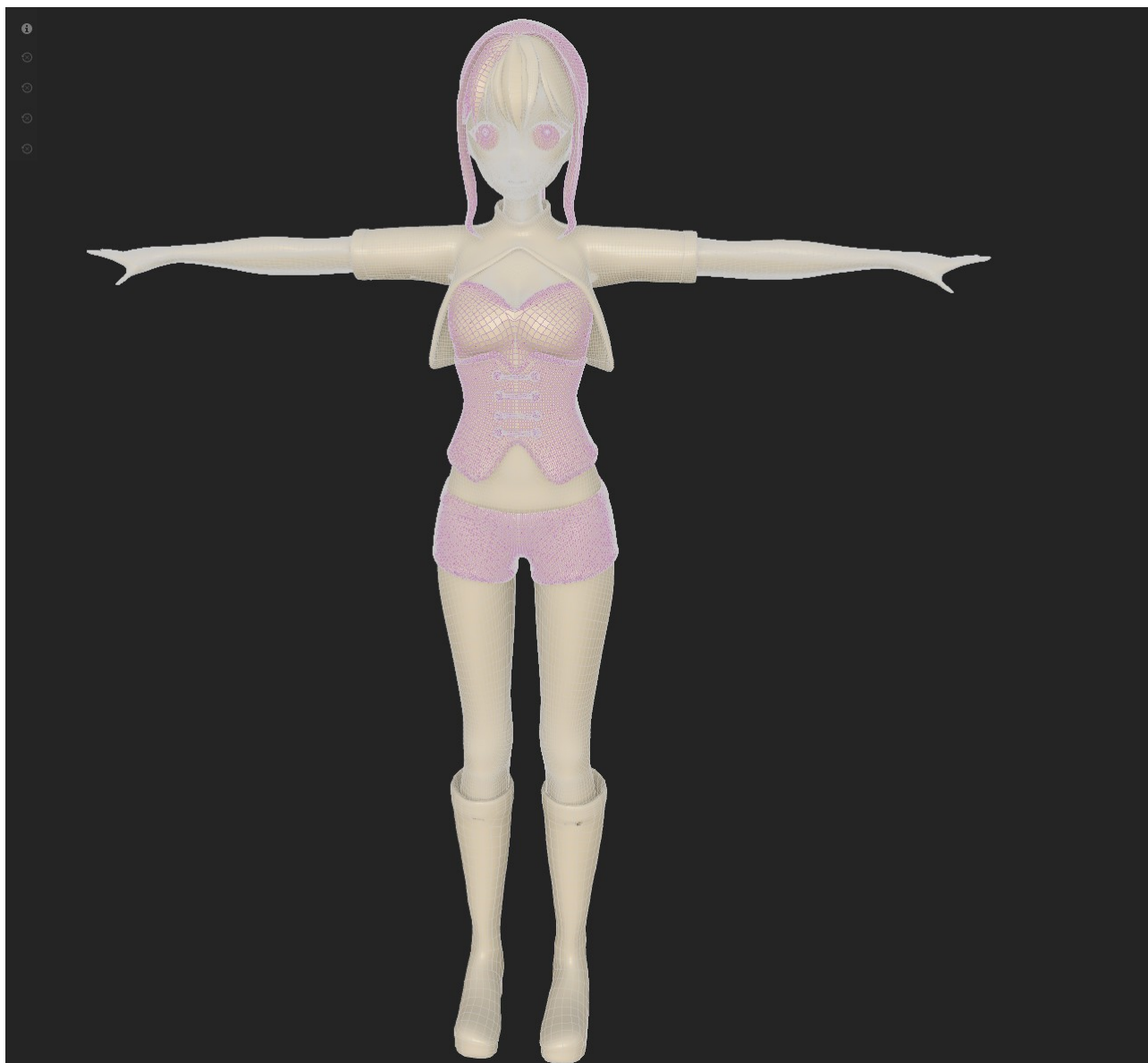Baking mesh maps:
The low poly mesh was used for baking the mesh maps

By masking out objects and the UV shells, textures were applied to the character. Using a black mask, then using polygon fill, the textures could be added to specific parts such as the clothing and skin.

For textures like the eyes, roughness and metallic channels were adjusted to make the eyes shiny. Filters were used on the skin to add blur and make it appear more natural.

