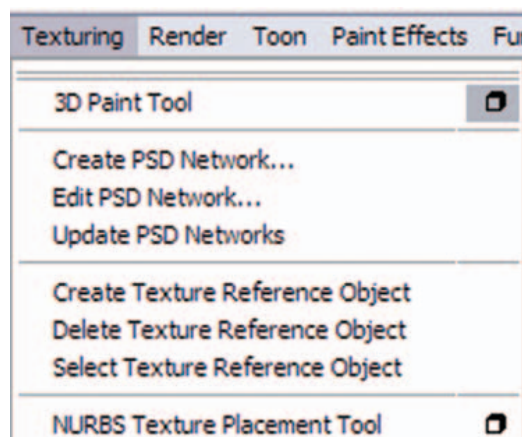


will have to lay out the UVs first. For most polygon models, the Automatic Mapping option serves quite nicely. NURBS models do not need to be mapped; NURBS utilize their Control Vertices as UVs.

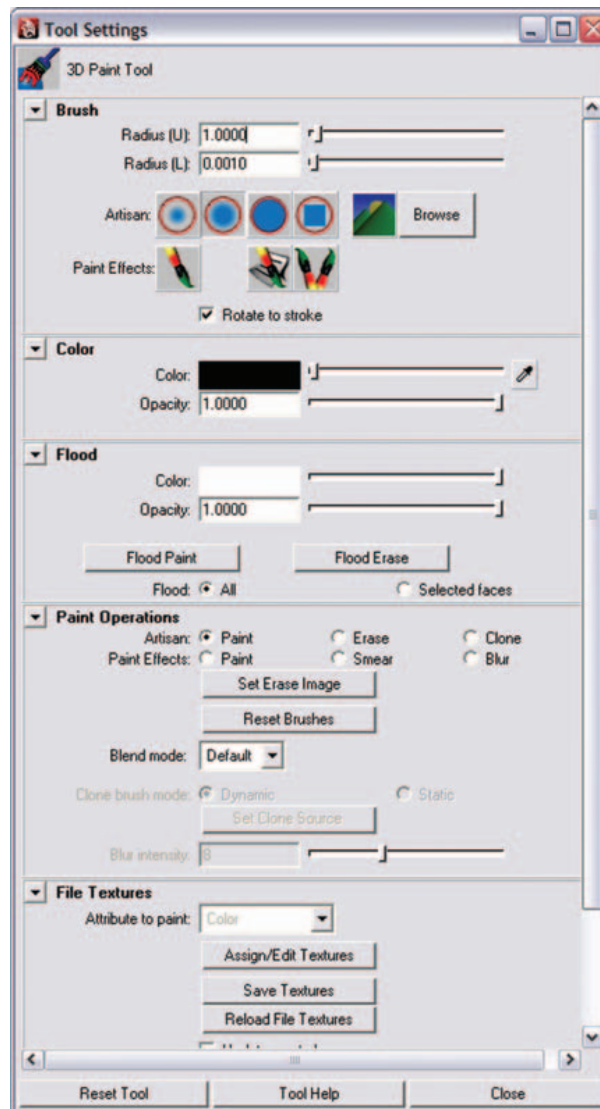
## The 3D Paint Tool

The 3D Paint Tool is a relatively quick and simple means of adding a *file texture* (or marking areas for more detailed texturing in Photoshop or another painting program). This tool allows you to paint color (or transparency, or any channel available in the *material* attributes) directly onto your model using the artisan brush (the same brush used earlier for the sculpt geometry tool). The brush size, shape, feather, and opacity can be changed easily. Simple tasks such as erase, clone, smear, and blur can be applied directly onto your model. Maya's 3D Paint Tools encompass enough options to create a basic texture beyond simply applying single-color shaders to selected faces. As you are working, make sure hardware texturing is turned on [6] in order to see what and where you'll be painting later.



The 3D Paint Tool can be found in the Rendering menu set by pressing (F6) on the keyboard under the Texturing menu.

! When working with the 3D Paint Tool, it is extremely important that you set your project so that Maya knows where to save the file textures. (To do this, go to [File > Project > Set] and choose your project folder.) This will keep all of your project related assets in the same folder and keep your paths relative.



The 3D Paint Tool options Window.

