Beginner Tutorials Part 1 - Getting Started

Note: This is a copy of the online tutorial, so all links link to webpages. I'd suggest using the online documentation since it can be updated and added to easily, but if you'd like a pdf, then here it is :).

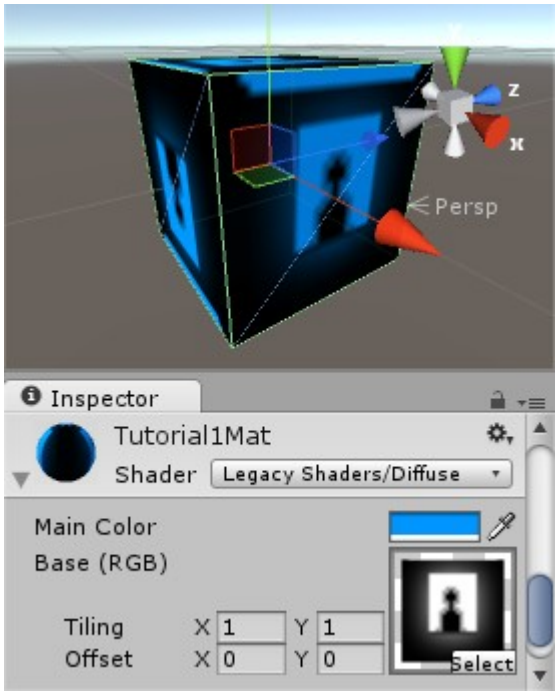
Hello, and welcome to the first Shader Sandwich Tutorial. This is the first of a 3 part set of beginner tutorials which will show you the basics of Shader Sandwich.

For this tutorial we'll be getting started with Shader Sandwich, and will be creating a simple shader to get familiar with the basics.

But first, I want to cover a few things. I'm going to assume knowledge of how to use Unity and its asset system, along with its material system. Just in case though I'll quickly cover it here.

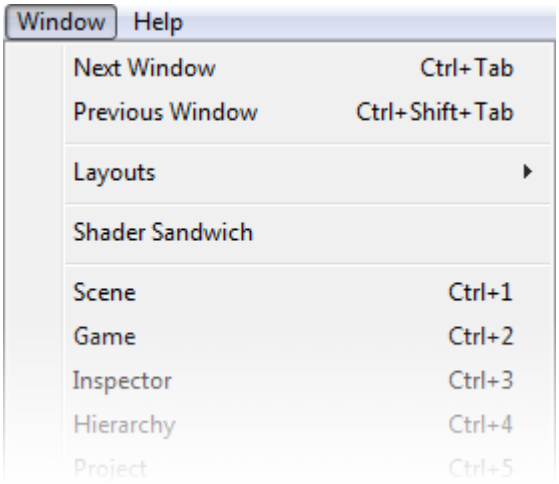
In Unity, three things are needed to render an object.
A) The Object, which contains a mesh.
B) The Object, or technically the mesh renderer, then has a material.
The material contains inputs such as textures or colors.
C) Finally, the material has a shader, which uses the inputs from the material to draw the object.
Without a shader the object just renders pink.
So the shader renders an object using settings which are set in the material.

If that didn't make any sense I'd suggest taking a look at Unity's official documentation, they explain it all in a lot more detail :).



