How to set the project

When creating a new project, you can use the default locations and names that Maya generates by default, or you can specify custom ones. You can also create new file rules to specify custom data locations for custom files.

To start a new project

1. Select File > Project Window.
2. In the Project Window, click New.

   Maya populates the Project Window with default project locations and names.

   Note: You can clear all of the currently set project locations by selecting Edit > Clear Settings from the Project Window. To restore the default project locations, select Edit > Reset Settings.

3. Type the name of your new project in the Current Project text box.
4. Click the browse icon to the right of Location, and then specify a location for your project directory.

   This location is known as the project root directory. You can use this location for primary and secondary project locations and any other locations you add to your project.

5. To change the directory of a primary project location, click the browse icon at the end of its text field, and then specify a new directory.

   Otherwise, the Primary Project Locations are added to the specified projects root Location.

6. To change the directory of a secondary or translator data location, select Edit, click the browse icon at the end of its text field, and then specify a new directory.

   Otherwise, the Secondary Project Locations are added to the specified projects root Location.

7. Click Accept to save your changes and close the Project Window.

   This creates the project directories and sub-directories if they don't already exist.

How to import Image plane?

You can create two types of image planes: a free image plane that is not attached to a camera and that you can select and transform in your scene; or, an image plane that is attached to a camera.

To create a free image plane

1. Do either of the following:
   - o Select Create > Free Image Plane from the main menu bar.
   - o In any orthographic view, select View > Image Plane > Import Image, then browse to select an image.

   To edit or position a free image plane, select it in the scene and move or transform it as you like. When you select the free image plane, you can also edit its attributes in the Attribute Editor.

To create an image plane attached to a camera

1. Do either of the following:
   - o In the perspective view panel, select View > Image Plane > Import Image.

     Browse to the file you want and click Open.

   - o Select View > Camera Attribute Editor from the panel menu, then click Create beside Image Plane attribute in the Attribute Editor (under the Environment heading).

     This creates an image plane node, and you can then browse for your image file next to the Image Name attribute.

To edit an existing image plane

1. Select View > Image Plane > Image Plane Attributes from the current view and choose any of the camera's image planes you want to edit.

   The selected image plane's attributes display in the Attribute Editor (unless the Attribute Editor has been hidden)

To position an image plane

1. Do one of the following:
   - o Use the Placement attributes to position an image plane relative to the camera.
   - o Use the Placement Extras attributes to control which portion of an image file is visible on the image plane.

Making an eye

Step one if you want to make a human eye, choose a photo reference. All eyes are different and the generic eye does not really exist. Usually a model becomes unrealistic when you make it generic, in this case the eyes. They lack any kind of individuality, which is what makes each person stand out. The main differences between eyes are the colour of the iris, the eyebrows but what usually gives the eye unique characteristics is the flesh that encapsulates it. Between the eye and the nose, everyone has different amounts of fat. In the picture above, you can see that the fat surrounds the top of the eye and you can only see a small part of the eyelid. Other eyes like mine have very little fat and you see a concave area between the forehead and the eyelid.

STEP 1

Find an image for reference; if you are working on an animation/games project then use the concept art, and this method makes no difference if the eye is realists or cartoonie, the principles are the same. I got my image reference from here. It's called "mariah3angles". Put the images accordingly in your program and begin to model.

STEP 2

NOTE: Because I am only making an eye I am modelling with faces, but this also works if you model the whole head from a cube (like I do). If you are doing that then ignore this step.

Model the superior and inferior arches of the eye. The area that is closest to the eye itself. Make sure the curvature is correct in the three dimensions (This is for the newbies).

STEP 3

Now make a sphere and use it as reference for the eye. It's a common mistake that you model an incredible eye but the overall curvature is wrong and your eye won't fit properly.

STEP 4

Select the top edge of both of your arches and extrude (extend) inwards just a tiny amount, like -0.02 in Maya. Be aware that the actual number varies and depends on the size of your model and program that you are using. The amount that you extrude corresponds to the horizontal plane of flesh between your outer skiing and the eyeball. COMBINE the 2 arches.