## Summary

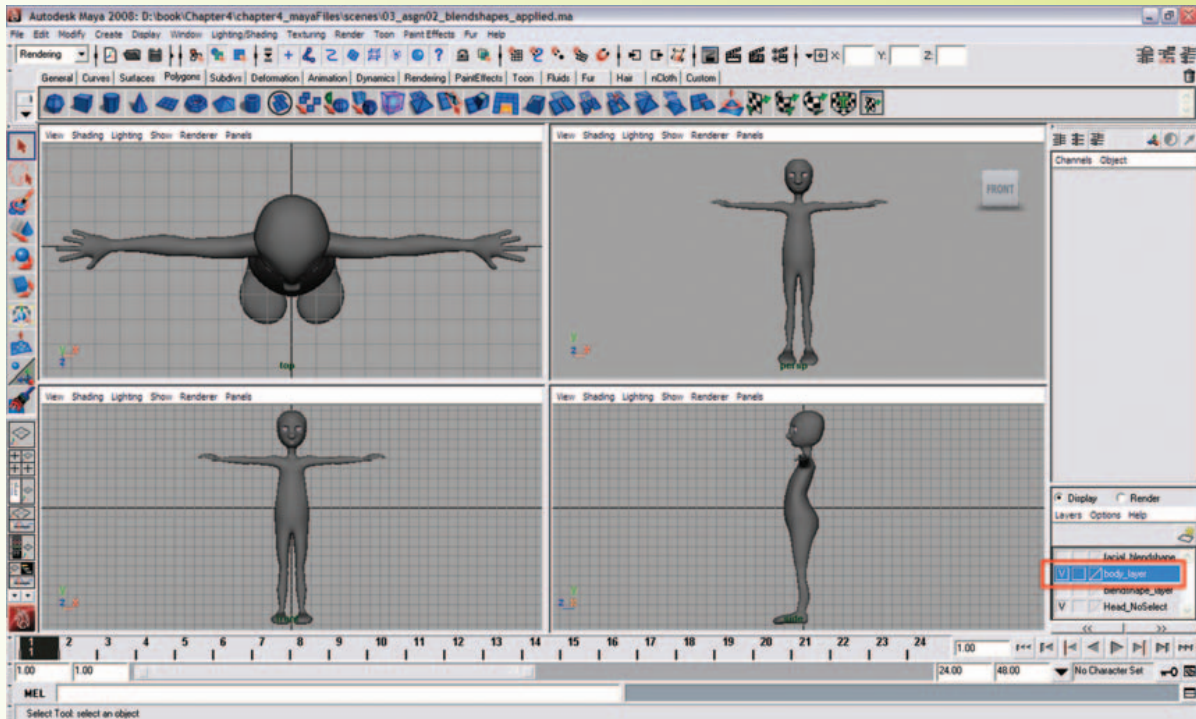
- 4.1 Texturing and shading can be a lengthy topic, but it can also be approached in a simpler way.
- 4.2 The *hypershade* is the work area that allows you to create and edit materials and textures.
- 4.3 A *material* defines how a surface is seen when the computer creates a rendered image.
- 4.4 The most commonly used materials for character shading are: Lambert, Blinn, Phong, and Phong E.

- 4.5 When texturing polygons, it is necessary to lay out the UVs for the geometry for first.
- 4.6 The 3D Paint Tool provides a quick and simple method for adding detail by an interactive creation of a file texture on your model.