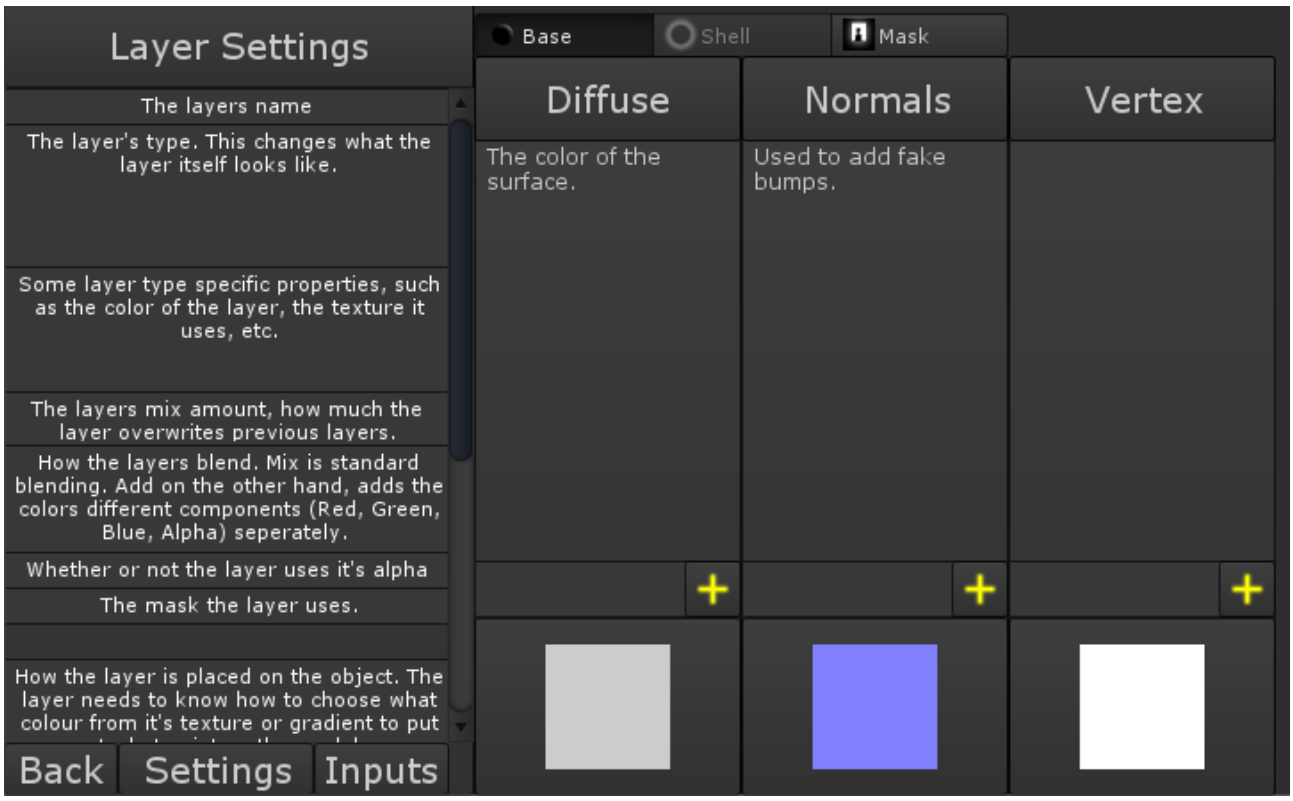
Shader Sandwich, as the name suggests, is used to make shaders. We are going to remake the Legacy Diffuse Shader, as you can see here.

The Legacy Diffuse Shader has two inputs, a texture and a color. The texture is blended with the color in such a way that both are visible without the texture looking transparent; we'll see how to do that in a second.



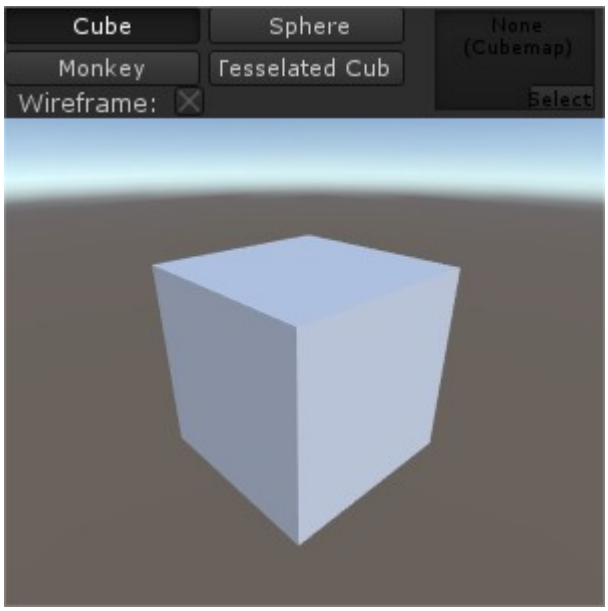
Well, lets get started!
Open up Shader Sandwich by going into the Window Menu, and selecting Shader Sandwich.

