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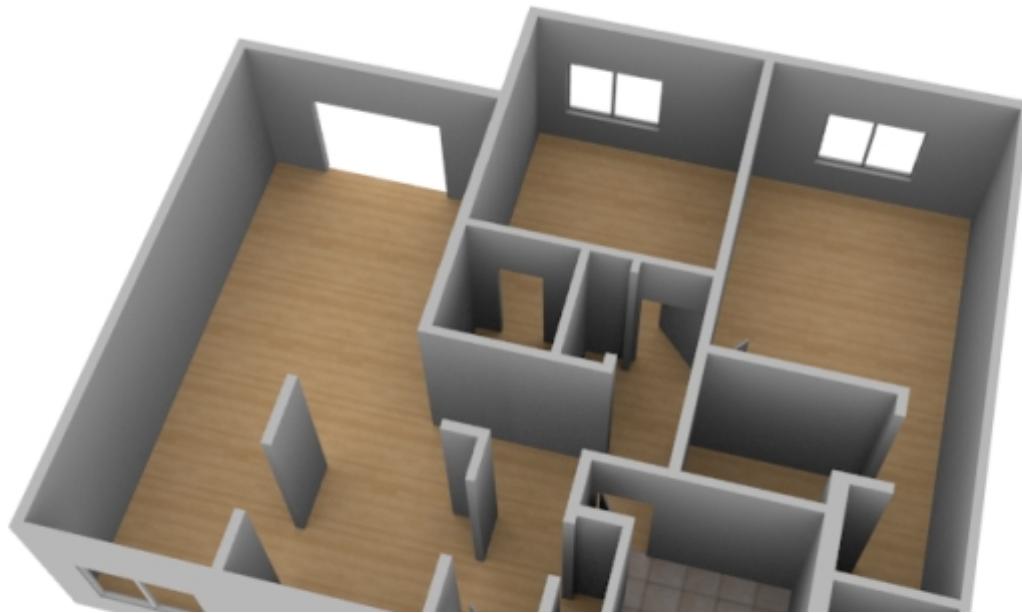
3D & MOTION GRAPHICS > MODELING

Create A 3D Floor Plan Model From An Architectural Schematic In Blender

by [Karan Shah](#) 31 Jan 2012

Difficulty: Intermediate Length: Medium Languages: English ▾

Modeling Blender 3D Texturing Interior Architectural Render 3D Rendering





In this tutorial you'll learn how to create a 3D floor plan model from an 2D architectural drawing. Karan Shah will show you some simple, yet effective techniques for constructing the walls, windows and doors following a basic interior schematic in Blender. With the model complete we'll add materials and textures, and do a final render of the scene.

Additional Files/ Plugins:

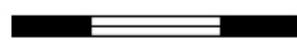
- [Floor Plan Schematic](#)

Step 1

Floor Plans are simply a drawing or a diagram showing a top view of a site layout. You can see the picture to understand the meaning of some basic symbols used. More can be found [here](#) (pdf).



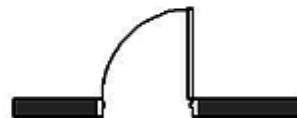
Wall



Window



Window



Door with its swing direction



Sliding Door



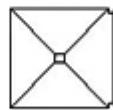
Door Placement



Toilet



Bath



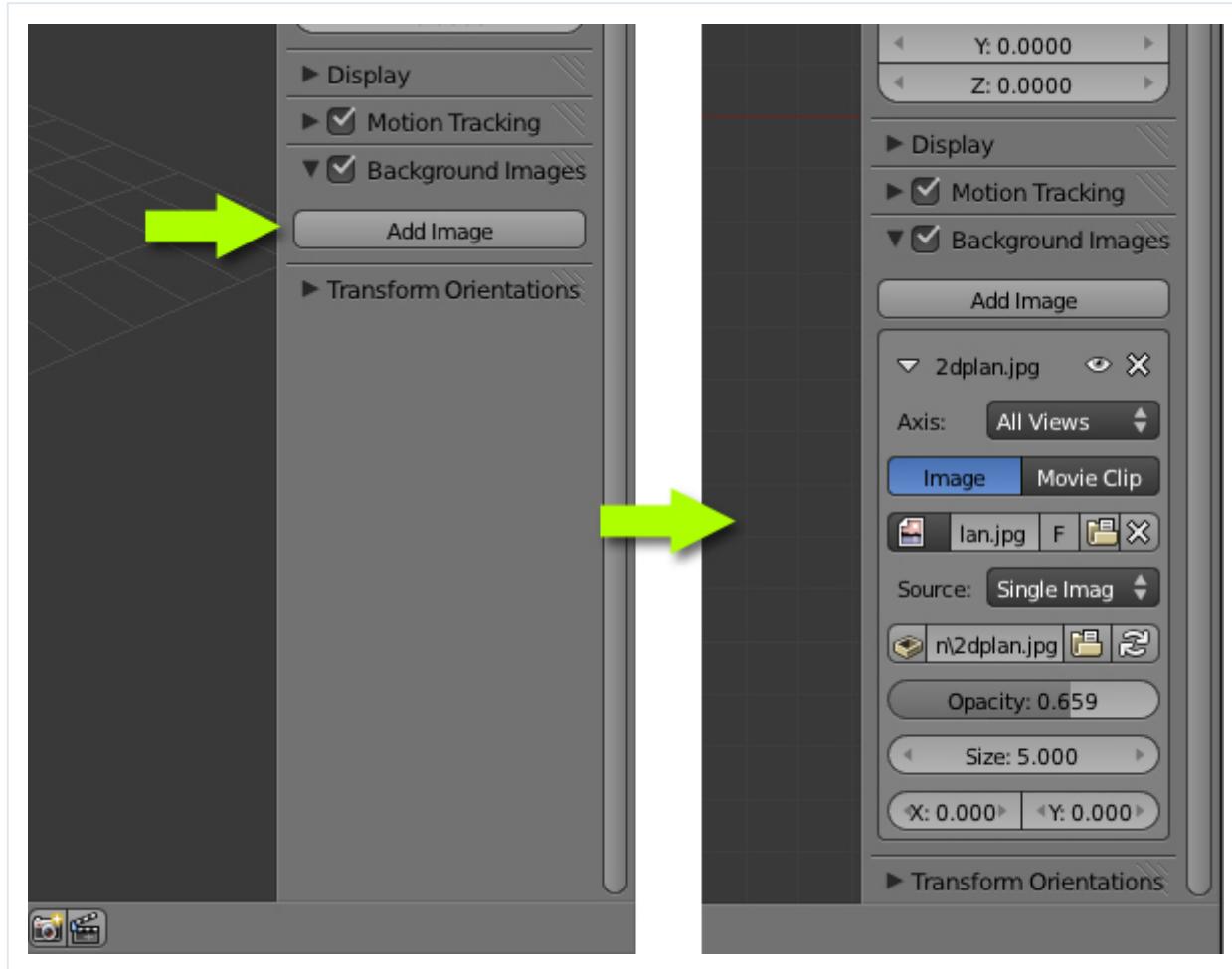
Shower



Sink

Step 2

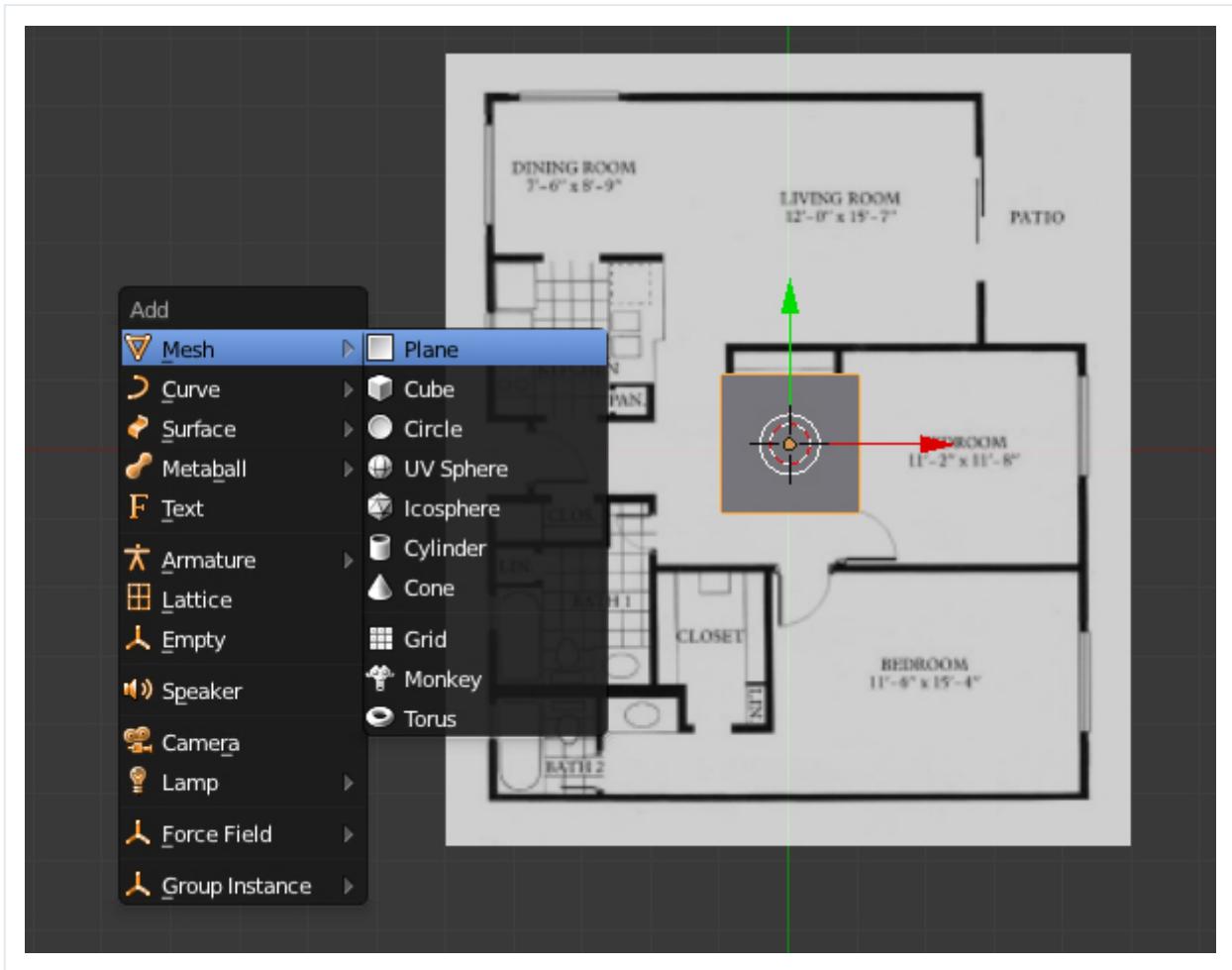
In a new file, select all objects with the 'A' key and press 'Del' to delete them. Press 'N' to bring up our View properties. In the Background Image Panel, add your reference image. Here I have used image courtesy of [LiamKeiranCooper Ltd](#) who kept the picture in public domain.



Advertisement

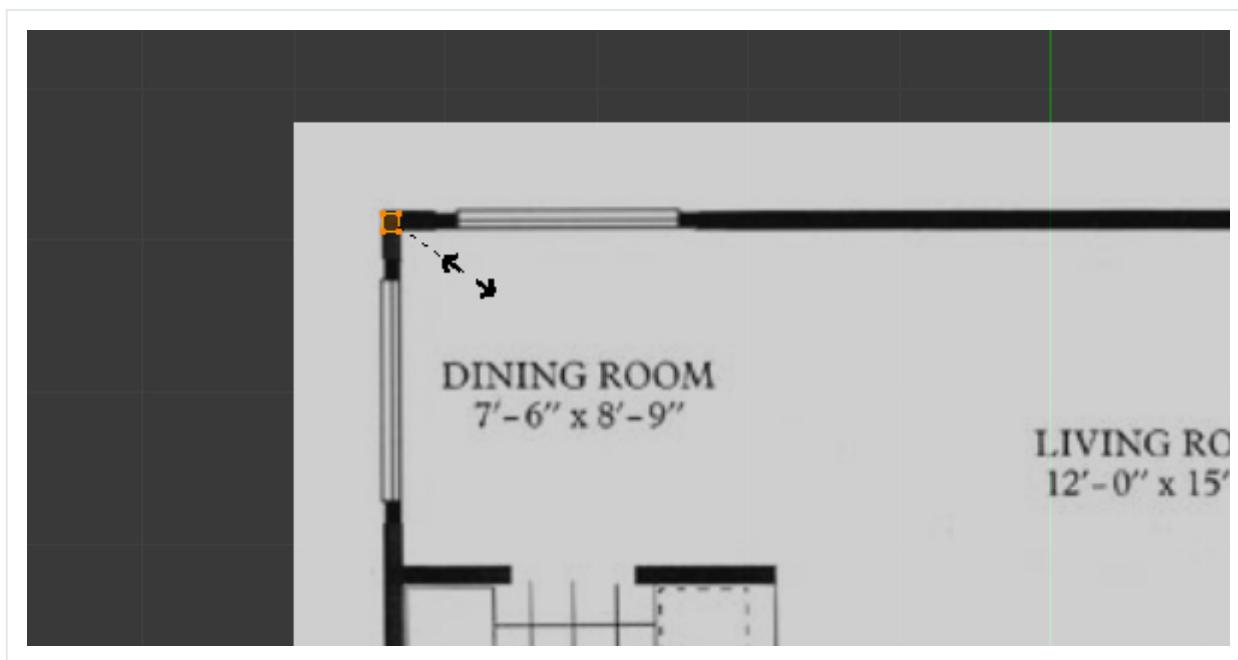
Step 3

Press '7' on the NumPad to get into the Top view. Here you can see the background image. The view must be set to 'orthographic' in order to see the image. You can toggle between the ortho and perspective views with the '5' key on the Numpad. Press Shift+A and add a Plane.



Step 4

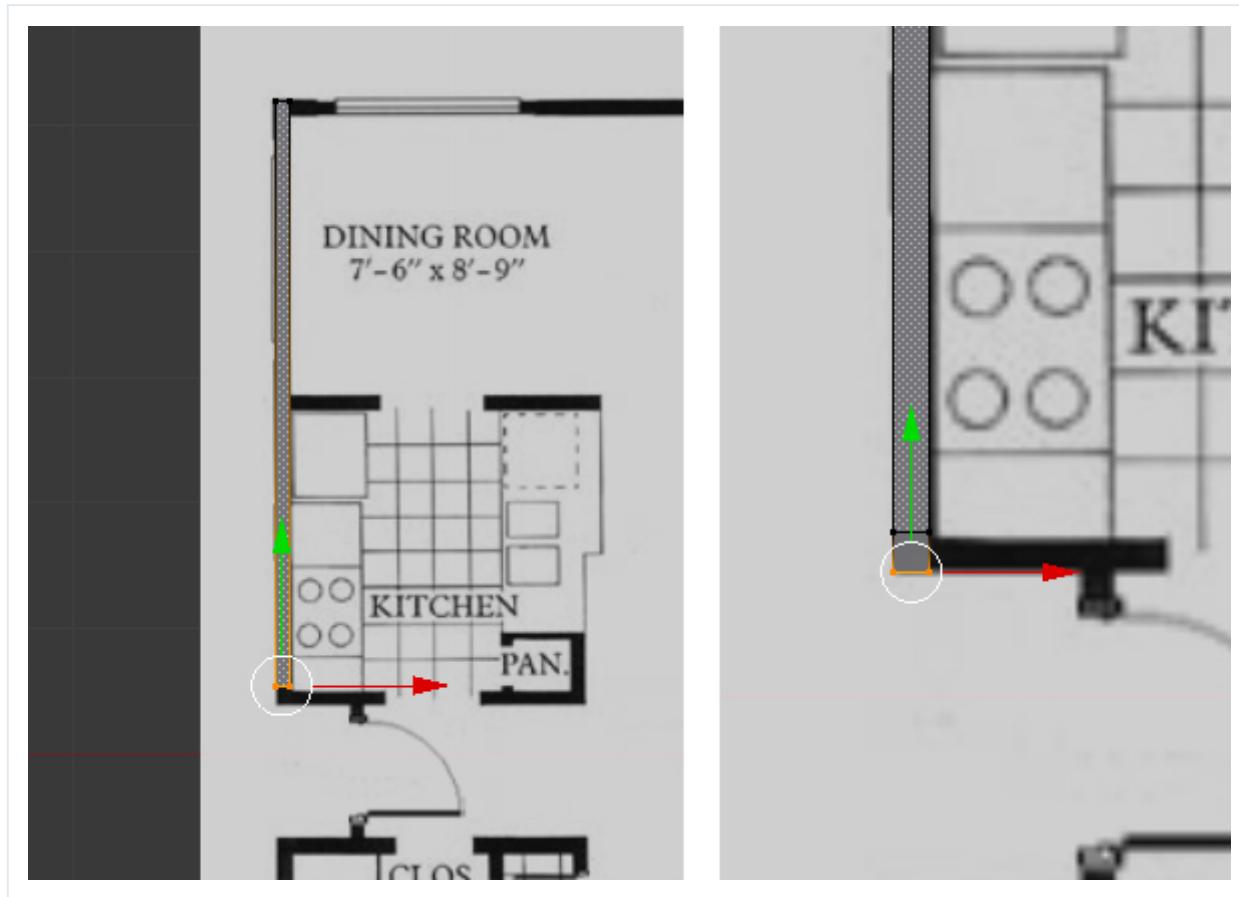
With the Plane selected, press 'TAB' to get into 'Edit' mode. Select all the vertices with the 'A' key, or press 'B' to drag select them. Press 'G' and move them to the top left corner. You toggle the viewport shading between solid and wireframe with 'Z' key. Press 'S' and move the mouse to scale them down to fit the width of the wall (as shown below.)



Step 5

Now we will cover all the black solid areas i.e. the walls. This will

include the windows as they are part of the walls and will be added later. Any type of door whether it's a slider or normal, is to be left out. Select the bottom two vertices (press 'B' to drag select or Hold 'Shift' and Right click for multiple select.) And move them down just before the wall turns left. Press 'E' and extrude the wall again until you reach the edge.



Advertisement

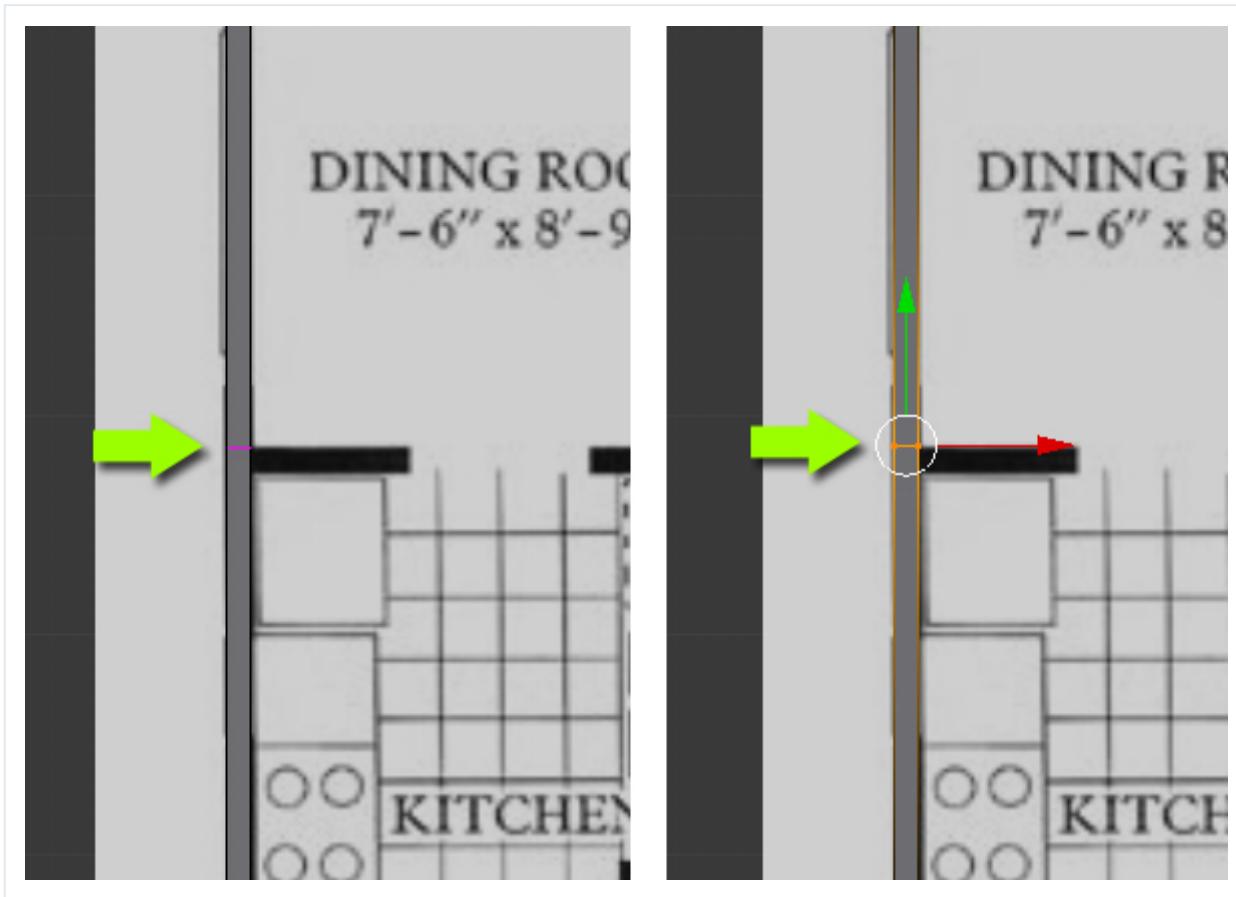
Step 6

Select the right two vertices and press 'E' to extrude, and match the reference.



