



# Media Computing Project

2D Design / 3D Design and Fusion 360

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**RWTH**AACHEN  
UNIVERSITY

**ASSIGNMENT**

# Elevator Pitch



TOOLS

# 2D Design

Export PNG Image (Shift+Ctrl+E)

**Export area**

Page Drawing Selection Custom

x0: -25.855 y0: -15.677  
 x1: 307.884 y1: 290.963  
 Width: 333.740 Height: 306.640  
 Units: mm

**Image size**

Width: 1577 pixels at 120.00 dpi  
 Height: 1449 pixels at 120.00 dpi

**Filename**

/Users/wagner/path815.png Export As...

Batch export 2 selected objects  
 Hide all except selected  
 Close when complete  Export

Fill and Stroke (Shift+Ctrl+F)

Fill Stroke paint Stroke style

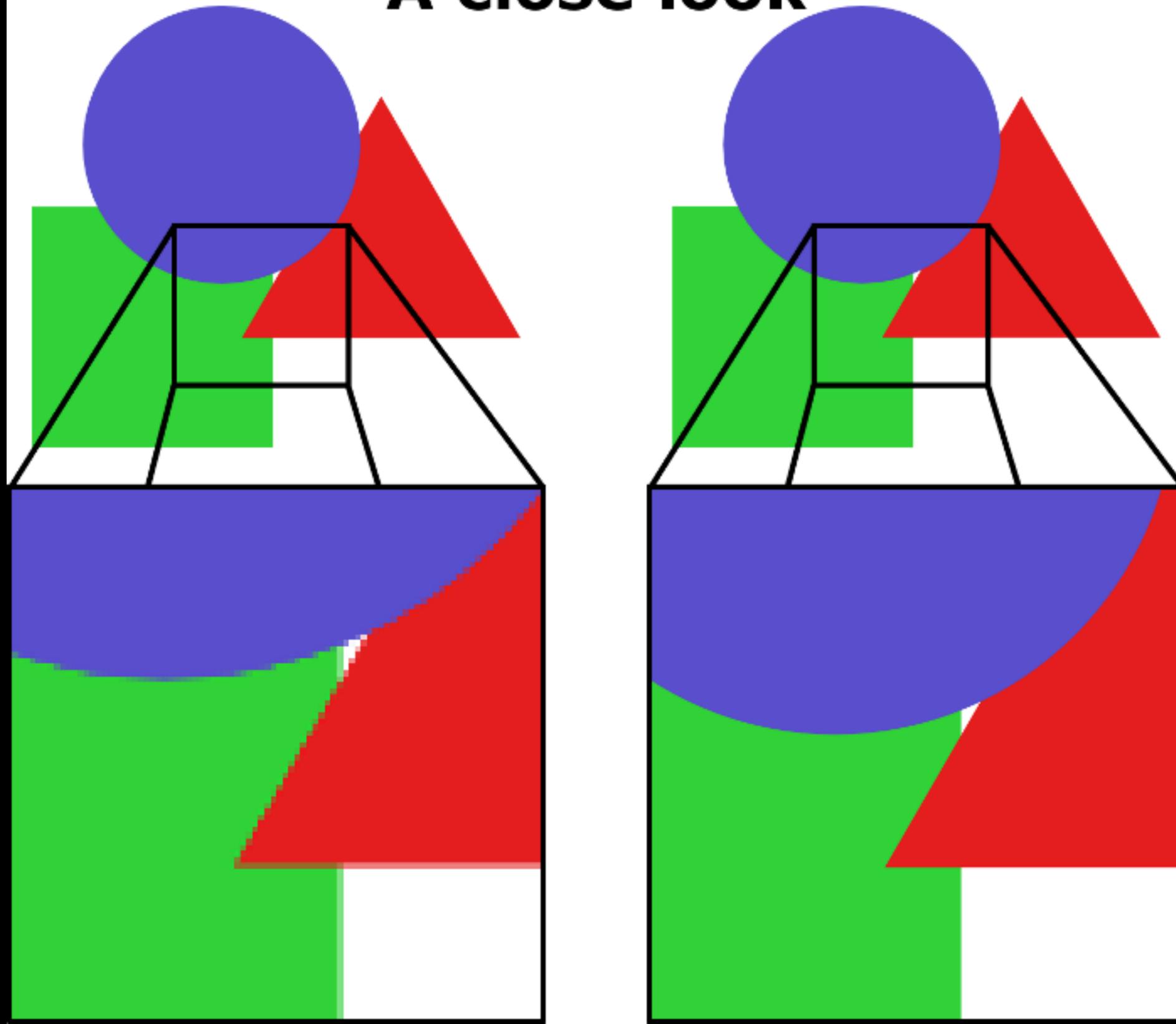
Width: 8.465 mm  
 Dashes: 0.00  
 Markers: - - -  
 Join: 4.00  
 Cap: [Square] [Round] [Butt]  
 Order: [Clockwise] [Counter-clockwise] [None]

Blur (%) 0.0  
 Opacity (%)



