

3D GAME STUDIO – TUTORIAL EXERCISE #2 CREATE A BUILDING WITH WINDOWS AND DOORS

In this exercise we will learn how to use WED to create a simple building in our 3D world.

The following will be accomplished in this exercise:

- Construct a building using simple blocks
- Make openings for doors and windows
- Add lighting effects
- Apply textures


Note: some of this information is included in the 3DGS help system tutorial on using WED and some additional information may be found there. Be aware, however, that some of the program features used in the help system tutorial have been superseded.


This is the step by step detailed procedure:

NOTE ON SCALE: The 3DGS measuring unit is the “quant”. The default is that one quant is equal to one pixel. How many inches a quant is worth in the game depends on the relative scale of the models. The 3DGS manual recommends that in person-based games that one quant = one inch. As a guide, the wall thickness of a hollow cube is 16 quants by default.

1. Open WED and open your Exercise 1 .wed file. Check the sky cube is still there by running the level.

2. Add a large cube to the level (Object > Add Large Cube).

3. Click on the scale tool , and scale the cube to the size of a large room of any rectangular shape. Use your player figure to judge the scale of the room. NOTE: you need to check the size of the room in each of the three windows: Top (XY), Back (XZ), and Side (YZ).



Make sure the room is within the sky cube. Move it by clicking on the move icon , then selecting and dragging it.

The room should be floating above the floor of the sky cube.

4. Select the room with  and hollow it by going to Edit > Hollow Block.

[Why not just add a Hollow Cube from the Object menu? Because with a hollow cube, the walls will scale as it enlarges leading to massive walls. Better to hollow after scaling the room to about the right size. Also, with a pre-hollowed cube scaling in one direction will scale the thickness of the walls in only that direction,]

Move your character model so its standing on the floor of the room. This may be difficult to do accurately if “snapping” is set too high. To adjust or turn off snapping: File > Preferences > General tab. Note: you will need to move the player figure in Save the level.




5. Now we'll add texture the internal surfaces of the room. To access the individual surfaces of each side (floor, walls, ceiling) we need to divide the block into its individual sides. To do this, select the room  then select the “scope down” tool .

6. Select the floor of the room. You will need to look at the three views and/or the 3D view to make sure the correct surface is selected.

Go to the Textures tab and double click on a floor texture of your choice (not animated textures like water or sky).



Do the same for the walls and ceiling, applying any textures you want.

Note: while in scope down mode your character model may appear to disappear. S/he will reappear when you scope up.

7. Select scope up  to group the sides of the room together. Make sure the character is visible in the room. Save, build  and run . Check out the room.

8. Now we add more interesting lighting. WED defaults to “fullbright” in the level so the room can be seen.


Select Object > Add Light. A red bulb-like icon appears in the room. Move it to the ceiling.

Click on  and then on Update Lights and build the level. The run it . You will see that the compiler generating light maps. When the level runs, you will likely see that most of the room is dark with only a pool of light around where you added the light source.

