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 by 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.

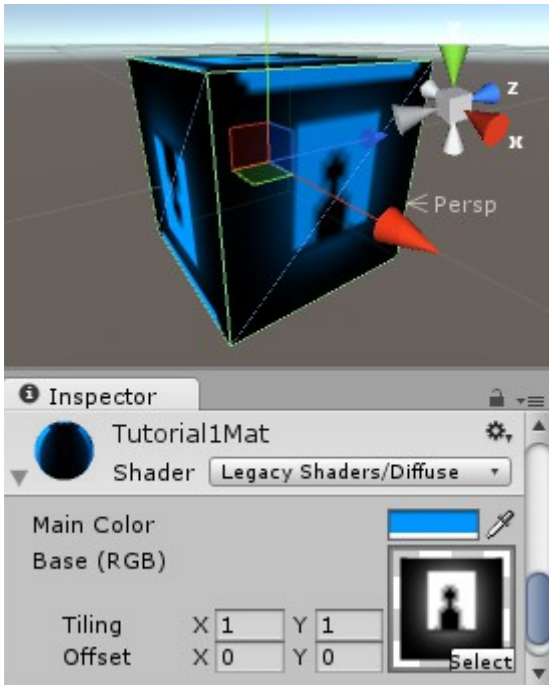
A) The Object, which contains a mesh.
B) The Object, or technically the mesh renderer, then has a material.
The material contains inputs such as textures or colors.
C) Finally, the material has a shader, which uses the inputs from the material to draw the object. Without a shader the object just renders pink.

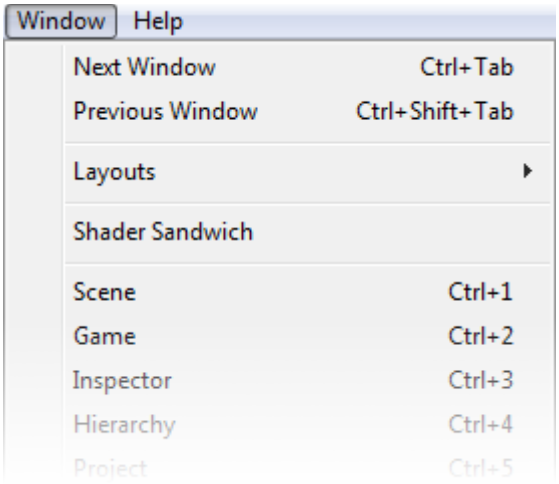
So the shader renders an object using settings which are set in the material.

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 (not sandwiches as my sister stated pointedly...). We are going to remake the Legacy Diffuse Shader, which you can see here.

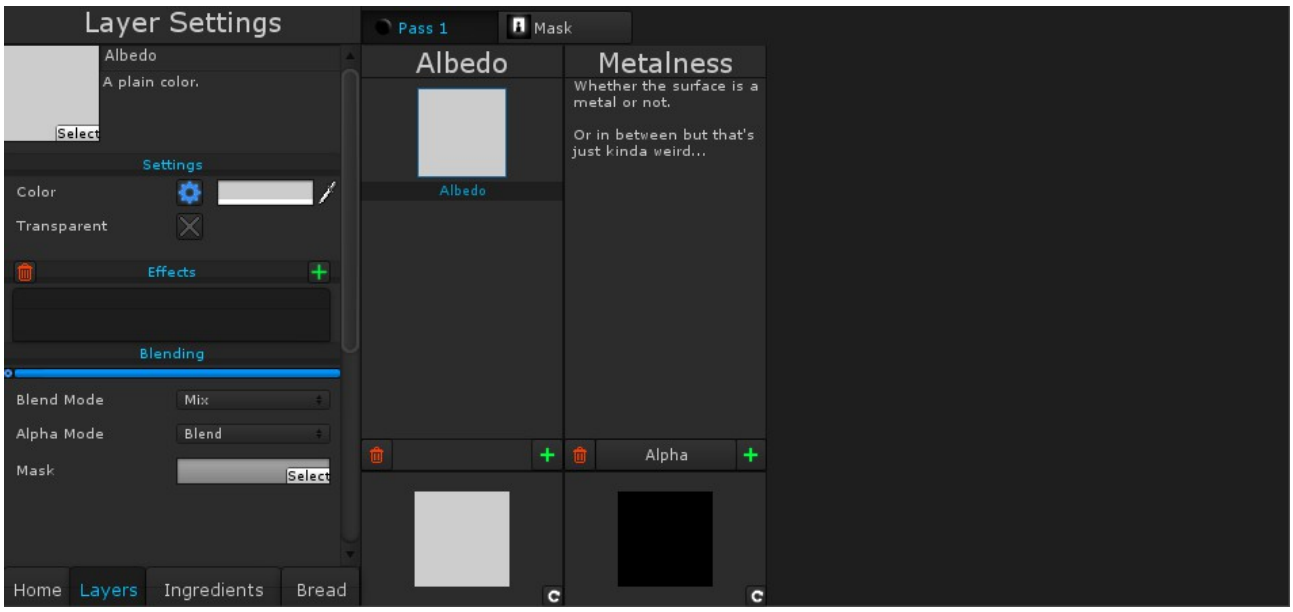
The Legacy Diffuse Shader has two inputs: a texture and a color. The texture is blended with the color in such a way that both are visible without the texture looking transparent.





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

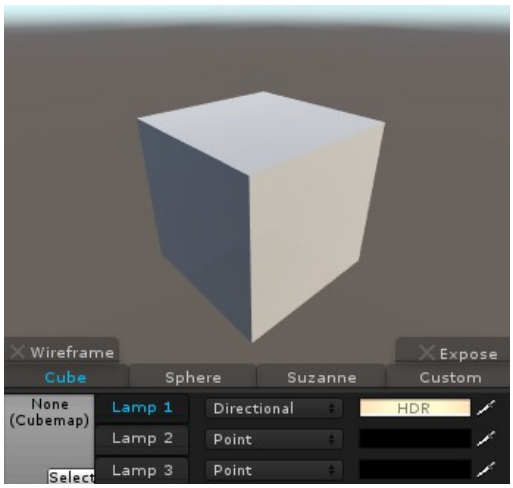
This is the opening screen, where you can create new shaders and see a bunch of other stuff.
On the left you can see your recently opened files, which in your case is probably blank, and on the right you can see some news which is updated every so often. Alright, enough of this, let's begin!
Click New to create a new shader :)



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.

On the left are the selected layer's settings, and then to the right of those are the layers themselves.

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



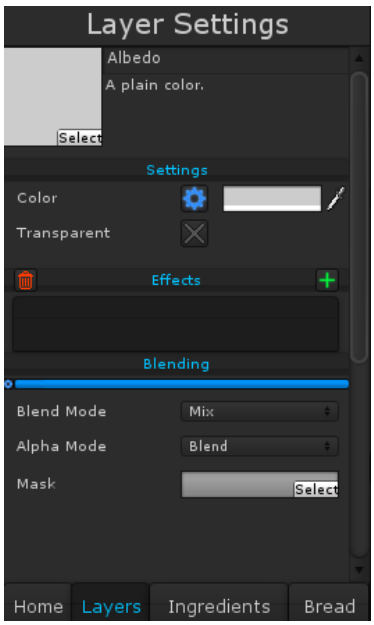
This is the preview window. Left clicking and dragging rotates the view, and right clicking and dragging zooms in and out.

Right at the bottom you can choose the ambient cubemap, and adjust lighting settings – these lights can be moved by holding down shift and using the same controls as the camera.

Just above these settings are those that allow you to choose the preview object, enable wireframe mode, and show the preview objects in the scene hierarchy.

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 :).

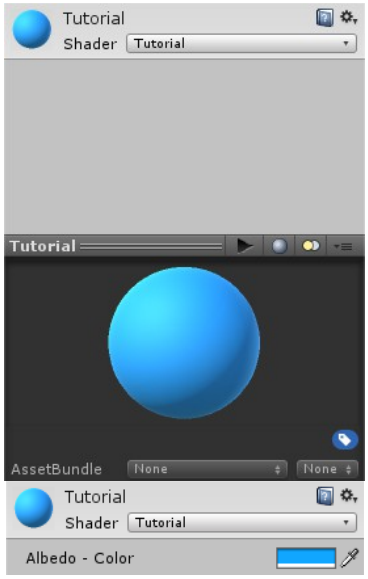
Ok, well lets get into making the shader. To start off, we're gonna add a base color. To do this, we would normally have to add a layer; however Shader Sandwich starts off every new shader with a default color layer.



You can see its settings on the right – we'll be going into what each of these do over the next few tutorials, but for now let's focus on the top. Here you can set the layer's name, and it's type – such as standard ones like Color or Texture, and more interesting ones like Cubist Noise or Depth.

Right underneath are the type settings, which allow you to change settings related to that layer type. For instance, I'm gonna go ahead and change the color setting.

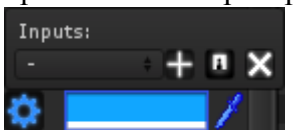
You'll notice the preview update and change color. In my case I've made mine a cool blue.



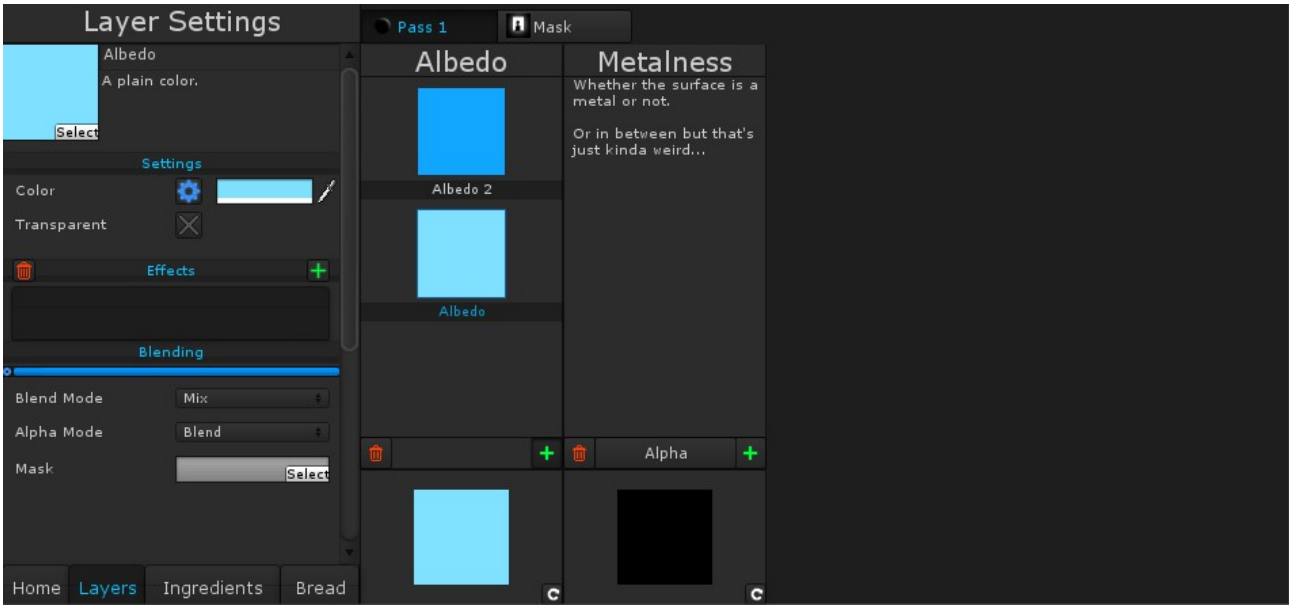
All right, well let's save the shader. Just click File, then Save As and call it whatever you want; I've called mine Tutorial 'cause I'm boring haha. Lets see what it looks like on a material. Add a new material and set its shader to what you called yours. The material will change to the color you selected, 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.

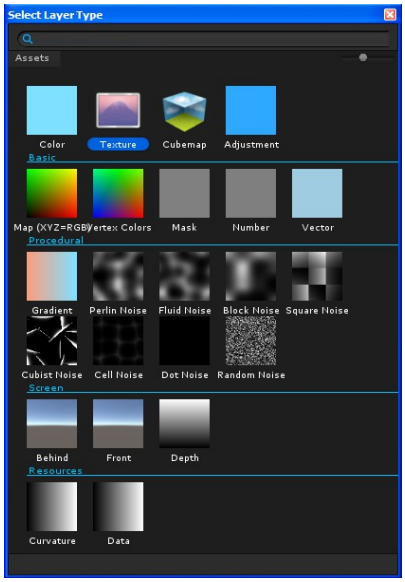
Next to the color setting, you'll see a blue gear. Clicking on it will bring up a miniature Inputs panel. By clicking the + button an input will be created and assigned to the Color setting (You can see more on Inputs here). Save now and you'll be able to change the color easily.

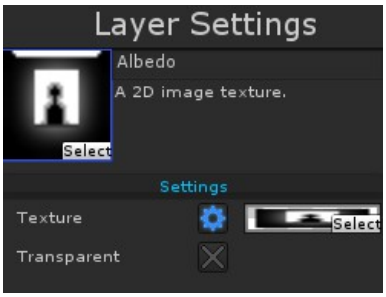


Alright, time to add the texture. Click the + button to add a new layer. It'll completely cover the other layer currently, but we'll fix that up in a second. For now, lets make it show a texture!



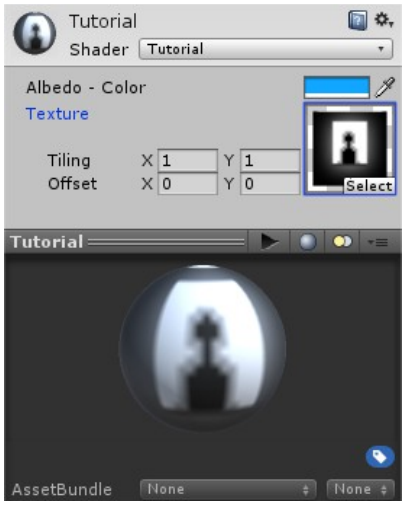
If we go back up to the top left of the layer settings and click select, it'll open up a panel where we can see all the layer types.





Double click the Texture type, and the layer settings will change to allow you to select a texture.

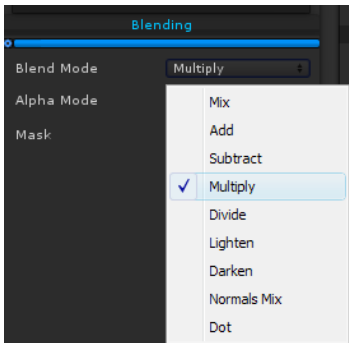
I've gone ahead and selected the little dude texture, but feel free to select something better. If you save now, you'll notice the material already has a texture input.



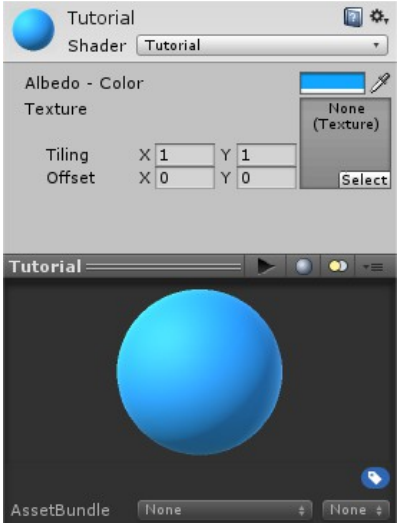
Since you can't easily set a texture without an input it'll automatically add one – however you can add your own input the same way as the color, which'll allow you to change the input's settings (like name and default value).

Now to get it to blend properly with the color underneath. To do this, we need to change how it blends; anyone who's used Gimp or Photoshop will understand blending modes, but I'll explain just in case.

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 combine together. The standard way (Mix mode) just interpolates between them, so mid-way is RGB(0.6, 0.2, 0.65). Try dragging the blue bar (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; using the colors I mentioned above will end up with RGB(0.2, 0, 0.42). We can set the blend mode surprisingly in the blending section, so let's do that!



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!