PETAL BASE:

Open Blender. We will use the default cube object. Go to Top view. Press the NKEY to display the right properties panel (if it is not already displayed). Press NUMPAD-5 to go into orthographic projection Mode (If you are in perspective mode)

Set the dimensions for the cube object to X=2.5, Y=8 and Z=.125
TAB into edit mode. Go to wireframe mode (ZKEY) Subdivide the cube once.

Then, using the Loop Cut tool (CRTL-R), add 2 more vertical loops and 4 horizontal loops as shown below.

Go to wireframe mode. **Go to Front View.** Box select the center vertices. Press the SKEY followed by the ZKEY and scale them down along the Z axis as shown below.
Box select the outside vertices. Press the SKEY followed by the ZKEY and scale them down along the Z axis as shown below.

Go to Top View. Box select the top set of vertices. Press the SKEY followed by the XKEY and scale them down along the X-axis as shown below.
Continue selecting the loops of vertices and scaling them down along the X-axis as shown below.
Select the center loop of vertices (ALT-Right-Click).

Press CTRL-E. Select (Edge Menu) and “Mark Sharp”. This will make this loop of vertices have a hard edge when we later subsurf the object.
Deselect the loop. While still in edit mode, go to the Modifier editor. Add a Edge Split Modifier.

Uncheck the Edge Angle checkbox.
TAB out of edit mode. Add a Subdivision Surface Modifier. Set the View and Render levels to “2”.

Activate the “Apply Modifier to Editing Cage During Edit Mode” button.

Go to solid shaded mode (ZKEY). Select “Set Smooth” in the Tools panel on the left. Your object should look as shown below.
In the properties panel on the right, name this object “PetalBase

Save your Blend file.

Go to Front View. Add a NURBS curve object directly above the PetalBase object.

Set the X Rotation of the NURBS curve object to 90
TAB into Edit mode.

Go to the Object Data Editor. In the Shape panel, checkmark the “Stretch” checkbox.

In the Active Spline panel, checkmark the Endpoint checkbox. This will bind the ends or the NURBS spline to its endpoint control points.
Select the 2 endpoints of the NURBS curve and move them up so that the NURBS curve forms a straight line.

TAB into object mode. With the NURBS Curve object selected, click on the Origin button in the tools panel on the left and select Origin to Geometry.
This will move the origin / center point of the NURBS curve to its physical center.

Select the PetalBase object. Press SHIFT-S (snap menu) and select "Cursor to Selection". This will place the 3D cursor in the center of the PetalBase object.

Select the NURBS curve. Press SHIFT-S. Select “Selection to Cursor”. This will place the NURBS curve in the center origin of the PetalBase object.
In the Properties panel on the right, name this curve C1.

Go to Top View. Go to wireframe view.

Select the PetalBase object. Go to the Modifier editor and add a Curve Modifier.

In the “Object” box, select the C1 curve object.
Click the Use Modifier in Edit Mode Button.

Then Click the Apply modifier to editing cage button

Select the C1 Curve object. Go to the Object Data editor. Checkmark the “Bounds Clamp” checkbox. This will clamp the curve to the deformation.
Select the C1 Curve. Press SHIFT-D (Duplicate). Left-Click to set.

In the properties panel on the right, set the Z rotation to 90

In the properties panel, name this curve object C2.

Select the PetalBase object. Go to the Modifier panel and add another Curve Modifier.
In the Object box, select the C2 object.

Click the Use Modifier in Edit Mode Button and the Apply modifier to editing cage button.

The Petal Base object may look a little squashed but we will modify it later.
Deselect the PetalBase object. While in wireframe, Box select the PetalBase, C1 and C2 objects.

With all 3 objects selected, make a duplicate copy (SHIFT-D) and move it to the side.
Deselect the objects. Select the PetalBase copy and name it “LeafBase”.

Notice that the 2 new NURBS curve objects are automatically named C1.001 and C2.001 and are assigned as such in the modifier stack for the new LeafBase object.