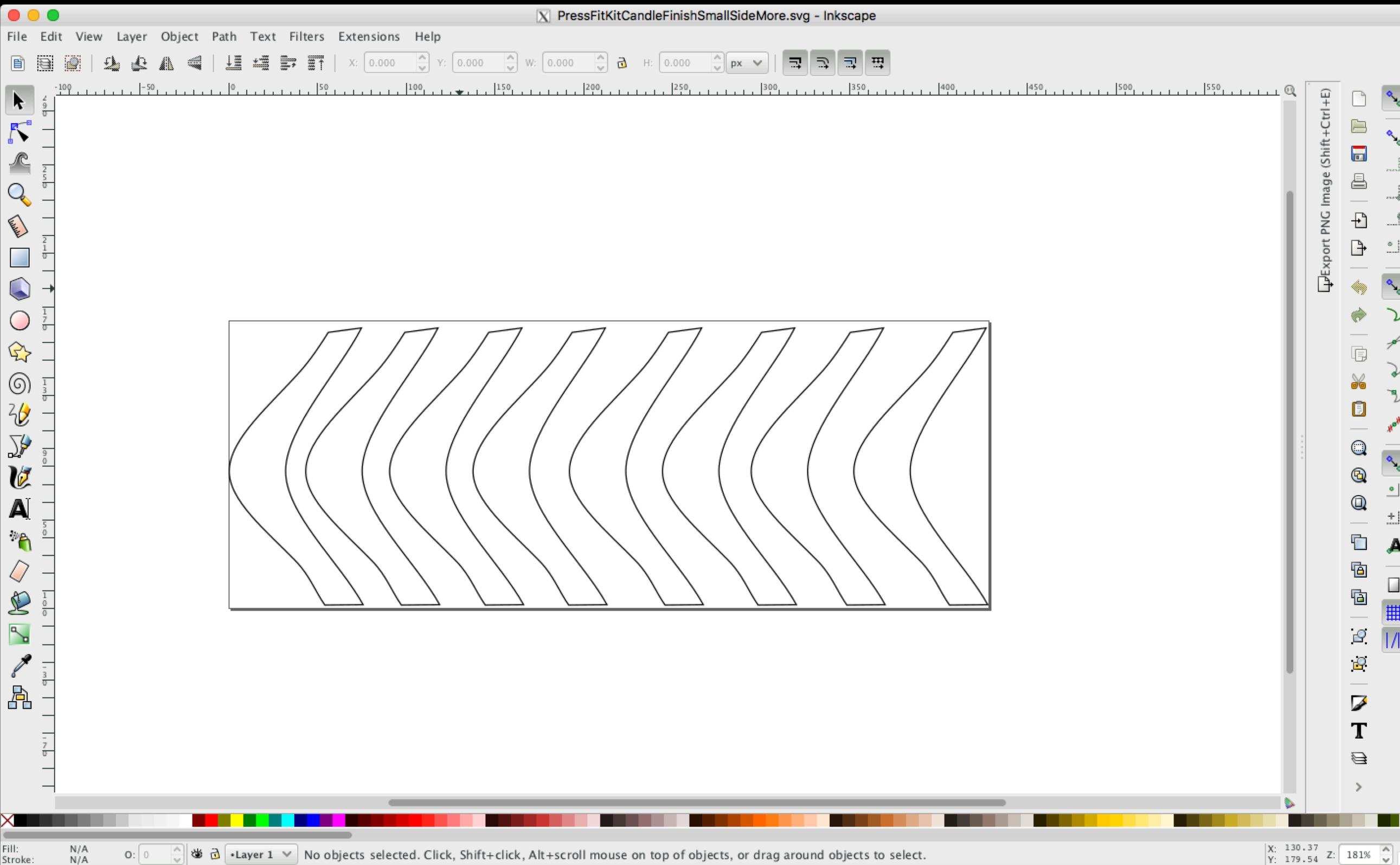
# Raster vs Vector

## A close look



2D Design





# Inkscape

Open Source  
Software

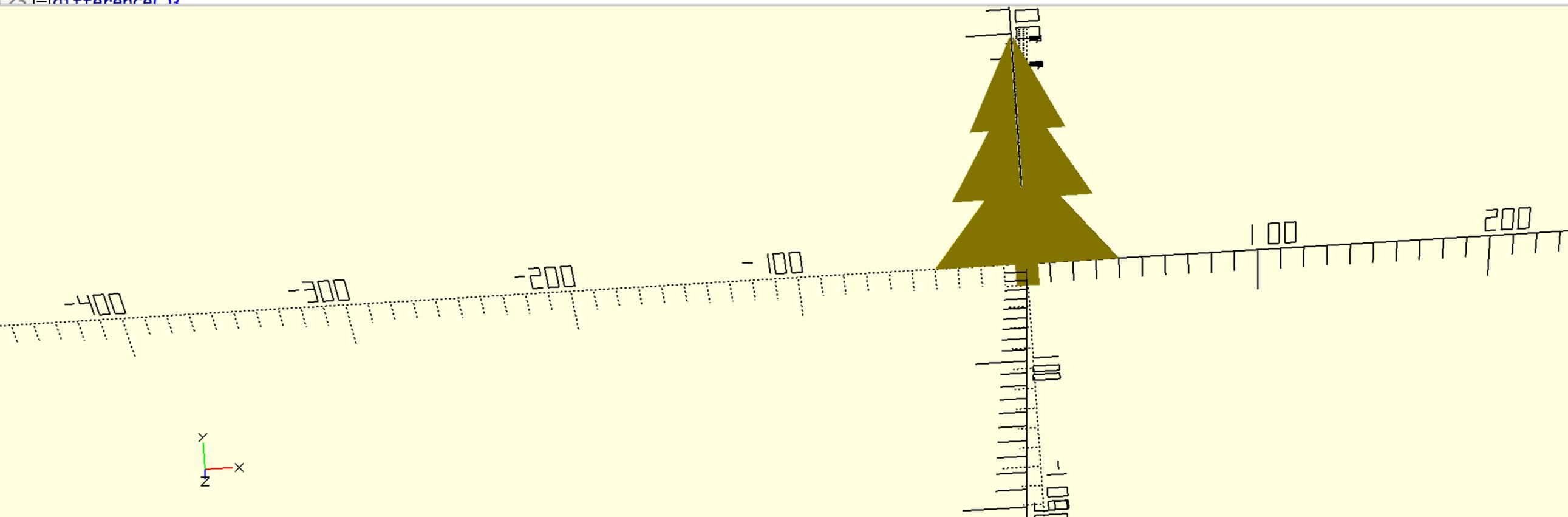




```

7  inside = 5;
8  widthSquare = 10;
9  lengthSquare = 20;
10
11 module tree() {
12     translate ([a,0*b,c]) {polygon(points=[[0,0],[-4*length,0],[0,5*width]], paths=[[0,1,2]]);}
13     translate ([a,1*b,c]) {polygon(points=[[0,0],[-3*length,0],[0,5*width]], paths=[[0,1,2]]);}
14     translate ([a,2*b,c]) {polygon(points=[[0,0],[-2*length,0],[0,4*width]], paths=[[0,1,2]]);}
15
16
17     translate ([a,0*b,c]) {polygon(points=[[0,0],[4*length,0],[0,5*width]], paths=[[0,1,2]]);}
18     translate ([a,1*b,c]) {polygon(points=[[0,0],[3*length,0],[0,5*width]], paths=[[0,1,2]]);}
19     translate ([a,2*b,c]) {polygon(points=[[0,0],[2*length,0],[0,4*width]], paths=[[0,1,2]]);}
20     translate ([a,-0.5*c,c]) square([widthSquare, lengthSquare], true);
21 }
22
23 difference() {

