What can you do with a terrain two balls and a cube

Introduction to gravity, driving, physics and cloning

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This tutorial shows how to create a sphere with gravity and driving behaviors on a terrain and how to add a camera + target and an additional view.

This illustration shows a terrain with sphere, cube and additional window on the top left. The second part of this tutorial shows how to create a world with physics. The last part of the tutorial shows how to clone fixed and moving objects and how to move clones on the terrain using physics.
Go to Resource > Open Data resource, select the data.rsc file where you exported the Maya terrain in the previous tutorial. Go to the data resource tab on the right, 3D Entities > Terrain drag and drop the terrain in the 3D Layout window.

Add a floor attribute to the terrain. Right click on the terrain, select Object setup in the pull down menu > in the 3D Object Setup window, select Attribute > Add Attribute > Floor Manager > Floor > Add Selected
Repeat the same steps with a sphere created in Maya or with a sphere
That can be found in the Poetics folder,
go to Go to Resource > Open Data resource, select VirtoolsResources.rsc. Go to the
VirtoolsResources tab on the right.

Go to 3D Entities > Primitives, select sphereLMedium Resolution, drag and drop the sphere in
3D Layout. Make sure that the sphere is slightly higher than the terrain. If your terrain's location is
at XYZ = 000, position the sphere's location at XYZ = 007. Select “Set IC”.
Go to Building Blocks > Transformations > Constraints > Object keep on Floor V2, drag and drop the building block on the sphere, edit the attribute window. Go to Schematic, to view the script for the sphere with the BB.

Test the terrain with Gravity.
Rotated the scene, step 1, select the terrain with the selection tool in the upper left corner, step 2, click on the rotation tool and drag in the 3D layout window in order to rotate the scene. Step 3, hit play. The sphere drops on the terrain.
Let's add a Driving behavior to the sphere. Go to Schematic > SphereScript > Drag the Key Event BB, three times, from Building Blocks > Keyboard > Key Event into the Sphere script. Edit the Key Event BBs attribute windows with arrows keys on your keyboard. Click in the black field on the right of “Key Waited” press the arrow key on your keyboard, press Ok.

Connect the Key Event BBs with the script on the right.
Drag the Translate BB, two times, from Building Blocks > 3D Transformations > Basic > Translate into the Sphere script. Repeat for the Rotate BB.

Connect the BBs as shown in the illustration. Please note that Translate and Rotate BBs are looped. Press play to test the scene.
Test with pressing translate and rotate together and at the same time. Please note that adding Motion Blur and a trail creates a nice motion effect. Go to BB > Visuals > FX > Motion Blur. Drag the BB in Schematic > Sphere Script. Repeat with Solid Trail BB.

**Part 2 - how to add a camera + target and an additional view**

**Let's create a new camera**
Step 1, use the Dolly and Rotate tool in order to move in the perspective view view until you reach a good point of view on the whole terrain.

Step 2, hit the the camera button to create a new camera.
Go to Level Manager > Cameras > New Camera001, right click on the name > choose rename in the pull down menu, rename camera target.
Go back to the perspective view to see the new camera that you created.

If you can’t see the camera
Go to Options > General Preferences, make sure that the above settings are checked.

**Let's create a target for the camera.**

Create a 3D frame. Let's move the 3D frame – target in the center of the Sphere. Since we can't easily eyeball the center of the sphere we will do this transformation with numbers, using the 3D object Setup windows.
For the Target 3D Frame:
Go to Level Manager, 3D Frames > New 3D Frame > Right click on the name select “Rename”. Rename “Target 3D Frame”. again Right click on the name of the 3D frame and select Setup in the pull down menu.
The 3D Object Setup window opens.
In the Setup window, Right click on the tab and select Move to separate window.

For the Sphere:
Go to Level Manager, 3D Entities > Sphere > Right click on the name of the Sphere and select Setup in the pull down menu.
The 3D Object Setup window opens.
In the Setup window, Right click on the tab and select Move to separate window.

You have two 3D object setup Windows.

Go to the Sphere 3D Object Setup Window > Go to Location, copy the value X of the sphere.
Go to the Target 3D Frame Object Setup Window > Go to Location, paste the value X -from the sphere. Repeat for Y and Z. The Target 3D frame has the same value than the center of the sphere. Press Set IC.

Troubleshooting if you can’t open two 3D Object Setup Window:
Go to Options > Preferences >
Let's target the camera on the sphere

Go to Level Manager > Target Camera, Right Click on the name, choose Setup. In the Target Camera Setup Window, select target = Target 3D Frame. See the result in 3D Layout.

Adding Orbital Controls
Go to Building Blocks > Cameras > Movement > Keyboard Camera Controls

Creating an additional window.

Go to Building Blocks > Interface > Screen > Additional View. Drag and drop on Target Camera in Level Manager > Cameras. Check the following settings for the Additional View attributes window.
Part 3 - using physics

Please note that the Gravity and Driving are different than in Part 1. But Terrain, sphere import and camera setup are the same than in Part 1.

You can skip the next page if you already imported terrain and sphere and if you already created the camera setup.

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and drop the terrain in the 3D Layout window.

Add a floor attribute to the terrain. Right click on the terrain, select Object setup in the pull down menu > in the 3D Object Setup window, select Attribute > Add Attribute > Floor Manager > Floor > Add Selected

Go to Building Blocks > Physics > Creation > Physicalize, drag and drop the BB on the Floor in 3D Layout or on the Floor in Level Manager > 3D Entities > Floor (or Terrain)
Testing fall with Physics same mass different polygonal subdivision

Driving a cube with Physics. Please refer to the Driving setup in part 1. We use Key Event with the Physics Impulse BB
Part 4 – Cloning fixed and moving objects

Cloning moving balls and fixed trees with Physics

**Fixed objects are for example trees.**
We an use 3D objects and trees created in Maya.
One tree is created with paint Effects. Go to Modeling, Modify > Convert > PaintEffects to Polygons.
Go to Display > Heads Up Display > Poly Count
Select all the polygons for the tree, go to Polygons > Combine in order to create one object.
Export the tree to Virtools.
Moving objects are for example spheres

Floor setup

Add a floor attribute to the terrain. Right click on the terrain, select Object setup in the pull down menu > in the 3D Object Setup window, select Attribute > Add Attribute > Floor Manager > Floor > Add Selected
Create a group of fixed objects for cloning.
Step 1, select 3D objects (Hold the shift key or the CTRL key).
Step 2, press the group key
Step 3, a group is created with the objects inside. Rename the group.

Repeat with a group of moving objects for cloning.

Let's add the cloning behaviors to the trees.

The cloning behavior can be found in Virtual Spaces Resources (see on your Cd).
In Virtools, go to Resources > Open data Resource > select Virtual Spaces Resources.rsc
Cloning behavior for trees. Please notice the counter controlling the number of trees. The random BB assigns locations to the trees Y=0 because all trees have Keep on Floor and will fall on floor.

Cloning behavior for moving balls. Please notice the counter controlling the number of balls. The random BB assigns locations to the balls They all start at the same location with different heights to create a bouncing motion.