STEP 5

Rotate you camera as to look from the inside, on this step it is useful to have double sided faces on. Go to the edges, select the edges and connect them (usually that is called the Bridge function).

PART 2

Although the basic shape is right now we have to build the surroundings and create the muscle that surrounds the eye so later you can rig it.

STEP 6

Extrude the top edge of the top eyelid. Adjust the edges to match the curvature if your reference images. (You can ignore this step if you are modelling fro a box and you already have the head).

STEP 7

At the edges, we need to unite the 2 eyelids. Create a polygon between the horizontal edges and the face you bridged before.

STEP 8

Select the last edges of your eyelid, including the one of the face you just created and extrude them (extend edges).

STEP 9

Set your edge loop to create one at the middle and make one for the top and the bottom.

STEP 10

Using the split polygon tool connect the 2 edge lines that you just created.

STEP 11

Now in order to remove the N-Gons we need another edge loop through the faces in between the 2 eyelids.

STEP 12

Select the 2 vertices of the triangles that you created when you joined the edge loops and merge them. You will delete the N-gon and return to a Quad topology.

STEP 13

Inside the vertices you just merged, add another edge loop.

STEP 14

Add another edge loop to the extrusion above the eyelid. Modify the geometry accordingly. Bevel that edge to from the curvature of the eyelid.

STEP 15

At the inner part of the eye take the inner edge and move it to form the beginning of the nose bridge. Do the same at the outer edge. This edges will form the side of the of the head.

STEP 16

Take the bottom edge and extrude it like you did at the top. Move the vertices accordingly to fit your reference image.

STEP 17

You should have something like this. **NOTE:** The last 2 steps can be skipped if you are modelling from a finished head, leaving the eye to the end. Either way is fine and this will not affect anything.

As you can see in this image, a very sharp line separates the inner eyelid to the outer parts. This is the folding of the eyelid. This is what makes a lot of the character of the eye. People of countries of Far East Asia, China, Japan, Korea, Taiwan, etc., have the eyelid to the bottom. Consider this because it is very important in order to get the shape right.

STEP 18

After smoothing the polygons, you should have something like this image. It is almost done. The only problem that you have is that there is a gap between the eye and the skin. We are going to solve this.
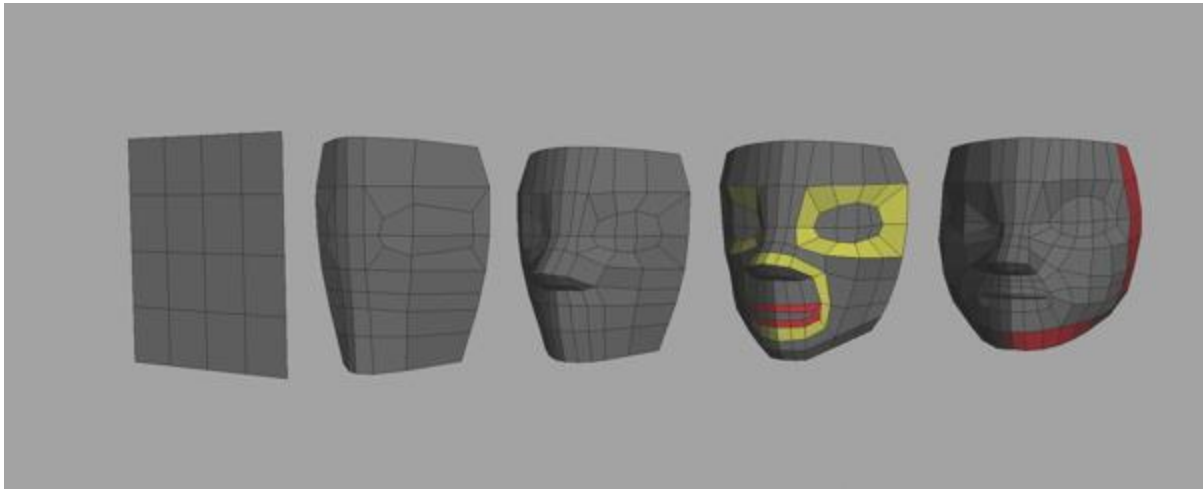
STEP 19

