

Lightmapping

This tutorial shows you how to create lightmaps for both the terrain and for mesh objects.

Concepts

In this tutorial you will learn:

- How to create lightmaps for a mesh object
- How to adjust the light properties for a terrain

Prerequisites

- Project Tree
- Texturing
- Adjusting light position
- Light sources

Lightmaps

Lightmaps are essentially textures which capture the light and shade over the surface of a mesh. As such they are obviously dependant of the position and properties of light sources. Also, they are dependant on the surface properties of the mesh they are to be applied to. This means that if you change the light positions or surface properties then you will need to re-compute the lightmaps.

Note : The lightmapping computation must work in world coordinates hence it operates on mesh inserts. This means that if you want to lightmap the same mesh, but at different orientations/scales then you must use the Copy Mesh tool and create independent inserts of each object.

Various options exist when computing lightmaps. These are as follows:

Texture size – the lightmaps for each triangle in the mesh are “packed” into larger textures – this option allows you to dictate the size of these larger textures. Note – try and minimise the size used; if you choose too small a size Simmetry3d will tell you and you should then try the next size up.

Sample Spacing – this controls the lightmap resolution over the mesh. It is in real world units and represents the distance between each pixel in the lightmap when stretched over the mesh. The mesh extents, (shown at the bottom of the dialog), are useful for working out a good sample spacing. The bigger the sample spacing the lower the resolution of the lightmap and the coarser the shadow edges.

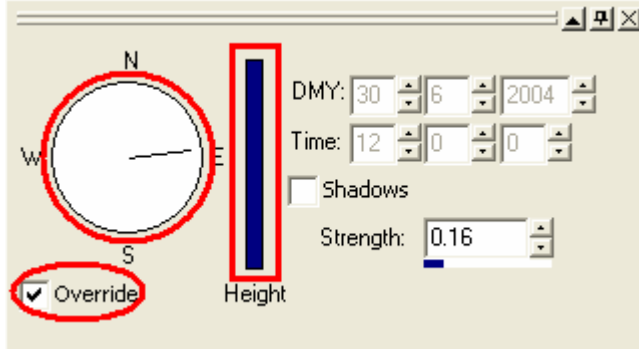
Soften Shadow Edges – The runs a blurring filter over the computed lightmap which has the effect of softening the shadow edges.

Smooth Normals – Choose this option for objects which have curved surfaces – the lightmap generation will then smoothly interpolate the surface normals to generate the lightmap.

EXERCISE 1

Creating a lightmapped mesh

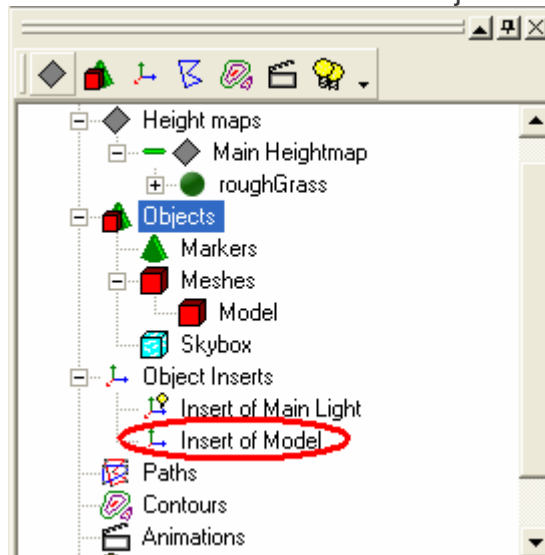
- Open file “SimpleMesh.s3d”
- Adjust the light position:



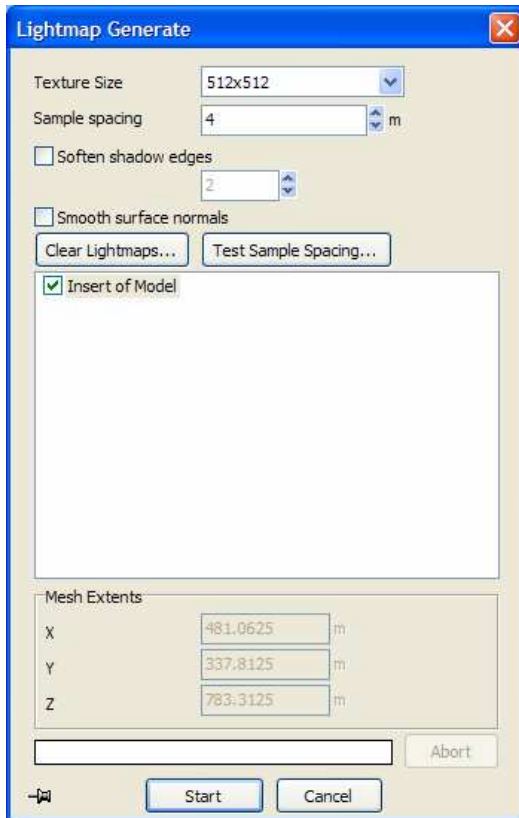
- Choose “Lighting” mode on the “Tool Modes” toolbar:



- Find the mesh insert on the Project Tree:



- Right click on the node and choose “Create Lightmaps...”



- Adjust the settings and then press the “Start” button.

Note you can “pin” the form (bottom-left pin button), so that it remains open after the lightmaps have been generated – this is useful when experimenting with the settings.

You can process more than one insert at a time by choosing “Create All Lightmaps...” from the “Object Inserts” node of the project tree. All the inserts will appear in the list on the dialog – and you can disable any you do not want lightmaps for.

EXERCISE 2

Lightmapping the terrain.

- Choose “Lighting” mode on the “Tool Modes” toolbar:



- On the “Lights” menu, choose Update Terrain Lightmap:



- Experiment with the basic settings – by sliding the “Light Influence” slider to the right the shading will become darker.
- The “Shadows” checkbox controls whether objects cast shadows onto the terrain. This feature used in conjunction with lightmaps on objects can produce very realistic results.
- You may want to change the “Light map size” – by increasing this the shadow boundaries will be better defined, although they will take longer to compute:

