

Soldier of Fortune 2: Double Helix

How to Skin a Character

Introduction

For mod makers, making new characters is one of the best ways to make your creation feel unique and special. With Soldier of Fortune 2, we've tried to make modding characters easy and very flexible. With the items contained in this .zip file, you can skin an SOF2model. So let's get started!

Note: You must have a passing knowledge of the Quake 3 shader system, as we do not go into any in-depth explanation here.

ModView

Before we get into the specifics of creating skins, let's look into ModView and view a character. We're not going to get into every feature of ModView, but a lot of it is pretty self-explanatory. It should be noted that there are two things under File (view SoF2 NPCs and view JK bots), which won't work at all. We take no responsibility if it happens to crash your machine.

1. Start ModView.
2. Under 'File', choose 'Read Script'.
3. Browse to where you unzipped the files included, then
base/models/characters/average_sleeves.
4. Open either of the .mvs files.

After a short pause, you'll see a character loaded in the 'base' pose. This is the best pose for skinning a character as you can see under the arms, legs, etc. On the left, you see 'average_sleeves_mini.glm' with a plus next to it. Clicking on the plus will expand the tree to show Surfaces, Tag Surfaces, Bones, G2Skins Available, and Sequences. For skinning, the only thing you need to be concerned with is Surfaces and G2Skins available.

Quick Tour

With your mouse over the viewing window:

Left-click and move will rotate the model.

Alt Left-click + mouse move to pan the character.

Right-click + mouse move up and down will zoom the character.

There are plenty of other options under the pull down menus, but they aren't all that important for skinning. Feel free to browse through them or ignore them entirely.

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Surfaces

Expanding the Surfaces tree will show another tree called 'stupidtriangle_off'. Expanding that tree will show you the various surfaces built into the Ghoul model. We use surfaces for things from different styles of hair, to scarves, to dismemberment of limbs. For example: The Colombian Rebel has a hairstyle called 'avmed' while the Marine is bald. Thus, the 'avmed' surfaces are on for the rebel but off for the Marine. The Marine is also wearing a backpack and a scarf. If a surface is turned off, it has a bunch of lines next to it. To turn a surface on or off, right-click and choose 'Set STATUS: Off', or 'On'. Experiment with the various surfaces by turning them on or off. If you screw up the guy really bad, simply go to File, Read Script, and reload one of the two included models. Included are two characters using the same model with different surfaces. Most of the difference lies in the hairstyle, but again, the Marine has a backpack. You may also notice a chinstrap but no helmet. The helmet is actually a bolt on that, when present, looks connected to the chinstrap. Thus it appears the character has a full helmet on.

There are also entries here with an asterisk (*) in front. Those refer to tags, which are areas we bolt other models onto. For instance, having a *head_t tag allows us to put hat models on the characters' heads.

G2Skins Available

If you expand this tree, you'll see two entries, 'col_rebel_h2' and 'marine_camo2'. Expanding these trees gives you first a 'white' entry, then a list of parts. The 'white' entry was originally intended to be for allowing a skin file to have any number of races, but as we moved along, it was found to be easier to have each NPC in a unique skin file. However, you can't just enter anything here. 'white', 'black', 'hispanic', and 'asian' are all valid entries, but they don't have any bearing on the game at all.

Right-clicking on the .g2skin entry will allow you to expand the whole tree or validate the skin. Validating the skin will let you know if all the created shaders for this character are valid. More on shaders later.

Right-clicking on the 'white' entry will allow you to apply the skin if it isn't already. One thing you'll find by switching between our two included characters however is that the surfaces don't automatically change with it. So, if you have the Marine selected, then apply the Rebel skin, you'll see the backpack on but with no texture, and the bald head with no texture. The reason is because those are not valid surfaces, that is, there are no shaders in the .g2skin file.

Now notice the listings for arms, avmed, body, etc. Every Ghoul 2 model is built with a name for the surfaces and a shader applied to it. So 'arms' is a shader applied to every arm surface. The .g2skin then basically overrides the shader by telling the model to use

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something instead of 'arms'. In the case of the Marine, it uses 'a_marine_camo2'. This is a bit of a simplification of the process, but hopefully you get the idea.

There are a couple of other things. Notice that the Marine has an entry called backpack but the Rebel doesn't. That is because the .g2skin for the Rebel has no entry for backpack. It would be easy to add one however. See if you can do it after the explanation of the .g2skin format.

Next, notice that the Marine has 'head' while the Rebel has 'avmed'. These are different head types. The valid types for this model are 'head' (bald), 'avmed' (medium hair), and 'avmedhat' (round on top, hair near neck so bolt-on hats fit).

Finally, notice the body_2sided and face_2sided. Those reference shaders that have a 'cull disable' entry in it. What that does is draw both sides of a given model triangle rather than the default one side. Examples of where this is used are the Marine's collar and teeth.

.g2skin file format

Browsing to the base/models/characters/skins directory, you'll find the .g2skin files for the two characters we've included. You can open these files in any text editor to view the contents.

The first entry you'll see is:

```
prefs
{
    models
    {
        1      "average_sleeves"
        2      "average_sleeves_mini"
    }
}
```

Every skin file needs this or it won't work. Normally, we only include one model, but since we've given you a stripped down Average Sleeves model for skinning, we include two entries here. (BTW, when I say stripped down, that only refers to the fact that all the animations have been removed.)

Next, you'll see an entry like this:

```
material
{
    name  "face"
```

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```
group
{
    name "white"

    texture1 "models/characters/average_face/f_marine_camo2"
}
}
```

Material name refers to the corresponding material name applied to a surface on the model. By the way, if you right-click on a surface name in ModView and choose info, you can see what the material name is for that surface. For instance, choosing 'torso_r' will reveal that the material for it is 'body'.

Next is the group. Remember that I mentioned before that we originally intended to include different groups in the same file. If we have done so, you would see multiple group entries here.

Finally, you get to the name of the shader used for this particular material. You'll see 'texture1' and 'shader1' interchanged, but it actually doesn't matter which you use. Above, you see 'models/characters/average_face/f_marine_camo2'. If you then browse to base/shaders and open the average_sleeves.shader in a text editor, you'll find a corresponding entry. More on this later.

So...

All that needs to be done once you have all your textures made is to create a file that lists all the materials you intend on referencing, along with valid shader entries for each. Every model needs these entries to work:

Face

Body

Arms

Caps

Face_2Sided (for teeth)

A head of some sort (either 'head', 'avmed', or 'avmedhat')

Optional entries are:

Body_2Sided (for collars)

Scarf

Backpack_Lrg

Helmet_Chin_Strap

Avmst (Mustache)

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Creating a skin

Now that the tour of the file formats is over, I'll explain how to make a skin. Included in the files are both of our two finished characters, and 'base pages' for the various areas. A base page is what an artist lays out after the model is built. The textures are split between the average_sleeves directory and the average_face directory. The reason for this is that the faces can usually be applied to models other than the one it was created for.

Next...paint! Since I'm not an artist, I won't get too much into what you should or shouldn't do. Save your work as a unique filename in .jpg format with little to no compression.

Create shaders for each of the textures you made. (Explained below)

Create a .g2skin page in base/models/characters/skins using the above information.

Load up ModView, and open one of the previous skins to open the model (or do a 'file' 'open' and browse directly to the model).

Apply your skin and turn on and off the various surfaces to get the model looking the way you envision it.

Go to 'File' 'Write Script' and write out an .mvs file that saves all the settings for your character. You can then later open your character with the 'Read Script' selection.

Once you've done all this, you'll probably see where seams don't line up and such. You'll then want to tweak your textures over and over until everything is perfect. But once all your files are set up, you can do this as much as you want.

You're all done! You now have a completed SoF2 skin. In a future document (down the road), we'll show you how to actually get a skin into the game!

Shader info

Unfortunately, there's nowhere near enough room in this document to explain everything there is to know about shaders. If you are familiar with Quake 3, then you should know how these work. I'll just tell you how each thing should be set up.

```
models/characters/average_sleeves/scarf
{
    {
        map models/characters/average_sleeves/scarf_marine
        rgbGen lightingDiffuse
    }
}
```

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```
}
```

Any shader that is not going on a 2sided material can be set up as above. You'll see other entries listing HitLocation and HitMaterial, but we won't worry about those for now. You also need not worry about the 'q3map_nolightmap' and 'q3map_onlyvertexlighting', as the game totally ignores those for character skins.

For a 2sided material, you'll want the following:

```
models/characters/average_sleeves/b2_marine_camo2
{
    cull    disable
    {
        map models/characters/average_sleeves/b_marine_camo2
        rgbGen lightingDiffuse
    }
}
```

Notice the addition of 'cull disable'. That's what causes the texture to actually be two sided.

Conclusion

So, that's all the basics. Now let's see some awesome skins!