This is the opening screen, where you can create new shaders and see a bunch of other stuff.
On the left you can see your Recently Opened files, which in your case is probably blank, and on the right you can see some news which is updated every so often. Alright, enough of this, let's begin!
Click New Shader, and then select start from scratch.



Welcome to the layers screen. You'll want to get familiar with this as the bulk of the shader will be made here. Shader Sandwich uses the concept of layers, that get wrapped around the object. This wont make sense immediately, but trust me, once we get started it'll become pretty intuitive.

Before we touch anything, we're going to open up a previewing window which will let us see the shader update as we make it. Click on the Previews window, then click on Open Preview Window.

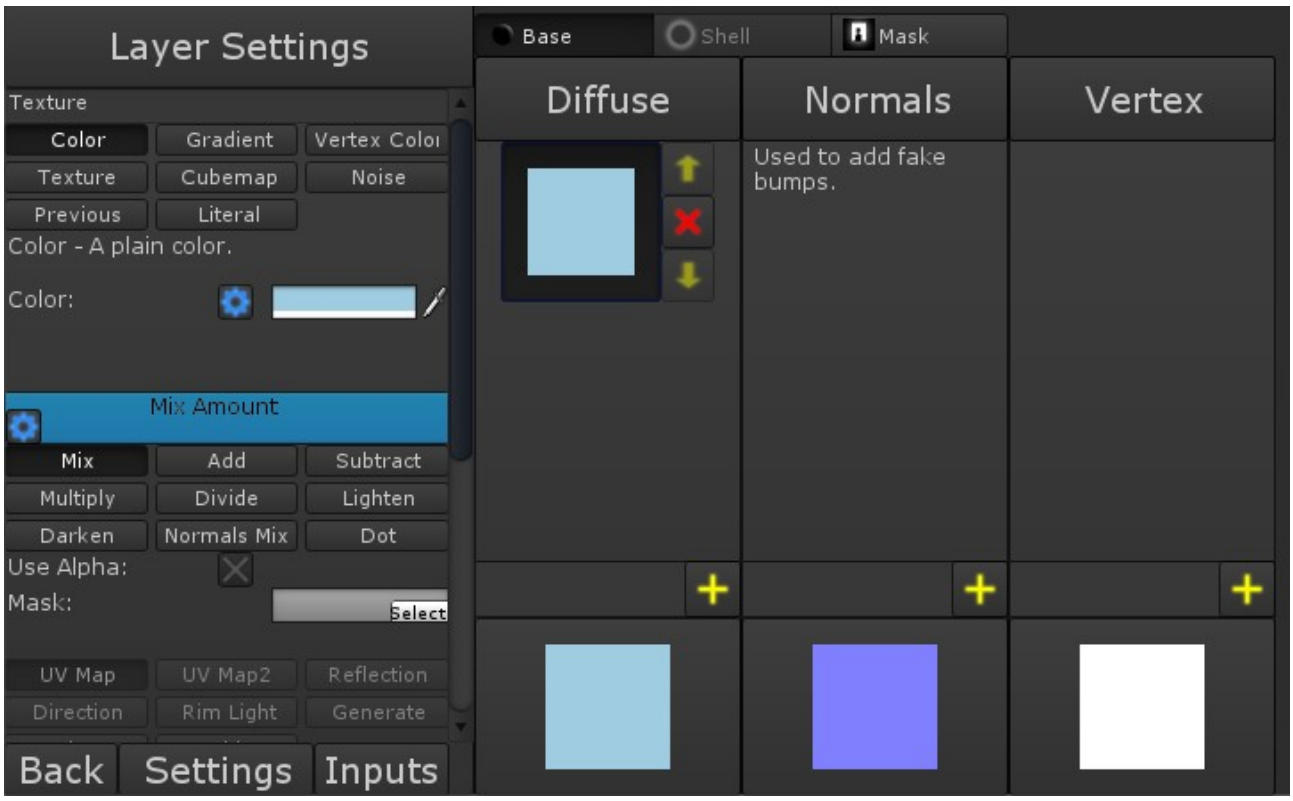