Curvature masks were used to add subtle shiny highlights, and ambient occlusion was added and set to a multiply layer after the ambient occlusion map was baked.
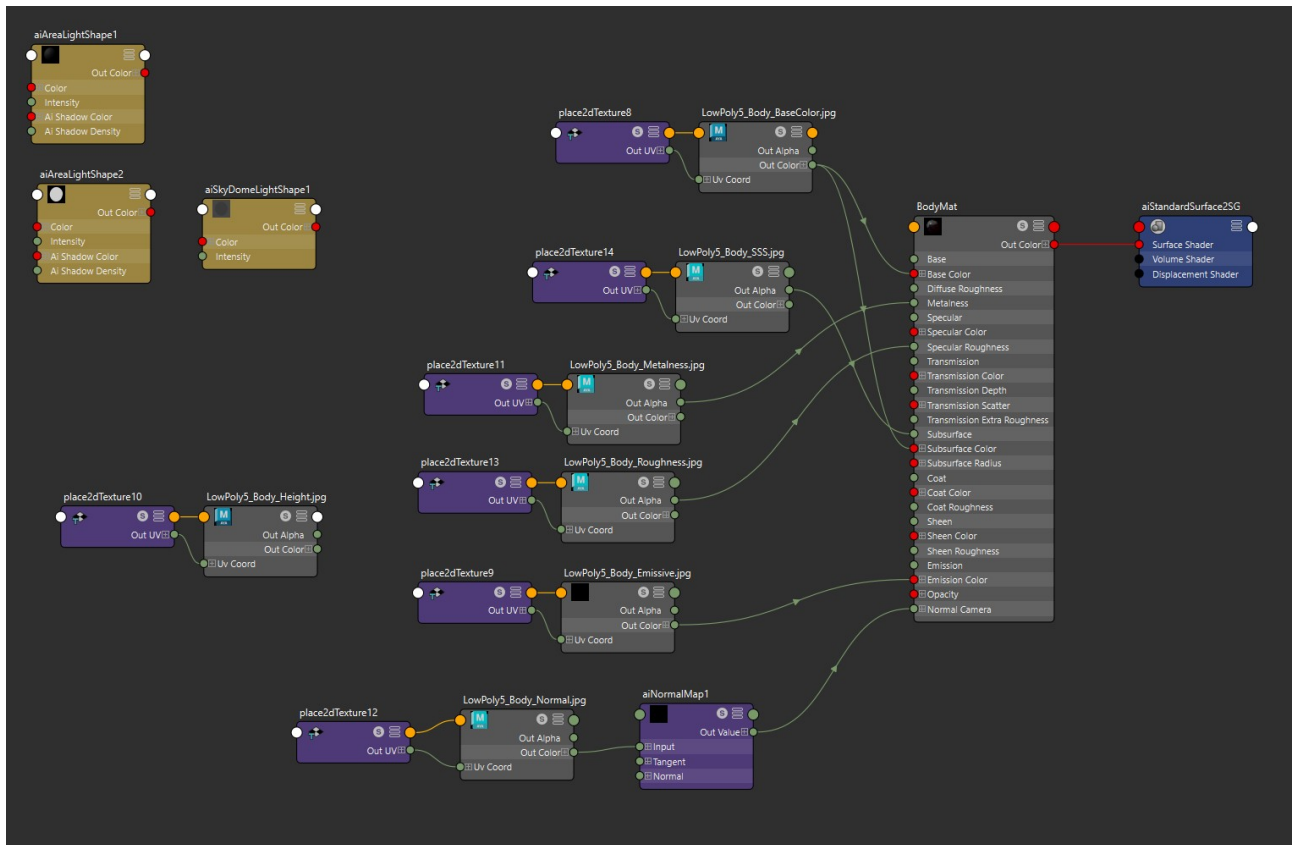
For the eyes, texture projection was used to project the Iris' onto the eyes.