```



# OpenSCAD

Open Source  
Software based on  
coding

**FABRICATE**

# **Lasercutting**

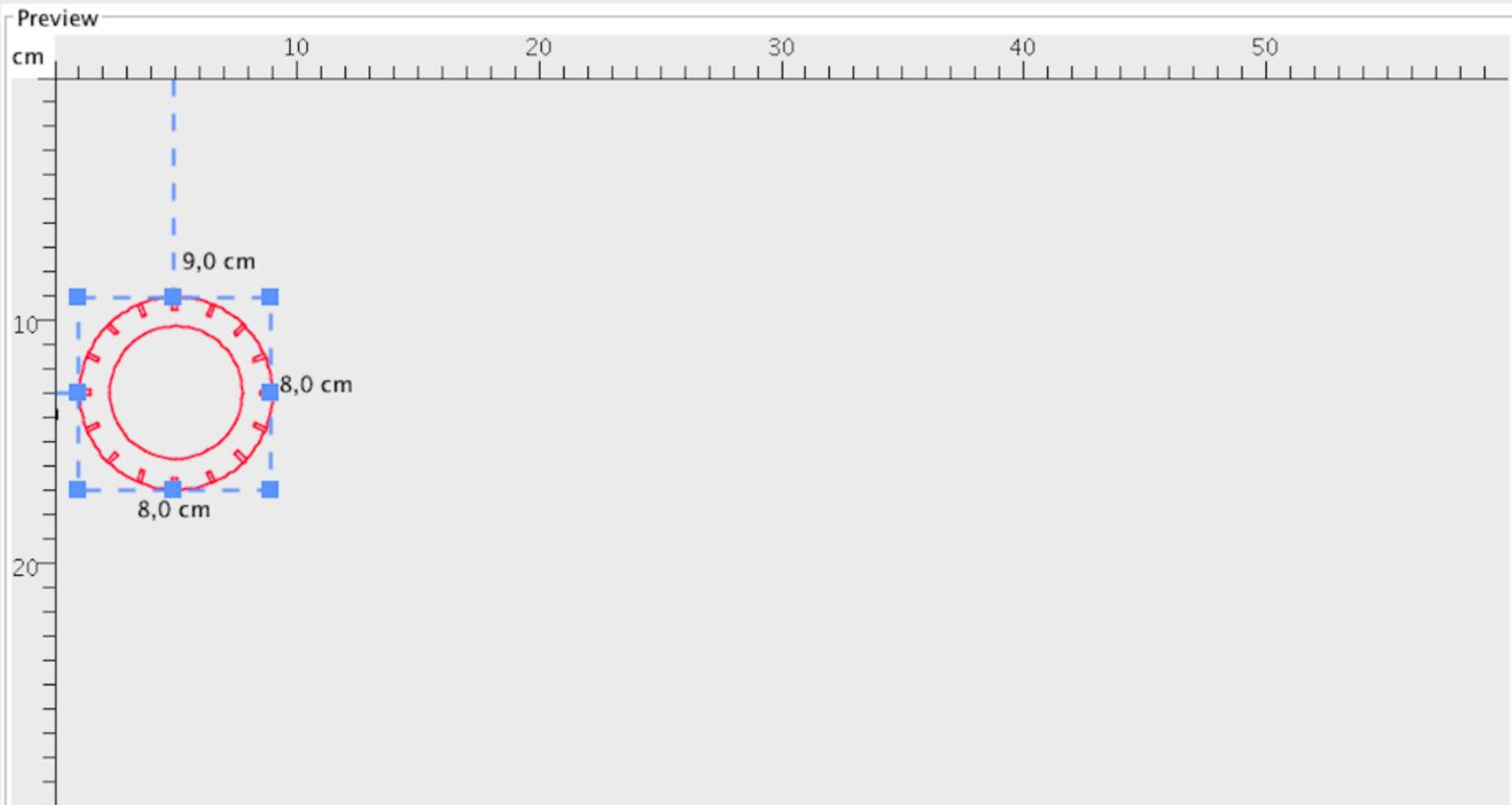


# The Lasercutter





# The Lasercutter



Laser Cutter

Epilog ZING

Material

Finnpappe

Material Thickness (mm)

3.0 +

File: PressFitKitCandleFinishTop2.svg

Mapping Position Laser Settings

cut everything

Estimated Time:

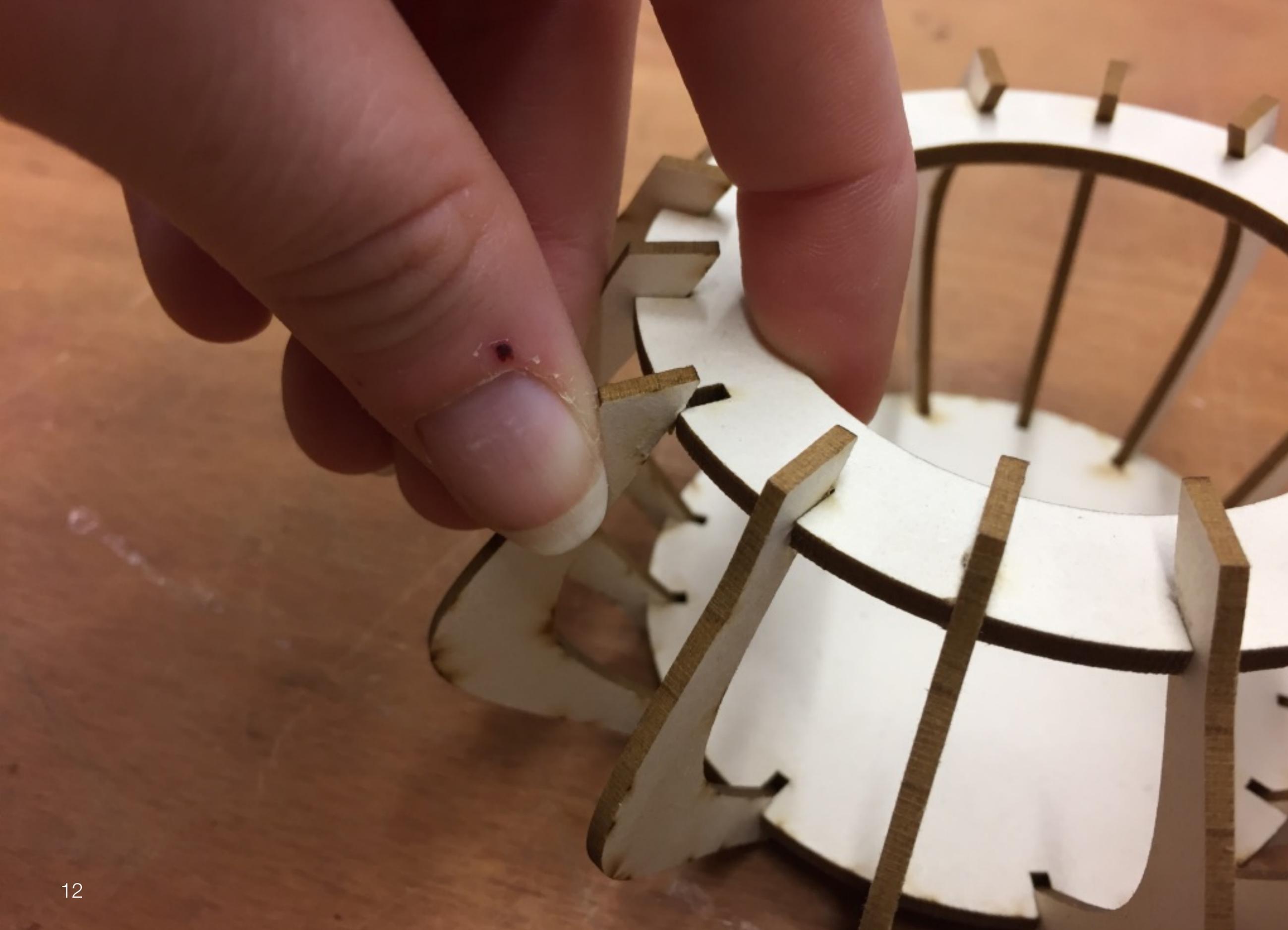
# VisiCut



# Cutting

- Various shapes (from easy circle to complex figures -> laser cutter very precise)
- Materials
- Press-Fit Kit
  - Different Joints