Select the new LeafBase, C1.001, C2.001 objects and place them on Layer 2 (MKEY). We will use them later.

Save your Blend file.

**MATERIALS 01:**

It is a good idea before we proceed with the forming the Tiger Lily petals to add our material to the PeatalBase object.

We will be using 2 image texture files name “TigerLily_Bump.png” and “TigerLily_Petals.png”. You can download these image files [HERE](#).

Select the PetalBase Object. Go to the Materials editor. Press the New button. Name this material “Petals”

![Texture Editor](image-url)

Go to the Texture Editor. Select the first Texture channel, press New and name this texture “Tiger Lily Bump”.

Change the Type to Image or Movie” Press the Open button. Locate the TigerLily_Bump.png file on your computer and select it. Then press on the Open Image button.

In the Influence panel, uncheck Color. Checkmark Normal and set the Normal slider to 12.3
Select the second texture channel. Press New and name this texture “Clouds”. 

Leave the default Clouds procedural texture Type. 

In the Influence panel, uncheck Color. Checkmark Normal and set the Normal slider to 4.67 

In the Clouds panel, set the Size to .150 and the Depth to 5
Select the third texture channel. Press New and name this texture “Petal Image”

Change the Type to Image or Movie” Press the Open button. Locate the TigerLily_Petals.png file on your computer and select it. Then press on the Open Image button.

We will accept all of the default settings.

Go to front view. Move your camera object so it is directly above the PetalBase object as shown below. In the properties panel, set the X,Y and Z rotation for the camera object to 0.
Go to top view and center the camera again on the PetalBase object.

Click on the Render button at the top of the 3D Viewport Window and select render Image.
This renders the scene in Blender’s UV Image editor.

Press ESC (Escape) to return to the 3D Viewport.

Save your Blend file.

**PETALS:**

Select the C1 curve. **Switch to Front view.** TAB into edit mode. Select the two end control points for the curve and move them up along the Z-axis to curve the PetalBase object as shown below.
TAB out of edit mode. **Switch to side view.** Select the C2 curve object. TAB into edit mode.

Select the left end control point. Move it to the left along the Y-axis to lengthen the PetalBase object as shown below.
Adjust the 4 C2 curve control points to create a PetalBase curve as shown below.

TAB out of edit mode. **Switch to Top view.** Select the C1 curve. TAB into edit mode. Select the 2 outside control points and Scale them in just a bit as shown below.
TAB out of edit mode.

Go to the Outline editor window. Click on the “eye” icon to the right of the Camera item to hide it. Do the same with the default lamp object.

This will make it easier to select objects without the Camera and Lamp object getting in the way.

**Switch to top view. Go to Wireframe.** Box select the PetalBase C1 and C2 objects.

Press SHIFT-D (duplicate). Left-Click to set. Move these duplicate objects to the side and deselect.

Box select the PetalBase C1 and C2 objects. Press SHIFT-D again (duplicate). Left-Click to set. Move these duplicate objects to the side and deselect.
Select one duplicate grouping of objects. Press the RKEY (Rotate) followed by 120 then press Enter. This will rotate the duplicate group of objects 120 degrees.

Select the other duplicate grouping of objects. Press the RKEY (Rotate) followed by -120 then press Enter. This will rotate the duplicate group of objects -120 degrees.

Select each of the groupings and arrange them as shown below.
Deselect the objects. Go to solid shading mode (ZKEY)
Save your Blend file.

Go to Top view. Place your 3D cursor in the center of the petals.

Press SHIFT-A and add a Lattice object.
Go to the Object Data Editor. Set U=3, V=3, and W=3.

In the properties panel, name this Lattice object “L1”.

Scale and position the L1 object so it looks as shown below.
Select each of the Petal objects (one at a time) and add a Lattice modifier to each one of them.

Use the L1 lattice as the Object. (3 individual modifiers, one for each petal – make sure you apply the modifier to the petal and not the curve objects)

Go to front view. Select the L1 object. Go to wireframe. TAB into edit mode.