A new fill layer was created for sub surface scattering. The thickness map was used to apply the sub surface scattering effect to the thinner parts of the model.
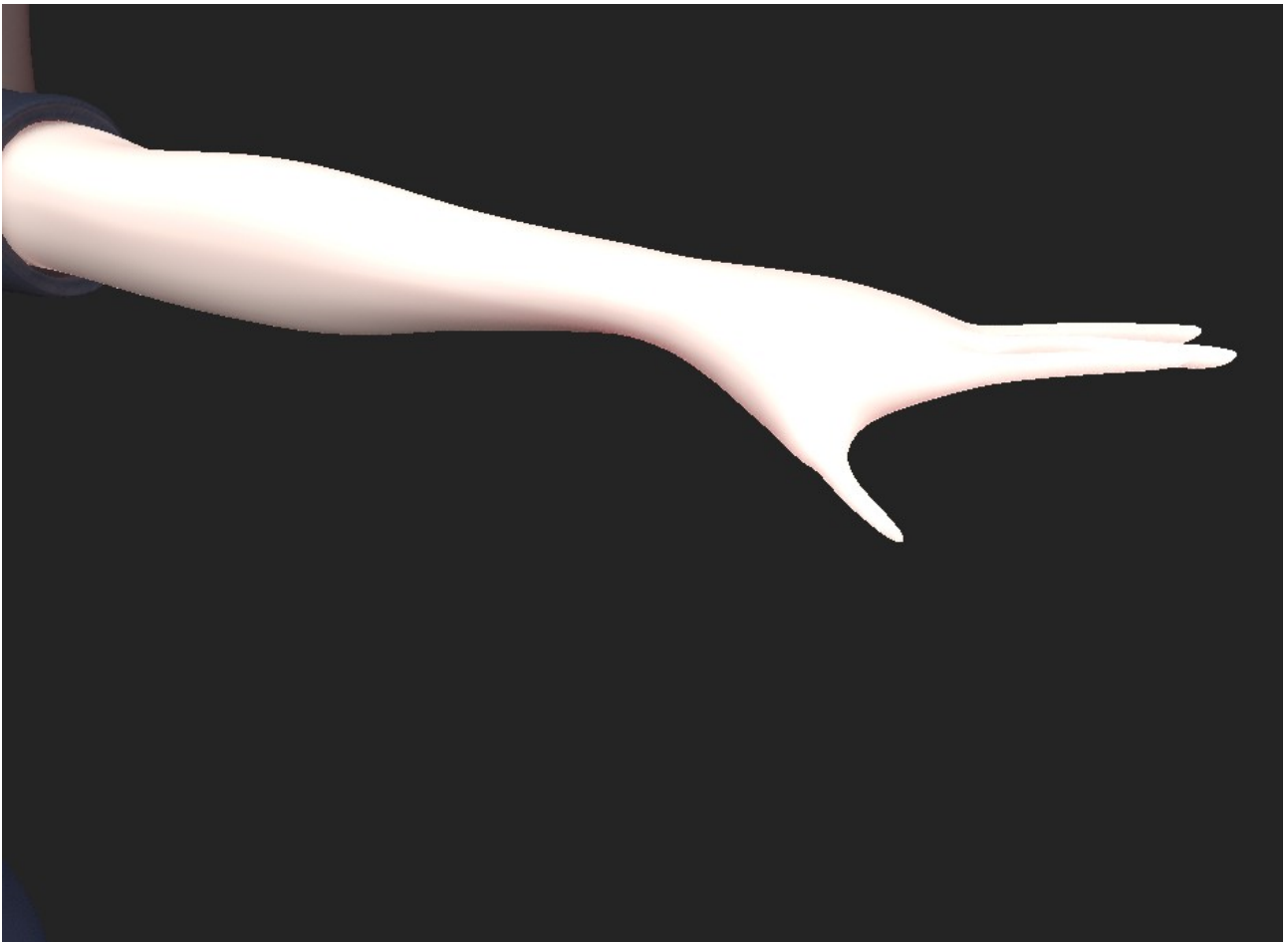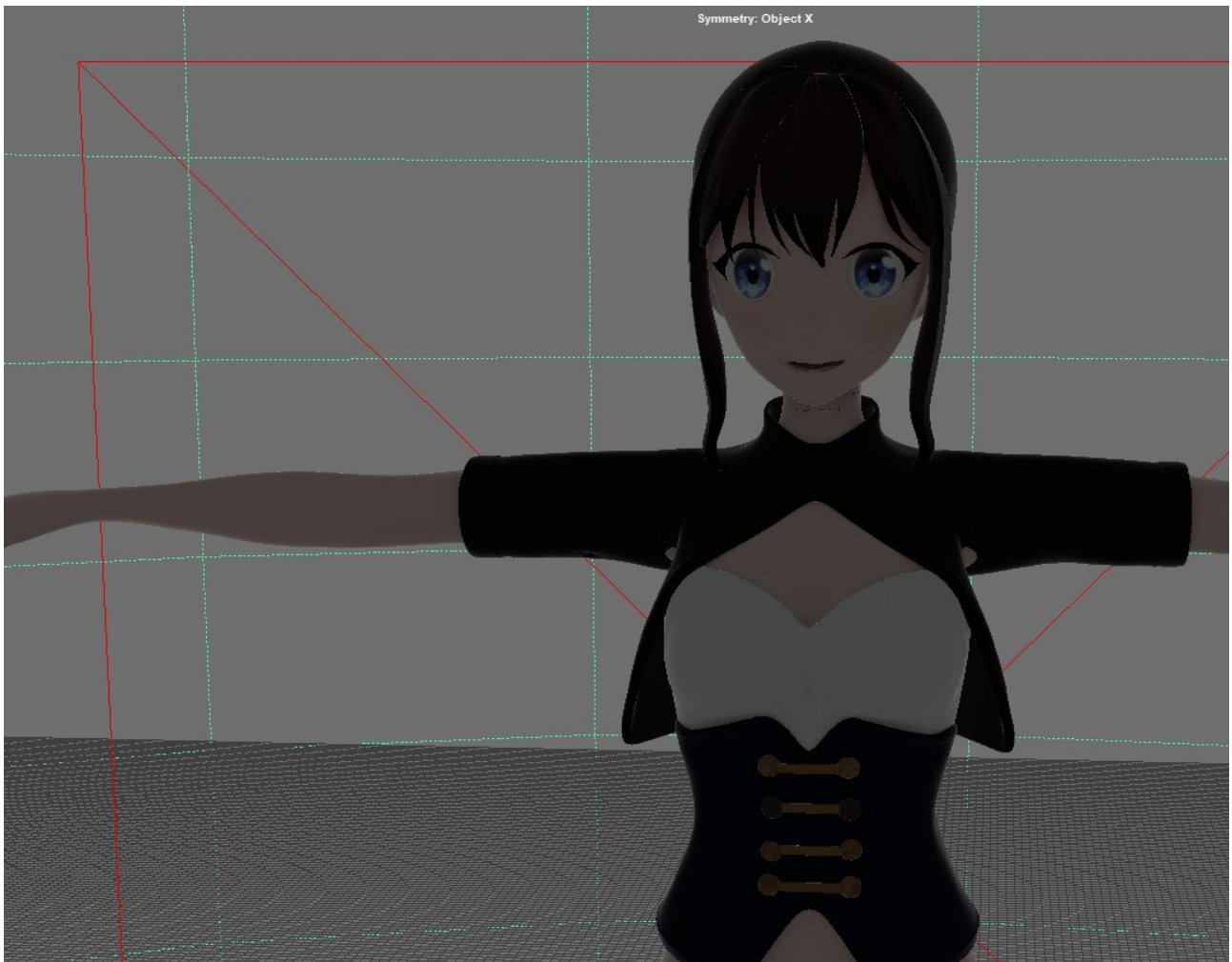