## Assignments: Shading and Texturing a Character

### *Assignment 4.1: Apply a colored material to your character*

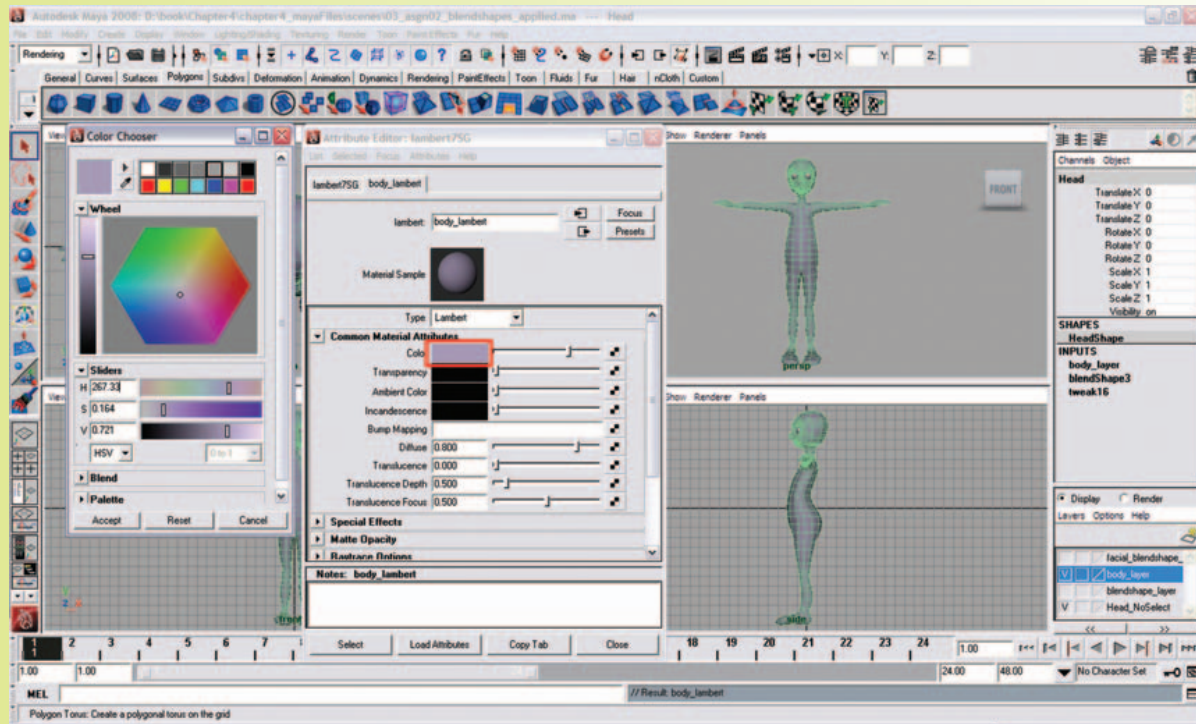
1. Open Maya and set your project.
  - a. Go to [Start > Programs] and select Maya.
  - b. Once Maya is open go to [File > Project > Set ...] browse to your project folder and click OK.
2. Open your last saved file. Go to [File > Open] and select *03\_asgn03.ma*.
3. Set all four view panels to turn off X-ray Mode and wireframe on shaded.
4. Turn hardware texturing on by pressing (6) on the keyboard so that you can see your reference images.
5. Make sure that your geometry layer is set to **Normal** so that you are able to select the geometry.



The work area with the geometry layer set to Normal.

6. Select the piece of geometry you wish to color.

7. RMB click and hold over the object and choose *assign new material* from the marking menu that appears. Once the *material* has been added to the geometry, the attribute editor is opened. Rename the *material* (something like *body\_lambert* should do). Change the color by clicking on the color box. This opens the color chooser window and allows you to select any color desired.



#### Choosing a color for the body lambert Material.

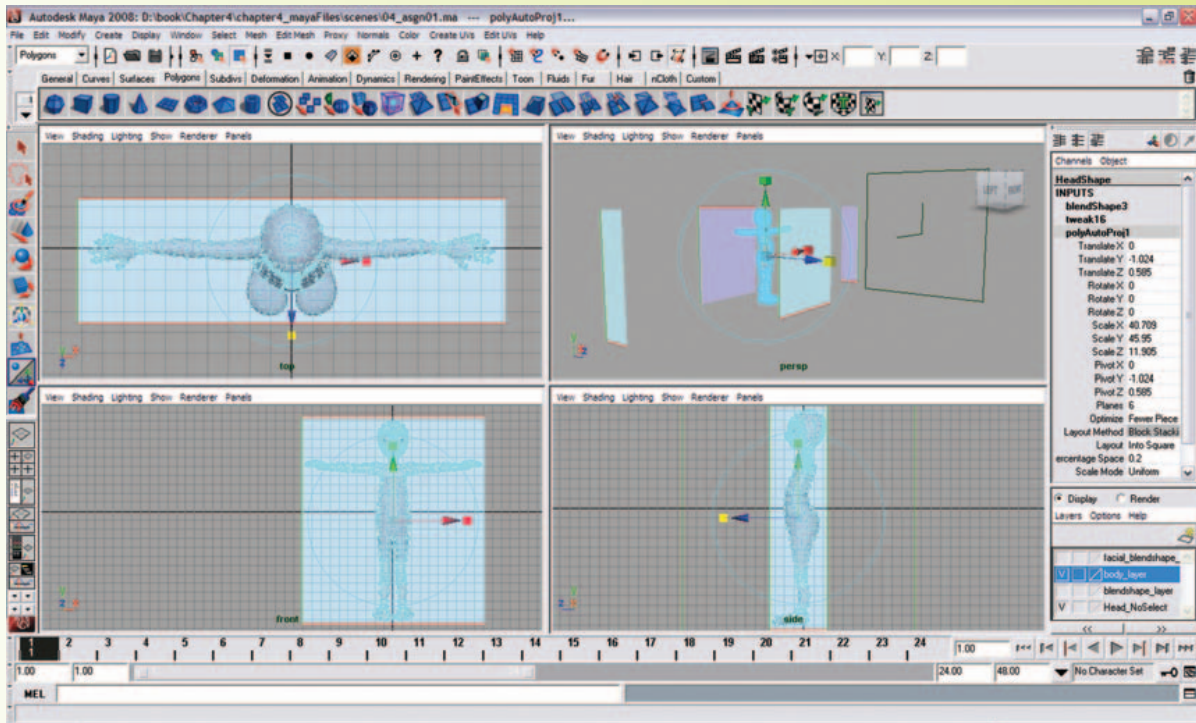
8. Save your scene file.
  - a. Go to [File > save as]. This should open the scenes folder of your project (assuming you set the project as in step 1).
  - b. Name your scene *04\_asgn01.ma*.