Box select the center set of control points and scale them down a bit as shown below.
Deselect the control points. Box select the top set of control points and scale them down as shown below.

Go to top view. Select the two top end control points and scale them out a bit so that the top petal is about the same width as the bottom two petals as shown below.
Deselect the control points. TAB out of edit mode. Go to solid shading mode. You model should look something like shown below.
Save your Blend file.

Go to top view. Go to wireframe mode. Box select all of the objects (3 petals, 6 curves and a lattice)

Press SHIFT-D (Duplicate). Press the RKEY (rotate) and rotate the duplicate set of objects about 60 degrees as shown below.
With the duplicates still selected, go to **front view**. Go to solid shading mode (ZKEY).

Move the duplicate sets of object up along the Z-Axis a bit as shown below. You may have to rotate you view to see better. The idea is to raise the duplicate sets so that they do not intersect with the original sets.
Note that the 6 petals are now named PetalBase, PetalBase001 through 005. The c1 curves are named C1 and C1.003 through 007 and the C2 curves are C2 and C2.003 through .007. The lattice objects are named L1 and L1.001. We will retain these objects so that we can at any time adjust the petals (or petal groupings) as desired.

Save your Blend file.
We need to create a control object so that we can later rotate the Tiger Lily flower head. Switch to top view. Add a UV sphere to the center of the petals. Scale it down and place it as shown below. Make sure it is centered in the bottom of the petals.

Name this object LilyHead.

In the tools panel on the left, click on the Smooth button to smooth the LilyHead object.

Press the AKEY to select all of the objects. Now hold your SHIFT KEY down and select the LilyHead object (this will remove it from the selection).

Now hold your SHIFT KET down again and select the LilyHead object (adding it to the selection)

Now press CTRL-P (parent) and make the LilyHead object the parent to all of the other objects. (the LilyHead object is the parent because it was the last object chosen in the selection)

We can now move rotate or scale the LilyHead object and all of the other objects will follow.
Select just the LilyHead object alone. In the properties panel on the right set the location to X,Y,Z = 0

In the Outliner window unhide the Camera and lamp objects by clicking on the “closed eye” icon.

![Outliner window with Camera and Lamp objects]

Render the scene. It should look something like shown below.

![Rendered scene]

Save your Blend file.

**SEPALS:**

Our Tiger Lily now needs its Sepals. This is an encasing that formerly protects the Tiger Lily bud. Switch to front view.

Go to top view in solid shading mode. Select the 3 original petals (you do not have to select the associated curve objects.

Press SHIFT-D and then left-click to set. Press the AKey to deselect the objects.

The names of these three duplicate petals will automatically be PetalBase.006, 007 and 008.
Go to the Outliner window and click on the plus sign next to the LilyHead object. This exposes all of the child objects. Select the PetalBase.06 object.

Go to the modifier panel and “Apply” the two curve modifiers and the lattice modifier.

Go to front view and move this PetalBase.006 object down along the Z axis as shown below.

Do the same for the PetalBase.007 object and the PetalBase.008 object.
Each of these petals (PetalBase.006, 007 and 008) have the original material still applied.

Select PetalBase.006 object alone. Go to the material buttons. Click on the “X” button to the right of the material name, which will unlink the material from the object.

**Do the same for PetalBase.007 and PetalBase.008**

Next select the 3 PetalBase object (.006, .007 and .008). Press CTRL-J (join). This will join the objects into one object. Name this object “Sepal”.

Select the Sepal object. Press the Origin button in thr tools panel and select Origin to Geometry.

With the Sepal object selected, press the SKEY and scale the object down as shown below.
Move the Sepal object up to the bottom of the Petal objects as shown below.
Go to top view. Go to wireframe. Rotate the Sepal object as shown below.
Save your Blend file.

