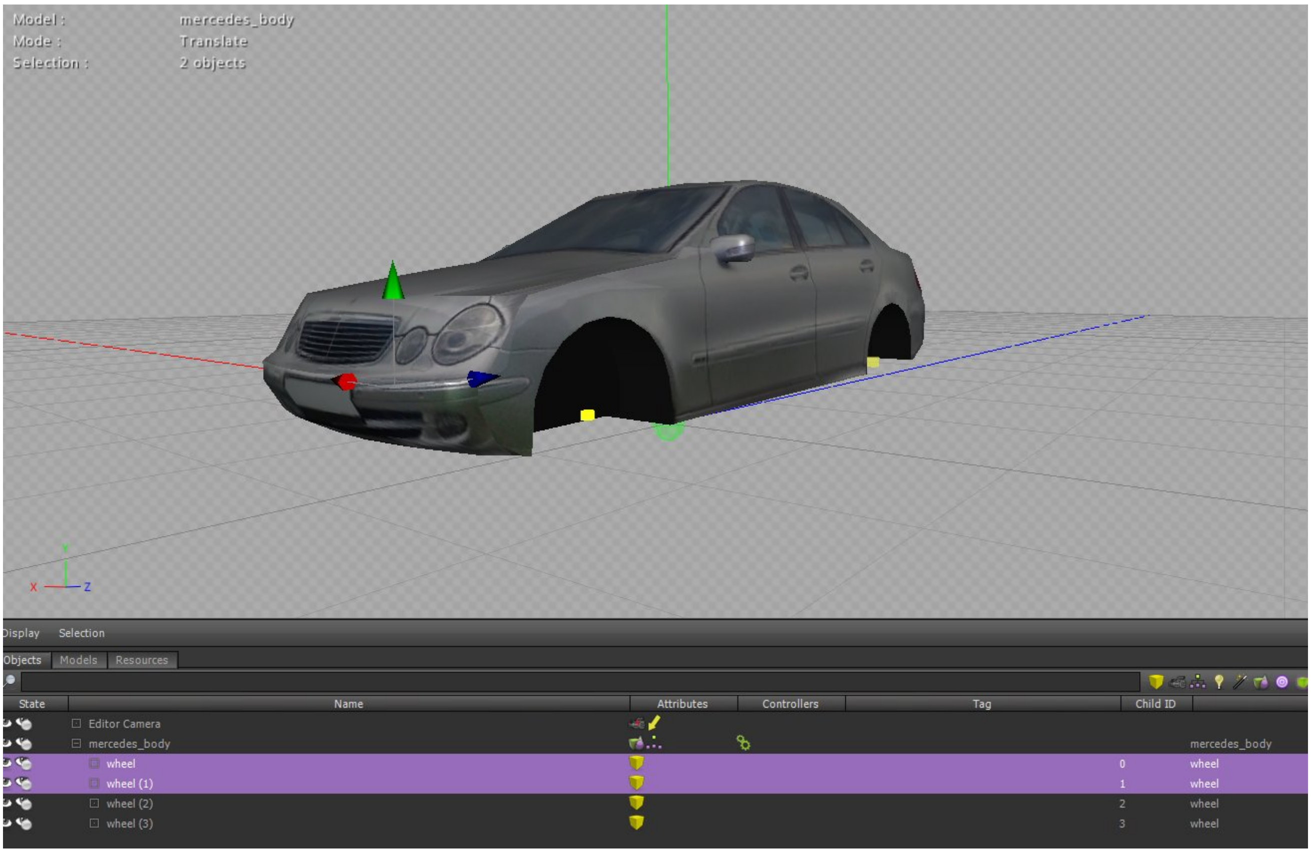
☑ Enable Gravity

☑ Enable Collisions

☐ Is Idle

your main body also needs helpers for the wheel positions. these must be named “wheel” and placed as children of the main body in a group.

you can add as many wheels as you like. however, only the first two children (id 0 and 1) will be steerable, the rest will be fixed. remember only the position of the children in the group is relevant, not the position on the car model itself, so it is totally legit to place the steerable wheels in the middle, in the back, or wherever you want.