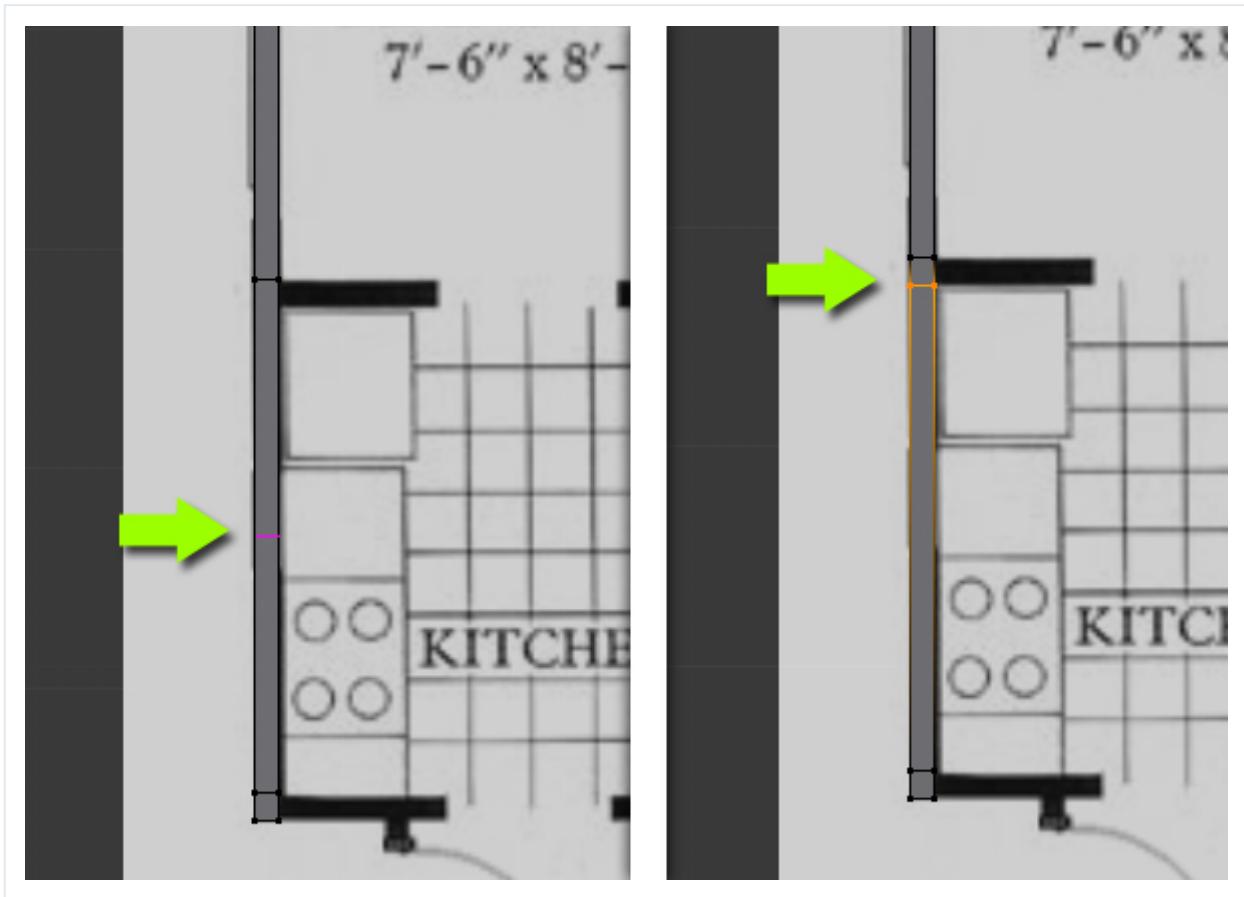
Step 7

Now, in order to extrude out a face from the middle, we need to add an Edge Loop. Hover your mouse over the face, and press 'CTRL+R' and Left Click to confirm. Move the mouse up and down and then Left click again to confirm its position.



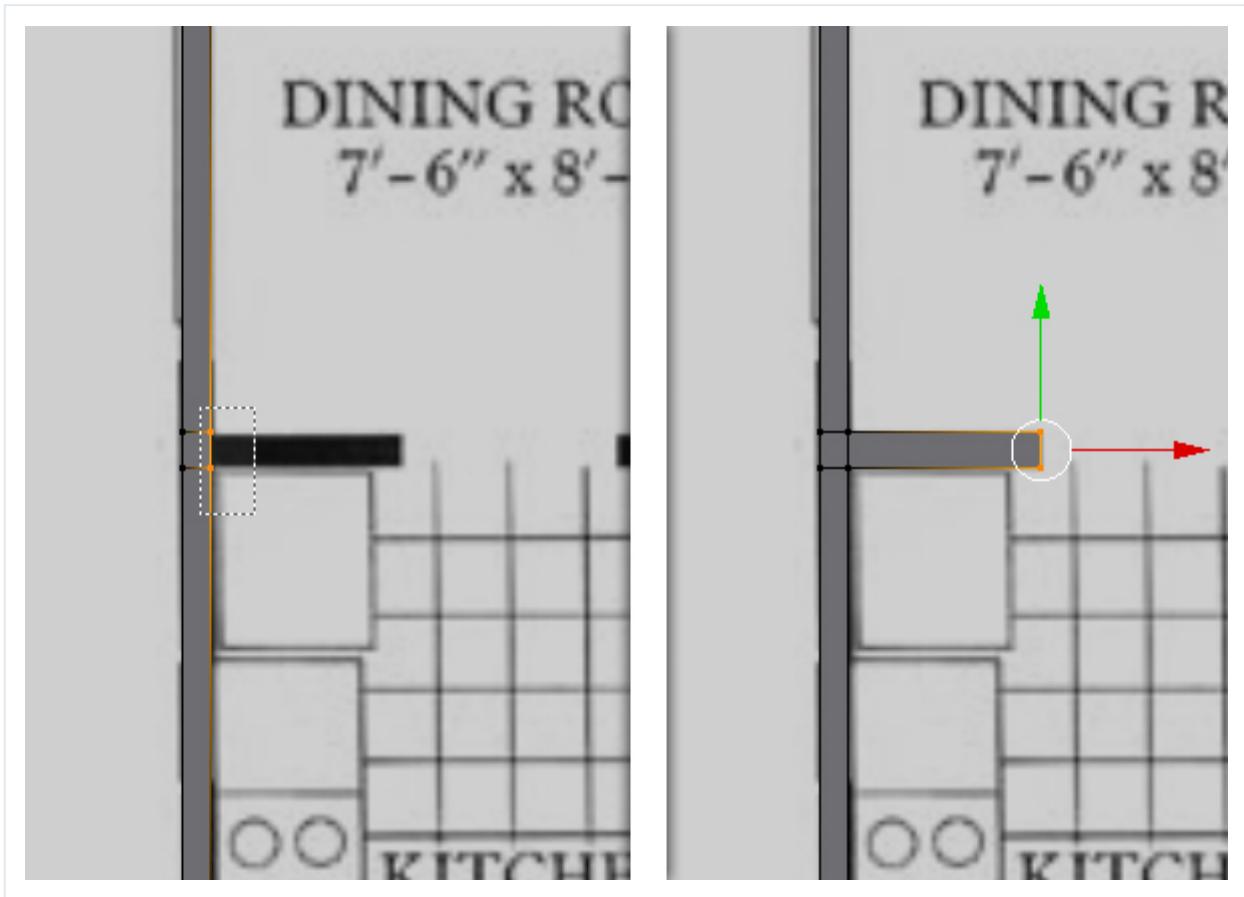
Step 8

Create another edge loop just below the previous one using the same method, matching the width of the wall to be extruded.



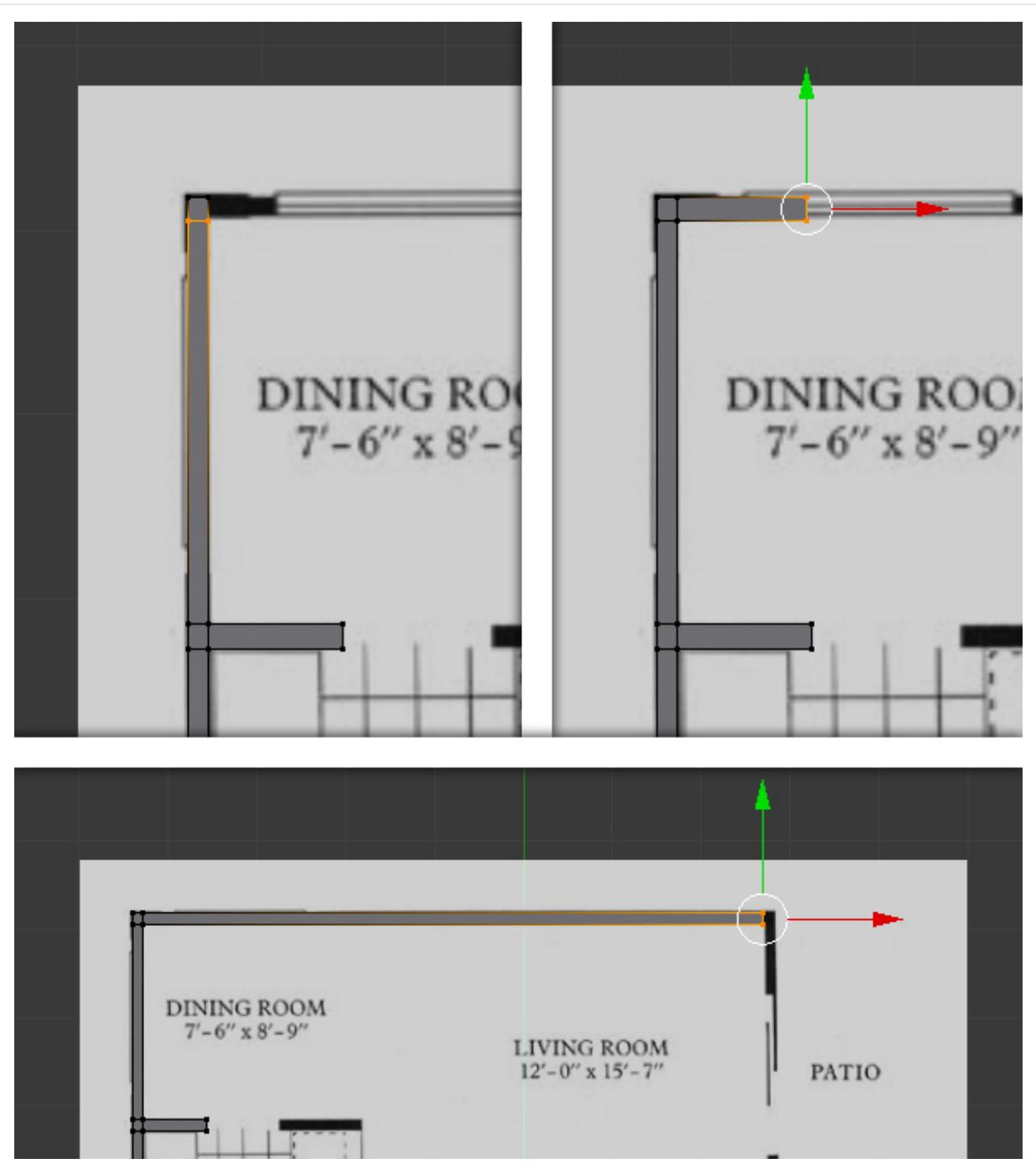
Step 9

Select the two vertices and extrude the wall.



Step 10

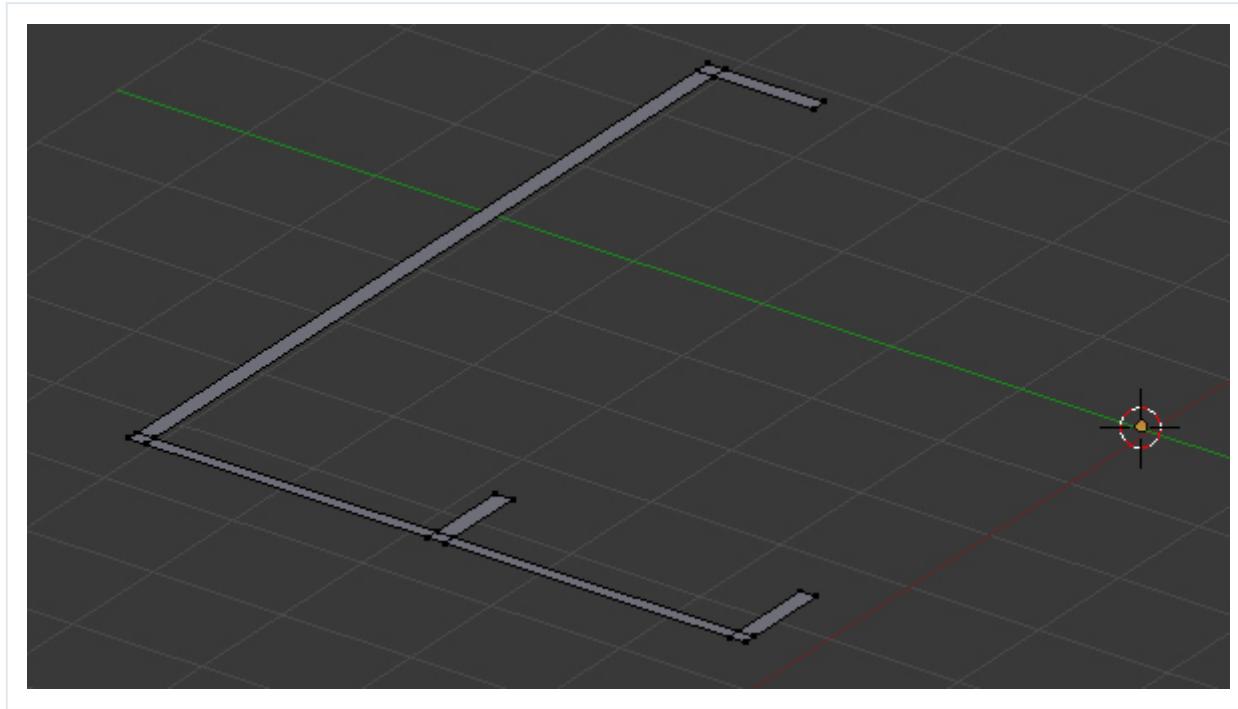
Create another edge loop on the corner and extrude the right edge.



Step 11

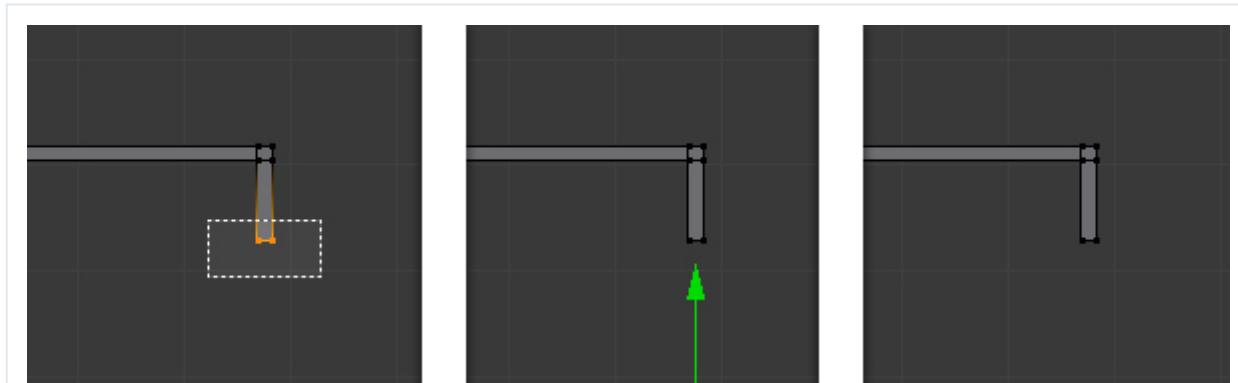
Using the techniques above (extrude and edge loop division) fill all

using the techniques above (extrude and edge loop division) fill all the solid black lines of the reference image with the mesh.



Step 12

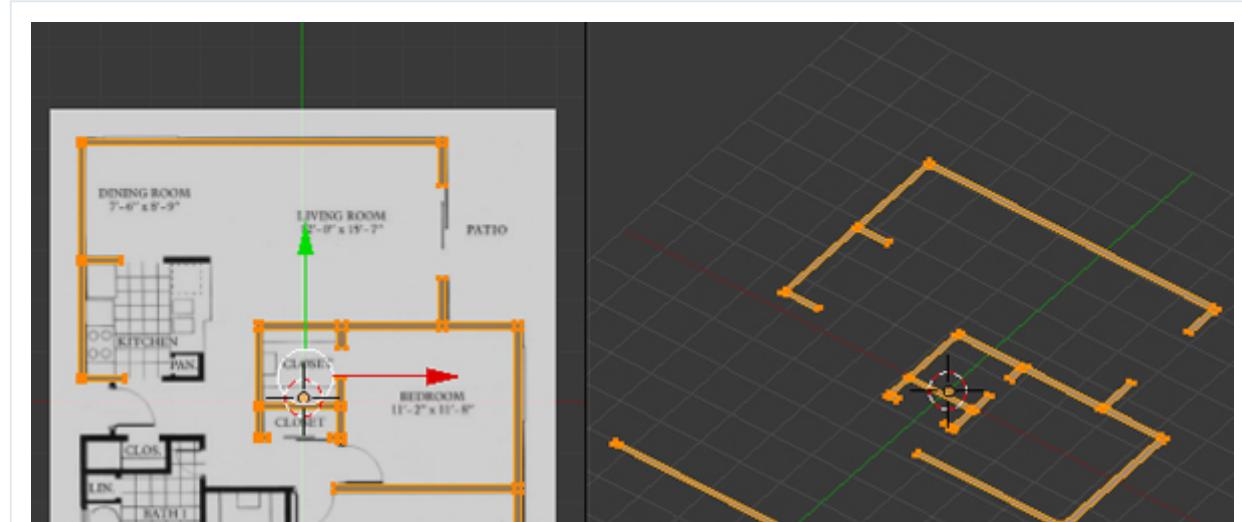
To start a new separate wall, duplicate the last edge and then start extruding it. Select the last edge and press 'Shift+D' to Duplicate it, and left click to confirm. Move it with the Move control widget or press 'G' key of the keyboard. And continue extruding the mesh along to match the reference.

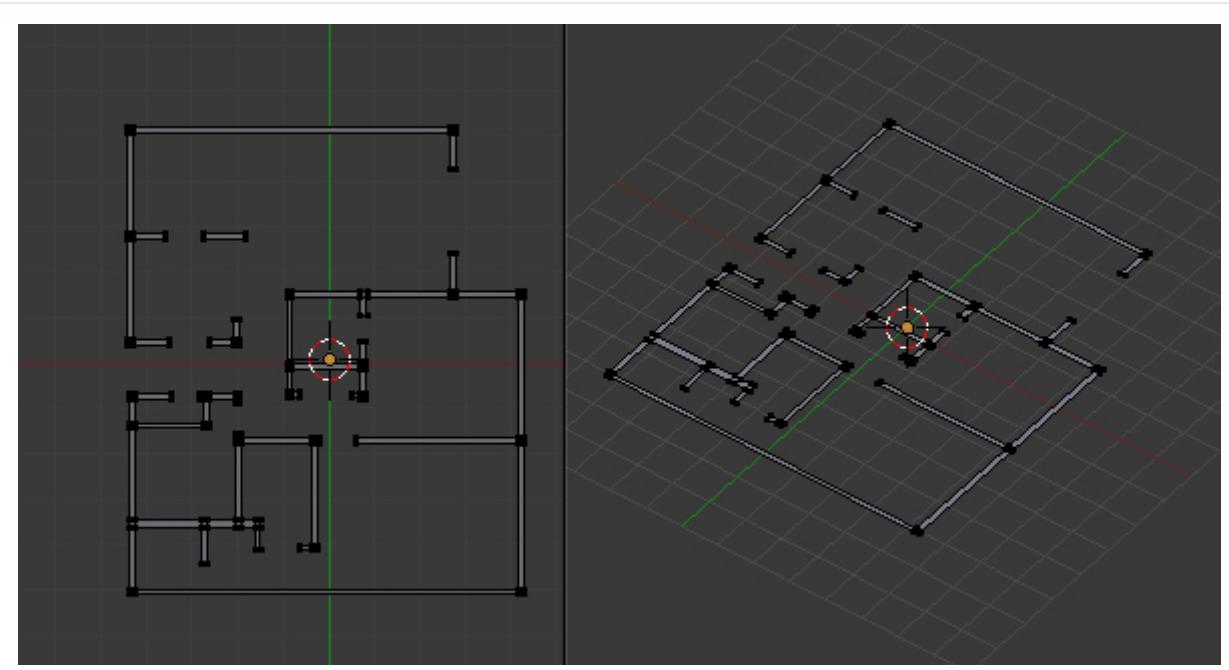
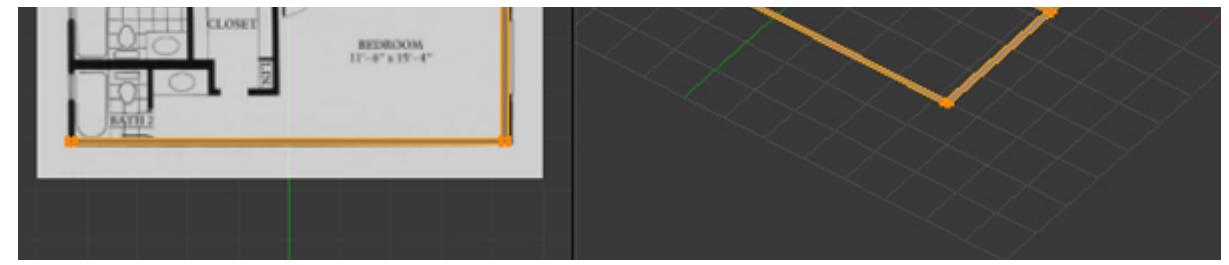




Step 13

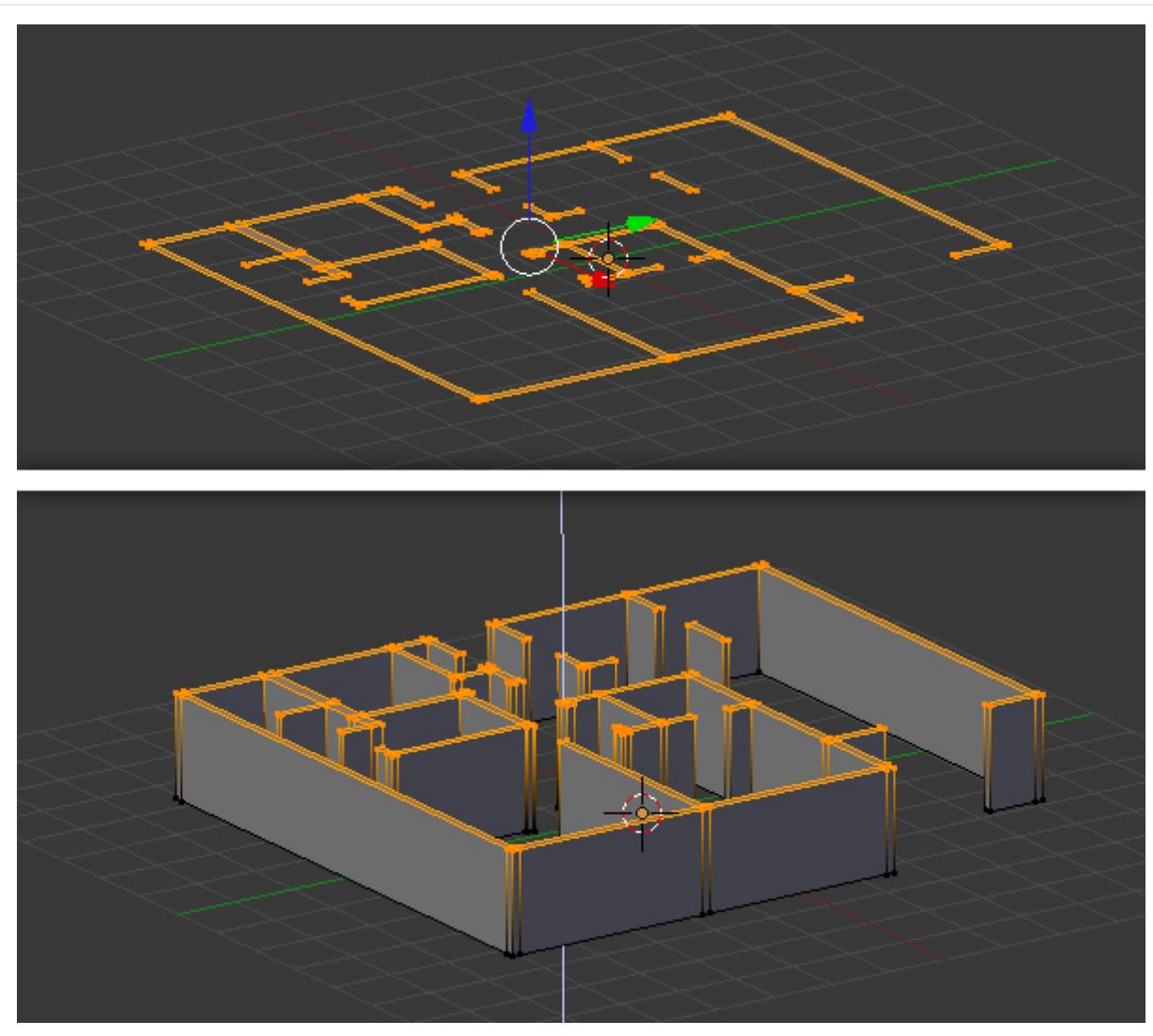
Complete the walls with the techniques you learned from above steps.