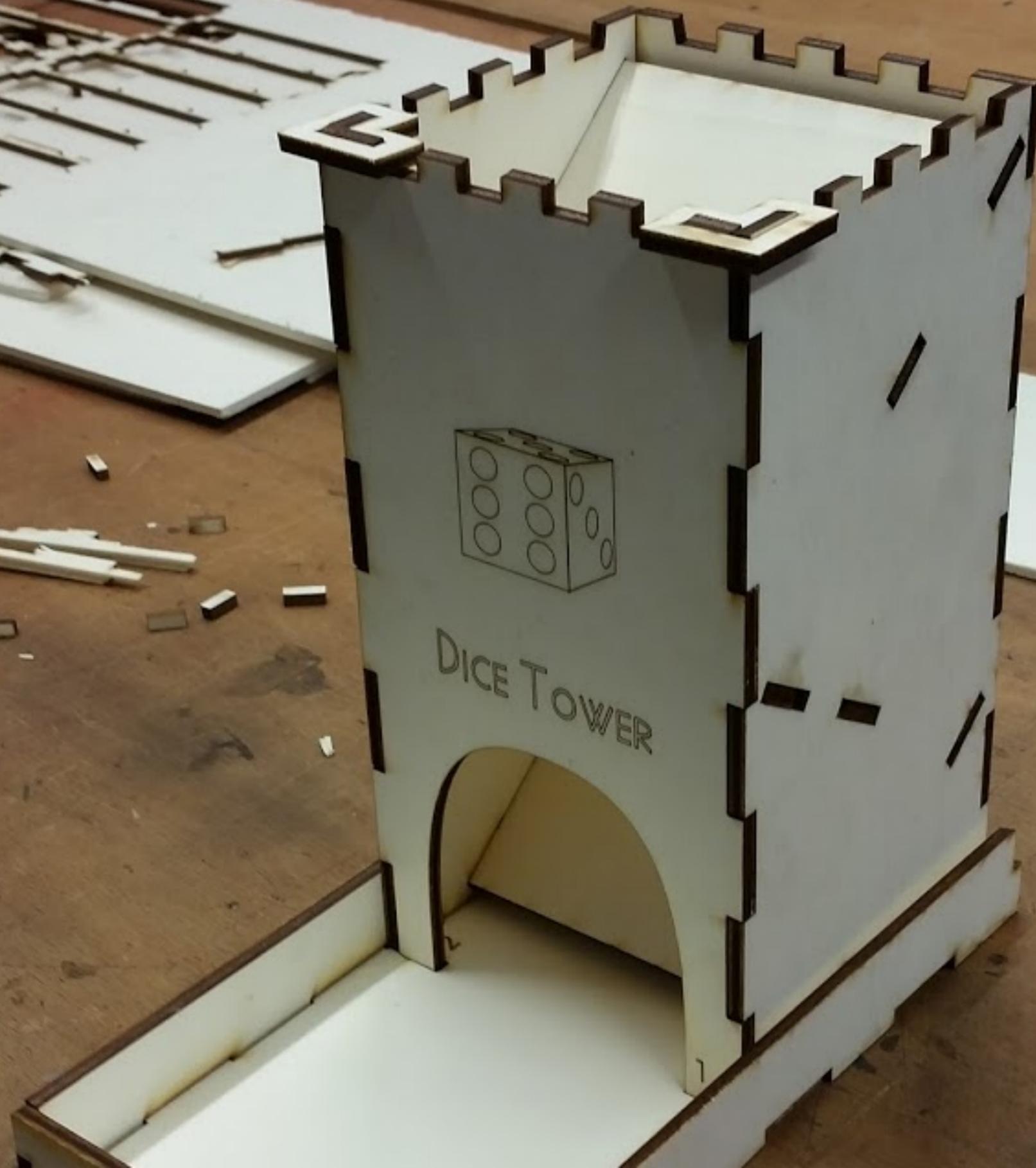


# Press-Fit Kit

Open Source  
Software



# Press-Fit Kit



# Engraving

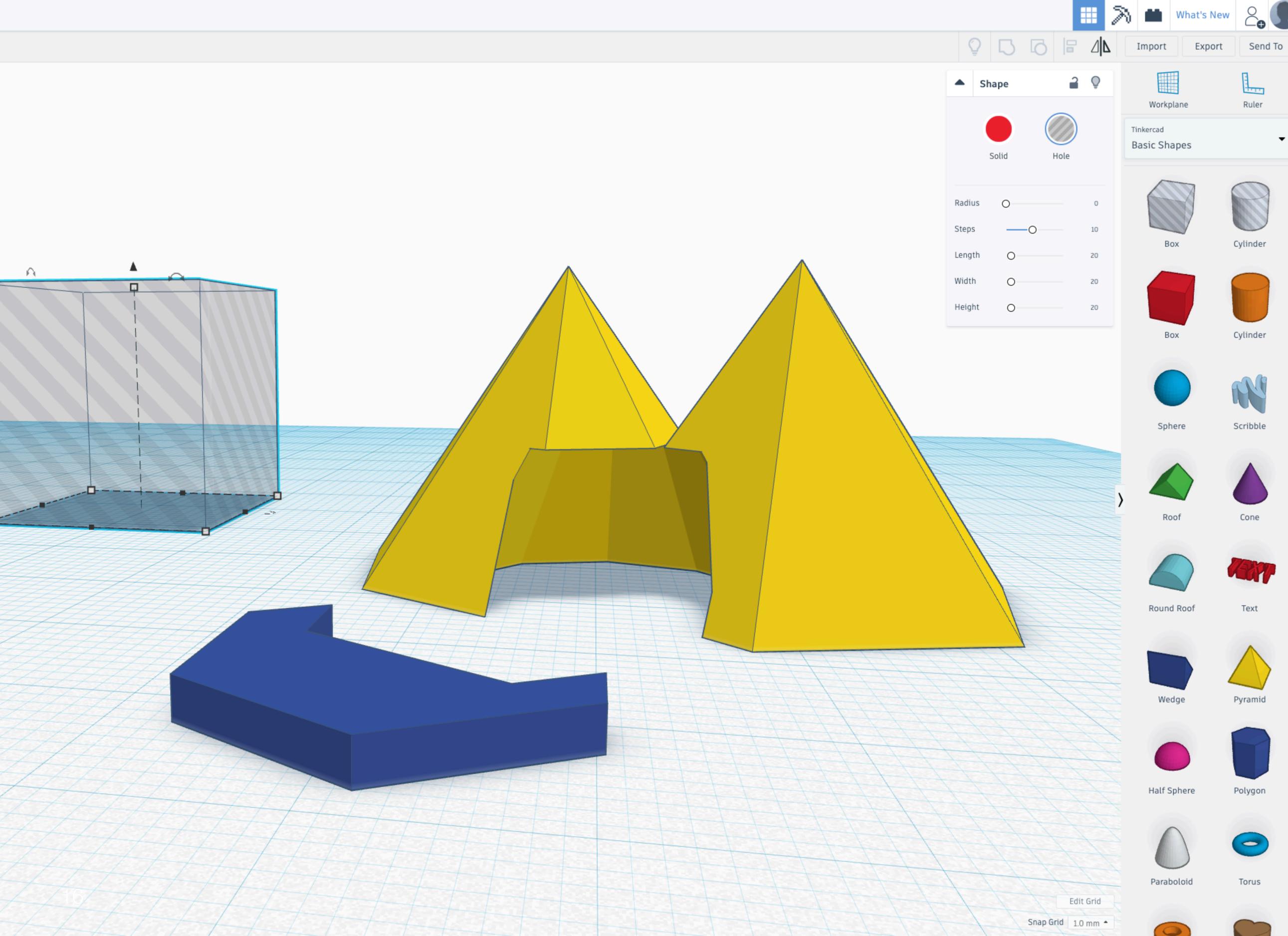
- Takes longer
  - Too much not possible
  - Maybe multiple runs for the desired depth
- Mostly wood and Plexiglas