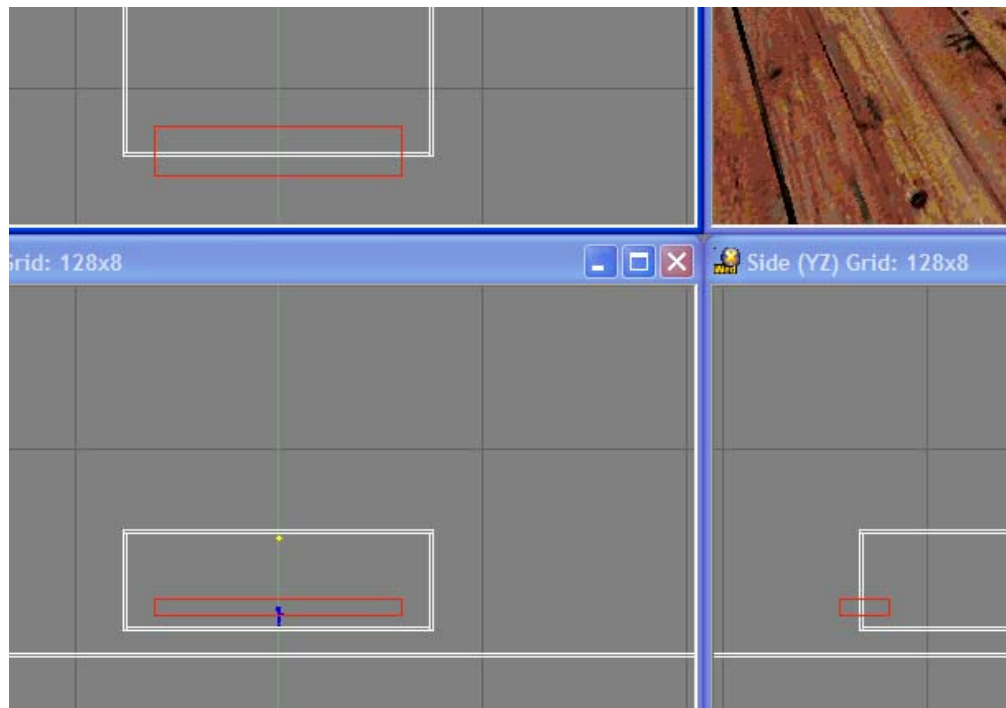
9. Select the light, then right click, and select properties. The light property box appears. Increase the light range so the range circle encompasses the entire room.

Save, build (update lights) and run. The room should now be visible. Play around with the range setting to see its effect on the lighting in the room.

10. Time to add some windows so we can see our beautiful sky cube. This is done in WED by subtraction. You create a block and use that to carve a hole for the window.



Go to Object > Add Cube, and select Small, Medium, or Large. Scale  the cube to the desired window size.

11. Move the carving block until it straddles the wall in which you want to cut a window.



12. Select Edit > CSG Subtract. Delete the carving block; a window should appear.

13. After this operation, the wall is subdivided into individual blocks with surfaces that may need to be retextured as in steps 5. and 6.

14. Save, build  (select "Build Level" in the map compiler window) and then run  and enjoy the view!

15. In a similar manner as steps 10. through 14., add windows on two more sides of the building. (Not on all three sides because we will be adding another room).


16. Notice that shadows at the windows are totally black which is a little unnatural, you can get greyer shadows by going to File > Map Properties and changing the ambient light to a grey color such as 25(red) 25(green) 25(blue).

17. At the moment outside, there is no sun in the level, just an all over default light. Add sunlight by going to File > Map Properties and changing the sun values from zero to something like 100(red) 100(green) 100(blue). You can change the horizontal angle of


the sun by setting the Azimuth value between 0 and 360 (default is 0.0, i.e. north) and angle above the horizon by changing the Elevation value (default is 60.0 degrees). Depending on where your windows are relative to the sun, you may see light streaming through one or more of them.

“Ambient” settings give an overall light, so that even if the sun does not enter a particular part of the building through a window that part will not be totally dark.






18. We will now add another room and a connecting door. First create a room as described in steps 2, 3, and 4 above. To make sure you work on this cube and not on the one already constructed, lock the selection on the new cube by using .