Select the inner edge inside the eye and extrude it backwards, towards the eyeball. Move the vertices so that they follow the curvature of the eyeball.
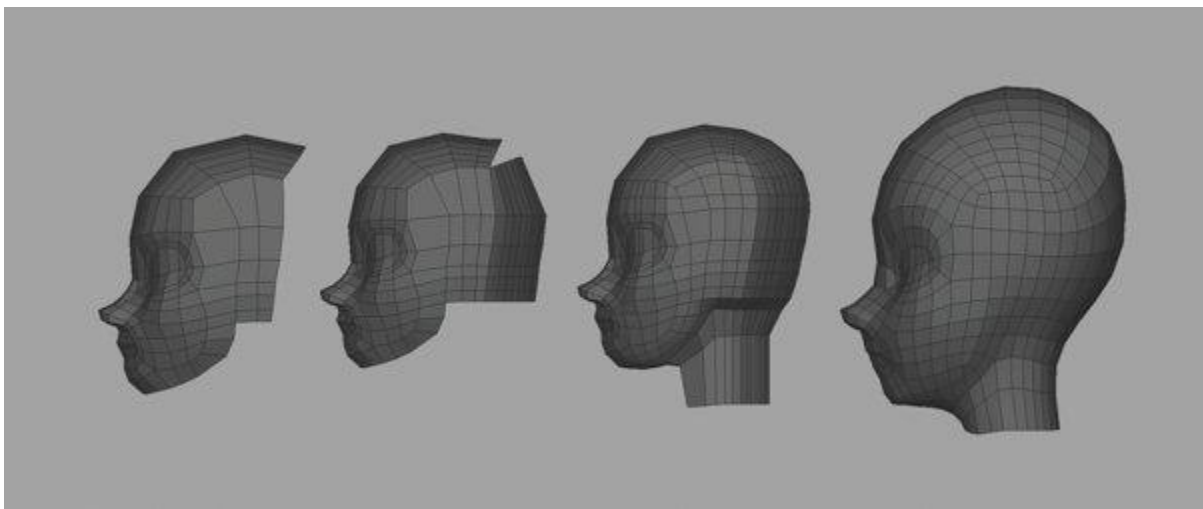
Now extrude the edge of the faces you just created and again make adjust them accordingly.

And there you have it. This eye construction method is quite easy. You can adapt it to all of your designs. You can change the shape of the main curves of the eye depending on for reference pictures or drawings. Be careful when you are making animal eyes, as you might have to modify the geometry of the eye in order to make it accurately.
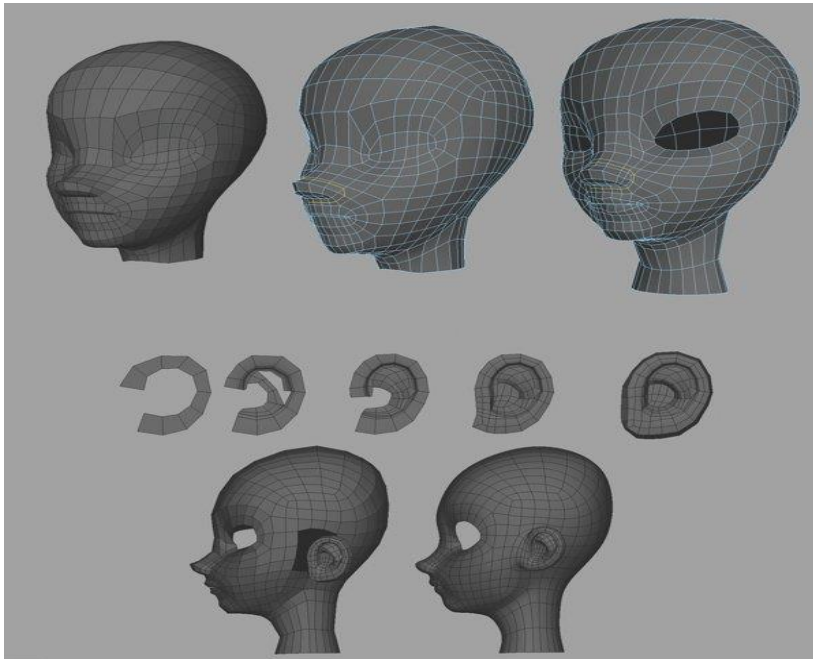
Model the head

