# 3D PRINTING

## ASSIGNMENT 8

### (DSL-732)

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# Introduction

3D printing or additive manufacturing is a process of making three dimensional solid objects from a digital file. The creation of a 3D printed object is achieved using additive processes. In an additive process an object is created by laying down successive layers of material until the object is created.

3D printing is the opposite of subtractive manufacturing which is cutting out / hollowing out a piece of metal or plastic with for instance a milling machine.

3D printing enables you to produce complex shapes using less material than traditional manufacturing methods.

## Idea Maker

**ideaMaker** is an interface we use for 3D Printing. since 3d printing is done in slices, the tool is also called as a slicer.
The slicer, also called slicing software, is a computer software used in the majority of 3D printing processes for the conversion of a 3D object model to specific instructions for the printer. In particular, the conversion from a model in STL format to printer commands in g-code format in fused filament fabrication and other similar processes. The slicer first divides the object as a stack of flat layers, followed by describe these layers as linear movements of the 3D printer extruder, fixation laser or equivalent. All these movements, together with some specific printer commands like the ones to control the extruder temperature or bed temperature, are finally written in the g-code file, that can after be transferred to the printer.

ideaMaker has the **following features** for effective 3D printing:

**Infill:** solid objects needs a big amount of valuable material (filament, ...) and print time. The slicer can automatically convert solid volumes to hollow ones, saving costs and time. The hollow object can be partially filled by internal structures, as internals walls, to provide additional robustness. The amount of these structures is called infill density, being this parameter one of the adjustments to be provided to the slicer.

**Supports:** most of the 3D printing processes create the object layer by layer, down to up, with the layer under construction being deposited over the previous one. As consequence, all object parts must relay, at least in some part, over another one. In the case of an object layer that is floating (by example, the flat roof of a house or an horizontally extended arm in a figure), the slicer automatically can add supports for it. The support touch the object in a way that is easily detachable from it at the finish stage of the object production.

**Rafts, skirts and brims:** printing of the first object layer, the one in contact with the printer bed, has some peculiarities, like problems of object adherence to the bed, rugosity, smooth deposition of the first amounts of filament. The slicer can automatically add some detachable structures to minimize these problems. Usual types of these base structures are a skirt (a single band around the base of the object without touching it), a brim (several lines of filament around the base of the object, each one a few more far from it until touch it, but not under it) and rafts (several layers of material that forms a detachable base, being the object printed over it).