# TOOLS

# 3D Design



# TinkerCAD

Browser based

Easy drag and drop  
shape menu

Free



Test

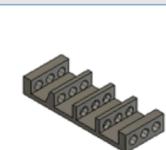
Data People

Upload New Folder

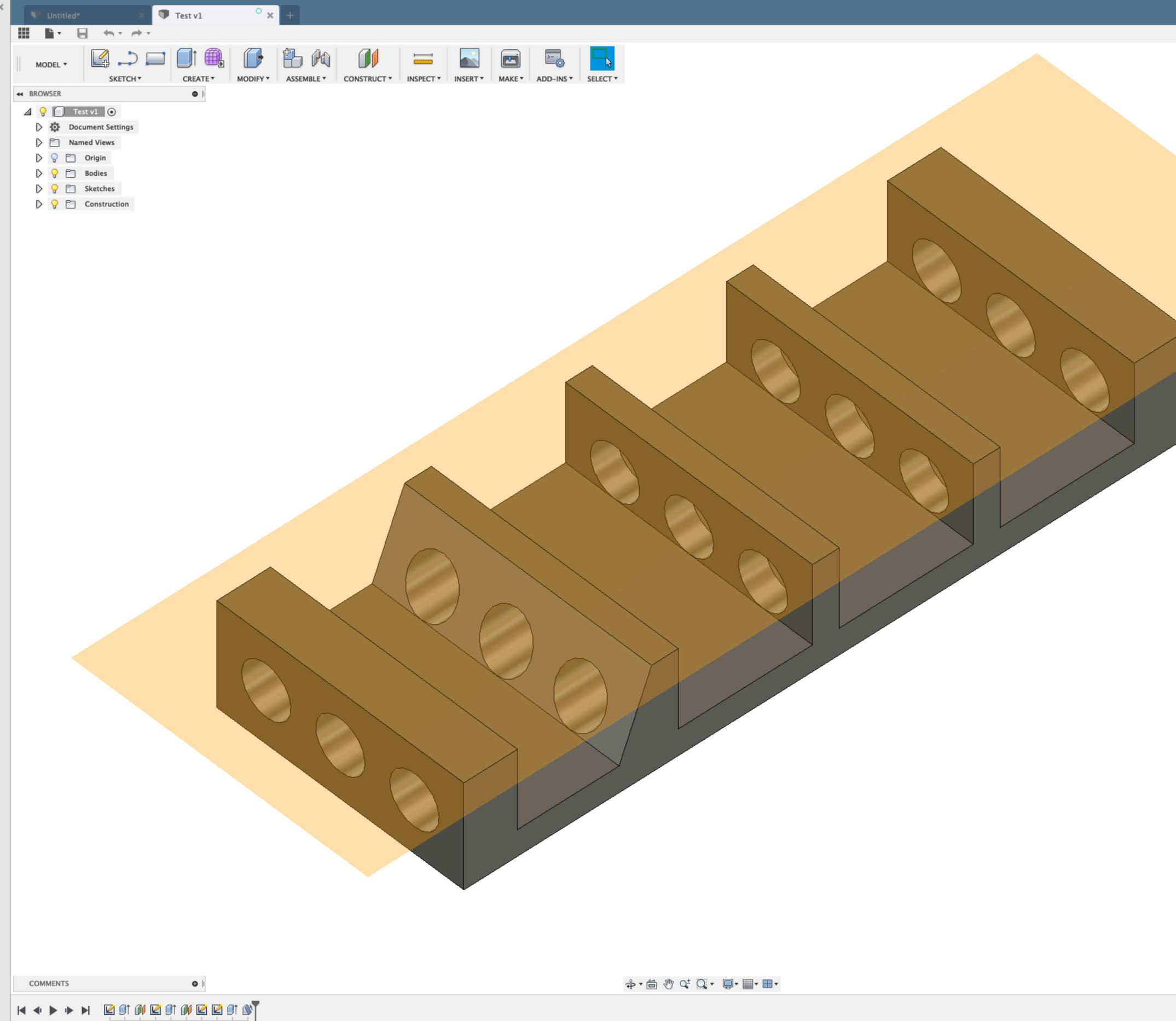
master



cube V1



Test V1



# Fusion 360

More complex

Editing history and playback mode

Cloud saves

Free for students

**BASICS**

# Manufacturing



# Subtractive

Removing material  
to create an object.



# Subtractive

Removing material  
to create an object.





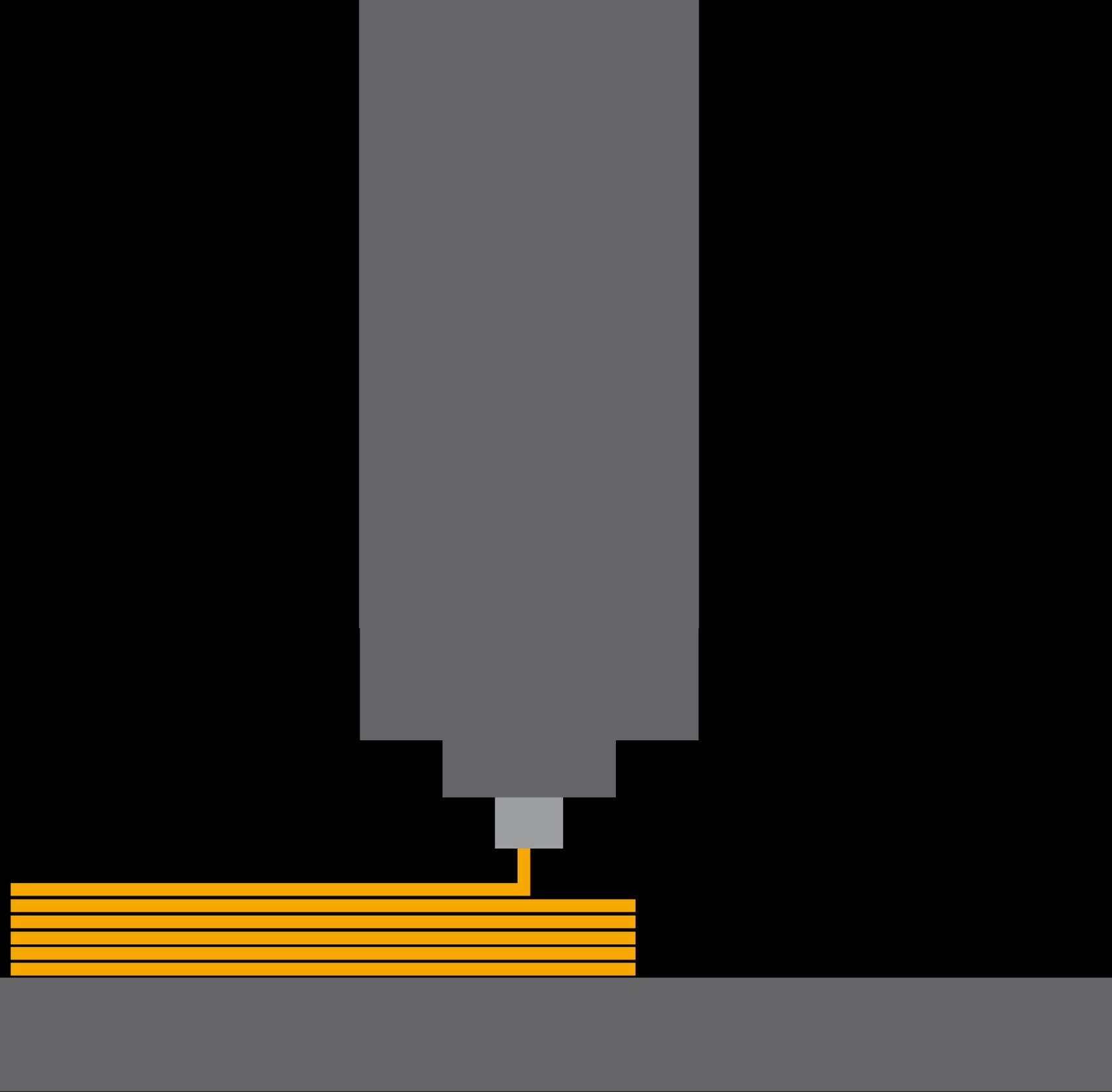
# Additive

Add material to  
create an object.