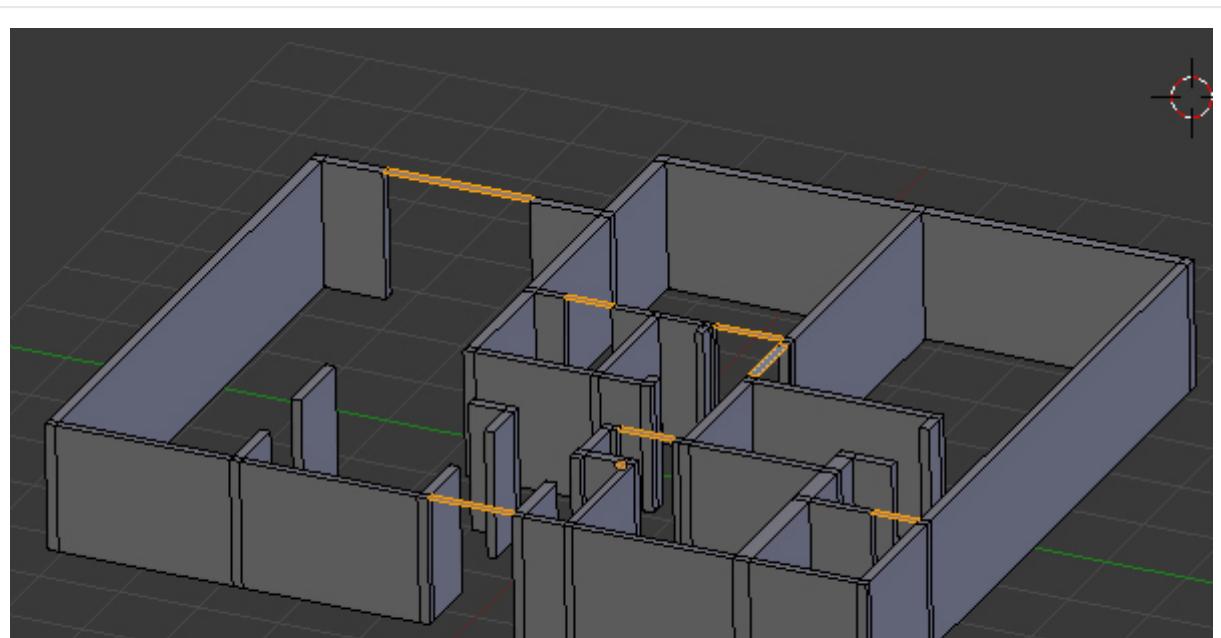
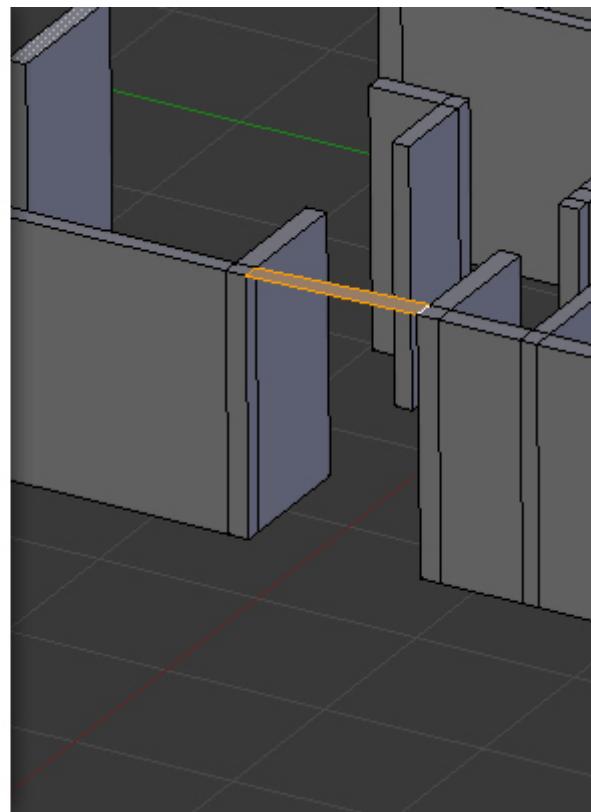
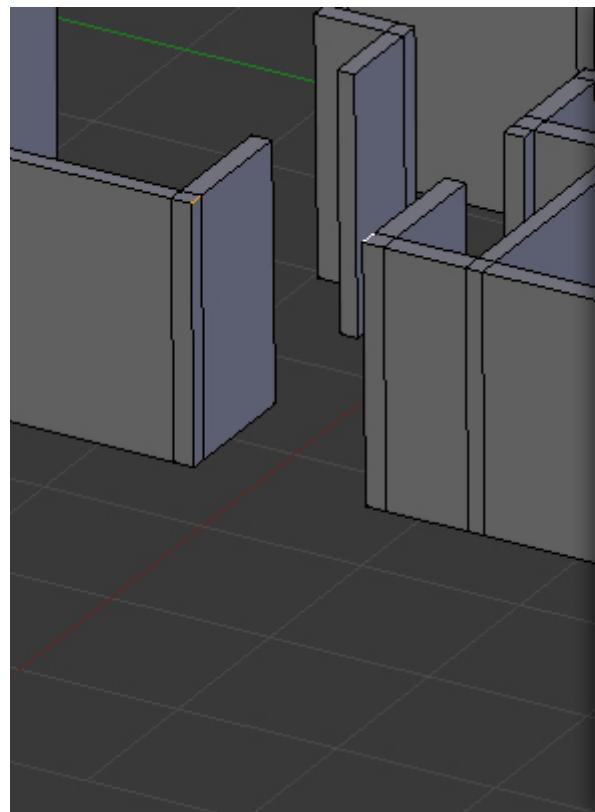
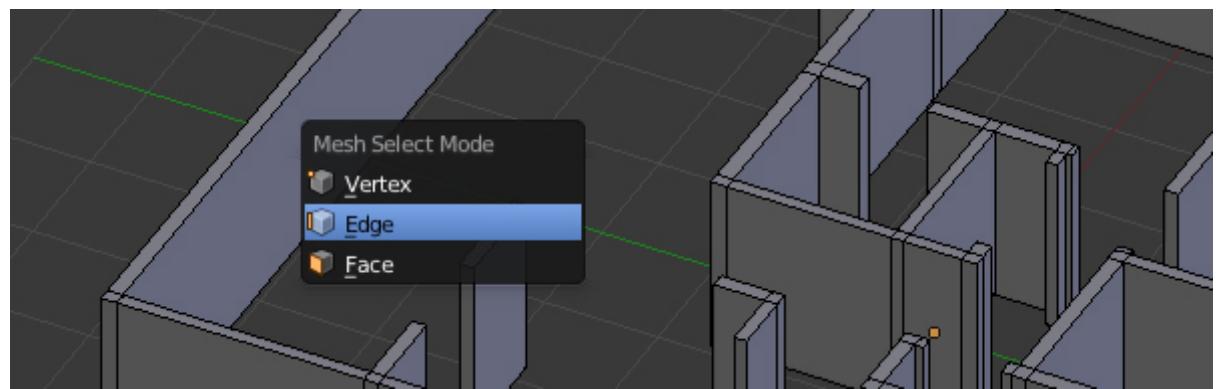
Step 14

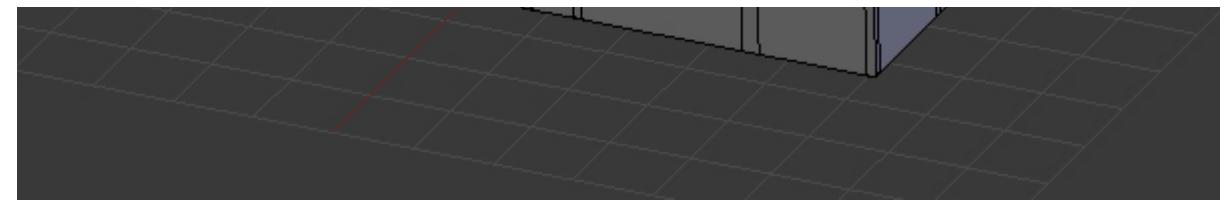
After completing the wall, select all the vertices and then press 'E' to extrude them along the Z axis. Now we see that the structure is taking shape. The height should be equivalent to a door.



Step 15

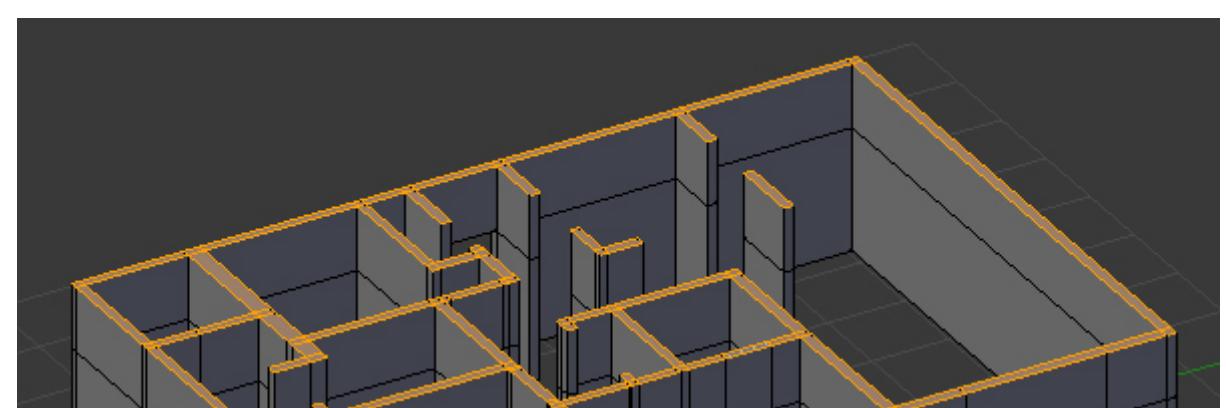
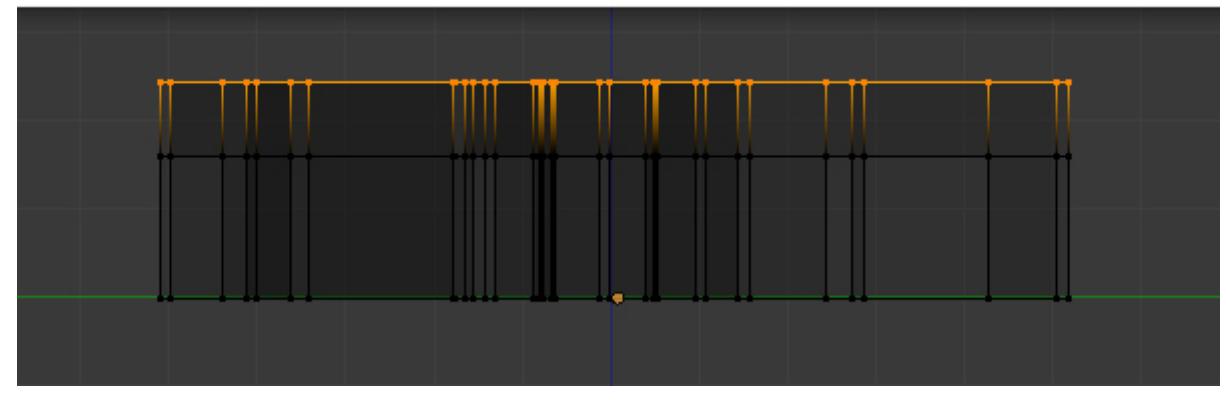
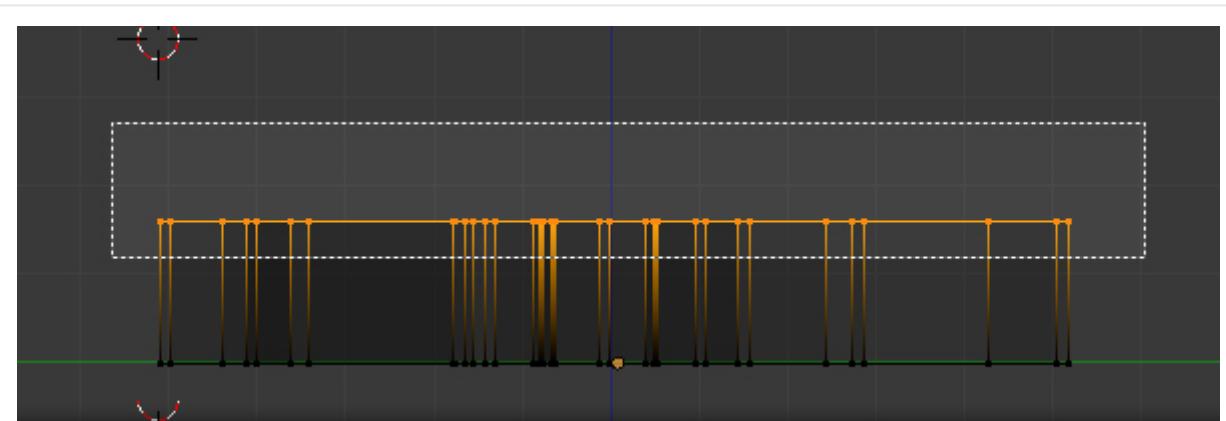
Press 'Ctrl+TAB' and select 'Edge' in the mesh select mode menu. Select the top two corner edges of a door (hold shift + right click to multiple select) and press 'F' to make a Face between them. Do this for all doors. Refer to your image and always check from all views.

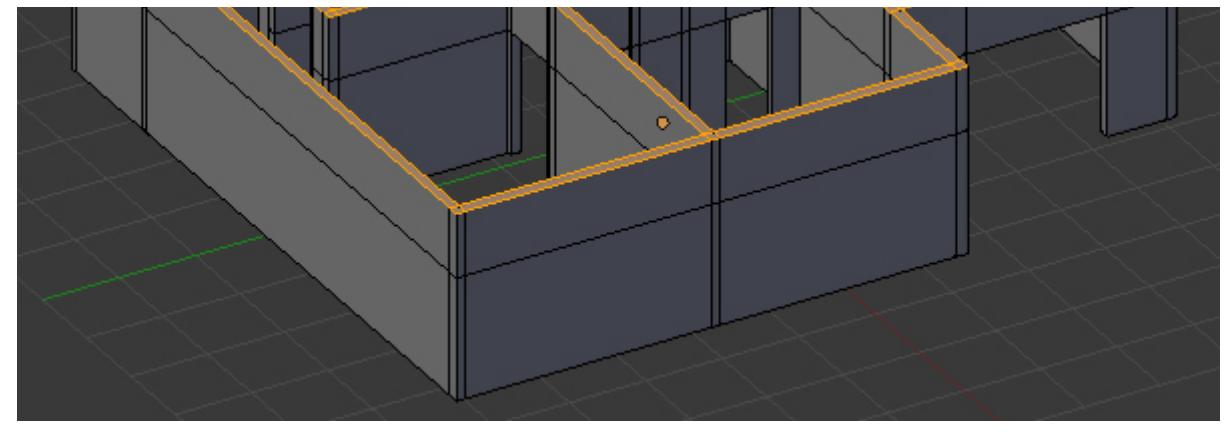




Step 16

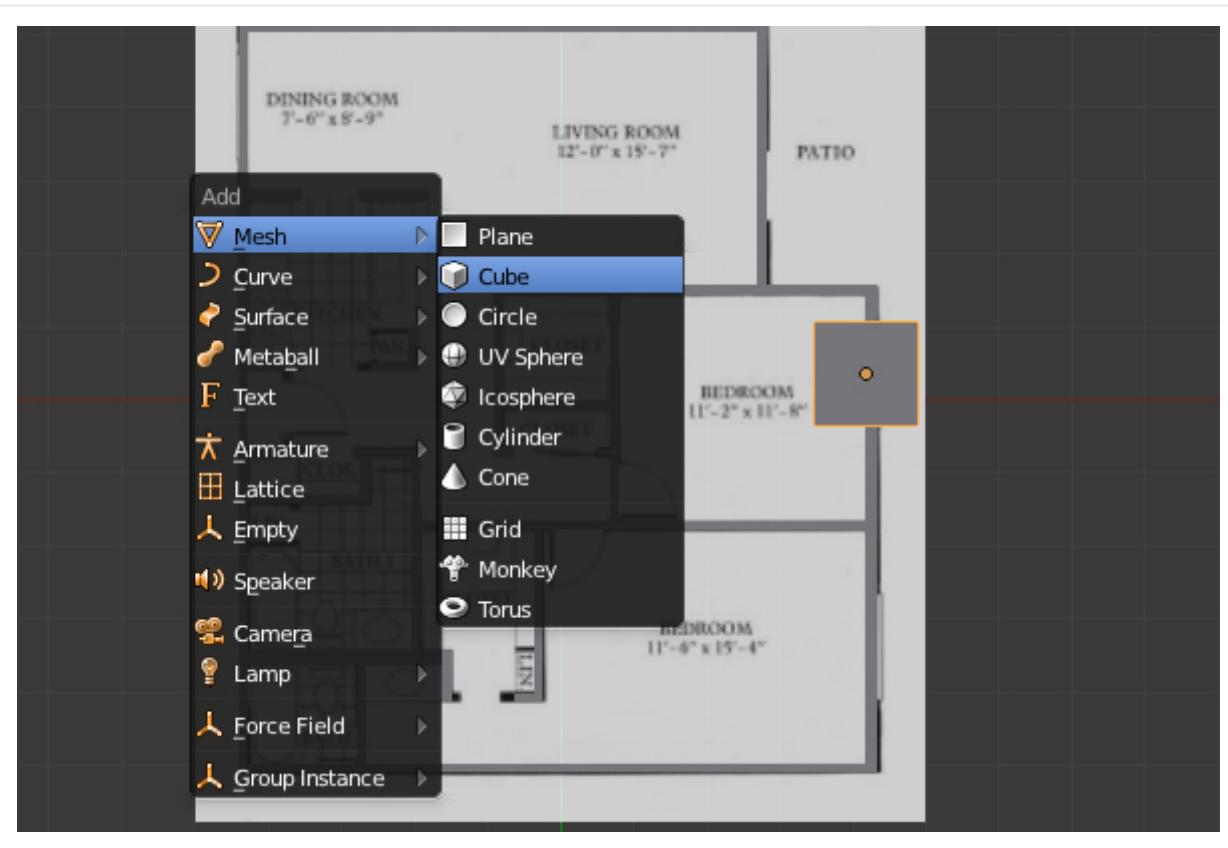
Press '3' on the Numpad to get into side view, and Press 'Z' to get into wireframe view so that we can see all the vertices behind are visible and can be selected. Press 'B' to drag select all the top vertices or edges, then Press 'E' to extrude them. This will reach the final height of the wall.