# Process

# Step 1 : making the 3D model on Rhino:
the following model in the shape was made on Rhino 3D:
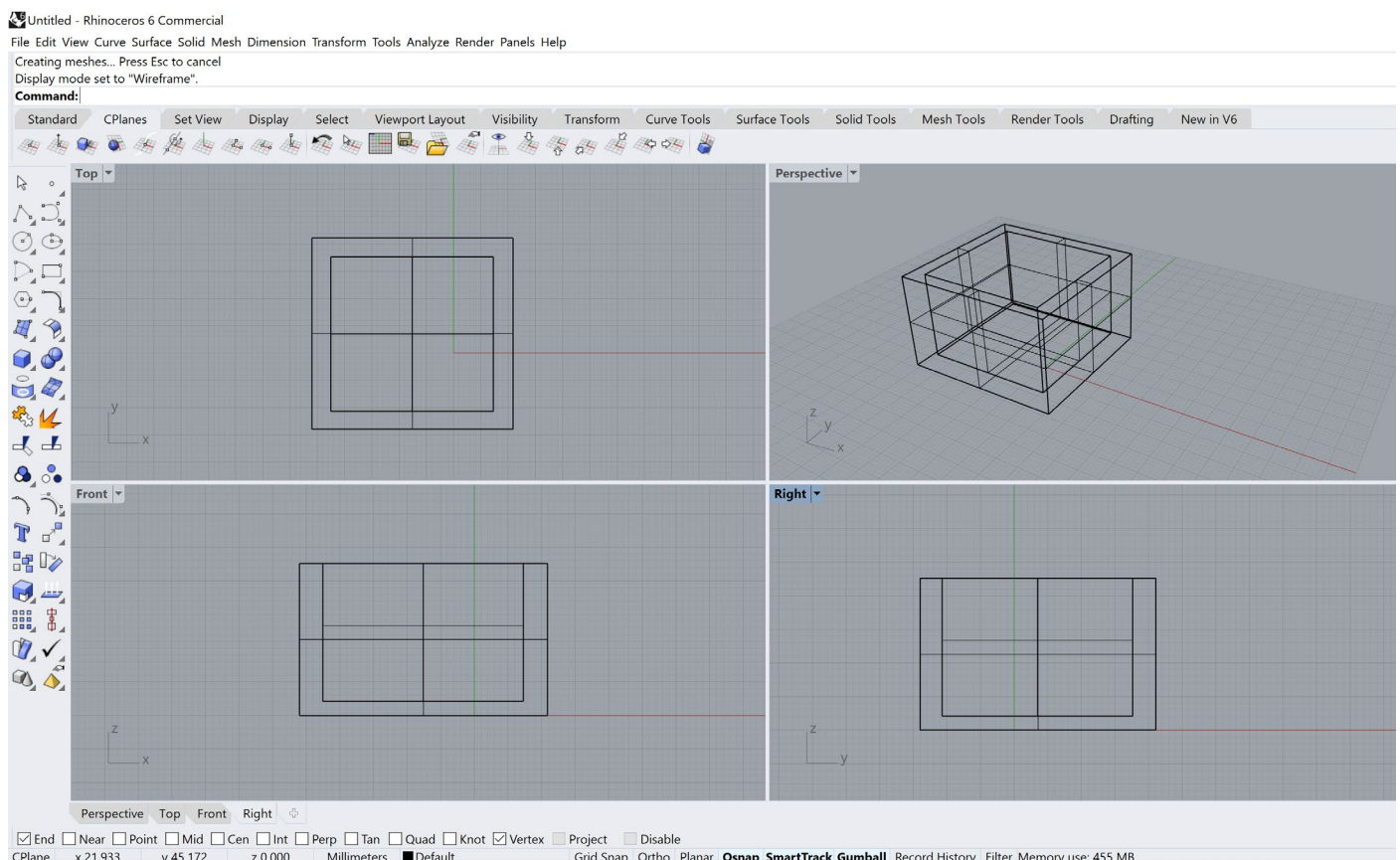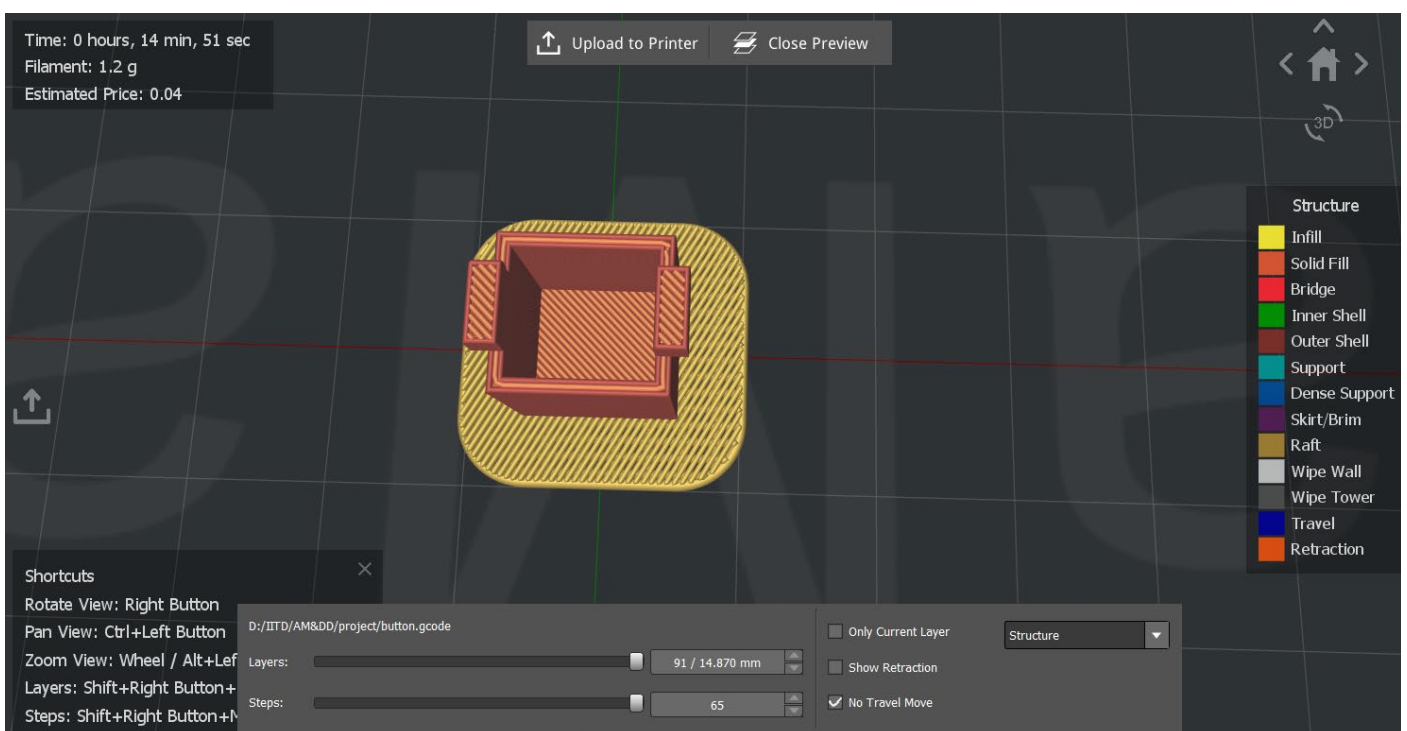
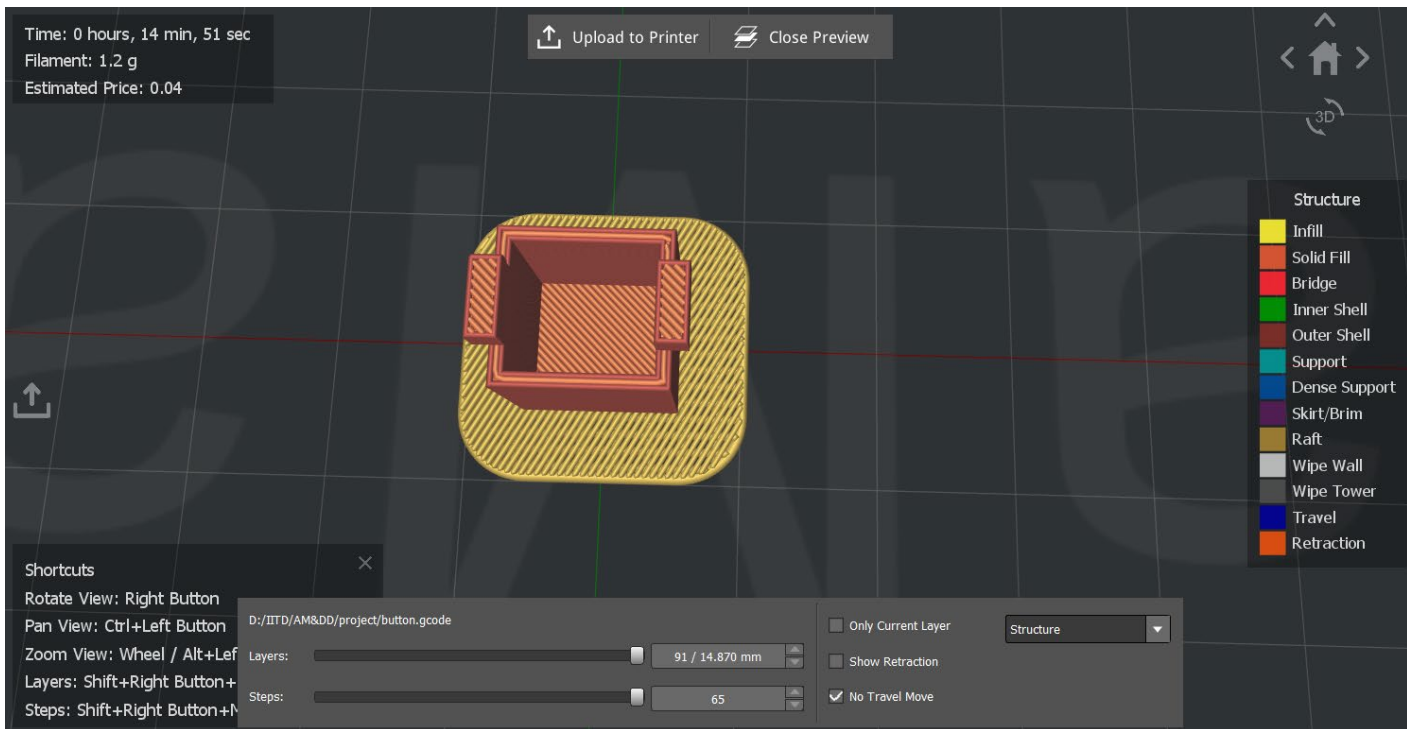# Step 