#### Assignment 4.2: Add Details Using the 3D Paint Tool (Optional)

For best results, use a pressure-sensitive graphics pen and tablet for this process, instead of your mouse.

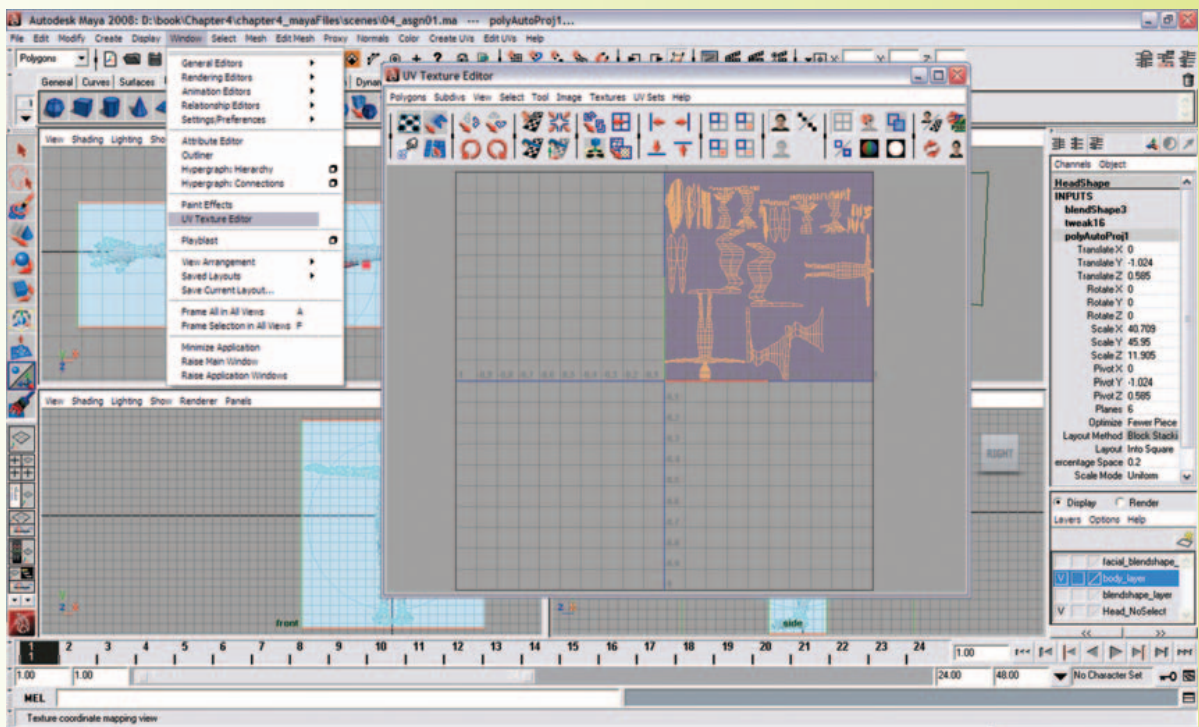
1. Open Maya and set your project.
  - a. Go to [Start > Programs] and select Maya.
  - b. Once Maya is open go to [File > Project > Set ...] browse to your project folder and click OK.
2. Open your last saved file. Go to [File > Open] and select *04\_asgn01.ma*.
3. Select the object you wish to texture. If your geometry is NURBS, skip to step 8.
4. Go to [Polygons > Create UVs > Automatic Mapping]. The default settings should work fine. If necessary, you can open the option box and reset the settings.
5. In the orthographic view panels, resize the projected planes to fit your geometry.