Maya texturing:

The textures were set up in Maya by connecting the emissive, metallic, roughness, normal and subsurface maps.

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Creating Blend shapes:

Blend shapes were created by duplicating the original geometry and then editing the geometry into the desired shape. For the mouth, the reference images from Stop Staring: Facial Modelling and Animation Done Right by Jason Osipa were used:

Figure 4.1
The nine shapes
we'll use to create
all of the visemes

Smile

Narrow

Frown

Upper Lip Up

Upper Lip Down

Lower Lip Up
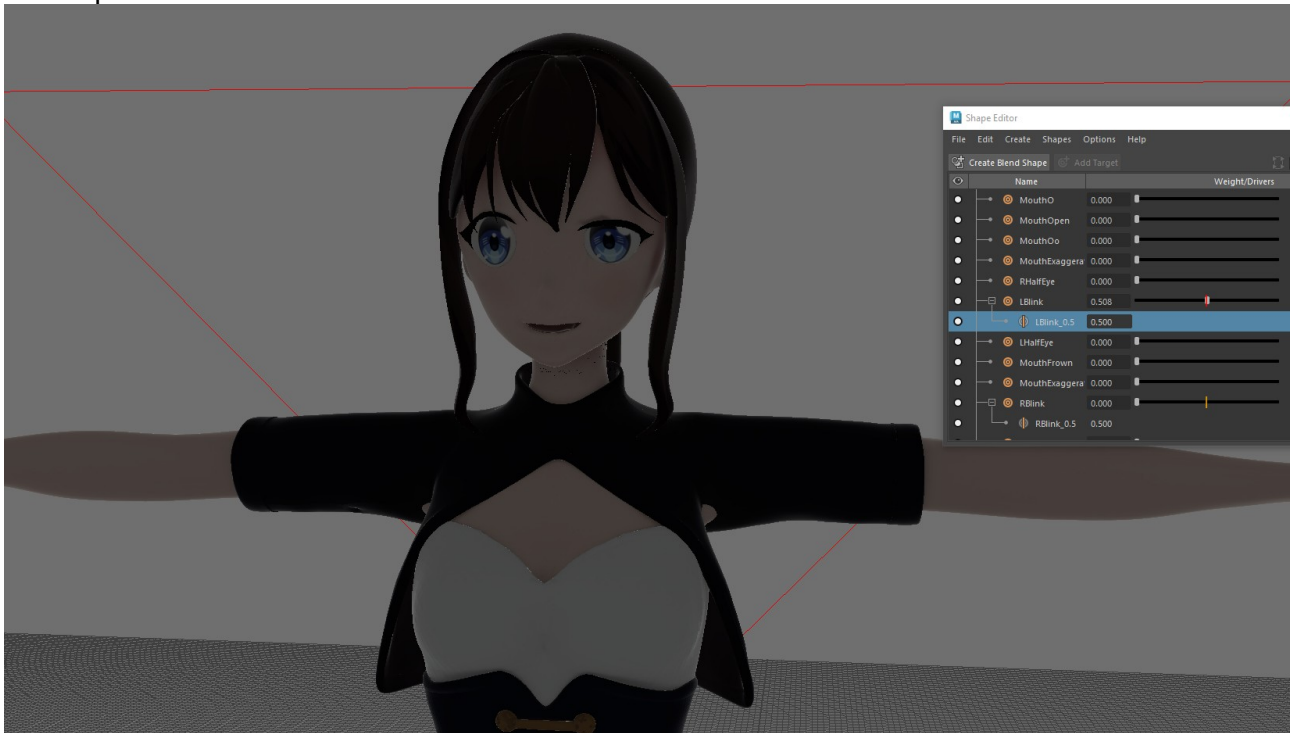
Lower Lip Down

Tongue Up

Tongue Out

a

Figure 4.2
The different
forms of Closed

Figure 4.3
The different
forms of Wide

Blend shapes were applied to the original mesh, and half blinks were added as in-betweens using the shape editor

To begin using the human IK system, the mesh was combined together. Upon reflection, this caused many problems that could have been avoided with the experience I learnt from later results. Since the clothes were created as separate objects, this made skinning and painting weights more difficult, as there were different "layers", such as the skin, and the different pieces of clothing. Additionally, the clothing had an inside and outside. This could have been simplified by extruding the clothing from the original body mesh.

Furthermore, upon exporting from substance painter to Maya, the mesh was retopologised by substance painter, and the result was poor topology and a very dense high poly mesh. This made creating blend shapes and skinning much more difficult. Additionally, the topology that was created in assignment 1 to aid in the character movement and animation was lost.

If time permitted, the entire model could have had its UVs redone, and all the clothing had the topology redone, or better, if as mentioned before the clothing was extruded from the base body, the retopologising and UVs would have been more simple.

If a more rounded character design was used (more conventional), instead of the sharp features (like the pointed nose) of the stylised character, a lower poly mesh would have retained the face shape easier.

Upon reflection of my current model, these are considerations I learnt that I must make in the design phase to make the later processes smoother.

Editing blend shape target: LBlink

Using the human IK, the character's skeleton was adjusted to match the character's body. A jaw bone was created to allow the jaw to open and close. A test animation was created in different poses that were relevant to the character.