2 : Finalizing the form before exporting as .stl(stereoli thography) file:
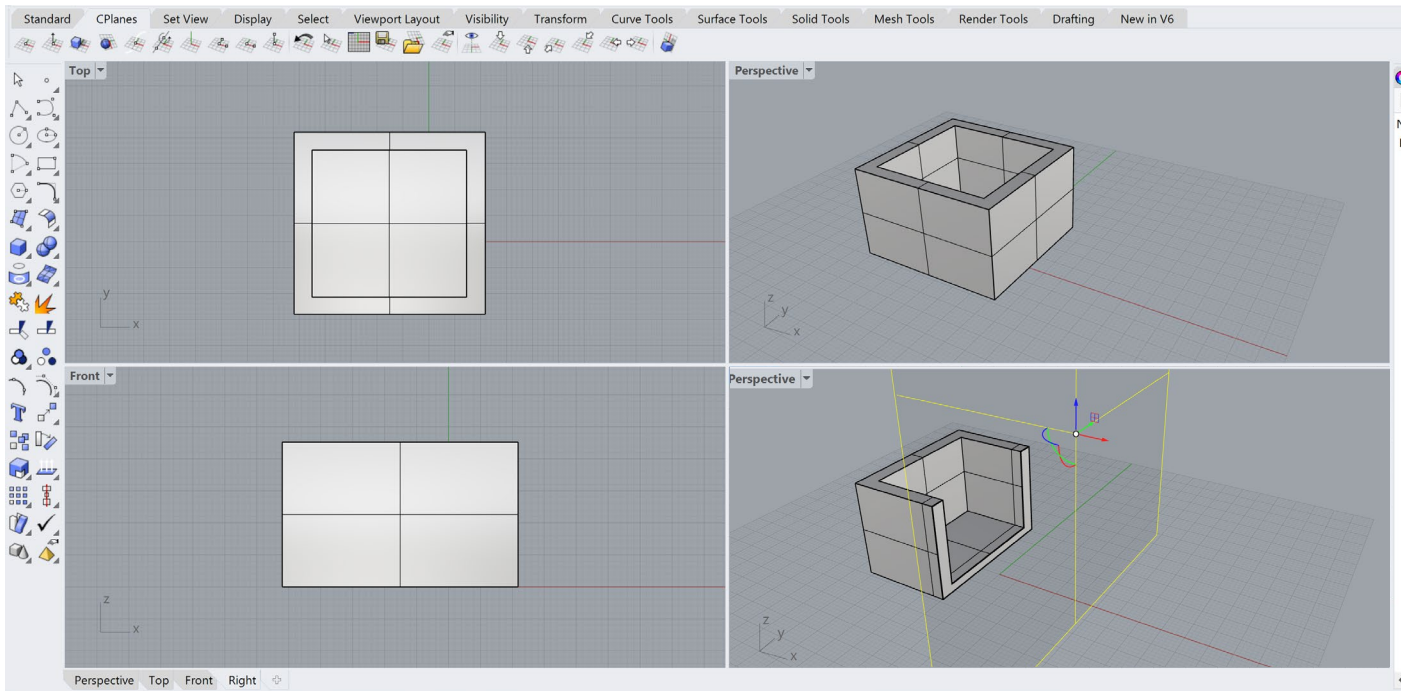