Starting with a 4×4 plane we start by creating the edge loops that will become the main areas of the face, such as the eyes, mouth and nose. The eye sockets are just circular extrusions and the mouth consists of two circular extrusions: an outer one going around the mouth up to the nose bridge area, and an inner extrusion that will become the mouth and lips. At this point it is useful to have a sphere to serve as an eye placeholder – it will also help us to build and define the eye sockets around it.
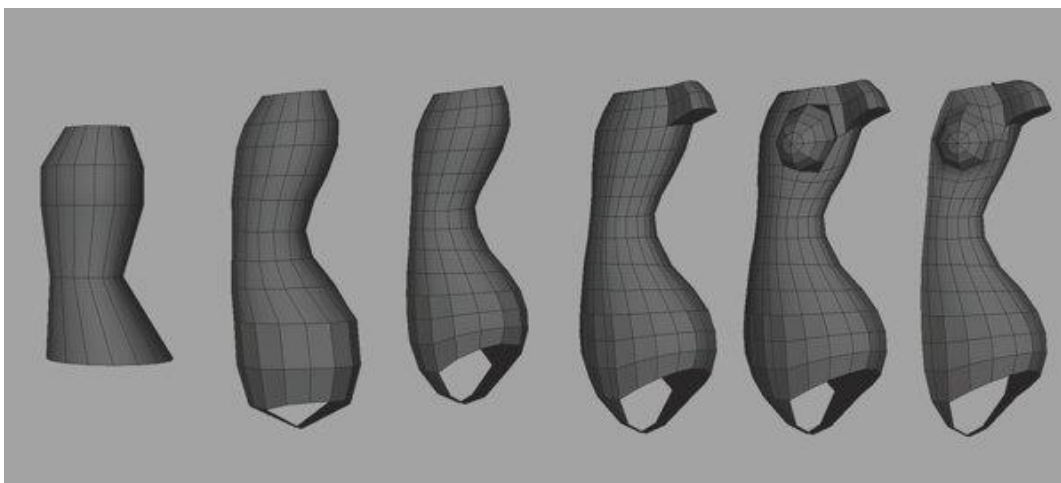

By extruding the border edges of the sides and the bottom of the head we will get the polygon flow that will define the jawline. Now extrude the edges of the sides and the top to the back of the head, this will leave room at the bottom to extrude the neck. You can close the head by extruding the edges of the back and merging the vertices to the top of the head – just think of the shape as a smoothed cube. Then extrude the hole in the bottom of the head to create the neck. Using the Sculpt tool, smooth the new edges to get a round shape.
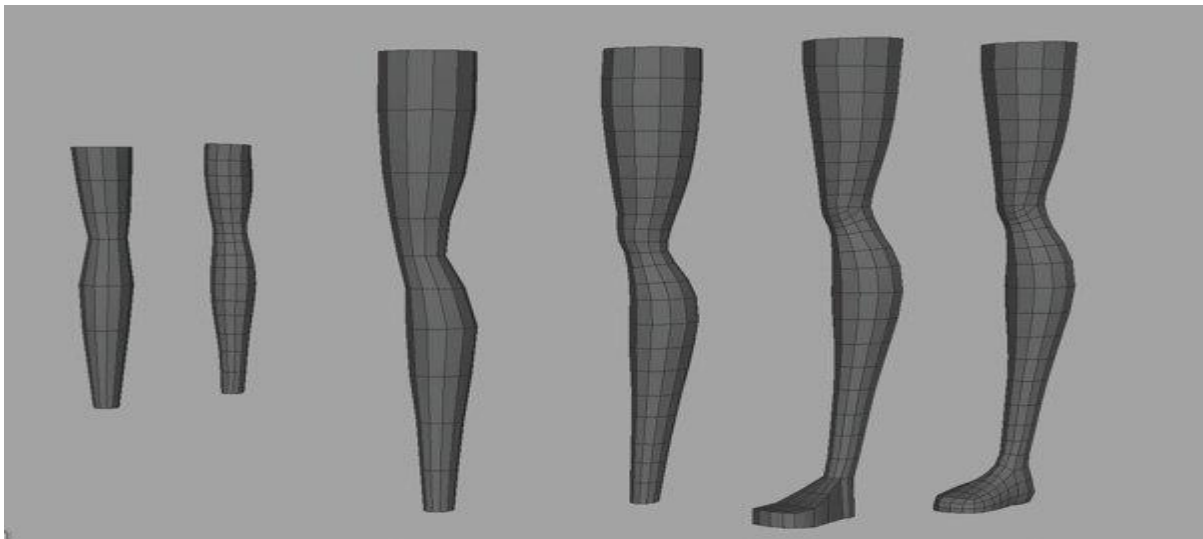
Model the nose and ear