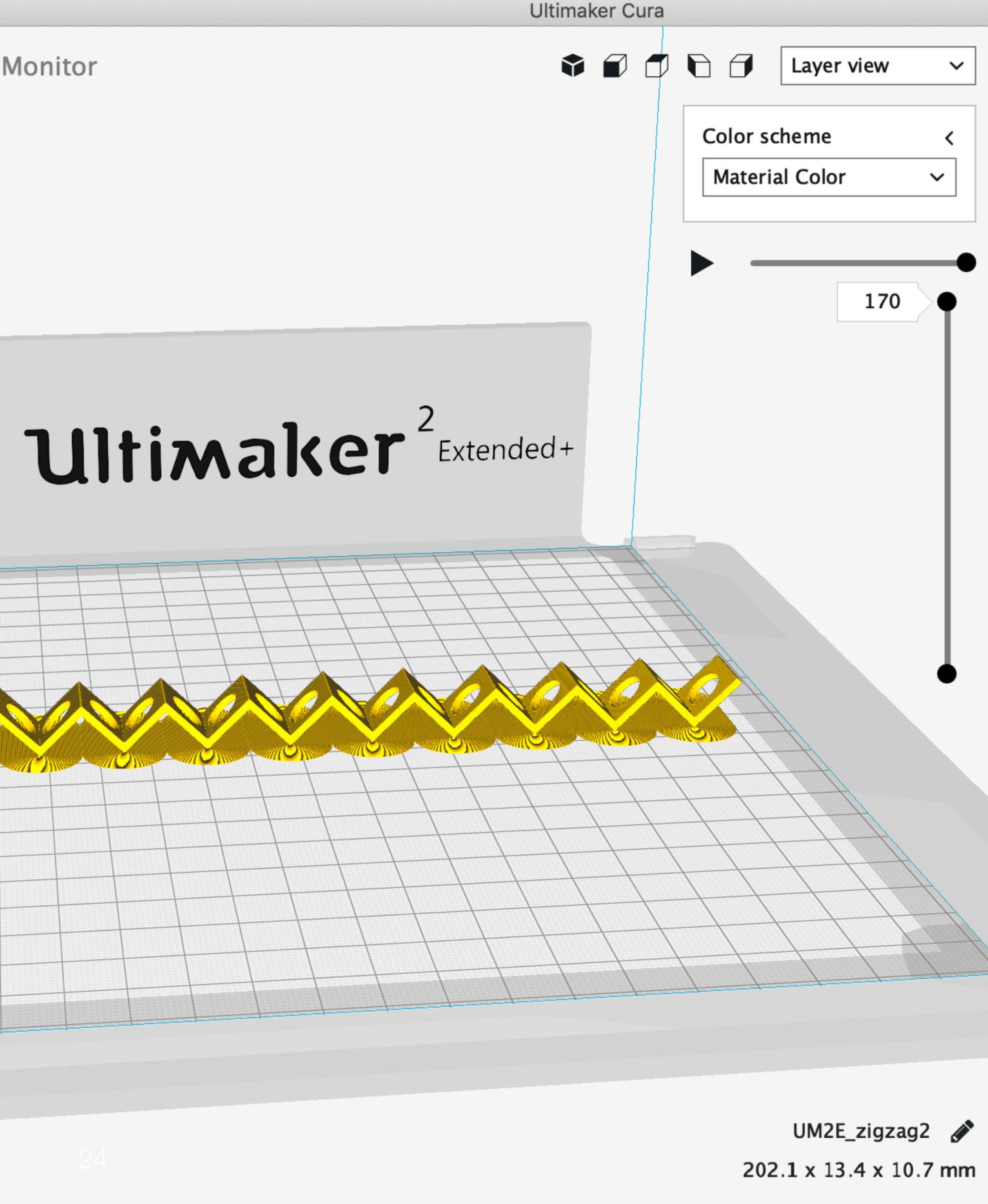
# Additive

Add material to  
create an object.



# TOOLS

# Slicer



### Ultimaker 2 Extended+

Material: PLA

Nozzle: 0.4 mm

[Check compatibility](#)

#### Print Setup

Recommended | Custom

Layer Height: 0.06 0.1 0.15 0.2 0.4 0.6

Print Speed: Slower | Faster

Infill: 90%

Enable gradual

Generate Support:

Build Plate Adhesion:

Need help improving your prints?  
Read the [Ultimaker Troubleshooting Guides](#)