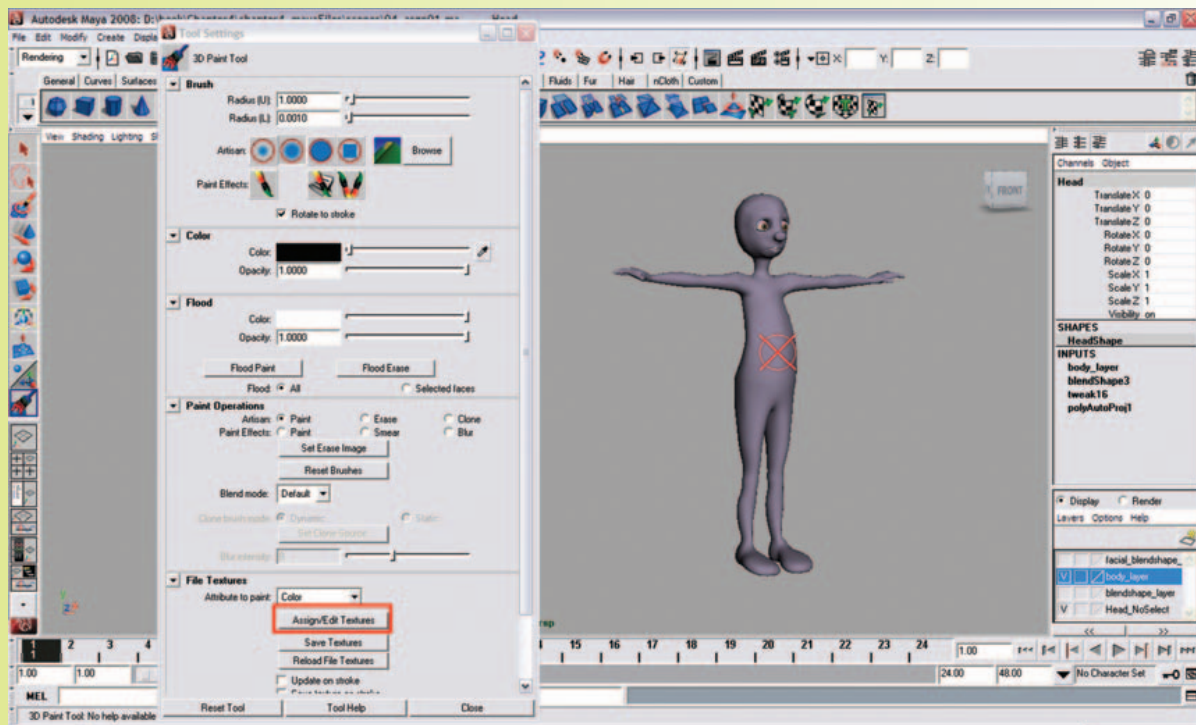
### Resizing the UV Automatic Mapping projection planes.

- To view the layout of the map, look under [Window > UV Texture Editor]. The Automatic Mapping has created several sections of UVs. All of the shapes should be within the 0–1 texture space (the square colored by the *material*).



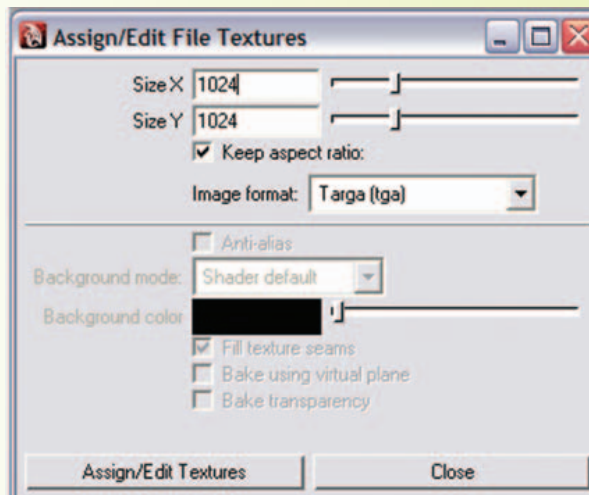
### The UV Texture Editor.