# Step 3 : Exporting to ideaMaker

Once exported to .stl file let us use ideaMaker to slice the model and 3D Print it .
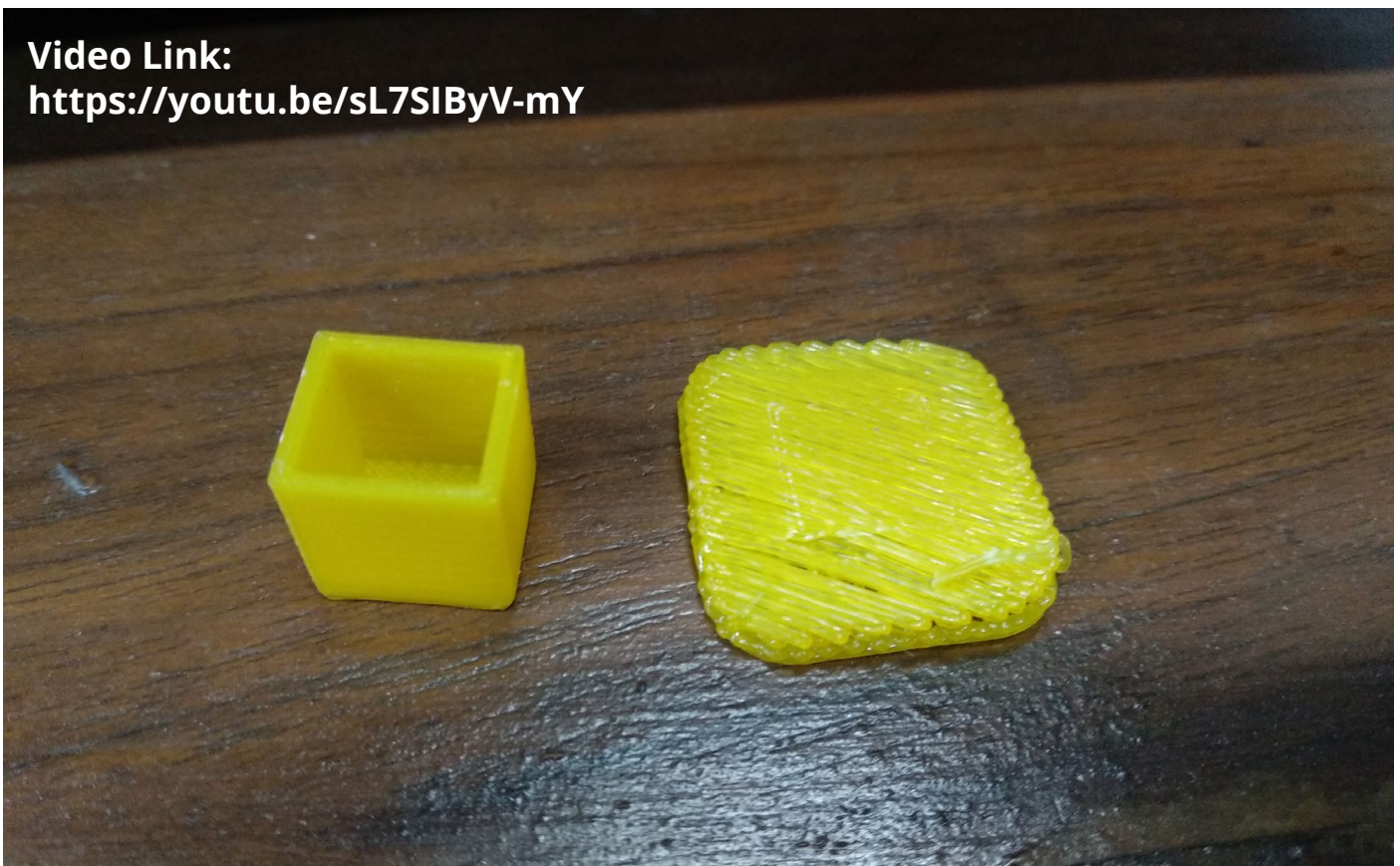
i.Import Models
ii.Select settings for 3D printer
iii.Preview slice
iv.Finlaize and export to pen drive as g-code



# Final Output

# THANKYOU

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