Ready to Save to File

03h 13min  
0.73m / ~ 6g

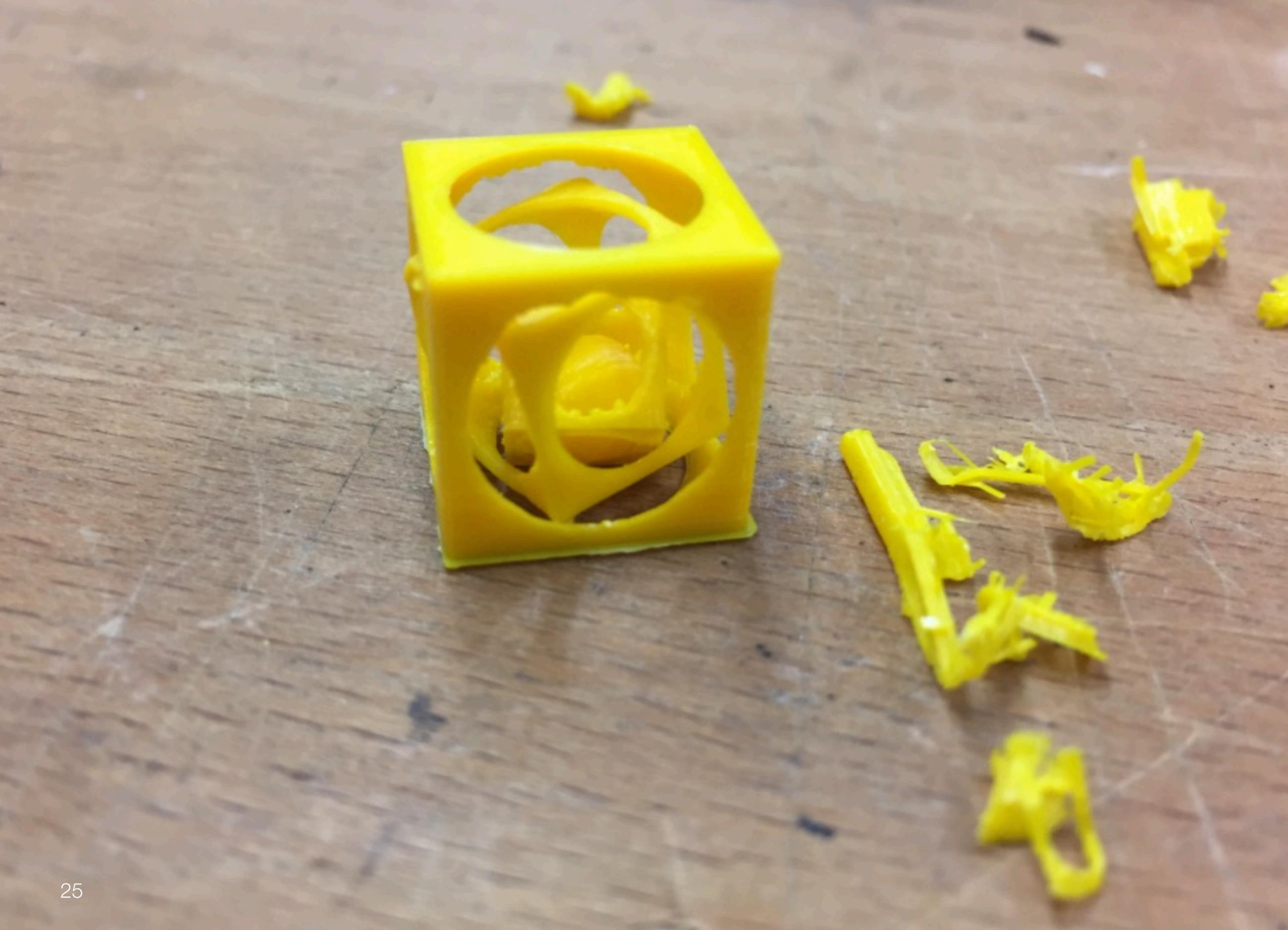
[Save to File](#)

# Slicer

Dependent on the used printer (here: Cura for the Ultimaker)

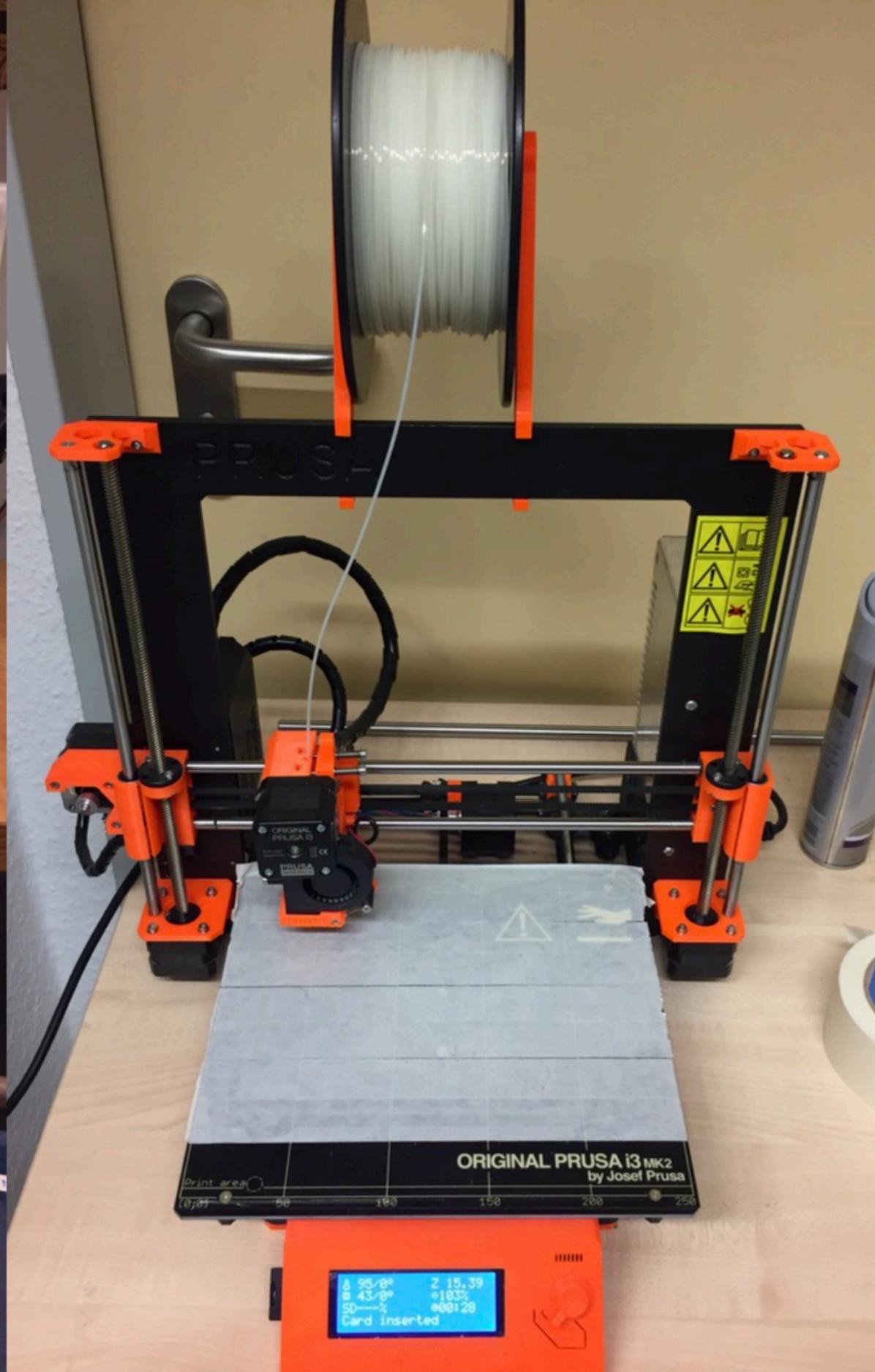
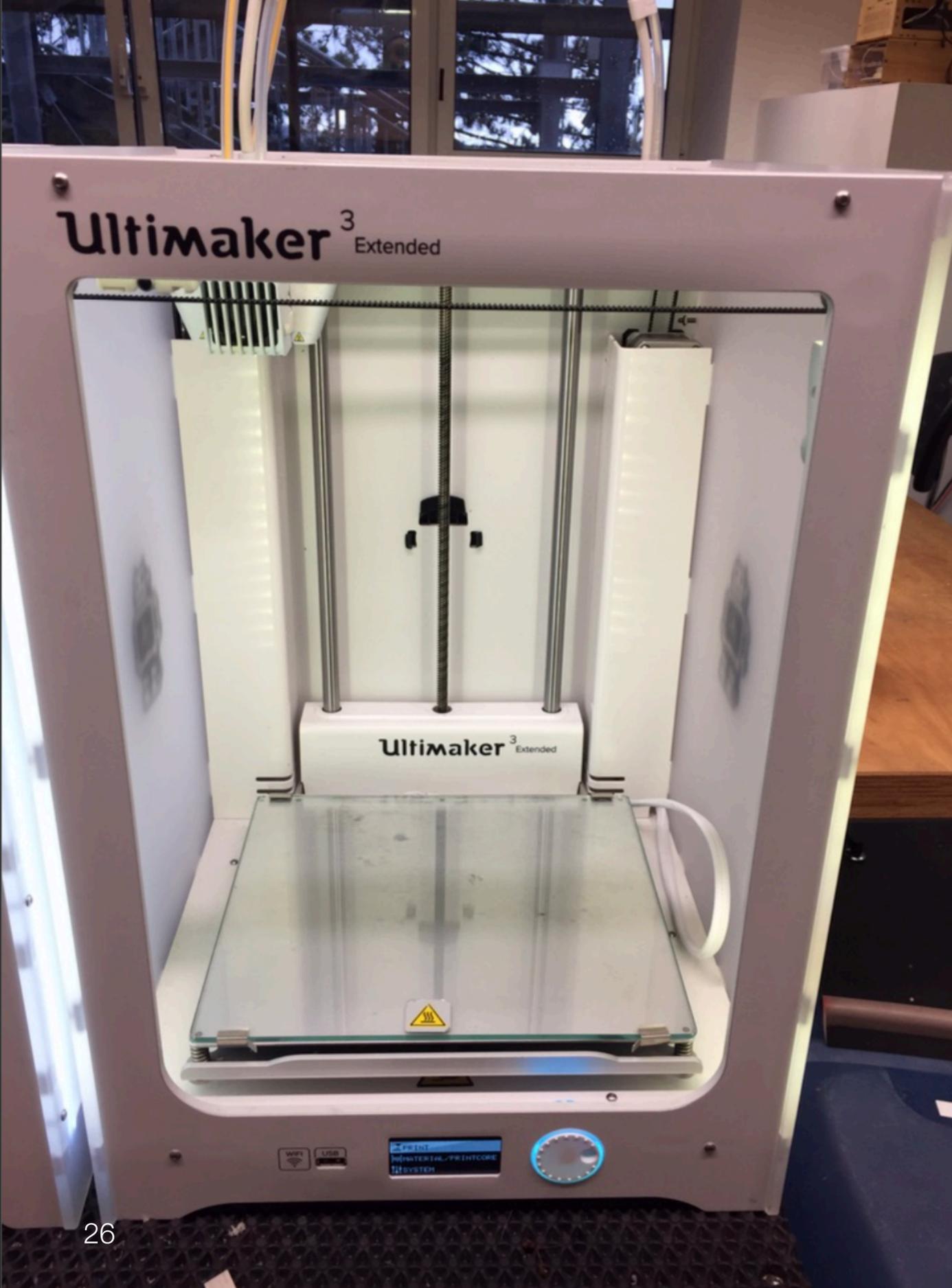
Works on STL files