We create the nose by adding a face loop in the nose area. The ear is modelled in parts, starting with a simple row of polygons shaped as a spiral section. We don't need a fully detailed ear for this character – modelling a simple, suggestive antihelix and the inner ear is enough to get believable cartoon ear. By deleting some faces on the head and leaving the same amount of edges in the hole and in the ear border, we can attach it to the head using a Bridge operation.
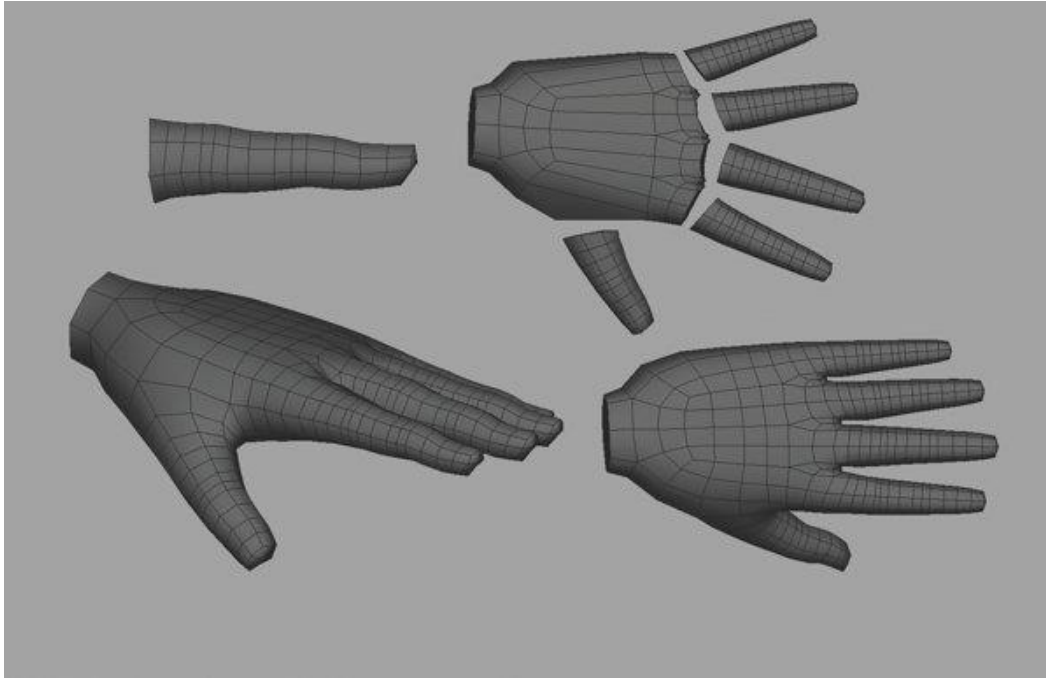
Build the torso

The main shape of the torso is basically a cylinder. With a few divisions we start to block the base of the neck, the shoulders, the waist and the hips. With those areas defined it's easy to start adding divisions to the rest of the piece, as well as extruding the shoulders. The breast area is just a section of a 8×8 sphere attached in the front, slightly below the shoulder's height. We close the bottom area by creating a bridge with the central edges in the front and back, this will leave the holes for attaching the legs later.
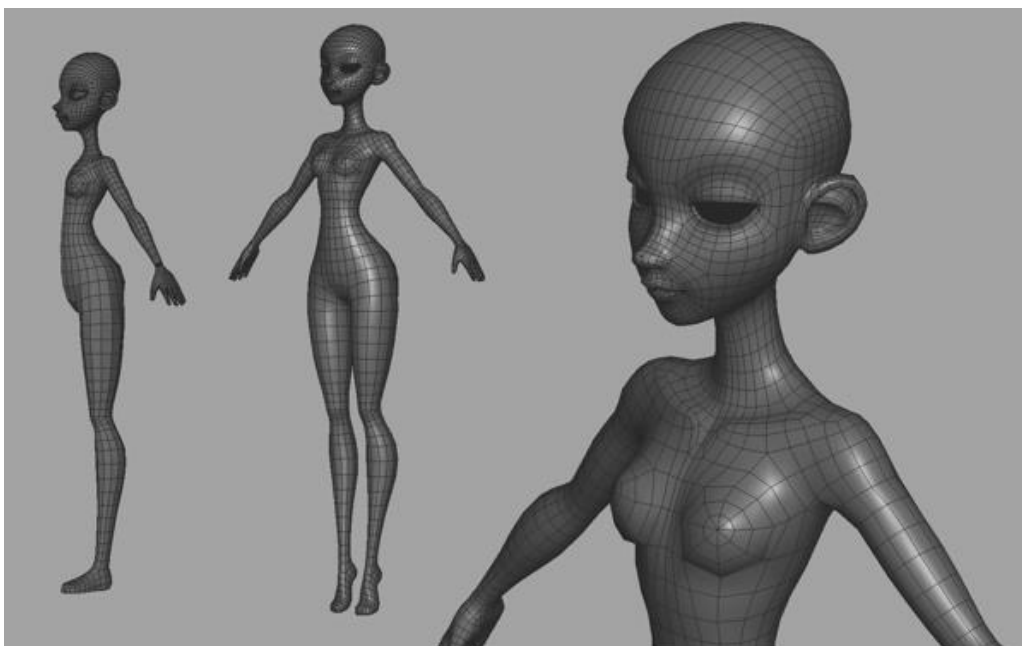
Build the arms, legs and feet

The arms and legs are cylinders too, but with the edges extruded. The main areas and widths that we want to define here for the arm are the biceps, elbow, forearm and wrist; and for the leg the width of the thigh, knee, calf and ankle. For both parts always check from both views to get the desired shape. Once we have those sections blocked we can start detailing by adding more divisions. The foot in this case is created by closing the bottom of the leg and extruding the front faces, we don't need toes since our character will have shoes.
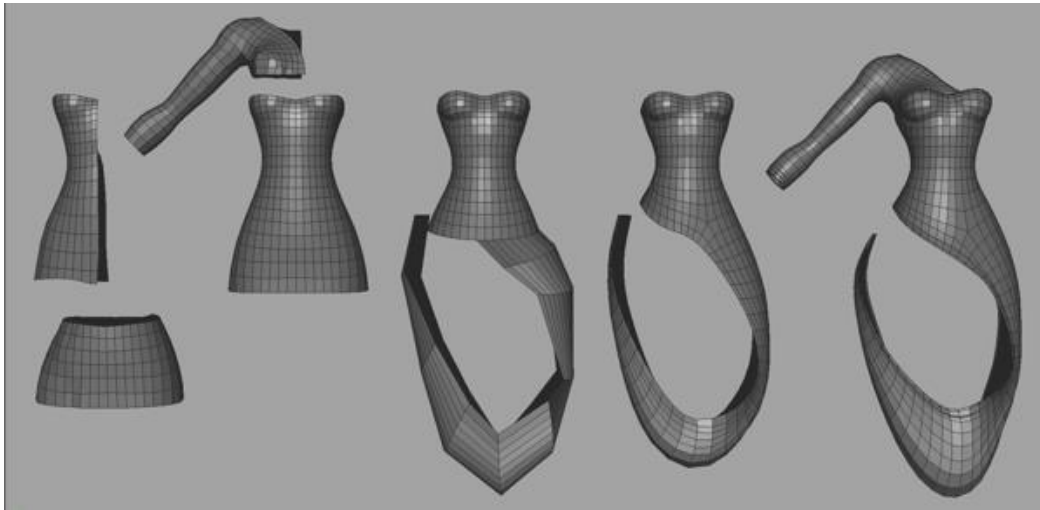
Model the hands

Starting with a cylinder we create a base finger. The palm can be started from a cube with enough divisions for attaching fingers later. It can come in handy too, when adding the skin, to leave space between each finger. Duplicate the finger and place them around the palm, scaling each one to its proper size. Then attach each finger to the palm, using a Bridge or the Merge Vertex Tool. The base topology is really basic, so focus more on avoiding a blocky shape by sculpting or tweaking vertices using a soft selection.
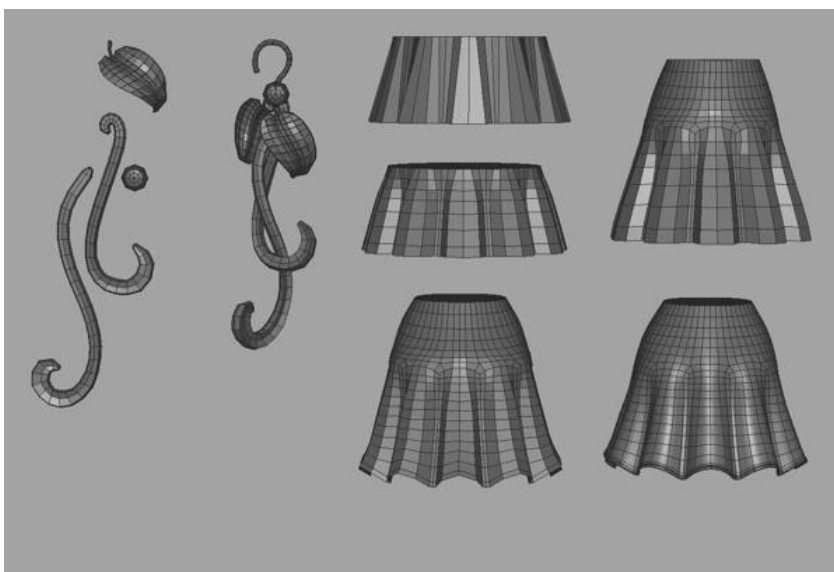
Merge the pieces together

Attach all the limbs to the torso, and smooth out the joins if needed. Add some clavicle detail on the body since it is a part of the body that will not be fully covered by cloth. For the final eyes we start with a sphere, extruding and sculpting the bulge on the front that is useful to catch highlights pleasantly. The iris and pupil is just a concave disc placed inside the outer eye, by using a transparency map it will enable us to see through the cornea inside the iris.

Make the dress

We create the dress by using a duplicate of the body, this way we will make sure it will fit with no major effort. The upper part of the dress uses the geometry of the waist up to the shoulders, and the skirt itself will come out of the hips' geometry. Once extracted, we need to get rid of the breast details and close the dress more naturally. The cloth extension is just an extrusion of the bottom half of the dress, going back and up to connect to the opposite side of the dress at the hip's height.

Add the skirt and Accessories

The skirt is created in two parts, the folds can be easily created by using a cylinder and pulling out vertices to create the folds. After extruding and shaping the bottom part of the skirt attach it to the hip's geometry that was previously extracted from the body. The shoes are created using geometry from the feet, and then building them around the foot. For things like earrings and hair ornaments, model the elements and then combine them to create each accessory, this adds a consistent style by having repeating patterns across the model.