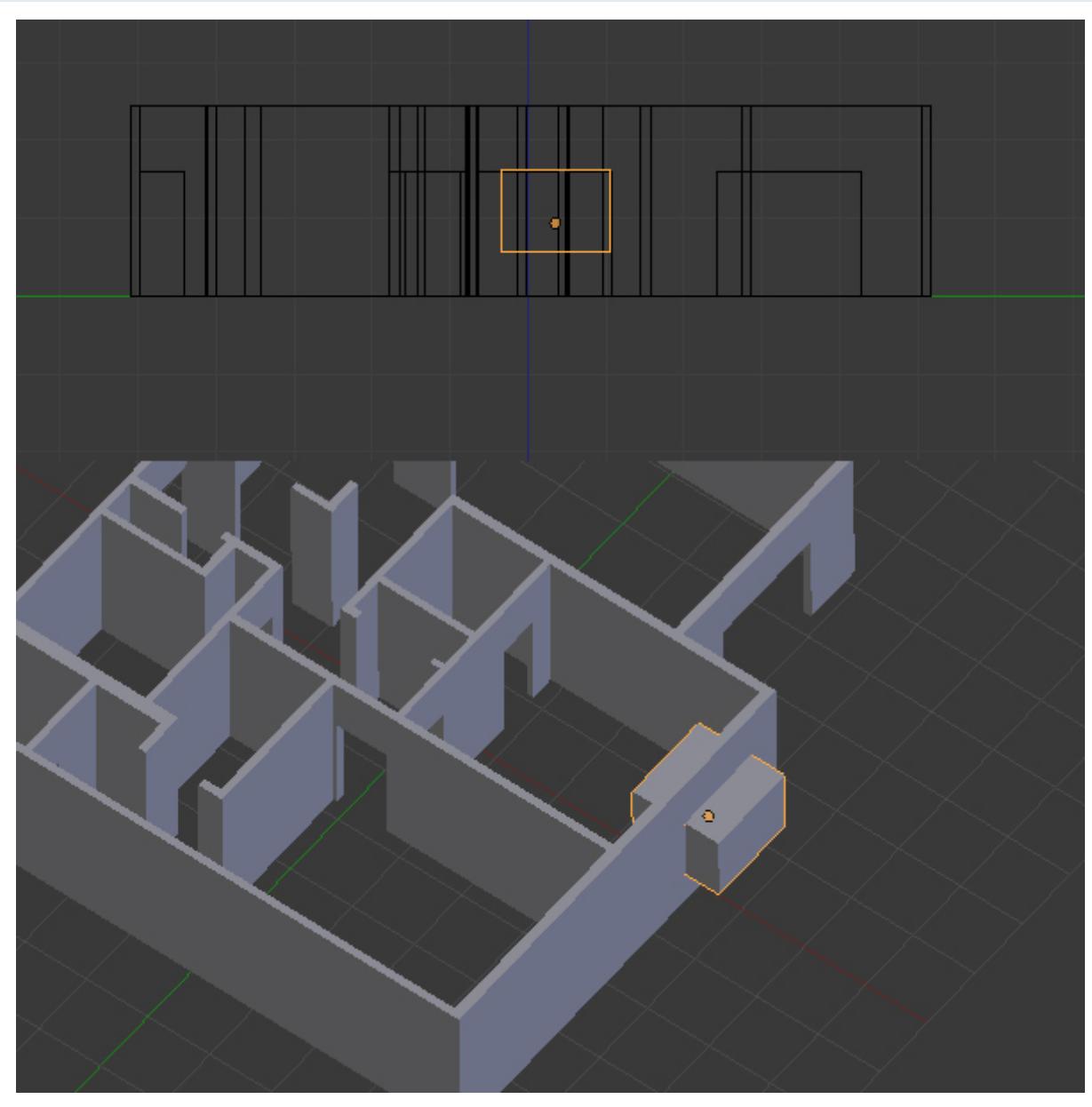


Step 17

Now we will place the windows. Press 'TAB' to get out of the Edit mode, and in object mode, press 'Shift+A' and add a 'Cube'. In the Top view, size (press 'S' to scale) and place it where the window is on the reference image.

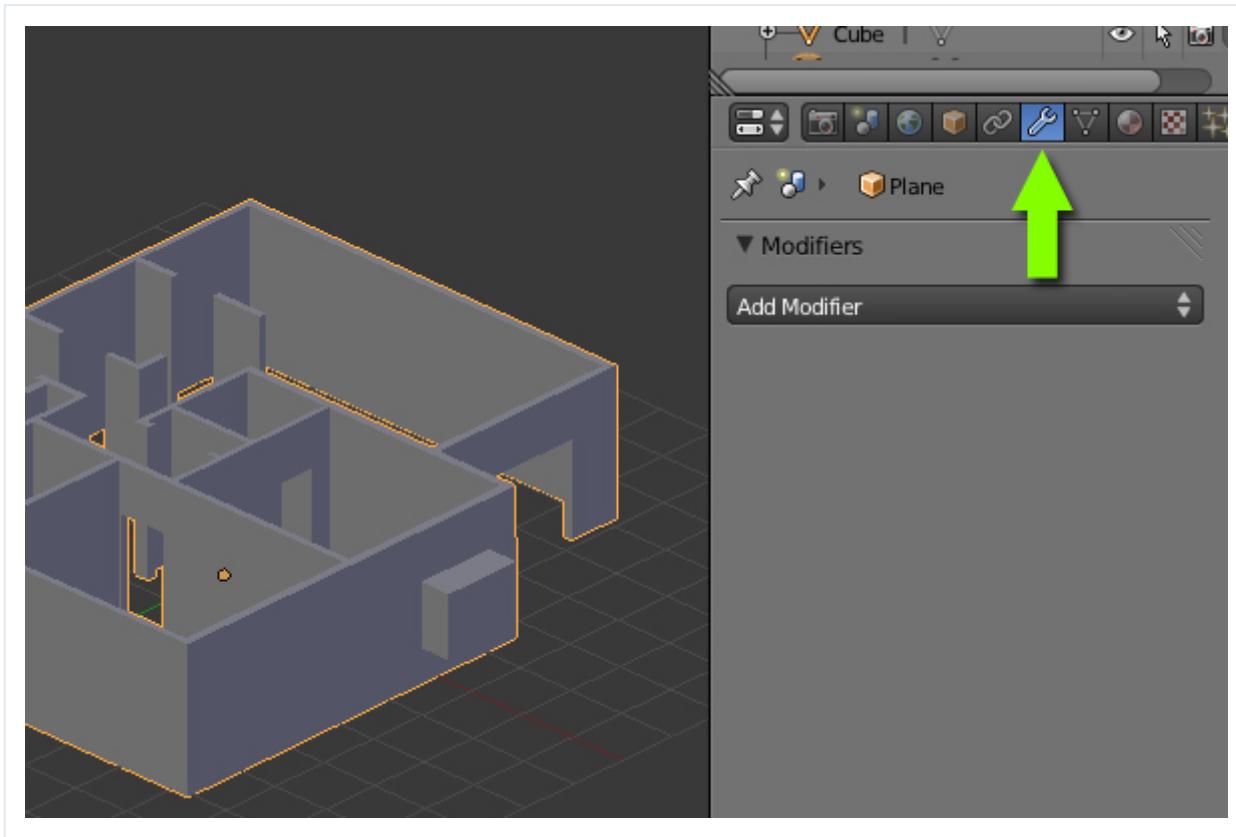


In the side view, the top part of window should align to the top of door. Press 'TAB' to enter into the edit mode to adjust the vertices. Adjust the bottom height of the window too. The width of the cube should be such that it should be half inside and half outside. See image below.

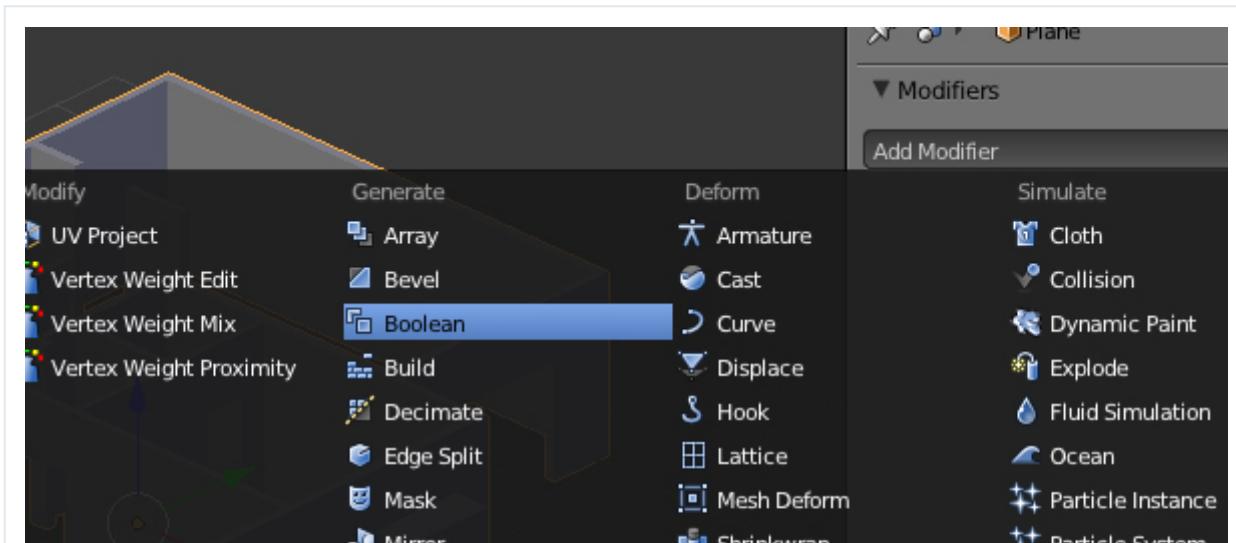


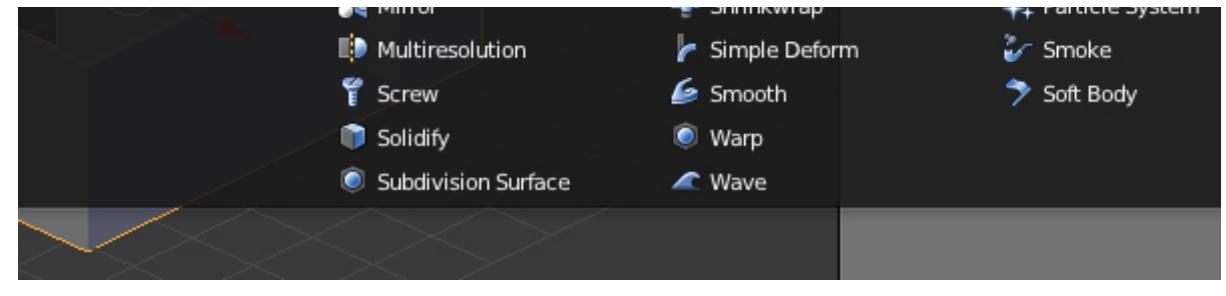
Step 18

Select the Wall mesh with Right click, and in the Properties button window, click on 'Object Modifiers'.



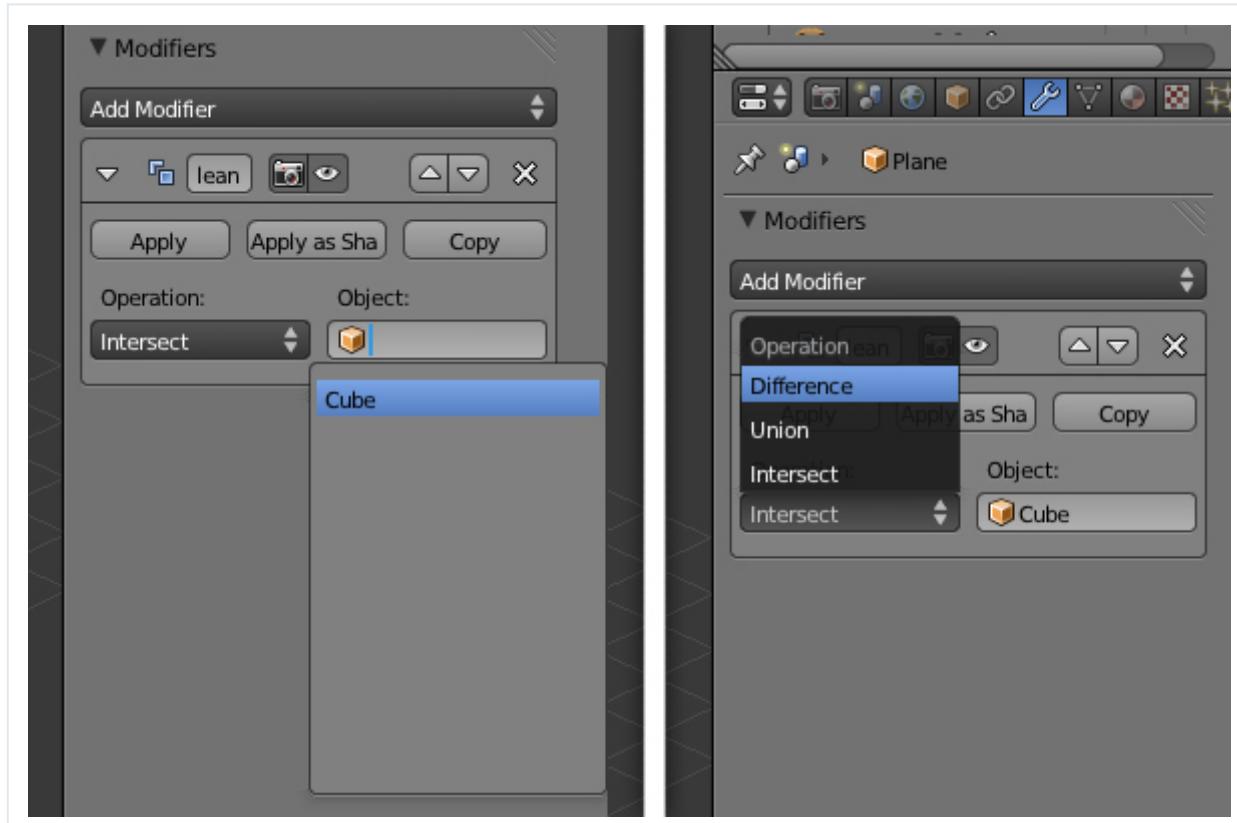
Click on 'Add Modifiers' and select 'Boolean'.



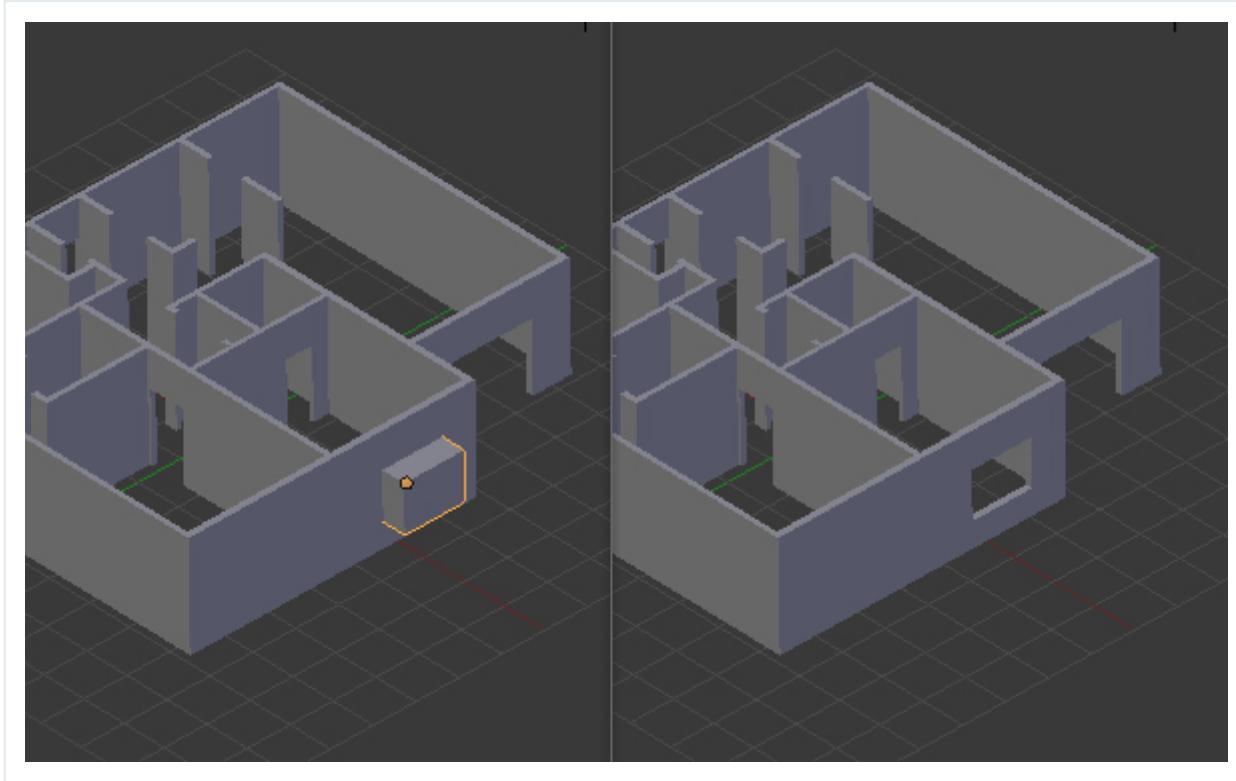


Step 19

In the Boolean modifiers panel, select 'Cube' in the Object, and 'Difference' under 'Operation'.



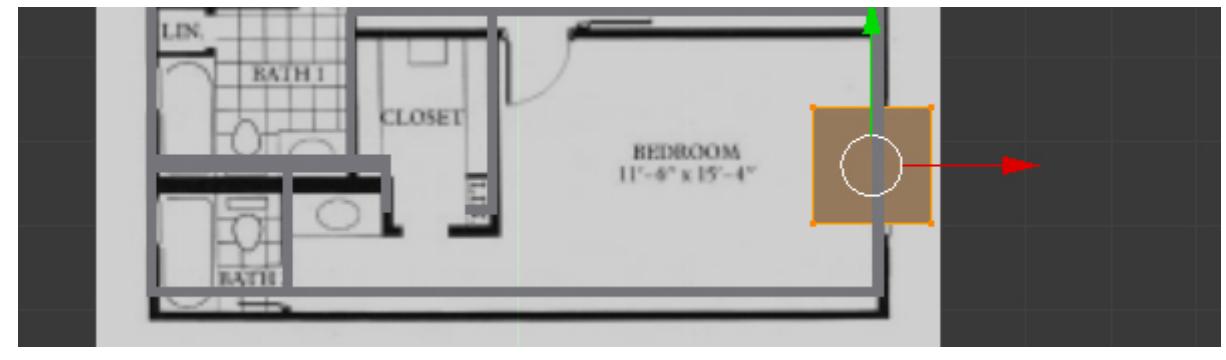
To see the effect - Select the cube and press 'H' to hide it. You will see that there is a "hole" in the wall the size and shape of the cube. Press 'Alt+H' to 'Unhide' the Cube.



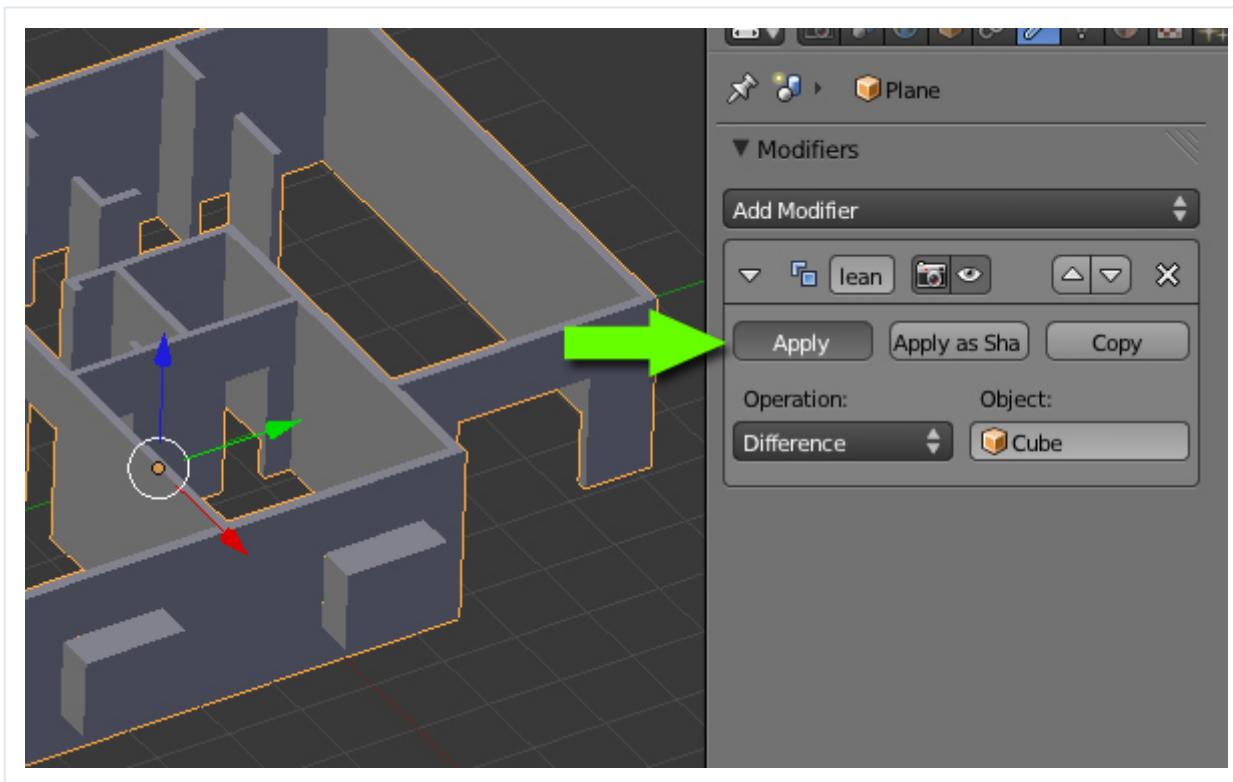
Step 20

Now select the Cube (window) and in the 'Edit' mode, select all the vertices and press 'Shift+D' to make a duplicate. Place this new cube in the location of the next window.