We do not need to see many of our object till latter. Go to the Outliner Window. Click the plus sign next to the LilyHead object (the parent) Hide all of the lattice objects, and curve objects by clicking on the “eye” icon.
STIGMA:

The Tiger Lily’s stigma is a tube-like object that traps pollen and delivers it to the plants ovary located at its bottom. Go to Top View. Add a UV sphere to the center of the petals. Scale this down to fit the hole at the bottom of the petals.
Go to side view. Adjust the scale and position as shown below. Name this object “Ovary”. In the tools panel, press Smooth.”
Go to Front View. Place your 3D cursor to the side of the Tiger Lily and **add a Bezier circle.**

Set the X Rotation to 90. Scale it down as shown below and name this object S1. This will serve as the profile object for our lofted stigma.
Place your 3D cursor below the S1 object. Add a Bezier curve.

Set the X Rotation to 90 AND the Y Rotation to 90.
Name this object “Stigma”. This will serve as our lofted path.

With the Stigma object selected, go to the Object Data Editor. In the Geometry panel, click on the Bevel Object box and select the $1$ circle object. (NOTE: You may have to use your scroll wheel to get to the bottom of the list).
This Bevels (Lofts) the S1 circle along the Stigma curve object.
TAB into edit mode. Note we can adjust the shape of the Stigma object by adjusting the control points and control handles of the Bezier curve.
TAB out of edit mode. Go to solid shading mode. Move the Stigma object to the center of the Ovary object as shown below.
Select the S1 circle object and scale it down a bit until you have a Stigma object that looks something like shown below. (You may have to edit the Stigma object control points to get interesting curves).
Once you have a nice shape and length, Select the Stigma in object mode and press **ALT-C** and convert the Stigma object from a curve object to a mesh object.

Press the Smooth button. TAB into edit mode. Select the top ring of the Stigma object as shown below.
Scale the vertices out a bit as shown below.
Next, Extrude the vertices out 3 times, scaling down a bit after each extrusion as shown below.
TAB out of edit mode. Select first the Stigma object then add the Ovary object to the selection. Press CTRL-P and parent the Stigma to the Ovary.

Save your Blend file.

**STAMEN and ANTHERS:**

Our Tiger Lily has 6 stamens, which provide support for the 6 anthers, which produce the flower’s pollen. The stamens are structured the same as the Stigma object and we will use the same “S1” curve as a profile.

Go to Front view, wireframe. Place your 3D cursor below the S1 curve object and add another Bezier curve object.

Set the X Rotation to 90 AND the Y Rotation to 90.
Name this object “Stamen”. Go to the Object data editor and in the Geometry panel / Bevel Object box select the S1 curve object.
This will bevel (loft) the S1 object along the Stamen object.
TAB into edit mode and adjust the control handles to give the Stamen object a nice set of curves.
TAB out of edit mode. Go to wireframe. Place the Stamen object in the Ovary object as shown below.
Press Smooth.

Make 5 duplicate copies (SHIFT-D) and arrange them around the Ovary object. TAB into edit mode and alter the curves so they are not uniform in size or shape or curve as shown below.
Select the original profile object (S1). Scale it down a bit to produce very thin Stamens. (Note that the stamens are now numbered Stamen and Stamen001 through Stamen 005)
Zoom in close up to one of the Stamen heads. Create a UV sphere. Scale it down a lot then scale it on the Z axis to squish it. Name this object “Anthers”.
Move the Anthers object so it is close to one of the Stamen objects. Scale it down on the Y axis to squish it in that axis as well.
8- Rotate the Anthers object and checking from all views place the Anthers object inside of the Stamen object as shown below.
Press the Smooth button.

Now make 5 copies (SHIFT-D) of the Anthers object and place them on the other 5 Stamens.
When you are happy with the placement of the Anthers and the Stamens, you can select each stamen in object mode and then press ALT-C and convert them to mesh objects.
We will save the profile object (s1) and use it on the stem.

When finished with the conversions, re-select each Stamen object and press “Smooth”.

Select each Anther object and parent it (CTRL-P) to its associated Stamen.

Next select all of the Stamen objects and parent them to the Ovary object.

Next select the Ovary object and parent it to the LilyHead object.

