Name Plates using FreeCAD

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Contents

***Abstract*—This manual explains designing of various models which explain various tools present in FreeCAD for 3D-designing, these models are basic design for any 3D shape in the universe.**

1 Text as Shape

FreeCAD can be used to generate text as shapes, makes it easy to design written text or name plates.

1.1 Installiation of Fontfile

Download the fontfile by running this command in the terminal

```
git clone https://github.com/
    rajeshvangara/Fontfiles.git
```

1.2 Aphabets as shape

To design Alphabets in FreeCAD,

- In FreeCAD go to **View Menu**, Select **Draft Workbench** in that open **create text string as shape**.
- A dialog box appears,In that enter location as (0,0,0), String as A, height as 30mm, tracing point as 1mm, Add path by browsing into **/Fontfile/Font_file/Roboto.otf**, and press ok.
- Go to Part workbench select the **ShapeString** label and click on extrude from Part Menu,enter a length of 8mm ,check create solid and click ok.
- Go to **Sketcher workbench** and create a new in xy-plane, contaning two concentric cricles of radius 3mm, and 1.5mm.
- Place the sketch such that the outer cricle intersects the letter, make it's z-coordinate 2mm, resembling a hole for a keychain.
- Extrude the sketch to height of 4mm.
- Perform **Fusion** operation between the letter and the hole.
- Export the object as **A.stl**

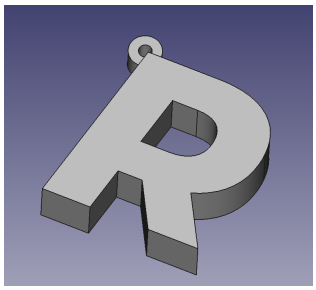

Fig. 1: Alphabet R

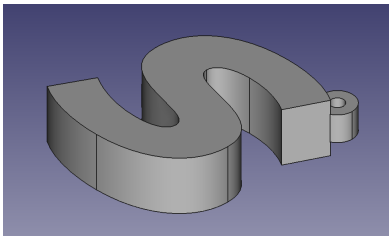

Fig. 2: Alphabet S

To 3D print the Alphabet,

- In **cura** open **A.stl**.

- Set **layer hight** to 0.2 mm, **infill** to 100, **infill pattern** as concentric, and slice it.
- Save it as A.gcode

1.3 Number as Shape

Problem 1.1: Design a number as a Shape.

2 Name Plate

This section deals with designing different types of name plates in FreeCAD.

2.1 Engraved name plates

To design an engraved name plate,

- In View Menu click on Workbench and select Draft.
- Now in Draft menu select **shape from text**.
- A dialog box will appear,Set the coordinates to (0,0,0) and press enter.

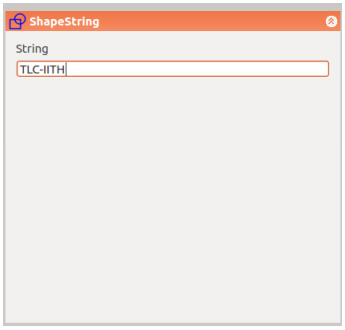

Fig. 3: Dialog box

- Enter the string you want to engrave and press enter.
- Enter the height of letters as 20mm,Add path by browsing into **/Fontfile/Font_file/Roboto.otf**, and press ok.
- Select the **ShapeString** feature and extrude it to a height of 10mm.
- Go to **Sketcher workbench** from **View menu** and create a new Sketch in xy-plane,draw a rectangle enclosing the text inside it and close the sketch.
- Extrude the rectangle to a height of 10mm.
- Select rectangle extruded and extrusion of string and perform **Boolean Cut** from Part menu.
- Select all the 4 edges of cuboid and apply fillet from Part menu.

Fig. 4: Rectangle outline

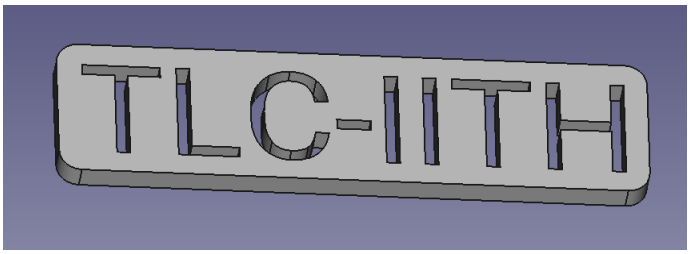

Fig. 5: Engraved

Fig. 6: Top view

- Export the object as **engraved.stl**

To 3D print the Name plate,

- In **cura** open **engraved.stl**.
- Set **layer height** to 0.2 mm, **infill** to 60, **infill pattern** as Triangles, and slice it.
- Save it as engraved.gcode

2.2 Embosed name plates

- Follow the same steps as in engraving but extrude the string to a height of 15mm.
- Extrude Rectangle to a height of 10mm.
- Select all the 4 edges of cuboid and apply fillet from Part menu.
- Now perform **Boolean Union** from Part Menu.
- Export the object as **embosed.stl**

To 3D print the Name plate,

- In **cura** open **embosed.stl**.
- Set **layer height** to 0.2 mm, **infill** to 60, **infill pattern** as Triangles, and slice it.
- Save it as embosed.gcode

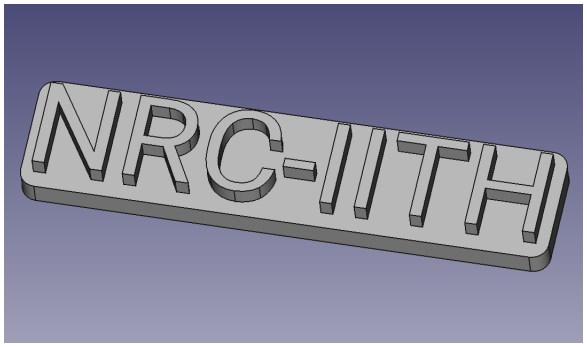

Fig. 7: Embosed

2.3 Name Stand

- Go to Draft workbench in View menu.
- Now in Draft menu select **shape from text**.
- A dialog box will appear,Set the coordinates to (0,0,0) and press enter.
- Enter the string you want to extrude and press enter.
- Enter the height of letters as 15mm,Add path by browsing into **/Fontfile/Font_file/Roboto.otf**, and press ok.
- Extrude the string to height of 10mm.
- Go to Sketcher workbench and create a new sketch in xz plane.
- Draw a rectangle enclosing the string,close the sketch.
- Create new Sketch in xz plane with an offset -5mm.
- Draw a slightly bigger rectangle than previous one,close the sketch.
- Now go to Part Menu and click on Loft tool and add the two rectangle sketches.check create solid and click ok.
- Now perform **Boolean Union** for all the shapes from Part Menu.
- Export the object as **Namestand.stl**

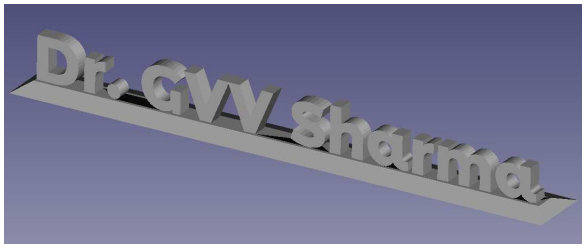

Fig. 8: Axometric View

To 3D print the Name stand,

- In **cura** open **Namestand.stl**.
- Set **layer height** to 0.2 mm, **infill** to 60, **infill pattern** as Triangles, and slice it.
- Save it as Namestand.gcode

3 CONCLUSION

The above designs can be modified and used for making your own designs and Name plates.