

Modeling

<https://www.youtube.com/embed/ofzw6hKhI3k>

In this lesson, we will build the geometry of our room!

There's something quick we should get out of the way first: look at the bottom right corner of the screen to make sure auto generate lighting is off. If it's on, click it and in the new window at the bottom where it says auto-generate, uncheck the box, then close the window.

Before we start using Probuilder, there are some settings that should be configured first. Go to Edit>Preferences and then click Probuilder. There are some changes I'd like you to make here from the default settings, and for the sake of time and not having to explain things that many may not understand, I'll just rapid fire them.

Enable Show Action Notifications

Enable Auto Resize Colliders

Change Static Editor Flags to Everything

Change Collider type to Box Collider

Now you can close the preferences window and open the Probuilder window by going to Tools>Probuilder>Probuilder Window. You can dock the Probuilder tab just like any other. You can also switch between the icon view if you prefer by right clicking the tab, and selecting Icon mode or Text mode.

Grid snapping should be in the top bar. Click it to turn it on and off. Click the dropdown to adjust the settings. I recommend going into Unity's hotkey bindings and changing the increase or decrease size of the grid to + or _ on the keyboard, and reset the grid to 1 square meter by pressing 0. It will make you work much faster.

Now that that's done, let's create our first Probuilder object! Click new shape, select cube, and confirm. You will now see that a cube appears in the scene! If you click the Probuilder icons in the scene view, you will see that on the cube appear vertices, edges, and faces: these are the fundamentals that make up the geometry of all 3D models. If you click on any of them you will be able to move them around in the scene view, and they will snap to the grid set by Unity (if you have grid snapping on).

We want to make a room, so let's make a floor. Click new shape, select plane, change the axis to be up, and set the length to be 6 and the width to be 5 and then click build. Reset the transform so that it is at the origin.

Now, decrease the grid size so it is about 0.125m. Add a cube with the hotkey Ctrl+K. Then go into face mode (the hotkey is K), select a side face, and scale it down so that the mesh is 0.125m thick horizontally. Now drag it out so that the mesh is the same length as the floor. You can see the dimensions of your Probuilder object by looking at the Probuilder script component in the inspector. The average height of a room is about 2.4m-2.5m, so let's make it 2.5m tall to snap easily with grids. Press ctrl+d to duplicate the wall and drag it over to the other side of the plane. Now press ctrl+k to add a cube and repeat the process to create walls for the remaining sides of the plane, and finally add a ceiling.

You've now created a box! But it doesn't look very much like a room. The biggest thing it's missing is a window! To make a window, select one of the walls, go into edge select mode and with one of the edges selected press alt+u to add an edge loop. This will add a new loop of edges bisecting your mesh perpendicular to the edge you selected. Your edge loop should be selected after you create it, so drag it out of the way and create 3 more to make a cutout for the window.

Now select the two faces where the window is going to be and press backspace to delete them (don't press delete; it will delete the entire object!). Now select the edge ring where one of the faces used to be, hold shift and use the gizmo arrows to extrude new faces to bridge the two holes.

There's a problem: the faces are not actually connected to each other. To fix this, go into vertex select mode and press ctrl+a to select all of the vertices of the mesh, and in the Probuilder tab, click weld vertices. This will merge vertices that occupy the same position in space, also known as overlapping vertices.

To add windows, we're going to add a cube and just add loop cuts and extrude them inwards to make a window. Now you're getting the hang of 3D modeling!

If you select vertex colors in the Probuilder tab, you can set faces to a vertex color, which can help with visualization and you can later set those vertex colors to actual materials.

We now have the basic geometry of our room. In the next lesson we will learn about bringing our surfaces to life with materials and textures.

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