For each vertex the skin weights were painted to change the influences and make the mesh deformation look more natural, particularly removing any spikes that formed in the mesh due it being too high poly.
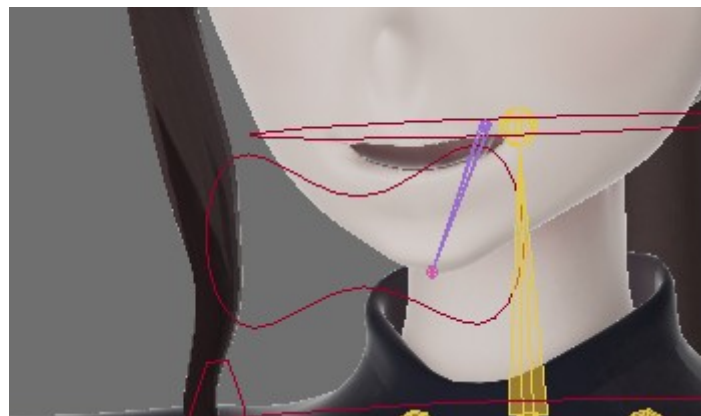
Nurb curves were used to create controls for the jaw and the eyes. I learnt that creating aim constraints for stylised "flat" eyes was not effective. Round eyes would have been a better design choice, or blend shapes could have instead been used.
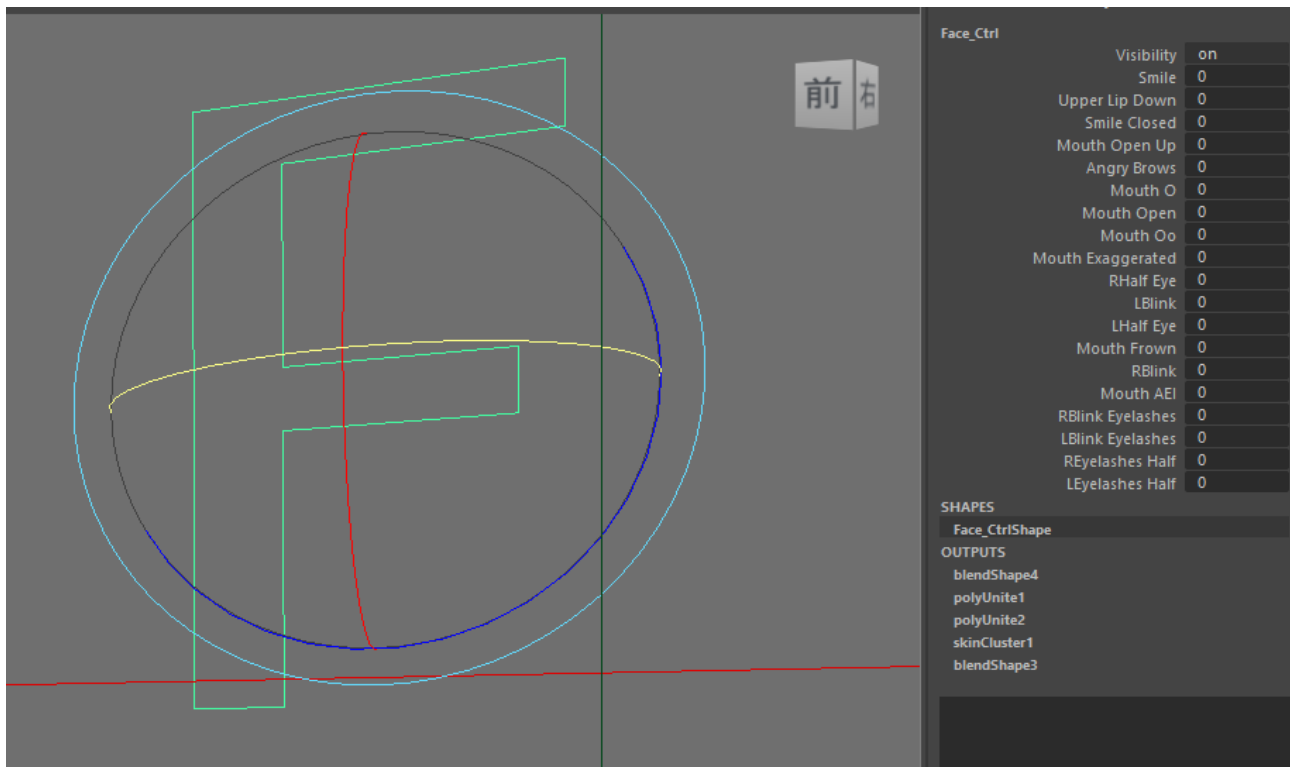
To make it easier for animating, a face control was made and custom attributes were added for the facial blend shapes.

Overall, key reflections learnt are as follows:

- Use a low poly mesh, and use smooth preview until smoothing the model
- Initially I used short sleeves and boots to make sure the character's knees and elbows were not covered to prevent issues such as unusual deformation when bending these joints. However, if extruding the outfit from the main body, this would not be an issue, as there would not be clipping issues from the skin and outfit. Additionally, there would be no need to paint both the body skin and the outfit interior and exterior, as they would share the same mesh.
- Retopologising is important and makes late pipeline such as creating blend shapes and skinning much easier.
- Export only the texture maps from substance painter, not the mesh itself.