This is the previewing window. Left clicking and dragging rotates the view, and right clicking zooms in and out. At the top you can choose what object is shown, and can enable wireframe mode.

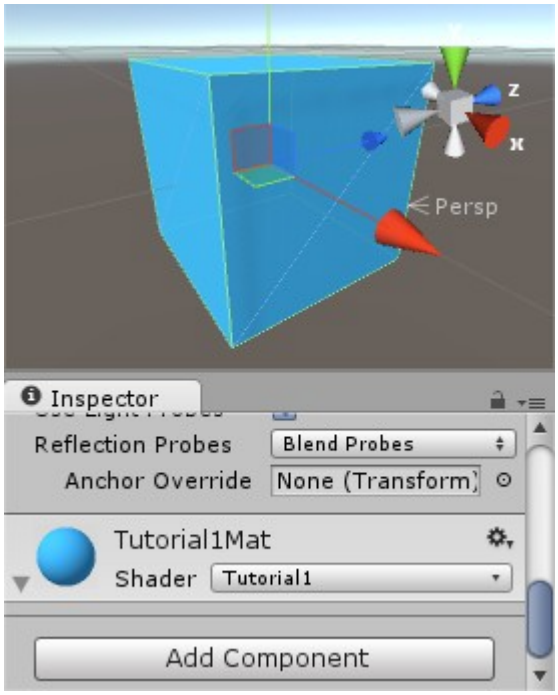
Now, as a quick note, make sure to **Never** do what I say. Well, ok, you can, but be sure to mess around a bit. Use different colors, use different values, do whatever. Shader Sandwich is a very hands-on tool and it's best learned by playing around. If something breaks, it's not your fault, it's mine :).

Ok, well lets get into making the shader. To start off, we're gonna add a base color. To do this, we have to add a layer.

Click on the Plus button at the bottom of the Diffuse channel, which controls the colors of the shader.

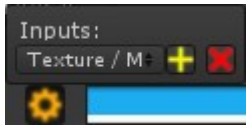


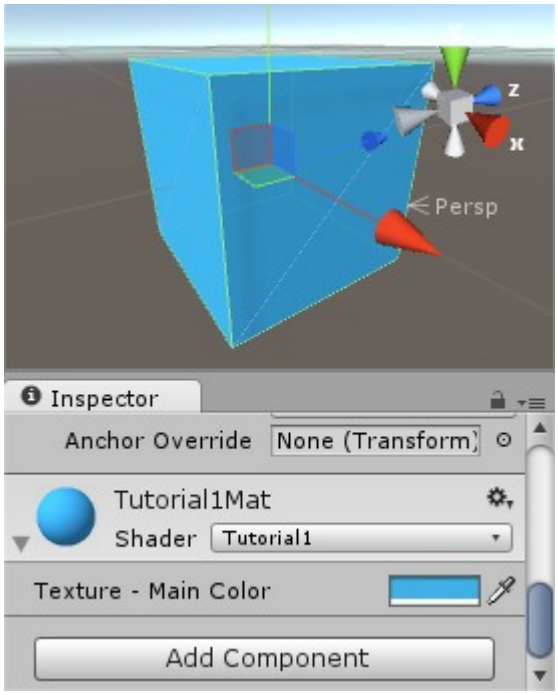
You'll notice the preview change update and change color. It's possible to change the color of the layer, just change the Color settings. In my case I've made mine a cool blue.