The LilyHead object is now the parent to all of the Tiger Lily objects on this layer.
Save your Blend file.

**MATERIALS 02:**

We will add simple colored material to the Sepal, Ovary, Stigma, Stamen and Anthers objects.

Select the Sepal object. Go to the Materials editor. Press the New button and name this material “Light Green”
Click on the diffuse color swatch and set the color sliders to R=.4, G=1 and B=.4

Select the Ovary object. Go to the materials editor. Press the New button and name this material “Reddish Orange”

Click on the diffuse color swatch and set the color sliders to R=.8, G=.2 and B=0

Select the Stigma object. Go to the Materials editor and click on the New button. Name this material “Cream”.
Click on the diffuse color swatch and set the color sliders to R= 1, G= 1 and B=.6

Select one of the Stamen objects. Go to the Materials editor. Click on the New button and name this material “Yellow”.

Click on the diffuse color swatch and set the color sliders to R=.9, G=.9 and B=.06

Select a different Stamen object. Go to the Material editor. DO NOT click new. Instead, click on the Browse file button to the left of the new button and select the Yellow material.
Do the same with the rest of the Stamen objects.

Select one of the Anthers objects. Go to the Material editor. Click on the New button and name this material “Black”.

Click on the diffuse color swatch and set the color sliders to R= 0, G= 0 and B= 0.

Select a different Anthers object. Go to the Material editor. DO NOT click new. Instead, click on the Browse file button to the left of the new button and select the Black material.
Do the same with the rest of the Anthers objects.
Select the LilyHead object (you may have to do this in the Outliner Window)

Go to side view (NUMPAD-3). Press the RKEY (rotate) and rotate the LilyHead object about 60 degrees around the X-axis. Since everything is parented to the LilyHead object, everything should rotate along with it.
Save your Blend file.

**STEM:**

Go to Side View. Add a Bezier Curve object. Set the X, Y and Z rotation to 90.
Name this curve “Stem”.

Go to the Object Data Editor. In the Geometry panel / Bevel object box select the S1 curve object. (Note: you may have to use your scroll wheel to reach the bottom of the list.)
This bevels (lofts) the S1 curve object along the Stem object.
TAB into edit mode. Use the Bezier control points and handles to make a curve similar to that as shown below.

TAB out of edit mode. Select the S1 curve object and scale it up as shown below.
I side view set the Stem object close to the bottom of the Tiget Lilly petals as shown below. Go to front view (and other dimensional views) and make sure it is correctly aligned.
TAB into edit mode. Select the top control point (not the handle points) and press ALT-S (scale control points) and scale up a bit as shown below.
TAB out of edit mode. Position the Stem object over the lower part of the Tiger Lily petals.

TAB back into edit mode and select the bottom control point and press ALT-S (control point scale) and scale that point down.

The idea is to model an object something like shown below.
Make sure to check this from all views.

Zoom out a bit in side view. Select the bottom control point of the Stem object (in edit mode).

Hold your CTRL key down and left-click new sets of control points forming the stem as shown below.
Note: You can adjust any of the control points or handles to get the Stem object to bend the way you want it. You can also ALT-S (scale control point) and scale the Stem object thickness at any single control point.

TAB out of edit mode and Press “Smooth”. We will NOT convert this to a mesh so that you can adjust the Stem at any time.
Save your Blend file.


Materials 03:

We will add a Dark Green color to the Stem object.

With the stem selected, go to the Materials Editor. Click New and name this material “Dark Green”.

Click on the diffuse color swatch and set the color sliders to R=.05, G=.07 and B=.05

Leaves:

Click on the layer 2 button. (Clicking on the button should select that layer alone)

This is the layer we place the LeafBase object and the C1.001 and C2.001 curve objects.

The Tiger Lily has many long thin leaves at its base. Go to front view. Go to wireframe mode. Select the C1.001 curve object. (You may have to select it in the outliner Window.)

TAB into edit mode. Select the 2 outside vertex control points and move them up along the Z-axis as shown below to give a curve to the LeafBase object.
TAB out of edit mode. Go to Side view. Select the C2.001 curve object. TAB into edit mode. Select the leftmost vertex control point and move it to the left along the Y-axis as shown below.

Adjust the control points so that they look something like below.
TAB out of edit mode. Select the LeafBase object and BOTH of the Curve objects. Place them on Layer 1 (MKEY).

Go to Layer 1. Move the LeafBase object along with its associated curve objects to the bottom of the Stem object as shown below.
Go to top view and make sure the objects are properly aligned.
Go back to Side view. Go to solid shading mode (ZKEY). Select the C2.001 curve object and TAB into edit mode. Adjust the vertex control points to form a nice leaf shape.
TAB out of edit mode.

**Materials 04:**

Select the LeafBase object. Go to the Materials editor. It still has the Petals material attached to it. Click on the “X” to the right of the material name to remove that material from the object. (note: you may have a different number than mine)
Press New and name the new material “Tiger Lily Leaves”

Click on the diffuse color swatch. Set the color sliders to R= .052, G= .107 and B= .052

In the Specular pane, lower the specular intensity to .153.

Go to the Texture editor. Click New and name this texture “Leaf Spots”
Change the Type to Noise.

In the Influence panel, click on the “Mix” color swatch. Set the color sliders to R= .016, G= .023 and B= .016

Save your Blend file.

Go to Side View. Go to wireframe mode. Select the C1.001 and C2.001 and LeafBase objects.
Press SHIFT-D (Duplicate0 and move the duplicate set of objects up along the Z-axis as shown below.
Select the new C2.002 curve object and TAB into edit mode. Adjust the vertex control points so that the duplicate LeafBase object looks something as shown below.
TAB out of edit mode. Select the first LeafBase object. Go to the Materials editor. Click on the “Apply” button for BOTH curve modifiers.
Select the other LeafBase object and do the same thing. This will set their mesh and release them from the curve objects. We can now hide the curve objects in the Outliner panel.

Select the first Leafbase object. Go to top view. Press SHIFT-D (duplicate) then the RKEY (rotate) and make a duplicate copy and rotate it about 120 degrees around the Stem object.
Go to a more dimensional view and move the duplicate leaf in closer to the stem as shown below.
Select the first LeafBase object again. Go to top view. Press SHIFT-D followed by the RKEY and make another duplicate leaf rotated about 240 degrees as shown below.
Go to a more dimensional view and move this new leaf in closer to the stem.

Select the smaller leafbase object. Go to top view and press the RKEY and rotate it a bit as shown below.
No do the same as we did for the larger leaves duplicating them and alternating the positions with the larger leaves so it looks something like shown below.
Note: The leaves are all individual objects. They can be moved, rotated (in any direction) and scaled individually.

Select all of the leaves (6). Then add the Stem object to the selection. Press CTRL-P (Parent) and parent the leaves to the Stem object (Set Parent to Object).

Save your Blend file.

**Lighting:**

Make sure the default Blender lamp is not hidden in your outliner panel.
For this tutorial we will add some basic lighting. Select the default Blender point lamp object and delete it.

Go to front view and add a Sun lamp and rotate it as shown below.

Go to the Object data editor and lower the sun lamp’s energy level to .7.

Add a Hemi lamp to the scene and rotate it as shown below.
Go to the Object Data editor and lower the Hemi lamp’s energy level to .4

**Camera:**

Make sure your Camera object is not hidden in the Outliner Window.

Go to Perspective view (NUMPAD-5). Rotate your view so it is in the middle of the viewport and of medium size.
Press CTRL-ALT-NUMPAD-0 (Align camera view). This will align the camera with your view.
Note: you may have to go back and forth, zooming or rotating or shifting your display to get the camera view you want. Pressing the NUMPAD-0 key will always show you the camera view.

Render the scene.

Save your Blend file.

Here I made some duplicates of the tiger lily and rotated them a bit to give a more clustered effect.
A completed copy of this tutorial named “TigerLily_Complete.blend” can be downloaded [HERE](#).