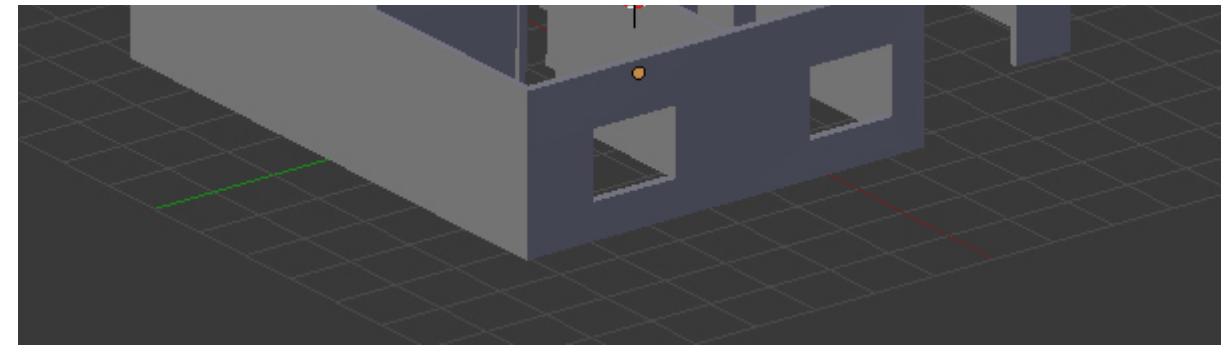


Now press 'Tab' to get out of 'Edit' mode, and select the Wall mesh and press 'Apply' in the 'Boolean' Modifier panel. The holes are now part of the geometry.



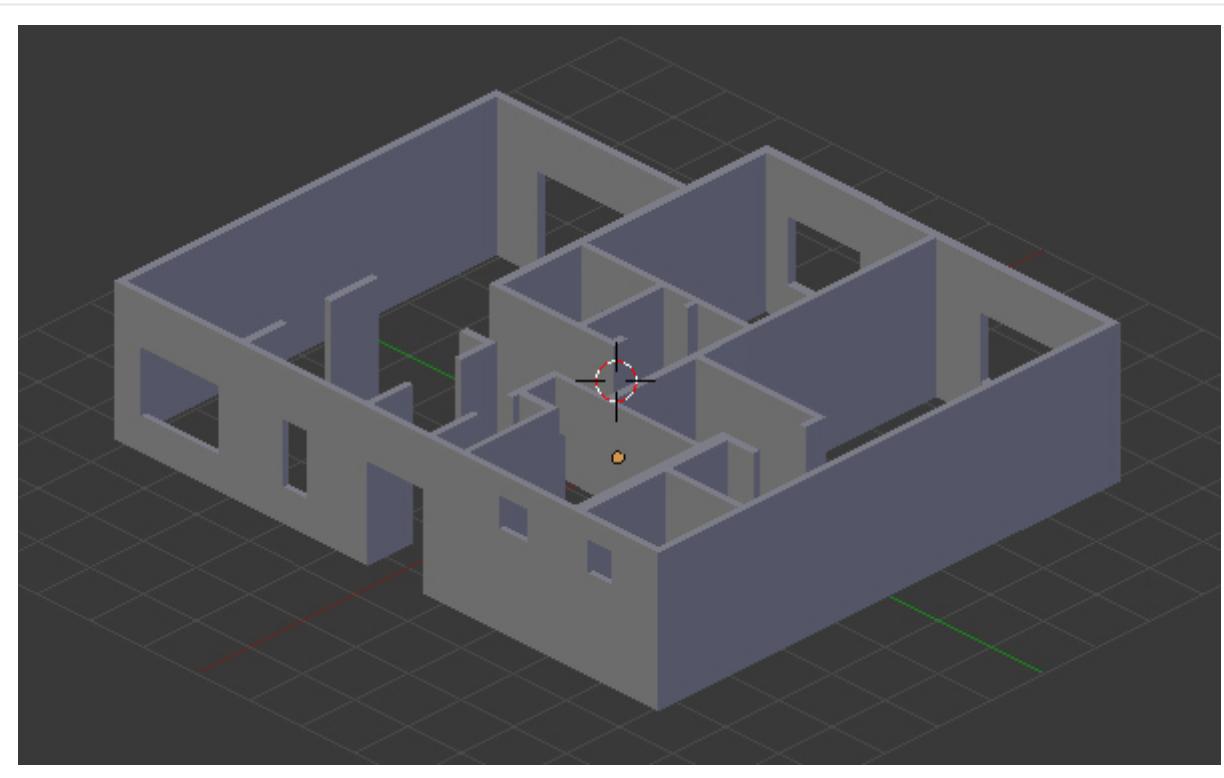
Move the Cube to see the windows.





Step 21

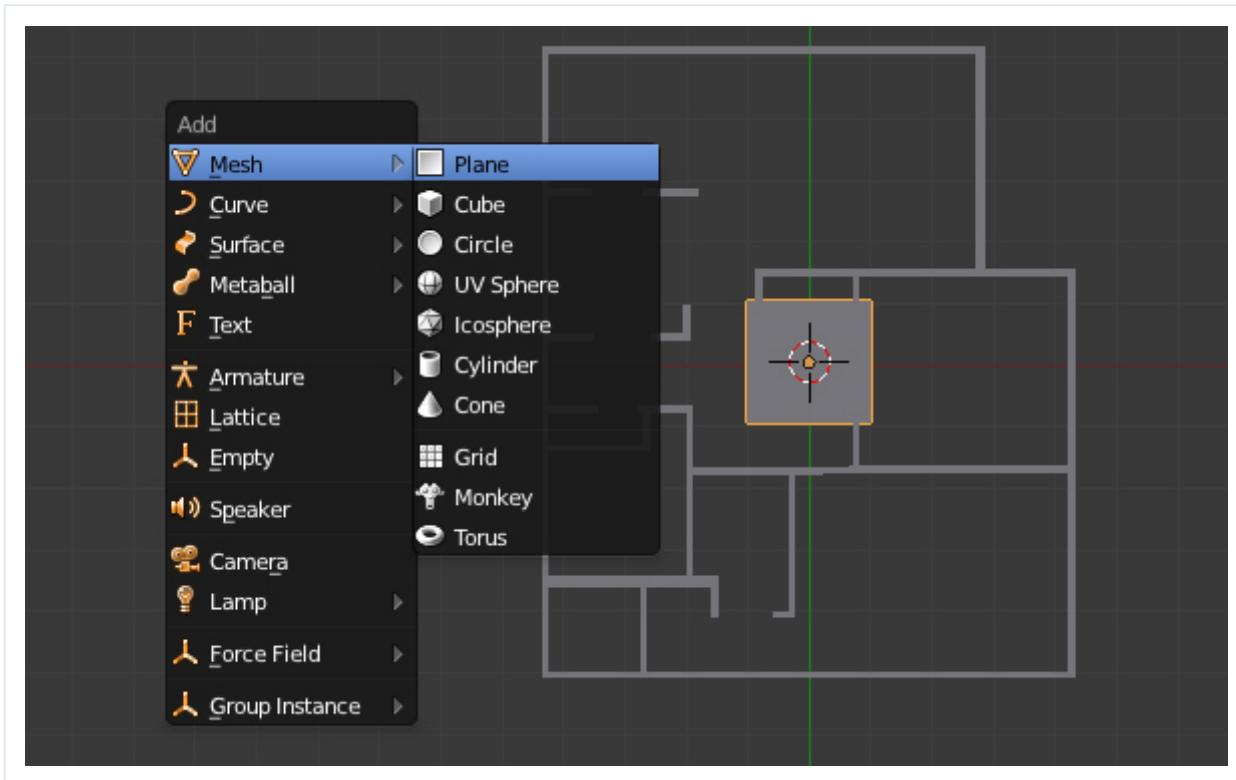
Similarly create all the needed windows with this Boolean modifier. Try doing them one by one, adjust the size and position of the cube according to the specific window.

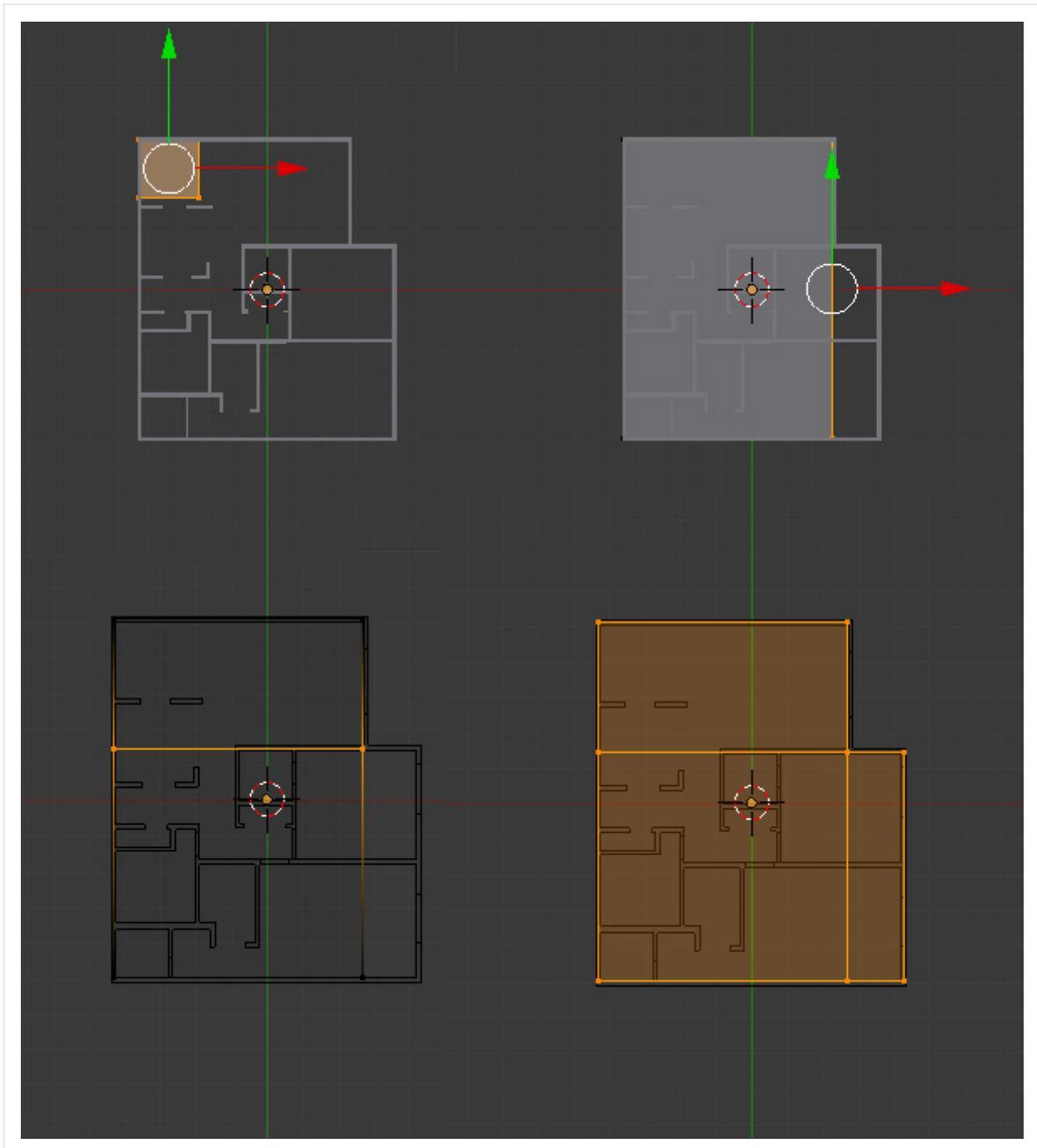


Step 22

Now we will create the Floor. In 'Object' mode and in the Top view, press 'Shift+A' and add a 'Plane'. Press 'Tab' to get into 'Edit' mode and adjust the vertices accordingly so that it covers the walls.

Create Edge Loops or Extrude the edges where necessary.

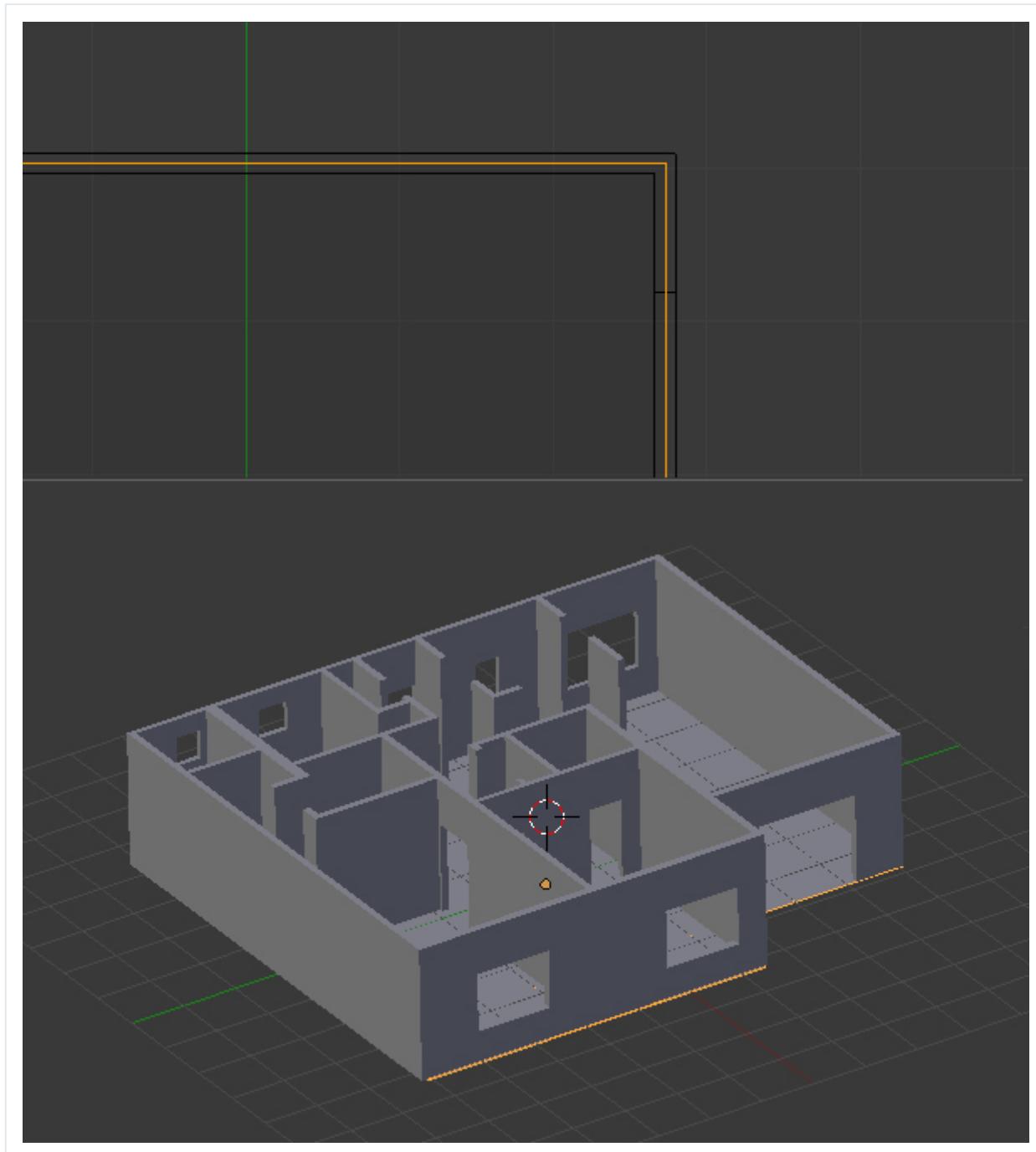




Step 23

Make sure that there are no gaps between the edges of the floor

and walls. Also in the Side view, move the floor down so it's aligned with the bottom of the walls.



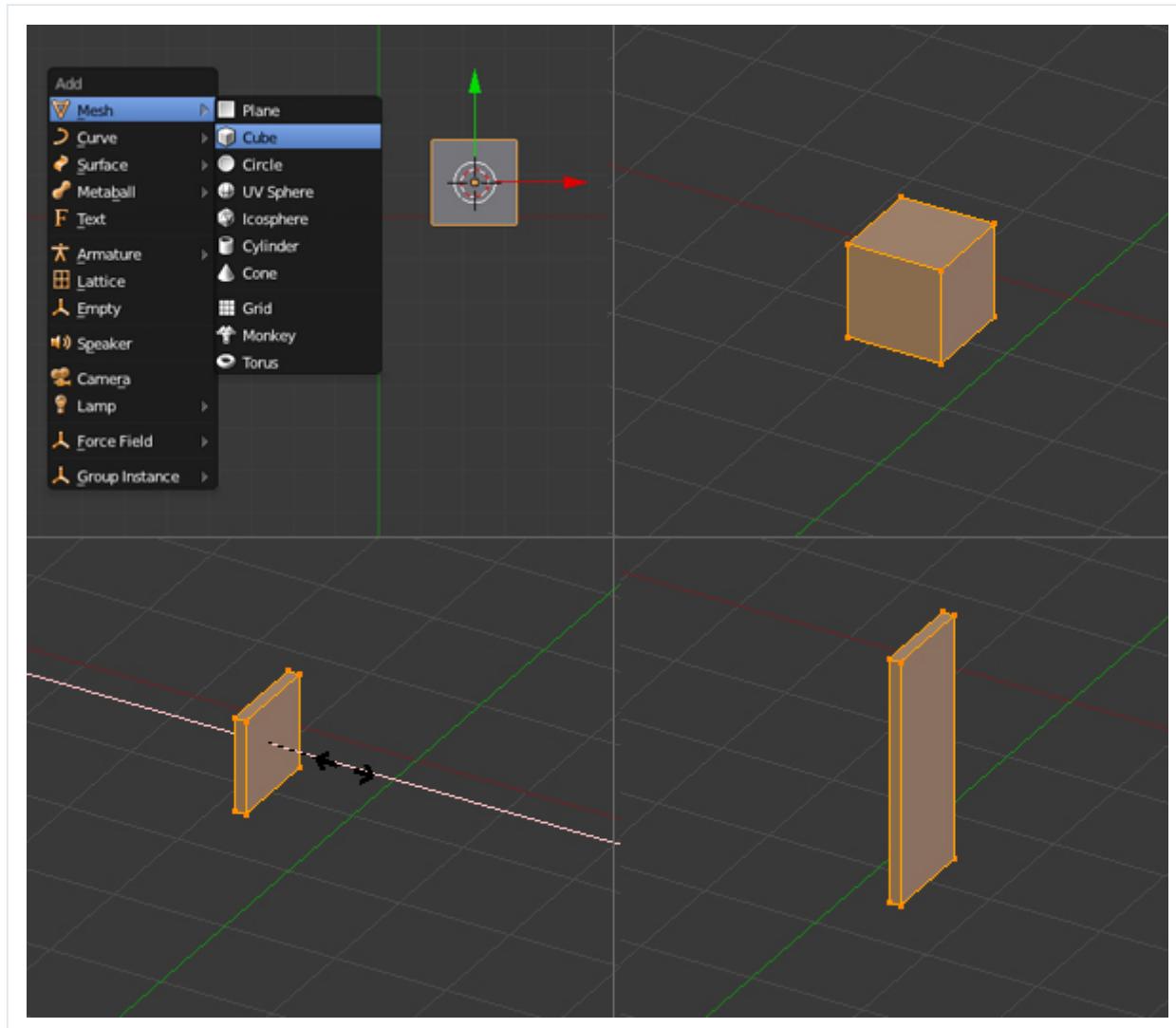
Step 24

To make doors, add a new 'Cube'. And in 'Edit' mode, press / on the

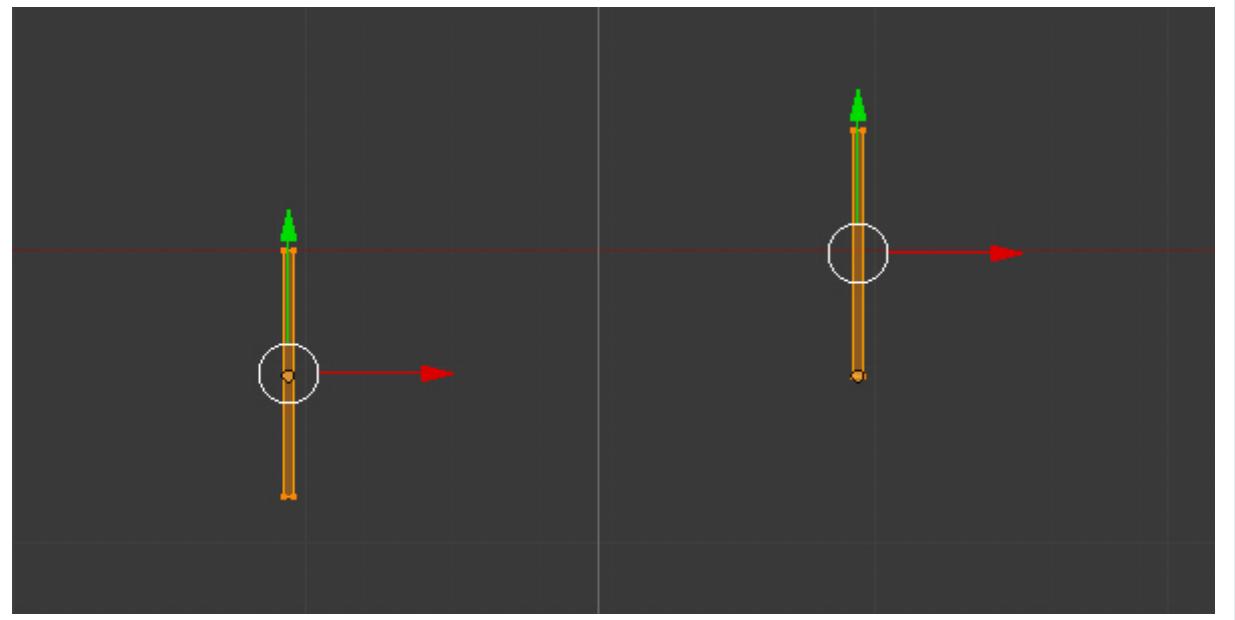
Numpad for Local view (this will show only the selected object.)

In the Top view, Move or Scale the vertices to give it a nice shape.