7. Go back into object mode (F8) on the keyboard, because Automatic Mapping placed you into component mode.
8. Now we can paint directly on our model. Select the object you wish to texture. Go to [Texturing > 3D Paint Tool – option box]. This will open the tool settings window.
9. If you place your mouse cursor over your model, you will see a red X in the paintbrush circle. Before you can paint you must first assign an image file texture to paint upon. **Scroll** down the tool settings window to the File Textures section. **Choose** which attribute you wish to paint (**Color**, **Transparency**, **Bump**, etc.), as well as which image format you want (default is set to Maya **.iff**, but if you want to edit the image outside of Maya, **.tga** would be better). Then click **Assign/Edit Textures**. This will open the Assign/Edit Textures window.



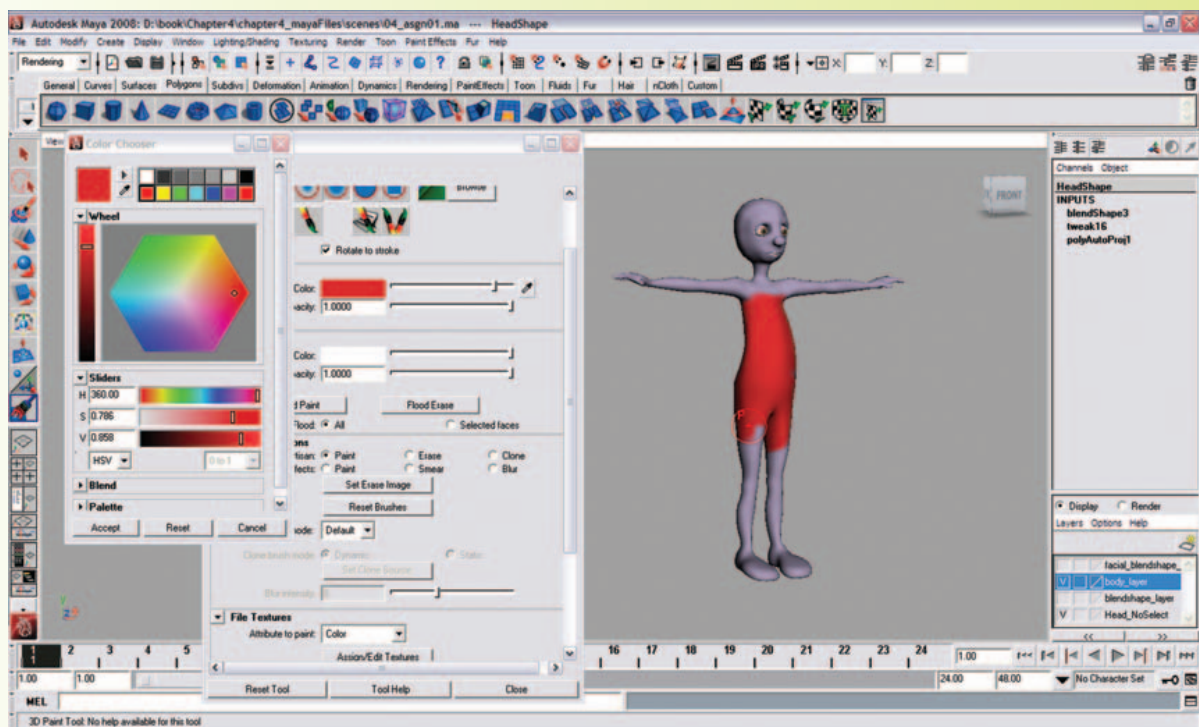
#### Assigning a texture file.

10. Decide how large your image needs to be. If painting an entire character's body, I suggest making the file size for X and Y 1024. This number represents the pixel dimension of the file that is applied to your model. Larger pixel dimensions will be necessary for larger models, so that the quality of the resulting texture is not pixilated. However, too large of an image will slow down the painting process and add expensive render time (a good rule of thumb is to keep the file size dimensions 2048 or smaller). *Keep Aspect Ratio* should remain checked, since your map occupies a square; also, keep the size as a power of 2, since computer calculations are based on the binary system (128, 256, 512, 1024, 2048).