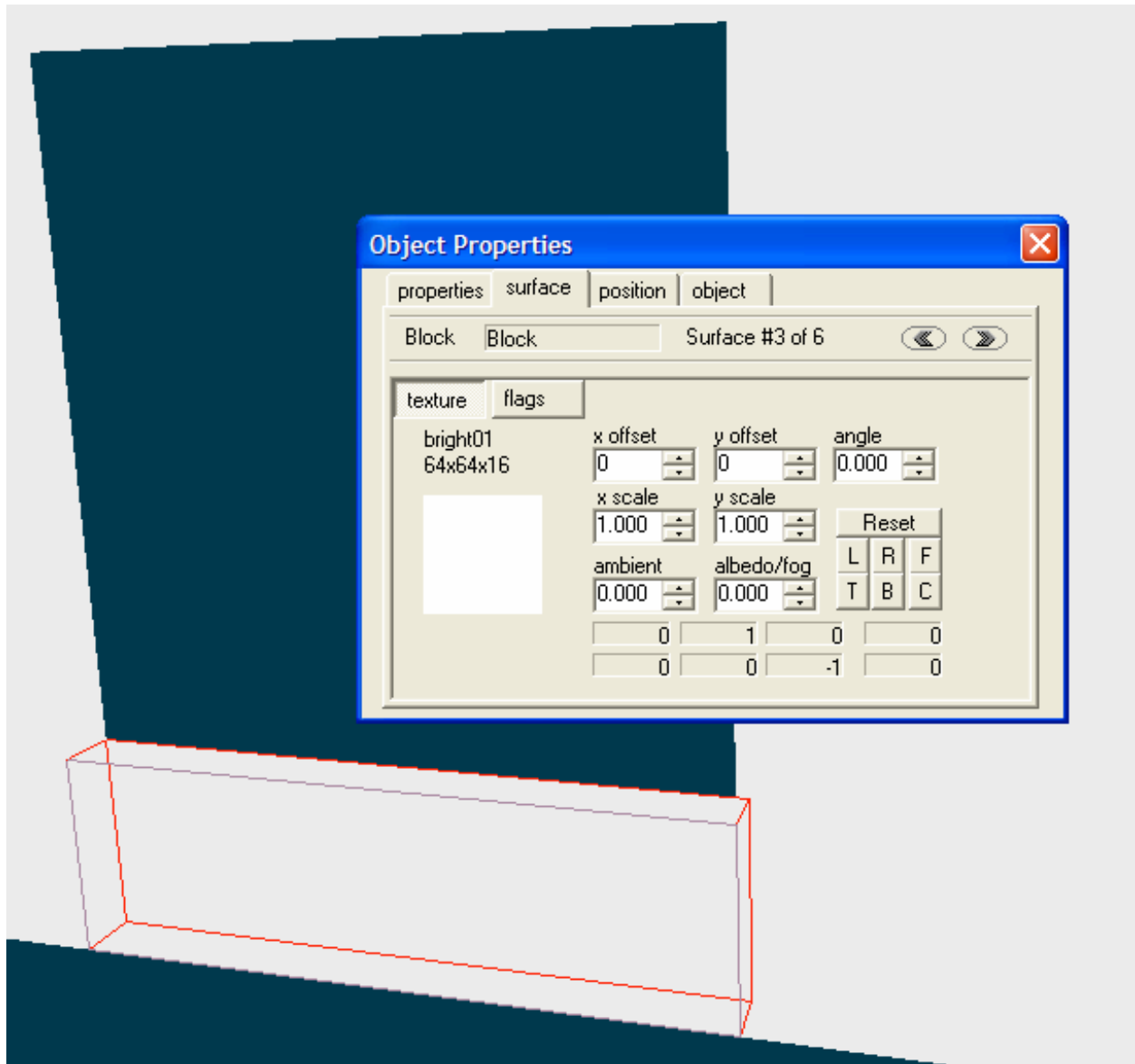
19. Move the new room so that its wall overlaps exactly with the existing room.

20. Create a door between the two rooms by subtraction using a carving block as described in steps 10, 11, and 12. The door should be big enough so your character model can pass through! To check the door has been created, click on the walkthrough icon, the green , and navigate through the 3D view.



21. Texture the new room as described in step 13. The inside of the opening (the “door frame”) may need to be textured in the 3d view. The eye tools   can be used to move around in all views but are particularly useful in the 3d view. It may also be necessary to use the scope down  tool to access individual blocks that need to be textured.

An easy way to select the sides of a block that is difficult to access is to right click on the block, select properties, and then cycle through the surfaces of the block in the surface tab. See below:



22. Add windows and lighting to the new room to your own specifications. Note that you can add light of different colors by selecting different RGB values in each of the three boxes in the light properties window.