Refer to the image for the height and width.

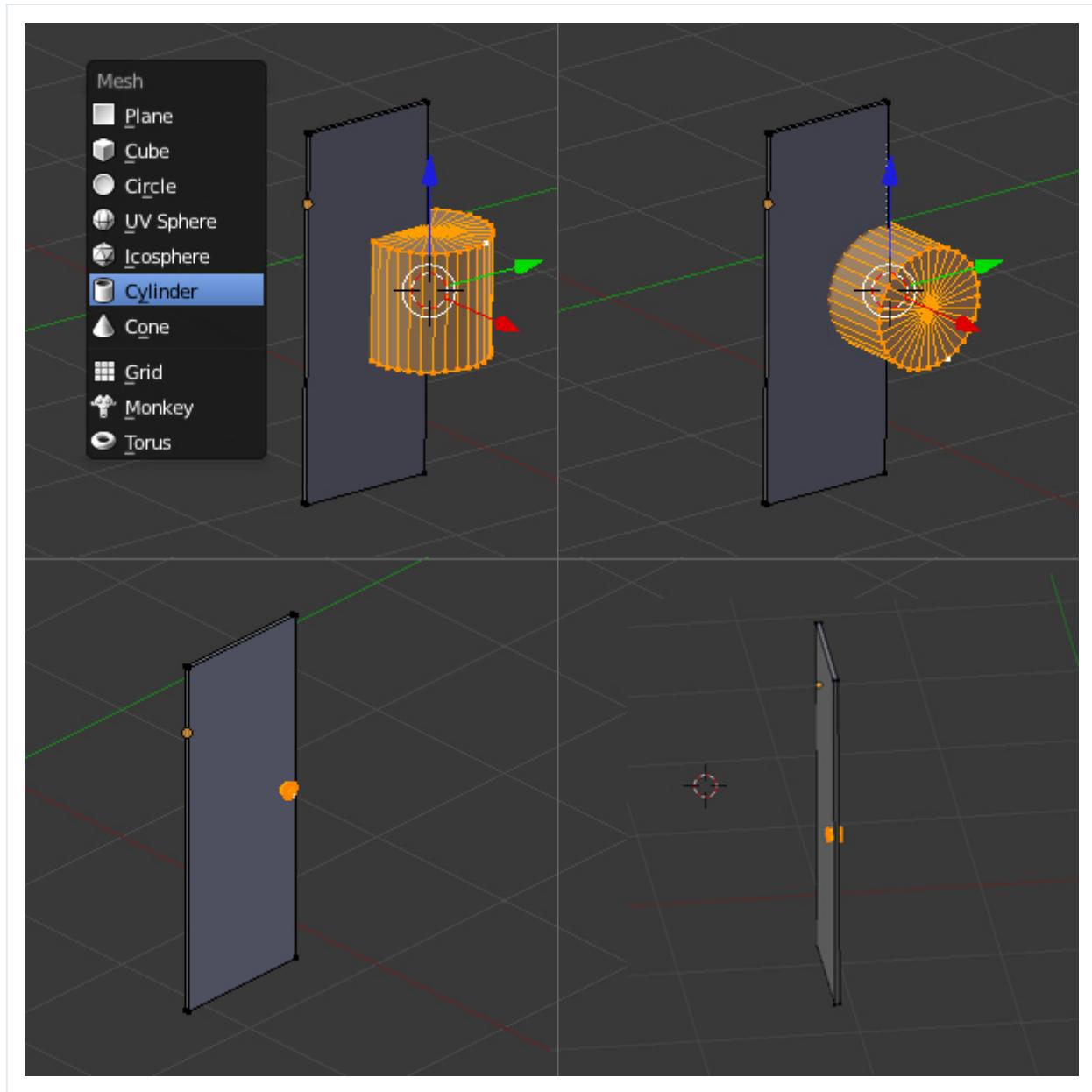


In the Top view, and in 'Edit' mode. Move all the vertices of the door along the Y axis, so that the center point of the object (orange dot) should be at the corner (see image.) This will set the transform orientation of the object from that corner. Press 'TAB' to get out of edit mode and then press 'R' to Rotate and see the difference.



Step 25

While in the edit mode, add a new 'Cylinder'. Rotate and scale it down to create the doorknob (you can add more details if you like.) Press 'TAB' to get out of edit mode.



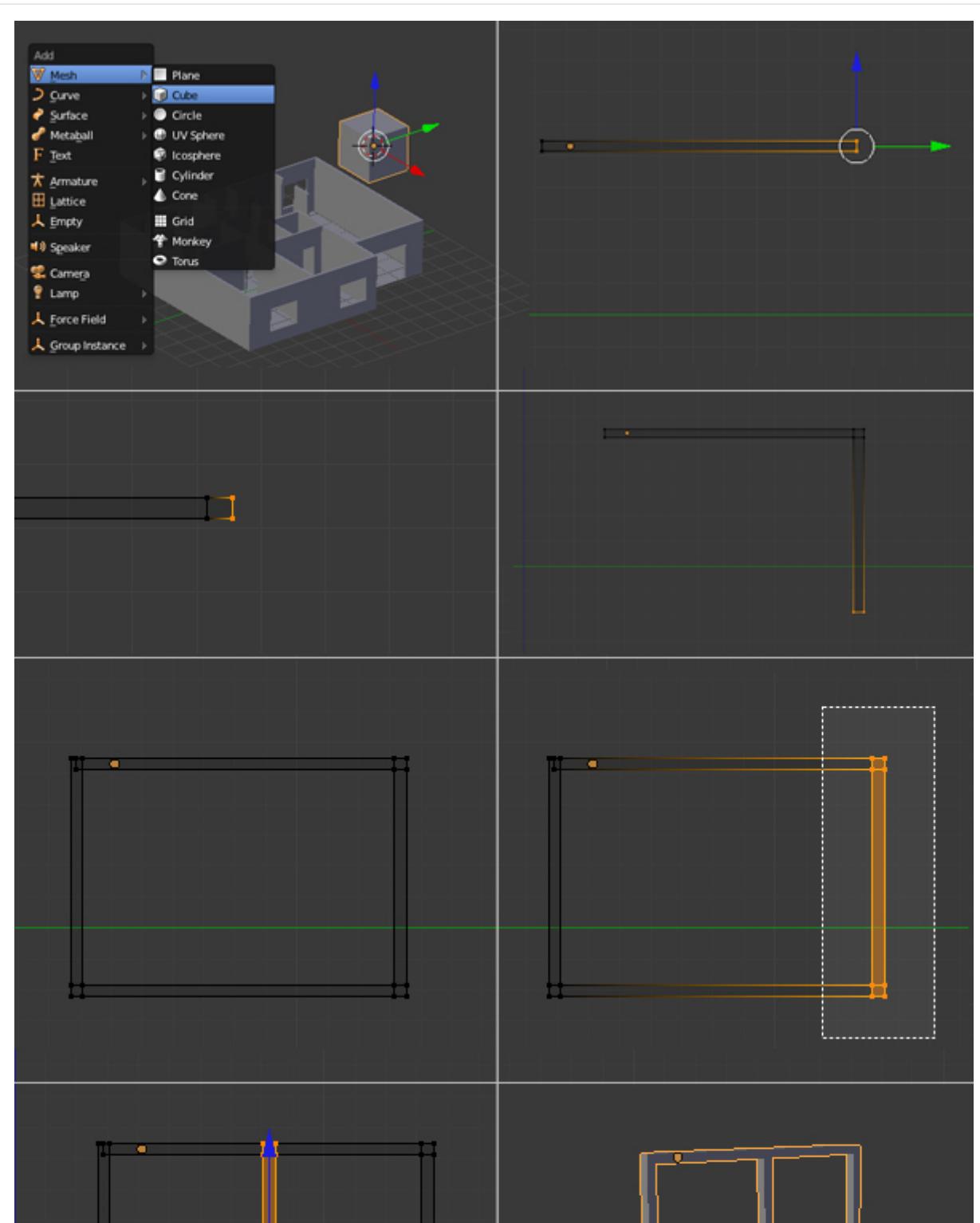
Step 26

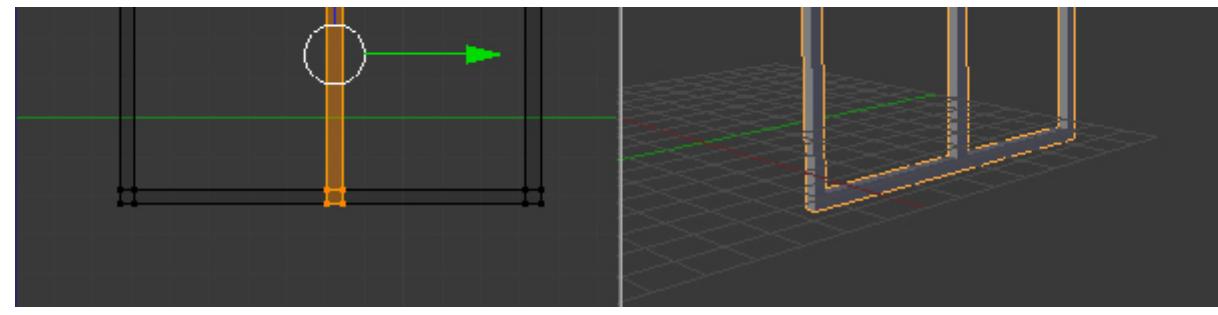
With the help of the reference image, place the doors in the correct positions (press 'Shift+D' to make duplicates.)



Step 27

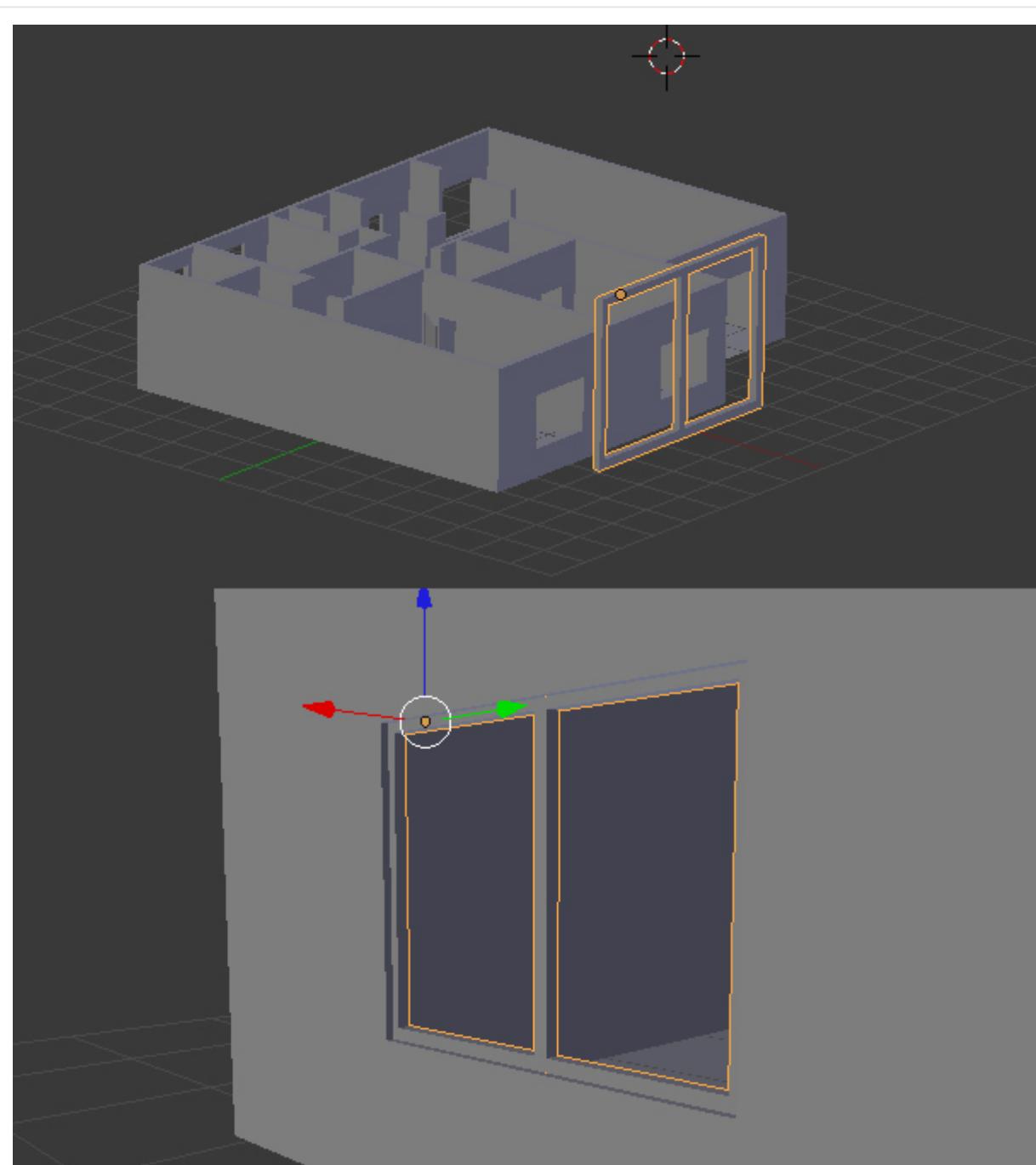
Now we will create the window frame. Start with another new 'Cube', and press 'TAB' to enter into 'Edit' mode. Press the 'Z' key to toggle wireframe view, so that we can select the back vertices too. Press '3' on the Numpad to get into side view and then extrude the faces as shown in the image to make the window frame. Press 'TAB' to exit out of edit mode, and press / on the numpad again to get back to the scene.





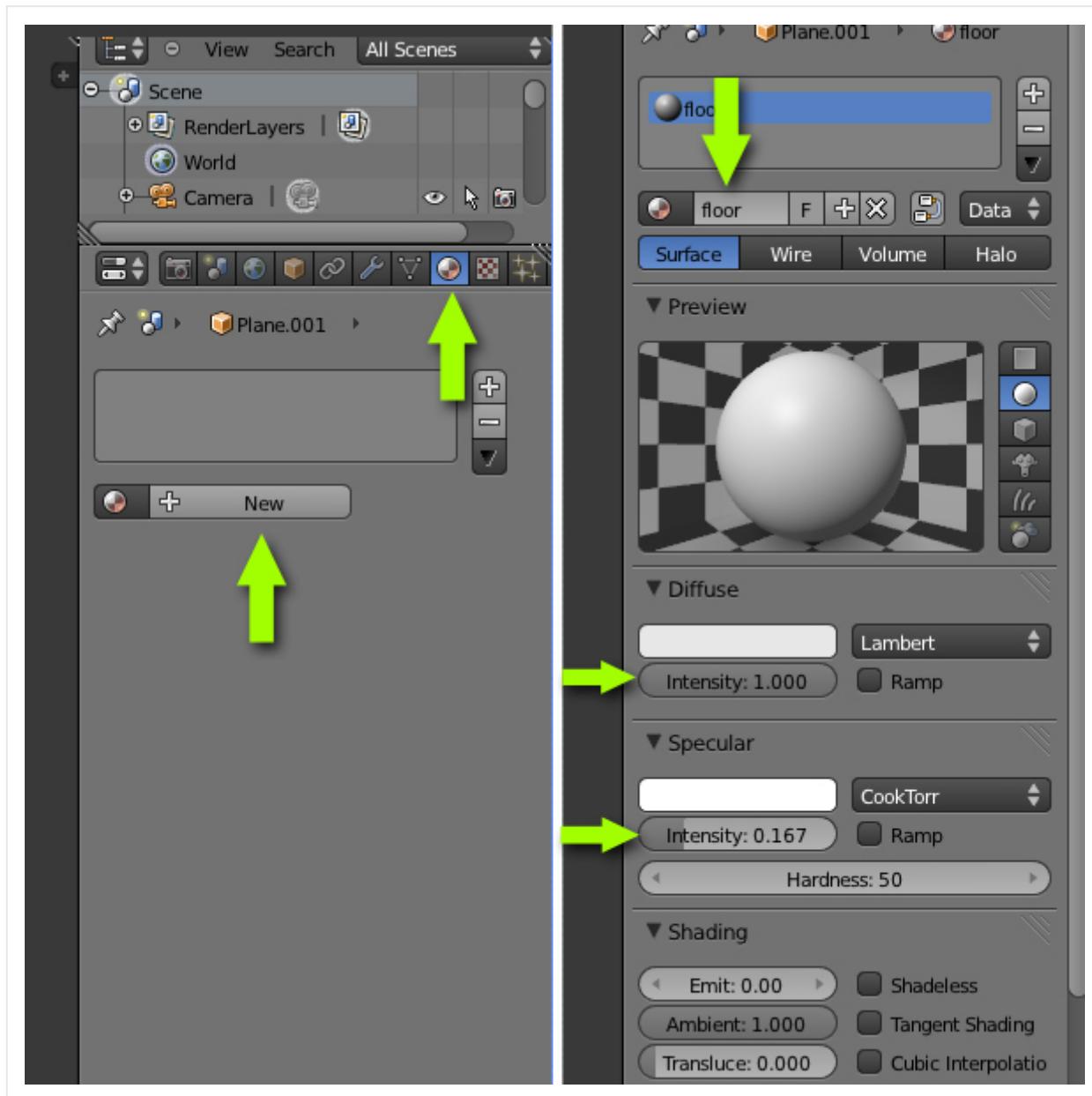
Step 28

Scale and place the window frames on the walls. Make duplicates and place them according to the image.



Step 29

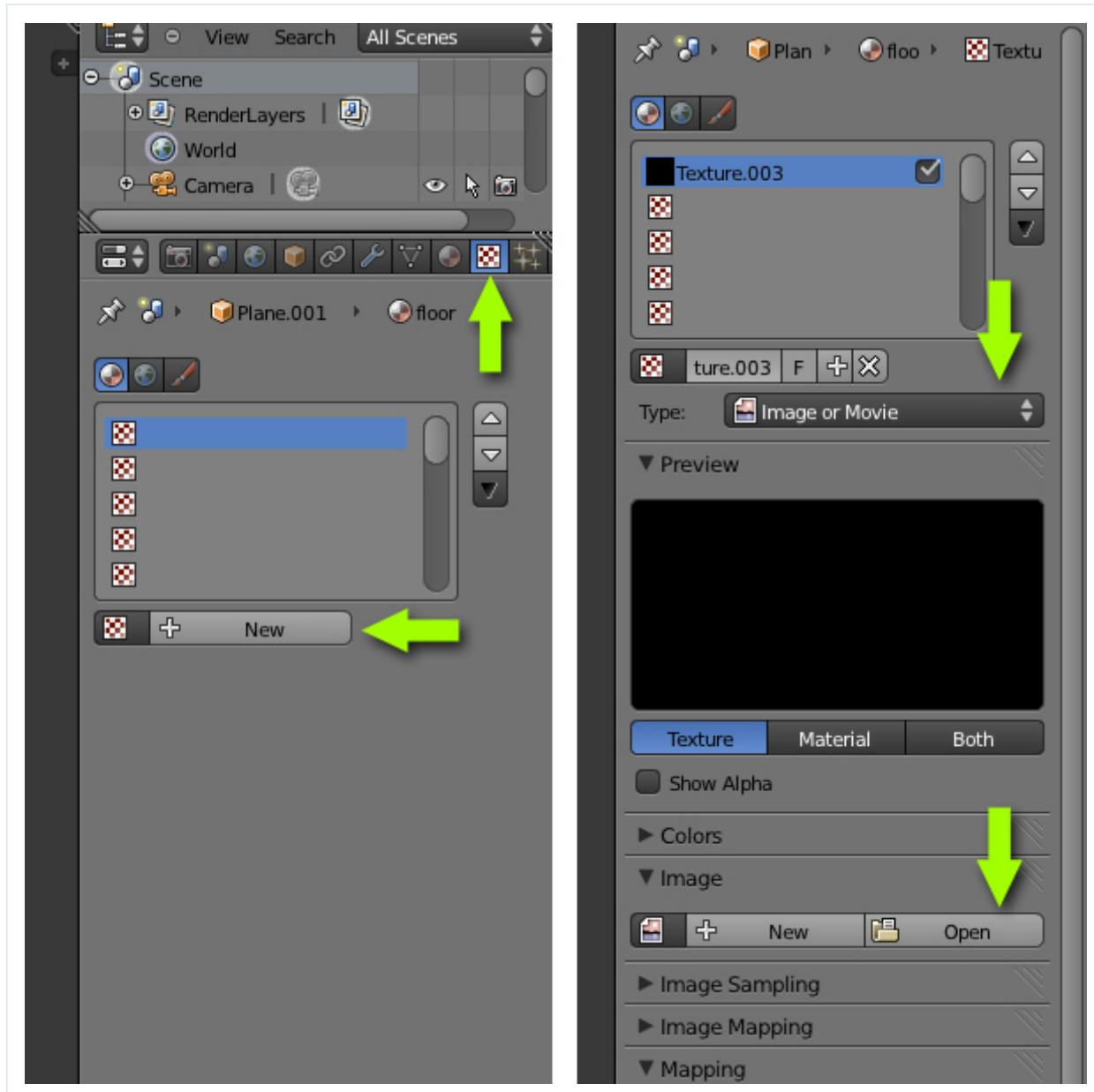
Now we will add a texture to the floor. Right Click on the Floor object to select it. And in the Properties window, click on the 'Materials' Icon. Add a New material and name it 'Floor', increase the 'Diffuse' intensity and reduce the 'Specular' intensity.