Defining the file texture size.

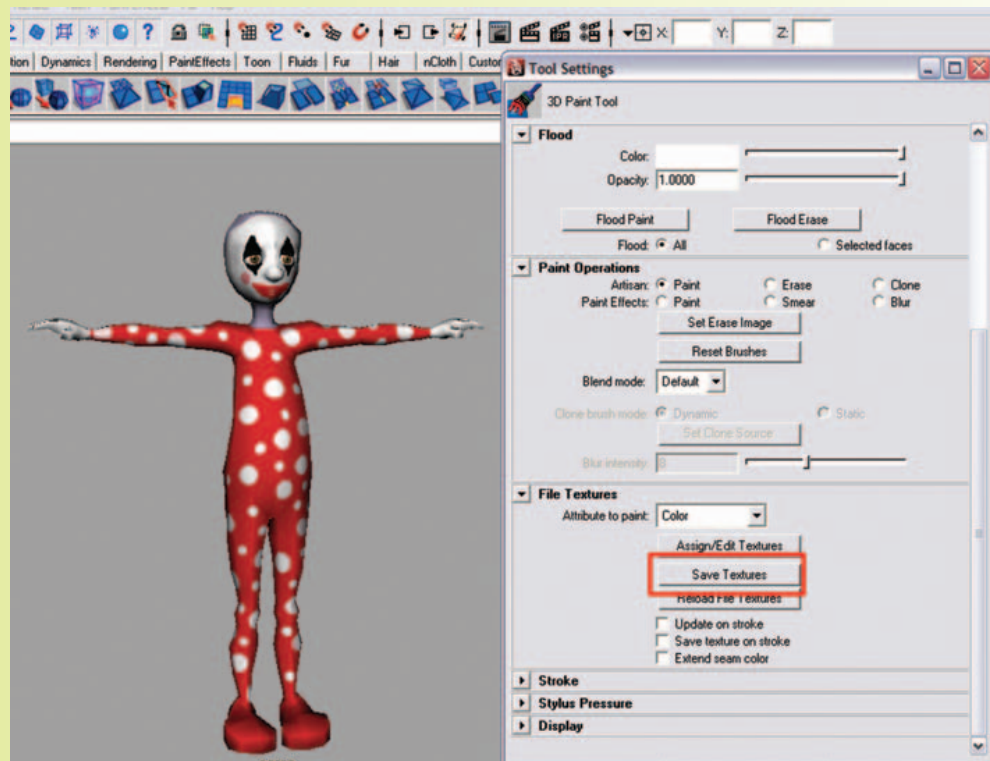
11. Click Assign/Edit Textures
12. Now, you can paint! The base color of your model is the color you chose when you assigned the *material* in Assignment 4.1; when you erase, you will actually be erasing back to this base color. If you want to change color from the color you chose when you first assigned the *material*, go to the Flood section and change the Color. Before doing any other painting, click Flood Paint. However, this does not change your base color. If you click Flood Erase, the area will return to the base color.



Painting with the 3D Paint Tool.



13. Under the Brush section, you can adjust the upper and lower brush radius, choose between a Gaussian brush, soft brush, hard brush, square brush, or load different brush shapes from Artisan's Browse box (these include charcoal, hatched, marker, and even skin-bump brushes). You can even choose a paint effects brush and paint a 2D image of the paint effects brush. The hotkey to change the brush size interactively is **(b)**. Simply hold down the **(b)** key, place your brush over your model, and (left mouse button) LMB click and drag left to right to change the brush size smaller and larger.
14. Under the Color menu, you can change the color of the brush, as well as adjust the opacity.
15. Under the Paint Operations Menu, you will find both Artisan and Paint Effects operations, including Paint, Erase, Clone, and Blur. You can even change the blend mode, working with lighten, darken, multiply, screen, and overlay modes. (These work in a very similar manner to blend modes in Photoshop.)
16. Once you have painted your model, make sure to scroll down the tool settings window to the File Textures section. Click Save Textures. This should create and save the file into a 3DPaint Textures folder in your project folder, (assuming you set the project as in step 1).



**Saving the file texture when painting is complete with the 3D Paint Tool.**

17. **Save** your scene file. Name your scene *04\_asgn02.ma*