Configure your printer and object settings (like detail and infill)



## Nested Objects

Think about the supporting material.



# 3D Printer

Used for additive manufacturing





SOFTWARE

Fusion 360

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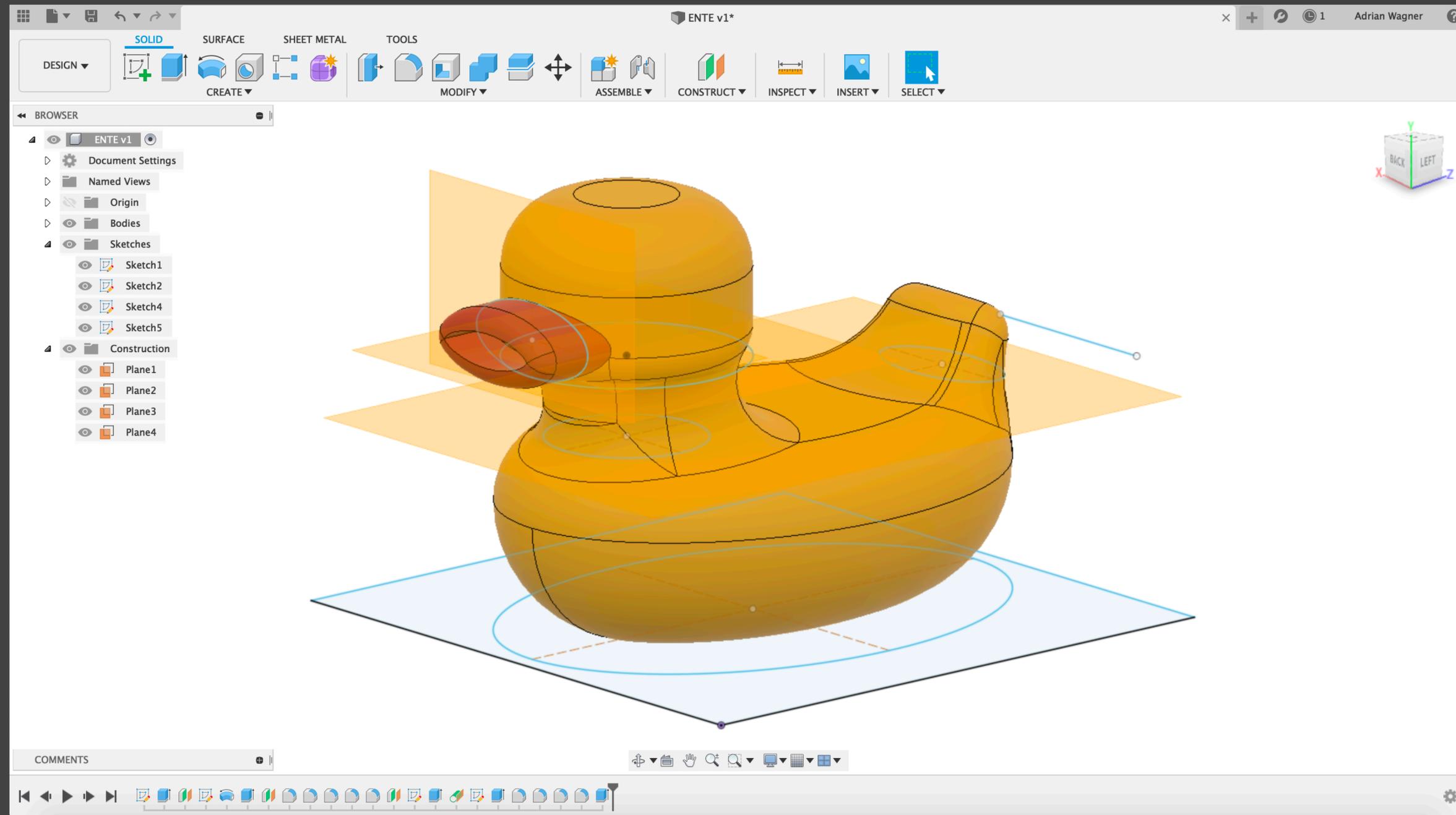
Order: [Clockwise] [Counter-clockwise] [None]

Blur (%) 0.0

Opacity (%)



# In-Class Exercise



## Exercise

Create a rubber duck

Maximum size:  
3cm x 3cm x 3cm

**ASSIGNMENT**

# Tasks for next week



# Tasks for next week

- **Create the Fab Lab logo with Fusion 360**
  - **Use at least 4 different tools**
  - **Create a “heroshot” of your model, i.e. an image which portraits your model in the best way possible**