Step 30

Next we will add an image to the floor. (I got mine from [Here](#).) Click on the 'Texture' icon next to the Material icon, and then Click on the 'New' button. Select 'Image or Movie' for the Type and in

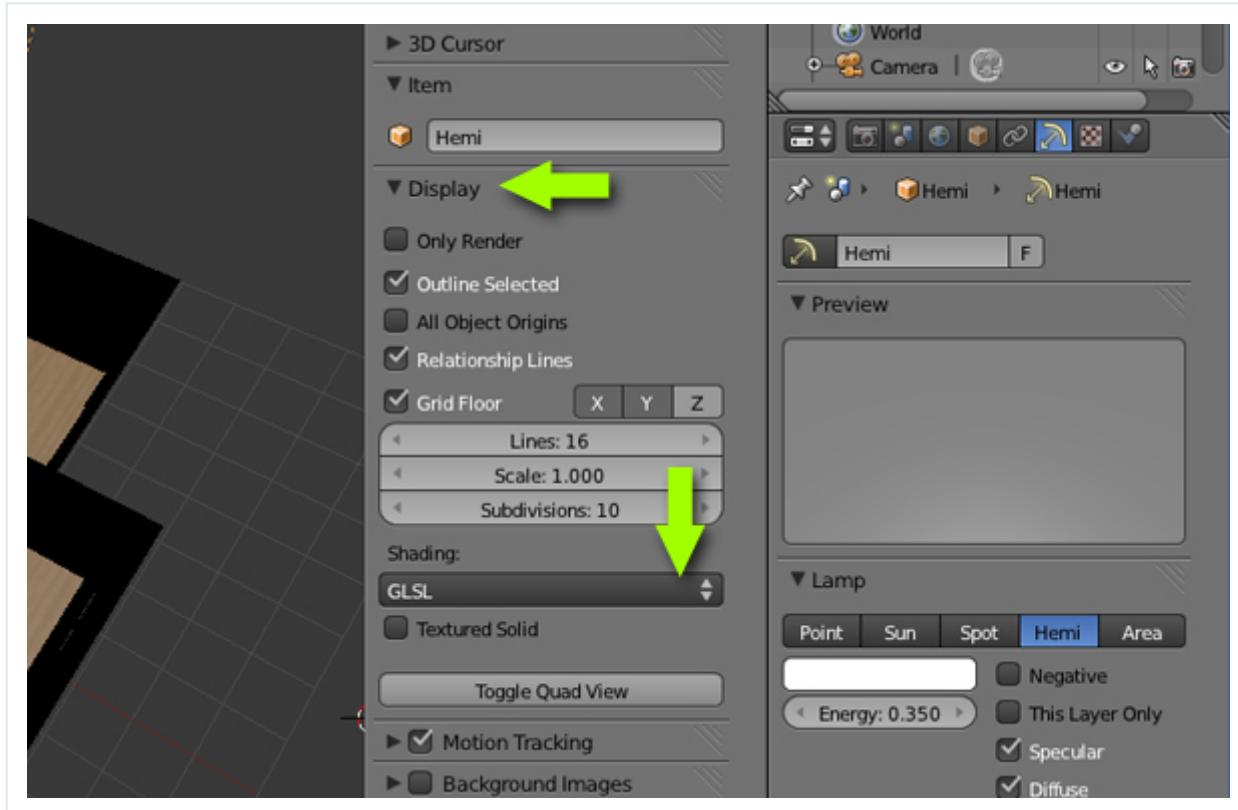
the Image panel, click on "Open" and browse for the image.



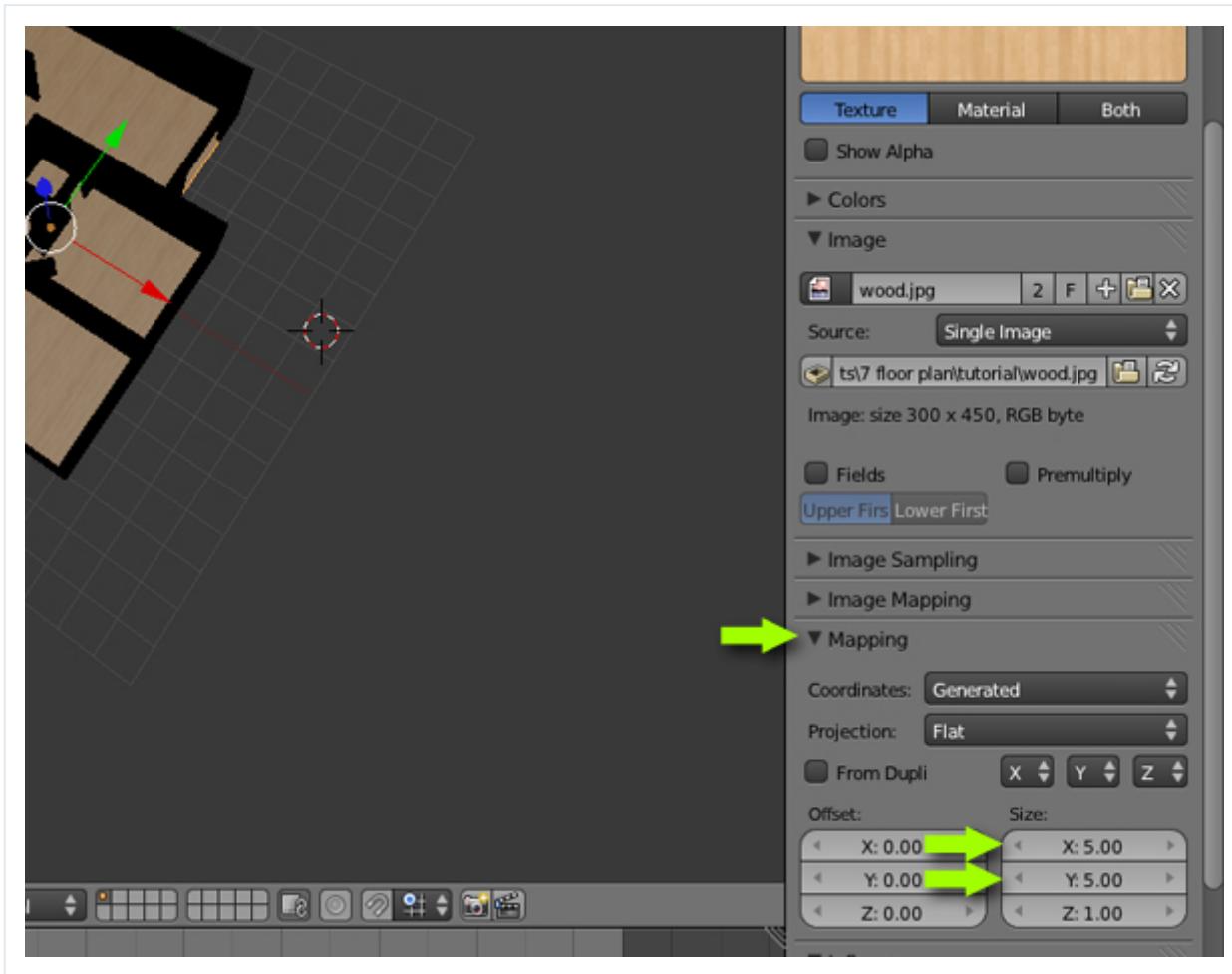
Step 31

You can preview the texture in the 3d View. Press 'N' to bring up the 'View Properties' and in the 'Display' panel, select *GLSL* in the 'Shading' menu (you'll need to add some lights in the 3d view to

see the texture.) Now press 'N' again to hide the view properties panel.

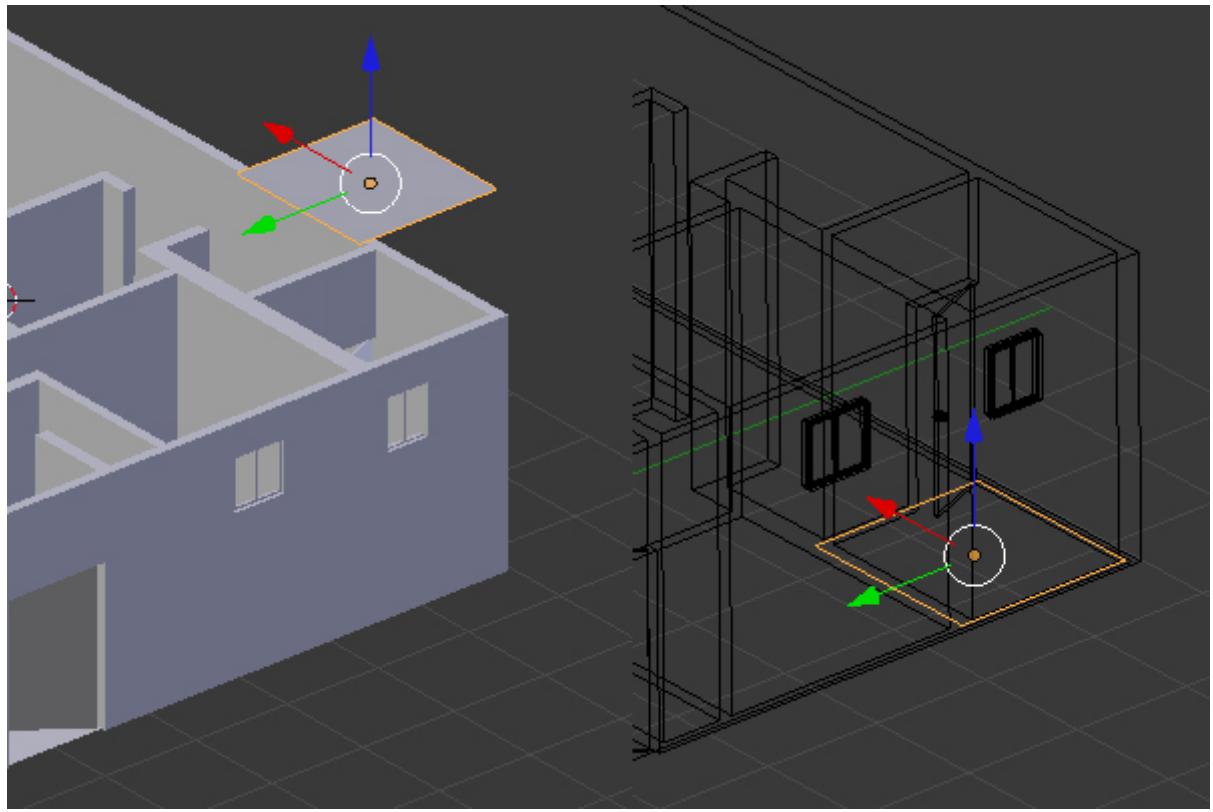


Back to the Image Texture properties, scroll down to the Mapping Panel and increase the Size of X and Y to 5 or 6 depending upon your image file.



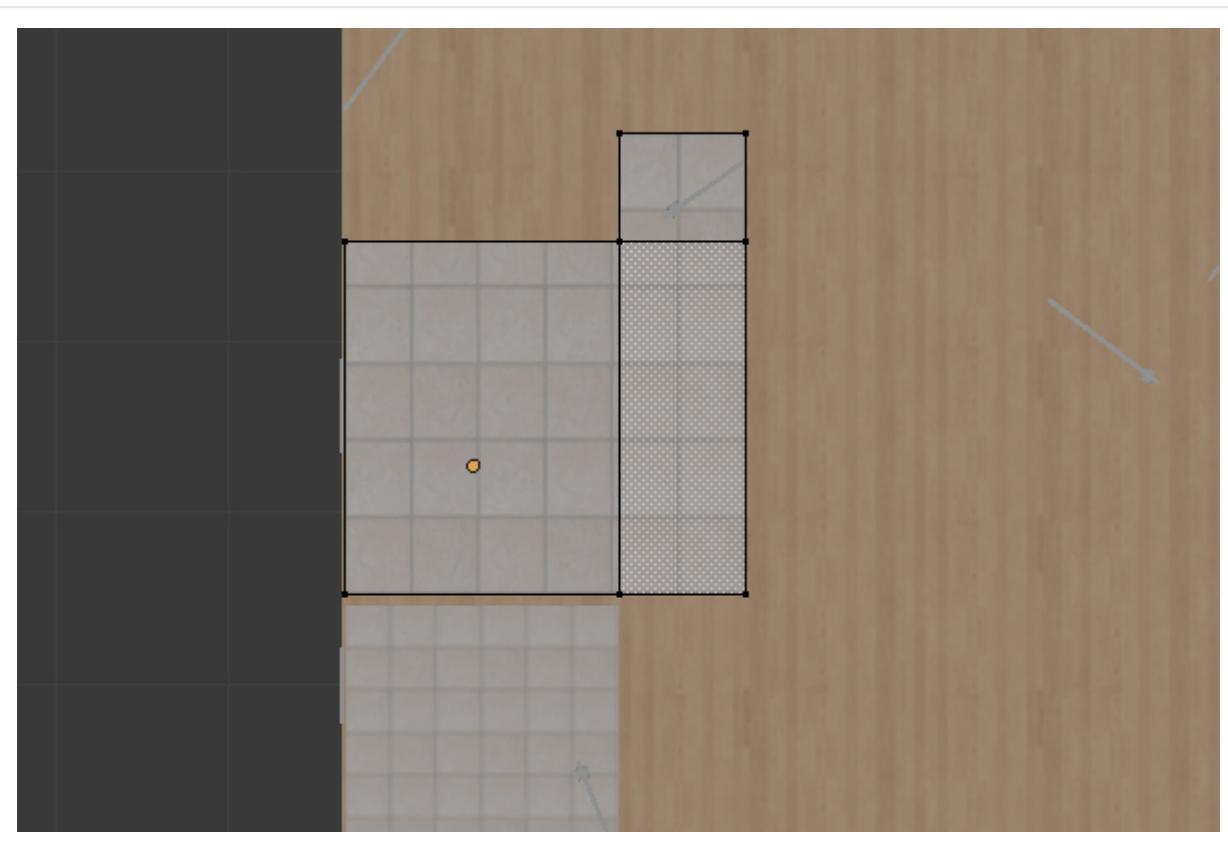
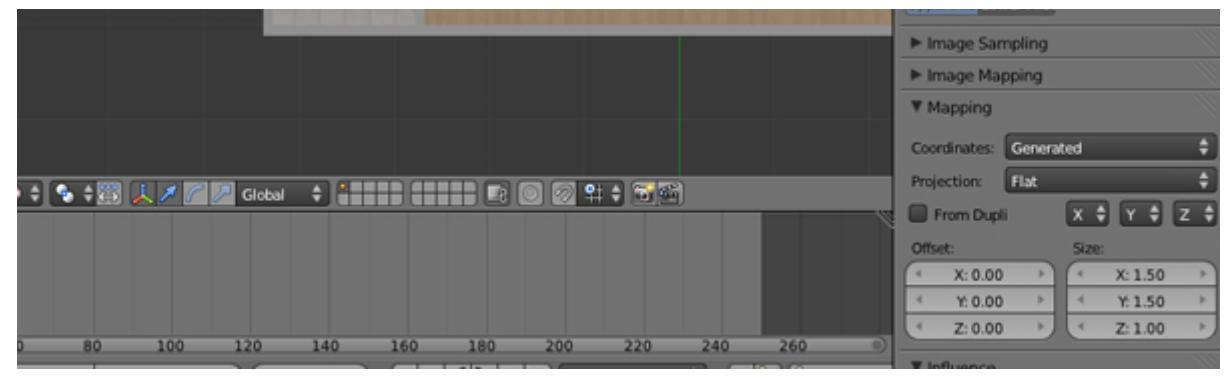
Step 32

Now to add a separate floor to the Bathrooms, we will add a new 'Plane' and adjust it's dimensions and place it just above the wooden floor so that it's hidden.



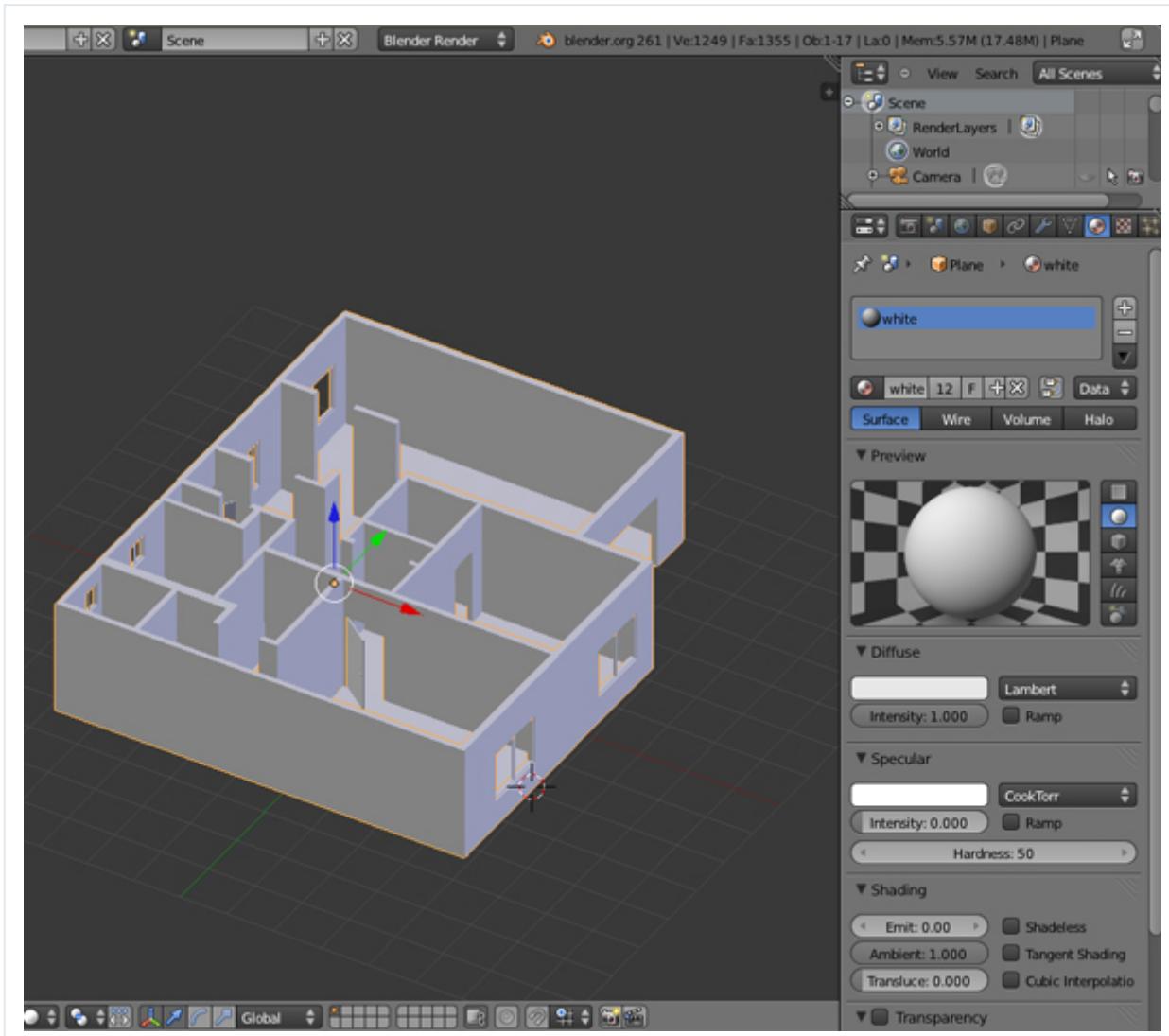
Apply an image, just like we did on the floor (I got mine from [Here](#).) Duplicate the Plane and adjust it's geometry by scaling and extruding for the second bathroom.



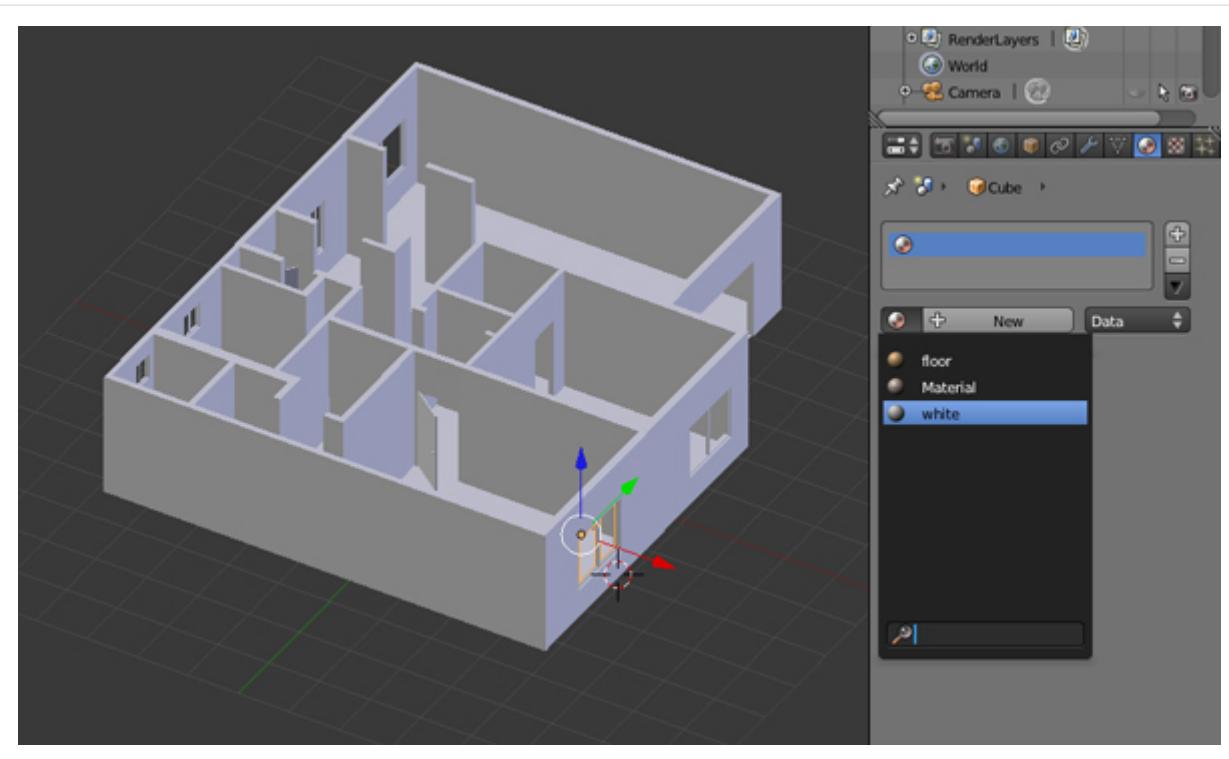


Step 33

Select the walls and add a New material to them. Choose any color and Increase the 'Diffuse' intensity and set the 'Specular' to 0.0

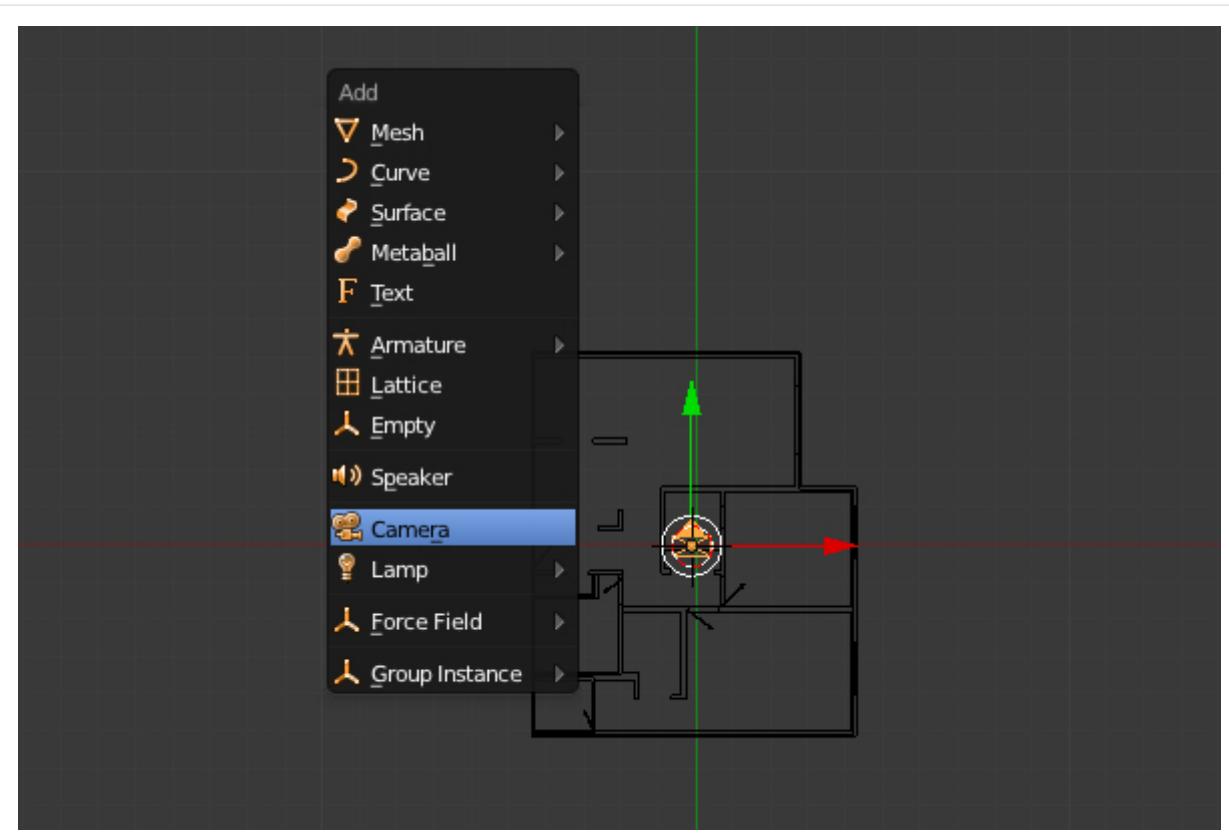


Similarly assign the materials to the windows and doors. You can assign the same material to any object by selecting the material from the list.

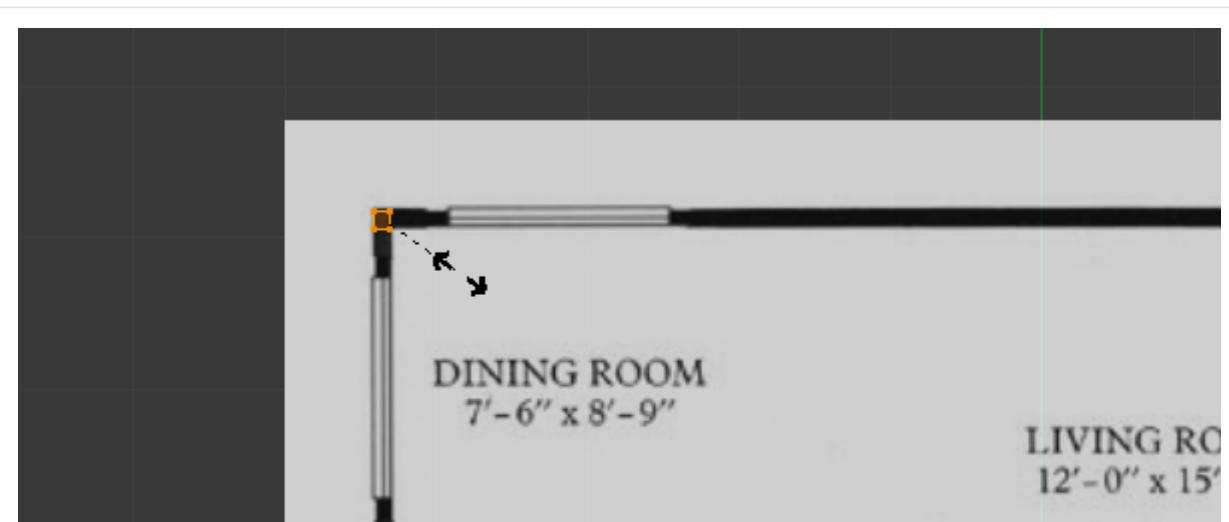


Step 34

Now we will prepare the scene for rendering. Make sure you are *Not* in 'Edit' mode (press 'TAB' to toggle Edit mode on/off.) Press '7' on the Numpad to get into the Top view, then press 'Shift+A' to add a camera.



Rotate and place it however you like. Press '0' on the Numpad to get into camera view.

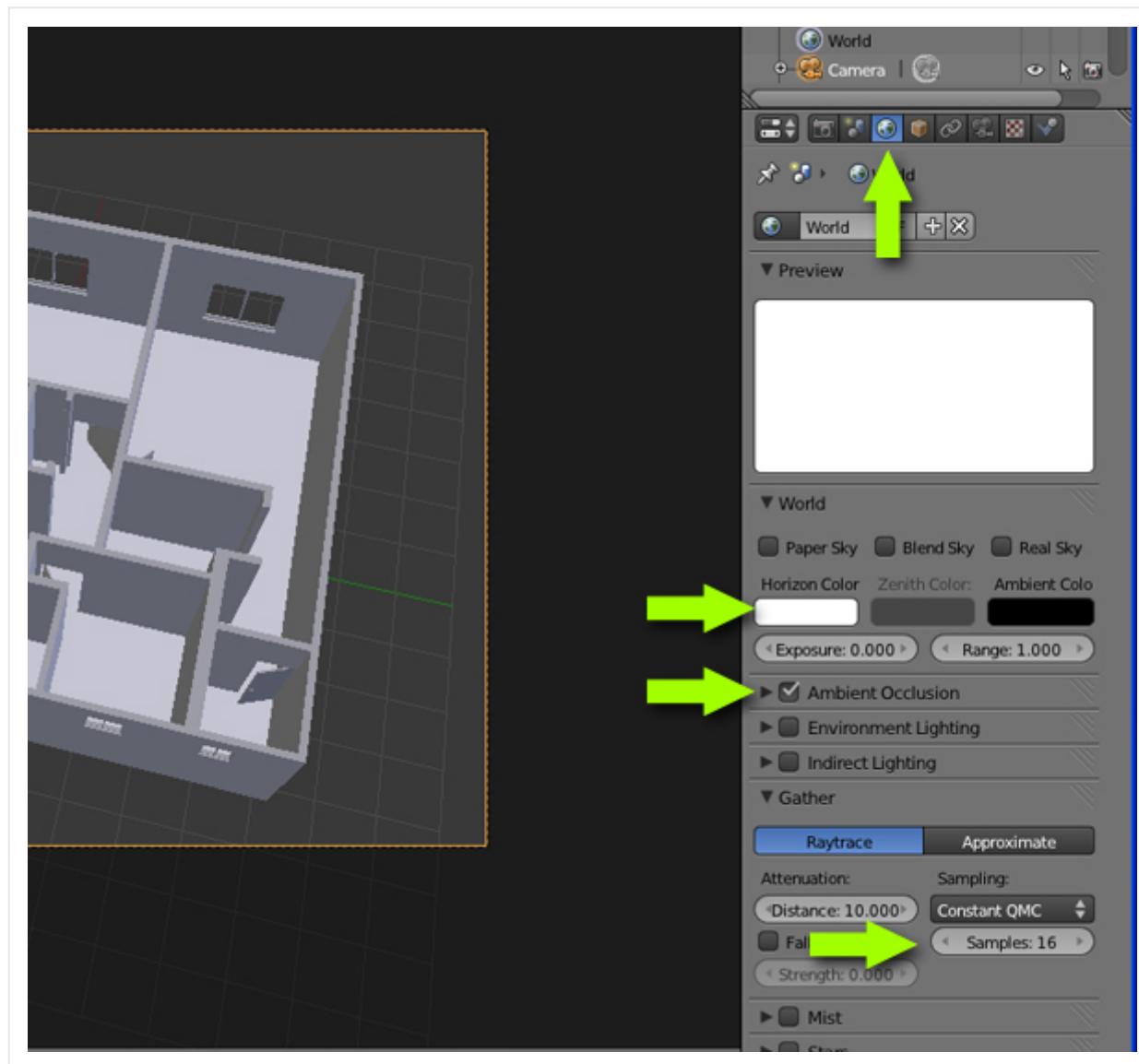




Step 35

Click on the 'World' settings and change the 'Horizon Colour' to white, then turn on 'Ambient Occlusion' and in the 'Gather' panel,

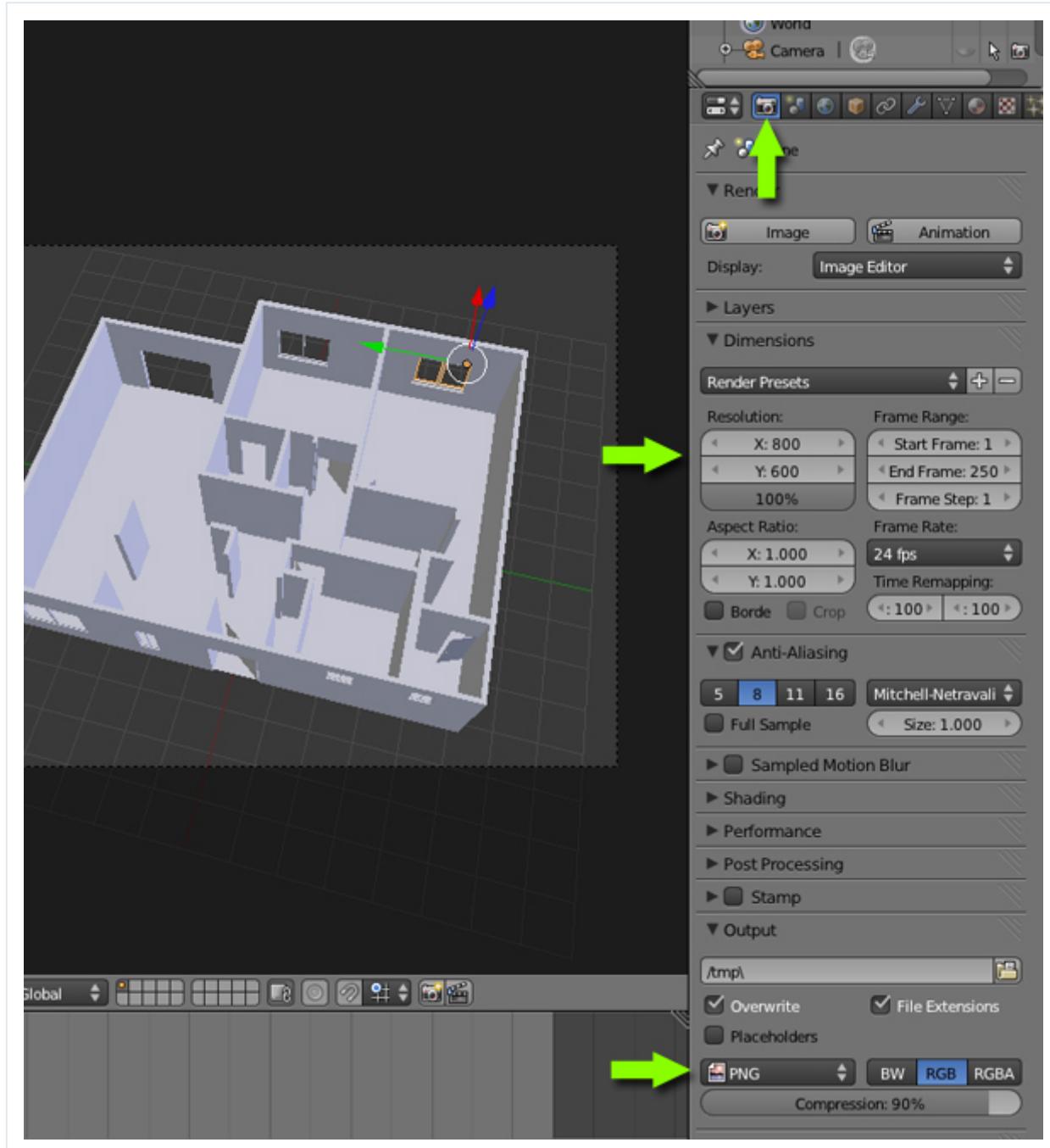
increase the samples to 16. In the 3D view **delete any lights if they exists.**



Step 36

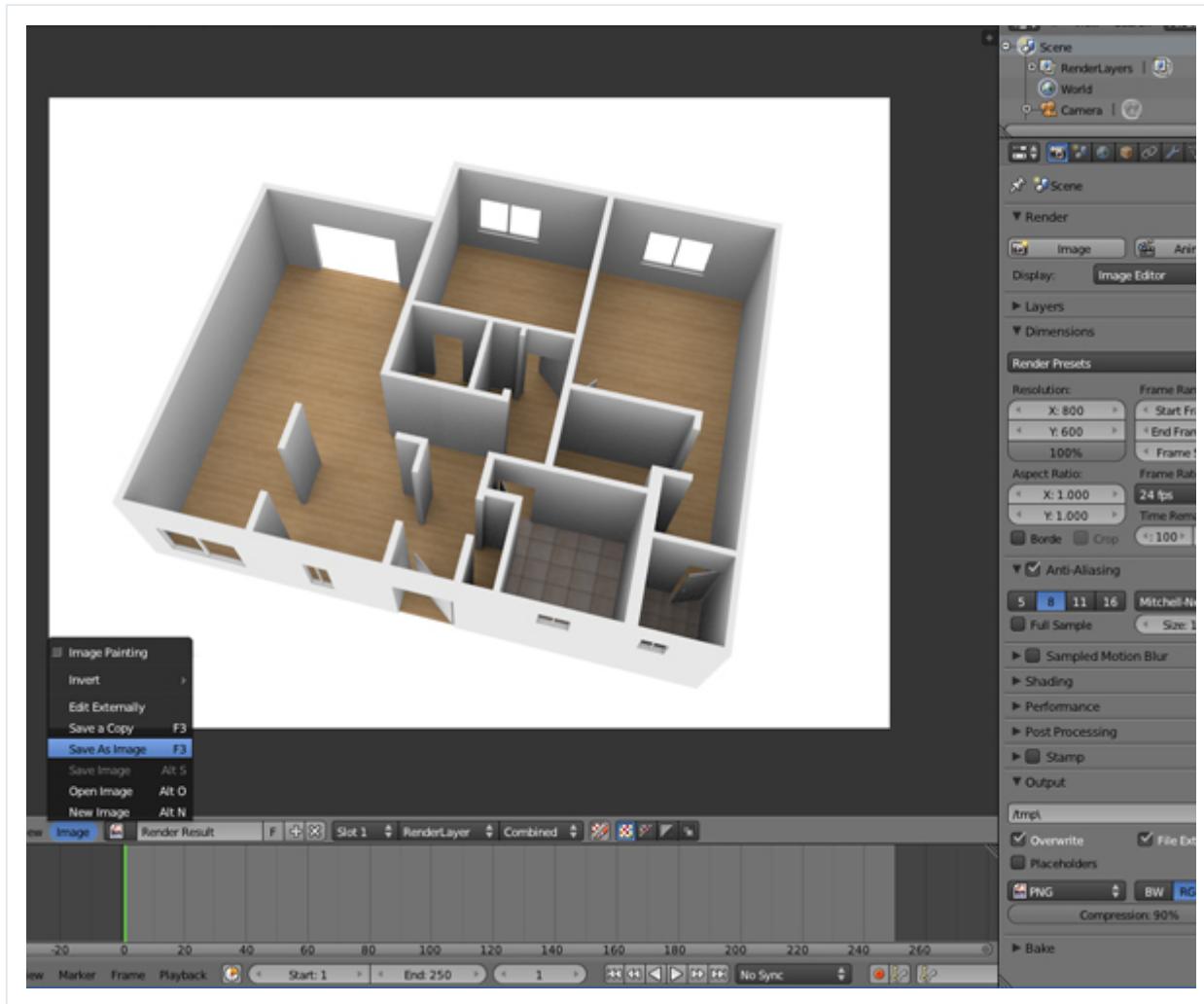
Click on the 'Render Settings' button in the property window, and change the Dimensions (resolution) to your desired size. Down in

the 'Output' panel, choose the file format for your render.



Press 'F12' or click on the 'Image' button in the render panel. Press 'F3' or click on 'Image > Save image as' to save the image.

Your 3D Floor map is now ready!



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Karan Shah

Karan Shah is a 3D Artist and Animator from India. He is a BFA Graduate with specialization in sculpture. An inclination towards the digital medium made him a self taught computer artist. He is currently freelancing..

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Name



Doug C

6 years ago

Great lesson. I actually use blender to do this for a living! Check out the company I work with at Cumminsarchitecture.com

[View](#)

9 ^ | v Reply



Evan Keller → Doug C

a year ago

What kind of experience and quality of portfolio did you need to start this kind of work?

^ | v Reply



DennG → Doug C

5 years ago

great!

well done

^ | v Reply



Thaddius.

8 years ago

Fantastic tutorial. Covers a lot of basics that people don't realize they need to know and gives a real-world example of how/why to use Blender. ALA Making nice floor models.

You could take this a step further even and make it a downloadable walk-through for clients using the BGE and making the camera the moving character. Put it on a laptop and let a client virtually walk through their house/building.

4 ^ | v Reply



Pierpaolo Tommasi → Thaddius.

3 years ago

I'd like to know how to do that virtual walking in the house: how difficult is that? Could this be made interactive (a la first person shooter)?

2 ^ | v Reply



PeterPan → Pierpaolo Tommasi

2 years ago

I would like to know this too. This would be really cool.

^ | v Reply



Vinc3r

5 years ago

How do you check dimension of your wall ? Is it possible to specify a dimension when you modelise ?

1 ^ | v Reply



stan

8 years ago



in my experience it's much faster to model from the ceiling down to the floor. that way you just have to unselect the door and window polygons. apart from that you wont need boolean operations.

cad software like sketchup doesnt help either because you cannot control the polygons topology. so for real time or high end visualization i would just use a 3d program.

one more wise comment: how about creating window frames and so on based on the walls' polygons? inner extruding and extruding might be ways to have properly placed window frames in no time!

1 ^ | v 1 Reply



cs_mansion → stan

5 years ago edited



IDK man. I see no difference modelling from floor or from ceiling. In real life building is built from bottom to top. I agree, you don't need booleans because they may cause lighting bugs later. It's not that hard put 2 vertical and 2 horizontal loops and then bridge polygons (it may even take less time than making box for boolean, move to wall and select boolean operation!)

I don't like idea of extruding window frames from walls, because that way you can't copy-paste and place them in different places. You are not going to redoing extrude operation every time you add new window, aren't you?

^ | v Reply



Ronen Bekerman → stan

8 years ago



Hi Stan, What topology issues might you have using SketchUP?

^ | v Reply



stan → Ronen Bekerman

8 years ago



hi ronen,

for complex tasks or more flexible scenes you might want to have control over how surfaces are split up. i am not talking about the edges (sketchup will probably be fine for that) but the polygons topology.

- for subpolygon subdivision its useful to have only squares in your model for example
- for realtime applications you might want to create uv maps right when youre modelling (youll need modular models then)
- when i am modelling within a 3d suite i can apply materials and polygon selections as well as tags for eg high anti-aliasing here, low aa there
- i can place the axis or pivots for each piece like window frames so they open the right way
- apart from that i can put objects in the proper hierarchy i will need later on
- how about lowering subdivision surfaces when the camera is far away. can i do subdiv modelling in SU?
- render proxies?
- and one more question: what would you do in sketchup if you wanted to export some cylinders of your model in low detail (like just using a few segments) and other cylinders (in the foreground) in high detail?

with a 3d package i have all this right under control without sorting out hundreds of objects or thinking: "damn, why are these objects glued together and where is its pivot?".

^ | v Reply

 **SAMIRA SIDDIQUI**
3 years ago

plz tell me what i will make in the project of 3d plane

^ | v Reply

 **WellTech Telecommunications**
3 years ago

It easy to create a simple house plan using Sweet Home 3D? Anyone tried it?

^ | v Reply

 **ajay**
3 years ago

thanks for great work

^ | v Reply

 **Fathullah**
3 years ago

great job

^ | v Reply

 **melody laker**
4 years ago

hi can anyone help me? i just want to know how to do a floor plan of a single room to scale. I dont have an architechtural drawing so i need to know how to draw to scale in blender. I am sure its very simple but im so new to this

^ | v Reply

 **bizun**
4 years ago

Great tutorial!

I'm using BLENDER for, like, two days :) and I could do it :)

^ | v Reply

 **Alexander Miller**
5 years ago

Man, this thing is cool; a must-read. Thanks for this compilation of great tutorials.

<http://www.blitz3ddesign.co...>

^ | v Reply

 **Alexander Miller**
5 years ago

I really love and like reading your blogs! And I really liked this post as well.. All the best keep [writing.it](#) is awesome tutorial .thanks for sharing it.

<http://www.blitz3ddesign.co...>

^ | v Reply

 Alexander Miller
5 years ago



This is one of the things I've always planned to do but never found the time for. Thanks for the inspiration to get out there and get cracking writing those posts.

<http://www.blitz3ddesign.co...>

^ | v Reply

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