


## 3D GAME STUDIO – TUTORIAL EXERCISE #1 CREATE A BOUNDED 3D WORLD WITH TERRAIN AND SKY



In this exercise we will learn the basics of how to use 3D Game Studio by modeling a basic 3D world (or “level”). This is essentially an update of Steempipe’s White Paper skycube tutorial (Module 2) available at <http://www.steempipe.technicalfoundry.com>. Thanks to Steempipe.



The following will be accomplished in this exercise:

- Set up the script modules (or “templates”) for a basic game
- Set up the boundaries of the game
- Implement a “sky cube” to model sky and distant terrain.
- Add the player’s model, camera, and add behavior

This is the step by step detailed procedure:



1. Create a folder in your user account called “3dgs\_exercise1” or something similar. This is referred to as the “working directory”.
2. Into this directory copy a .mdl player model from the c:\GStudio6\work\ directory.
3. Go to the class web site go to External Links > 3DGS > sky and locate a free sky cube image of your liking. Download to your working directory. Unzip, if required.
4. If the sky cube image is not in .tga format, open the image in Photoshop and save it in .tga format to your working directory. [Note for future reference: you can use the free terrain generator program Terragen to make your own sky cubes. Refer to this page <http://s91902847.onlinehome.us/6901/13874.html> and scroll down to the “Make a Skycube” tutorial. You could also make a sky cube out of any images you wanted, including buildings, photos, or abstract art.]
5. Open WED. Go to Start > Programs > 3d Game Studio > Level Editor.
6. Go to File > Preferences > Advanced and make sure Reload externally modified files is checked as Auto. Close preferences.
7. Start a new level with File > New.
8. Save As to your working directory as “exercise 1”.
9. Go to File > Map Properties and to the right of the Script box click on the  icon. Select \_A6\_template\_project. A new main script will be generated with the same name as 8. above. Close this box.

10. WED shows top, side, back, and a 3d image of the level. Click on the top left box, then go to Object > Add Cube > Large.
11. Enlarge the cube. Click on the scale tool icon . And scale the cube in the top, side, and back views by dragging with the mouse. The cube should be about 4 squares by 4 squares when the window is viewed at full size.  
  
To zoom into or out of a window click on the window and use the mouse wheel. To see a large version of any window simply maximize it via its tool bar. If you can't see the cube in a view, keep pressing + on the numeric keypad (to increase the view depth) until it appears.
12. Click on the selection tool icon . Select the cube then go to Edit > Hollow Block. This hollow block defines the boundaries of our game world. Note: before you can select anything you must click on the selection tool icon.
13. Now we need to add a model and a first person camera script so we can see what the world looks like when we run the level. Go to Object > Add Model. Navigate to your working directory and to your model. Select it and it will appear in the middle of the level.
14. Click on the wire frame model character and drag it until it is standing on the bottom of the hollowed cube. Save the project. To move around (pan) within a window right click on the window and drag.
15. To be able to do anything with the model we need to add an action to it. Go to File > Add Script. You will be taken to the Gstudio6/template\_6/code directory. Select the plBiped01 script and click Open. The script and other scripts referenced by this script are automatically loaded into the Resources > script files section to the left of the main window.
16. In a similar manner add the camer1stPerson01 script to the project. Again other necessary scripts are automatically added to the project.
17. We now need to add the plBiped01 action to our model. Right click on the model and select Behavior. Select plBiped01, click OK, and close that window. Save the project. We now have a first person model with basic functionality.
18. We will now texture the hollowed cube. First, we need to add a set of textures to the project. Go to Texture > Texture Manager, click on "Add WAD" and you will be taken to the c:\Gstudio6\wad directory. Select "standard.wad" and click Open. Click OK on the WAD dialog box. Now when you click on the Texture tab on the left of the main window, there's a set of selectable textures. Click on the standard.wad bar.

19. Select the hollowed cube. Go to the Texture tab and double click on one of the sky textures. The whole block takes on the sky texture. Check that the cube has the sky attribute by right clicking on the hollow block, selecting properties, then <blocks>, then flags, and check that the sky check box is checked. Save the project.
20. Time to take a look at our world. Build the level by clicking on the build icon . WED compiles the project. Then run the level by clicking on the run icon . To view the level in full screen mode press ALT + ENTER.
21. You should see the inside of a big box covered in a swirling pattern – you're first game level! It's OK if the floor is black. Not that impressive, but we're not finished.....
22. Check that your sky cube image is available for use in your working directory. It must be in this format: "filename+6.tga". The +6 tells 3DGS that the image is an unfolded six-sided sky cube. [Note: A sky cube image must comply with the following requirements: its width must be six times larger than its height. Each frame should be a power of 2 in size, like 512x512. The cube side images must be arranged in the sequence bk, rt, ft, lf, dn, up from left to right.]
23. A function controls how the sky cube will be wrapped around the hollow cube. This function must be added to the main level script. Click on the Resources tab, then expand the script files folder. Right click on your main script (which should be at the top of the list and be something like "exercise1.wdl") and select Open. The script opens in SED.
24. After the Include files and before "function main()"

```
sky cubesky {
type=<filename+6.tga>;
layer=1;
material=mat_sky;
flags=cube, visible;
}
```

Replace filename+6.tga with the name of your sky cube. Click on save.

25. Go back to WED and save the project. Then build  and then run  the level. The sky and terrain (if present in the original sky cube image) should appear.
26. You can take a look around at the sky and terrain in your level but apparently you will not be able to move around. This is because a sky cube follows the player. To view movement the player needs to move across a surface or a building. This will be part of the Exercise #2.