Phone Case Workshop 02

SLQ Wiki Fabrication Lab 2025/07/06 22:01

~~REVEAL~~

Phone Case Workshop 02

Proposal

This Workshop builds upon Parametric Phone Case to construct a prototype parametric phone case using the laser cutter.

Activity Summary

We will measure then model our phones, then use that model to create a case based upon a pre-existing model.

We will choose material from The Edge's fabrication Lab store to explore the limitations and strengths of laser-cutting a 3D object in acrylic and plywood.

Fusion360

The functions of Fusion360 to be demonstrated are;

- Creating sketches on a face
- Changing Parameters
- Adding Dimensions
- Mirror in sketches
- Mirror bodies
- Pattern bodies on a path
- Selection Sets
- Combine Bodies
- Export DXF

CorelDraw and Laser Cutting

Using CorelDraw and the RayJet300 we will

- Align Objects for cutting
- Create engraved text
- Cut case parts

Materials

These materials are per participant if not specified otherwise.

- parametric phone case model
- phone to measure
- 200mm x 200mm of approved material to cut (acrylic or ply)

Tools

Digital

- fusion360 with a working user account per participant
- CorelDraw and laser-cutter PC

Analog

- Precision Caliper
- superglue
- acrylic glue
- sidecutters
- cutting/gluing board

Outline:Part One

Step Zero: Getting Started

Lets get set-up for the workshop. If you are in the Fabrication Lab,

- grab a laptop
- log on as edgeuser
- launch Fusion360 (and log on using the account you created in workshop 01)
- download the

phone case model

Step One: Recap

Its time to remember the basics of fusion360. In your new blank model - see if you can:

- Create a sketch on the bottom plan (XZ)
- draw a rectangle with the centre on the origin
- break some constraints

- Make some constraints
- create a parameter
- Dimension a line or point

Step Two: Measuring Phones

Time to take a good look at your phone and measure;

- length
- width
- height
- curve radius or slope
- fillets
- screen inset
- button insets
- charger inset
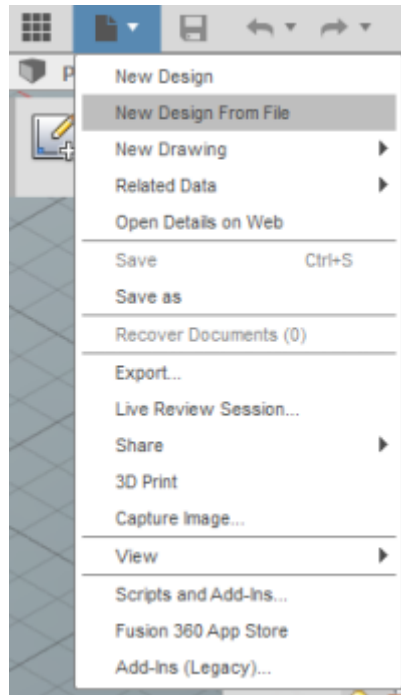
Step Three: Choosing Materials

Lets discuss and choose the materials we can use to make our prototype, by examining the existing examples.

- acrylic
- ply
- acrlyic + ply?

What material do you want to use?

Step Four: A Parametric Tour Using the Design History

We will use the Design History explore the model. This allows us go step by step through the making of our model. Open the model using the 'new design from window'

Phone : Design History

- In the Browser, hide all components except for the phone:1 (using the lightbulb button)
- active the phone component
- Make sure all sketches and bodies are visible
- Drag the History Marker back to the start
- Step through the history with the play button

Phone : Sketch

- Find the phoneDetails Sketch and right-click to edit
- Show and hide the bodies
- Drag the curve point around - notice the other line changes?
- Click Show constraints Sketch Palette
- What is the constraint making the lines move together?
- Stop The Sketch
- Exit the component by Clicking on your assembly name (the name of your model)
- Click the home button to reset your viewpoint.
- Drag your Model design history all the way to the right to reset it.

Spines : Design History

- In the Browser, hide all components except for the Spines:1
- active the spine:1 component
- Make sure all sketches and bodies are visible
- Drag the History Marker back to the start
- Step through the history with the play button
- Make sure you end up at the end of your component Design History

Spine : Sketches

- Find the phoneProfile Sketch and right-click to edit
- Notice the spine drawn in construction lines off to the right.
- Can you find the mirror constraints?
- The offset constrain?
- The parameters used in the sketches?
- Stop the sketch

Spine : Body - Pattern on Path

- Make sure you end up at the end of your component Design History
- Right Click the PathPattern1|Spines
- CLick Edit Feature
- Change to the front view
- Change the Quantity and Path Direction to see how they affect your model.
- Click the small tick boxes to suppress individual spines.
- CLick OK or cancel to exit The Edit feature

Spine : Body - Mirror

This is a create function similar to the sketch functon 'mirror'

- Make sure you end up at the end of your component Design History
- Right Click the Mirror1|Spines
- CLick Edit Feature
- Deselect your object and mirror plane with the X
- Re select your objects..
- and mirror plane
- CLick OK or cancel to exit The Edit feature

Ends : Design History

- In the Browser, hide all components except for the ends:1 (using the lightbulb button)
- active the ends component
- Make sure all sketches and bodies are visible
- Drag the History Marker back to the start
- Step through the history with the play button

Ends : Sketches

- Find the end Sketch and right-click to edit
- Its a simple sketch with only one constraint…
- Stop the sketch

Ends : Body Extrude

This is how we make a combined body - first we extrude..

- Make sure you end up at the end of your component Design History
- Right Click the Extrude1|ends
- CLick Edit Feature
- Notice the Distance parameter
- CLick OK or cancel to exit The Edit feature

Ends : Body - Combine

- Make sure you end up at the end of your component Design History
- Right Click the Combine1|ends
- CLick Edit Feature
- Make your spines visible
- Now we can see our target body - in blue
- and our tools bodies in red - these will cut into our target.

Break Time

Outline:Part Two

Step Five: Troubleshooting

Step Six: References

TryIt and Feedback

1. Feedback:

Solution:

2. Feedback:

Solution:

3. Feedback:

Solution:

4. Other observations:

References

Msic Files

These are files used to develop the workshop, test cuttings, experiments, failures, etc.....

phonecaseworkshopbalnk.zip

workshop02testblank2.zip

trophy_1.cdr

ribcasev1.zip

ribcasev2.zip

ribcasev4.zip

ribcasev5.zip