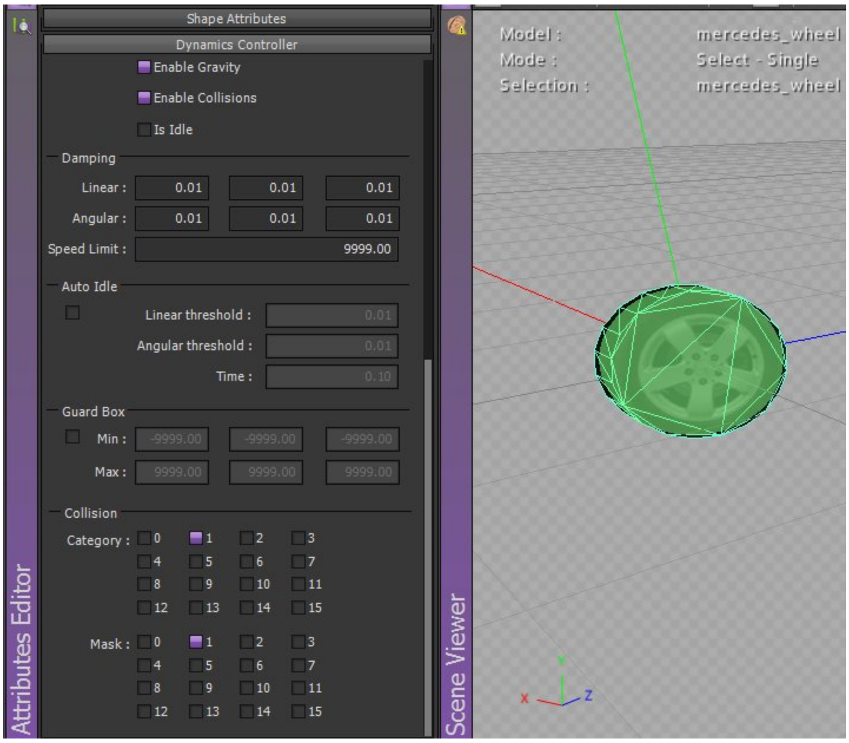


Model : mercedes_body
Mode : Translate
Selection : 2 objects

State	Name	Attributes	Controllers	Tag	Child ID	
	Editor Camera					
	mercedes_body					mercedes_body
	wheel				0	wheel
	wheel (1)				1	wheel
	wheel (2)				2	wheel
	wheel (3)				3	wheel

the wheels need to be separate models. they also need a dynamics controller, however their category and mask bits need to be set to 1 (and not to 0), so they can intersect with the main body without causing trouble.

the other values can be again ignored, since we will be setting them via script.



Shape Attributes

Dynamics Controller

☑ Enable Gravity

☑ Enable Collisions

□ Is Idle

Damping

Linear : 0.01 0.01 0.01
Angular : 0.01 0.01 0.01
Speed Limit : 9999.00

Auto Idle

□ Linear threshold : 0.01
Angular threshold : 0.01
Time : 0.10

Guard Box

□ Min : -9999.00 -9999.00 -9999.00
Max : 9999.00 9999.00 9999.00

Collision

Category : □ 0 ☑ 1 □ 2 □ 3
□ 4 □ 5 □ 6 □ 7
□ 8 □ 9 □ 10 □ 11
□ 12 □ 13 □ 14 □ 15

Mask : □ 0 ☑ 1 □ 2 □ 3
□ 4 □ 5 □ 6 □ 7
□ 8 □ 9 □ 10 □ 11
□ 12 □ 13 □ 14 □ 15

Model : mercedes_wheel
Mode : Select - Single
Selection : mercedes_wheel

CAMERA

the chase cam is created dynamically and requires the car_chasecam AI model. if you do not like the dynamic positioning or need to adjust the code otherwise, you can do that in this AI. the AI also has adaptive motion blur enabled, which looks good, but is a performance killer on mobile devices. make sure to switch it off if you want to go mobile.

INPUT

you can choose between 2 input models: keyboard and xbox 360 controller. just drag the desired aimodel into the user AI stack.