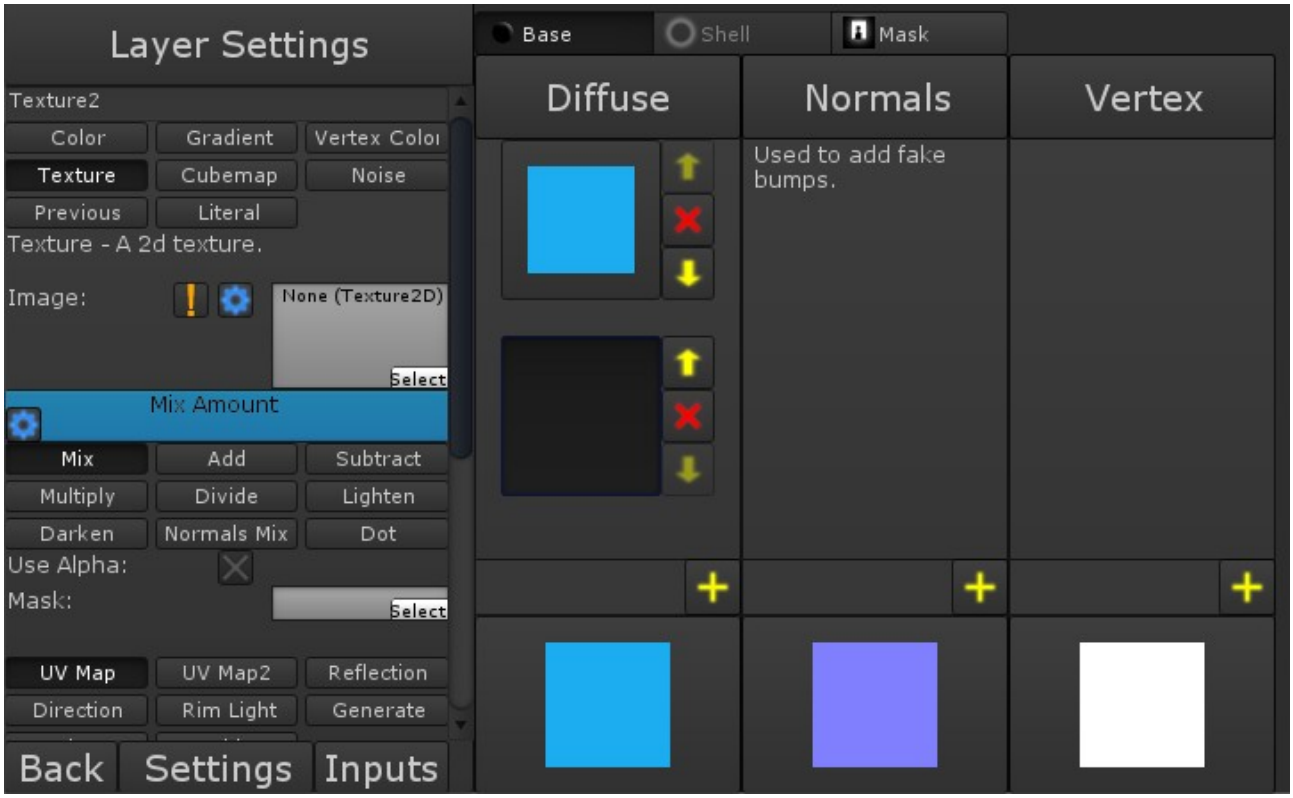
All right, well lets save the shader. Just click File, then Save As and call it whatever you want; I've called mine Tutorial1 'cause I'm boring haha. Lets see what it looks like on a material. Add a new material and set its shader to what you called yours. The material will change to the color you selected, however there's no input to change it yet.

Doing this is pretty simple, we just have to tell Shader Sandwich to display the color in the editor. Next to the color settings, you'll see a blue gear. Clicking on it will bring up a miniature Inputs panel. By clicking the + button an input will be created and assigned to the Color setting (You can see more on Inputs here). Save now and you'll be able to change the color easily.



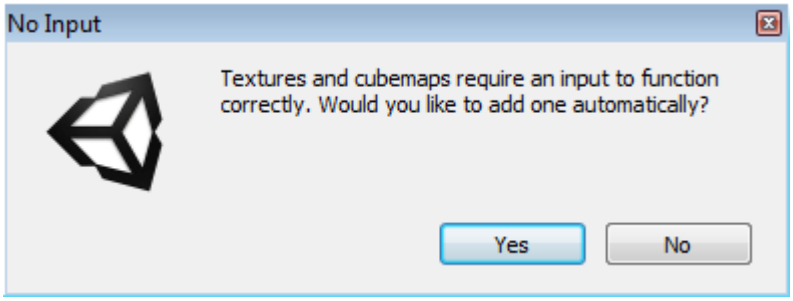


Alright, time to add the texture. Click the + button to add a new layer. It'll overwrite the other layer currently, but we'll fix that up in a second. For now, lets make it show a texture!

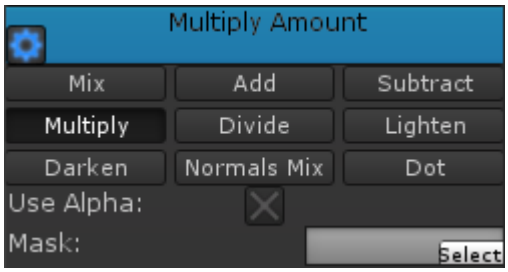


At the top you can see a bunch of settings for what the layer represents, be it a gradient, a texture or various other forms; (See here for a good look at the different types). In this case, we just want to set it to Texture. This'll change the settings beneath slightly, so we can select a texture.

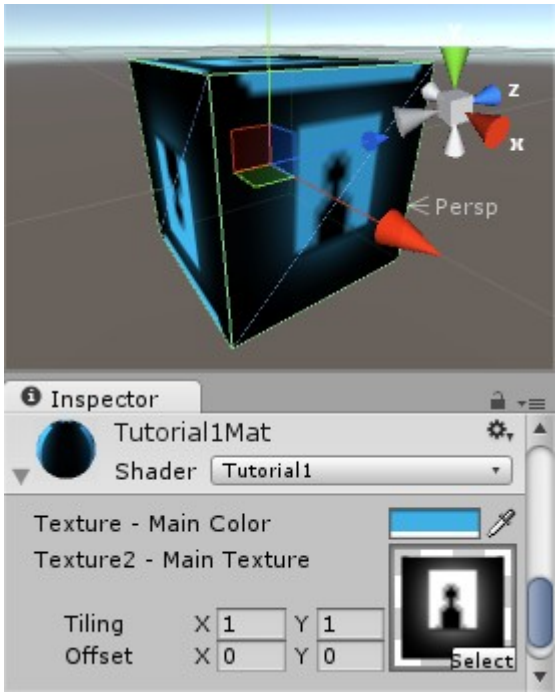
I've gone ahead and selected the little dude texture, but feel free to select something better. However, we're not done quite yet. You'll notice that in the preview the texture doesn't show. This is because a texture needs an input, so that it's selectable from the Unity editor. There's an ! next to the gear, which is a warning. Click on it, and it'll show this message:



Just hit yes, and the texture will work!



Now to get it to blend properly with the color beneath. To do this, we need to change how it blends; anyone who's used Gimp or Photoshop in the past will understand blending modes, but I'll explain for those who haven't.



When there's two different colors (For example, RGB(1, 0.4, 0.7) and RGB(0.2, 0, 0.6)) there are multiple ways to join them together. The standard way (Mix mode) just interpolates between them, so mid-way is RGB(0.6, 0.2, 0.65). Try dragging the Mix Amount and see how it blends.

Mix isn't the blending mode we want though, we want the Multiply mode. This will multiply the two colors together, or using the colors I mentioned above will end up with RGB(0.2, 0, 0.42).

Well, the shaders done now! Just save it and you've got yourself your very own Diffuse shader. Not exciting enough? Well, head on over to the next tutorial then, where things get much more interesting!