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ARRL Rocky Mountain Division Convention



**Using ChatGPT AI and OpenSCAD
to generate
3D Printer stl files**

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OpenSCAD: wikipedia

OpenSCAD is a [free software](#) application for creating solid 3D [computer-aided design](#) (CAD) objects. It is a script-only based modeller that uses its own description language; the 3D preview can be manipulated interactively, but cannot be interactively modified in 3D. Instead, an OpenSCAD script specifies geometric primitives (such as spheres, boxes, cylinders, etc.) and defines how they are modified and combined (for instance by intersection, difference, envelope combination, or [Minkowski sums](#)) to render a [3D model](#). As such, the program performs [constructive solid geometry](#) (CSG). OpenSCAD is available for [Windows](#), [Linux](#), and [macOS](#).

Chat GPT: wikipedia

- **ChatGPT** is a generative artificial intelligence chatbot developed by OpenAI and released in 2022. It currently uses GPT-5, a generative pre-trained transformer (GPT), to generate text, speech, and images in response to user prompts.^{[3][4]} It is credited with accelerating the AI boom, an ongoing period marked by rapid investment and public attention toward the field of artificial intelligence (AI).^[5] OpenAI operates the service on a freemium model. Users can interact with ChatGPT through text, audio, and image prompts.

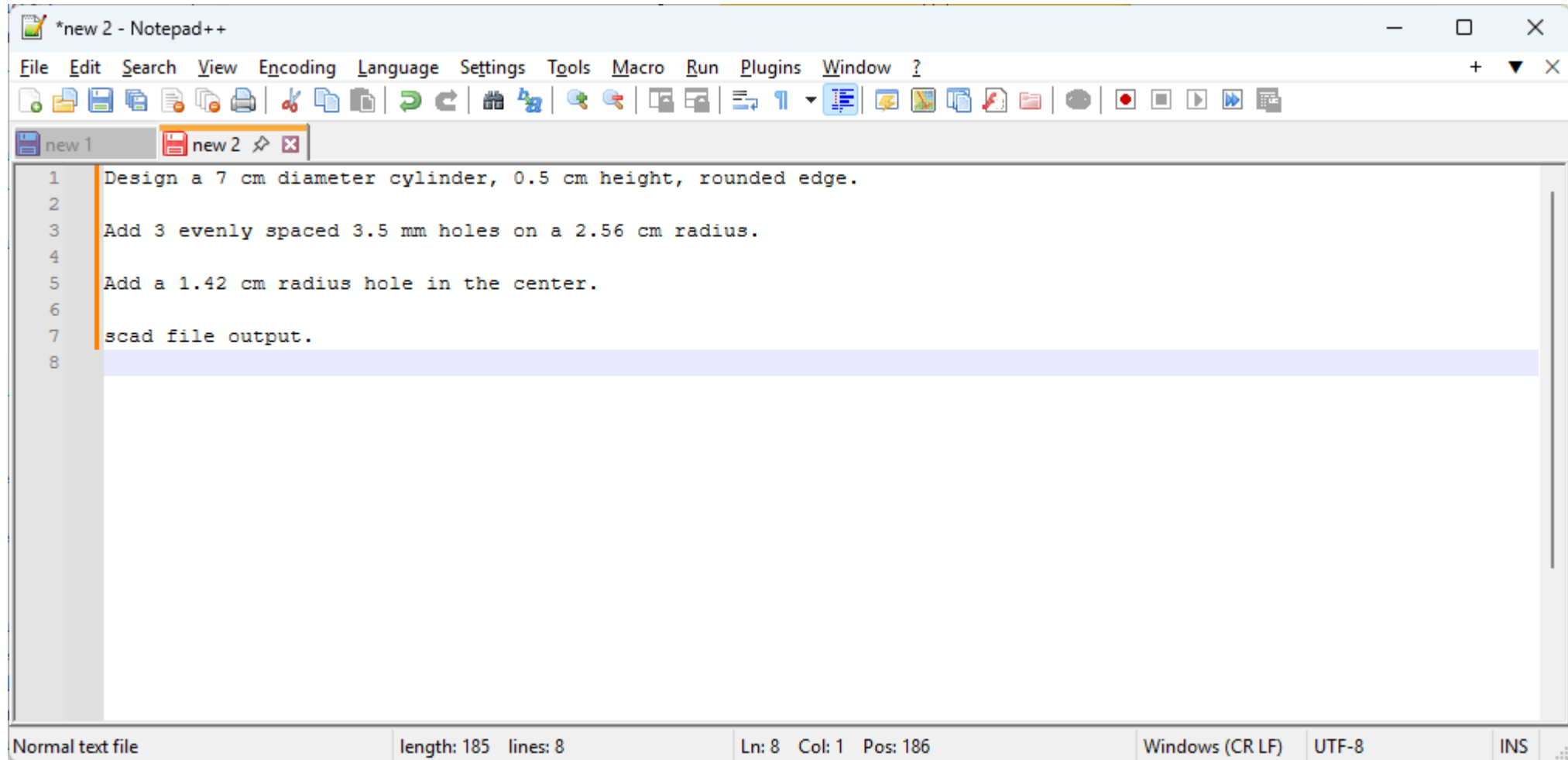
3D print: wikipedia

- **3D printing**, also called **additive manufacturing**, is the construction of a three-dimensional object from a CAD model or a digital 3D model.^{[1][2][3]} It can be done in a variety of processes in which material is deposited, joined or solidified under computer control,^[4] with the material being added together (e.g. plastics, liquids, or powder grains being fused), typically layer by layer.

Project Inspiration: popup camper mods.



1. Describe the part: An iterative process...

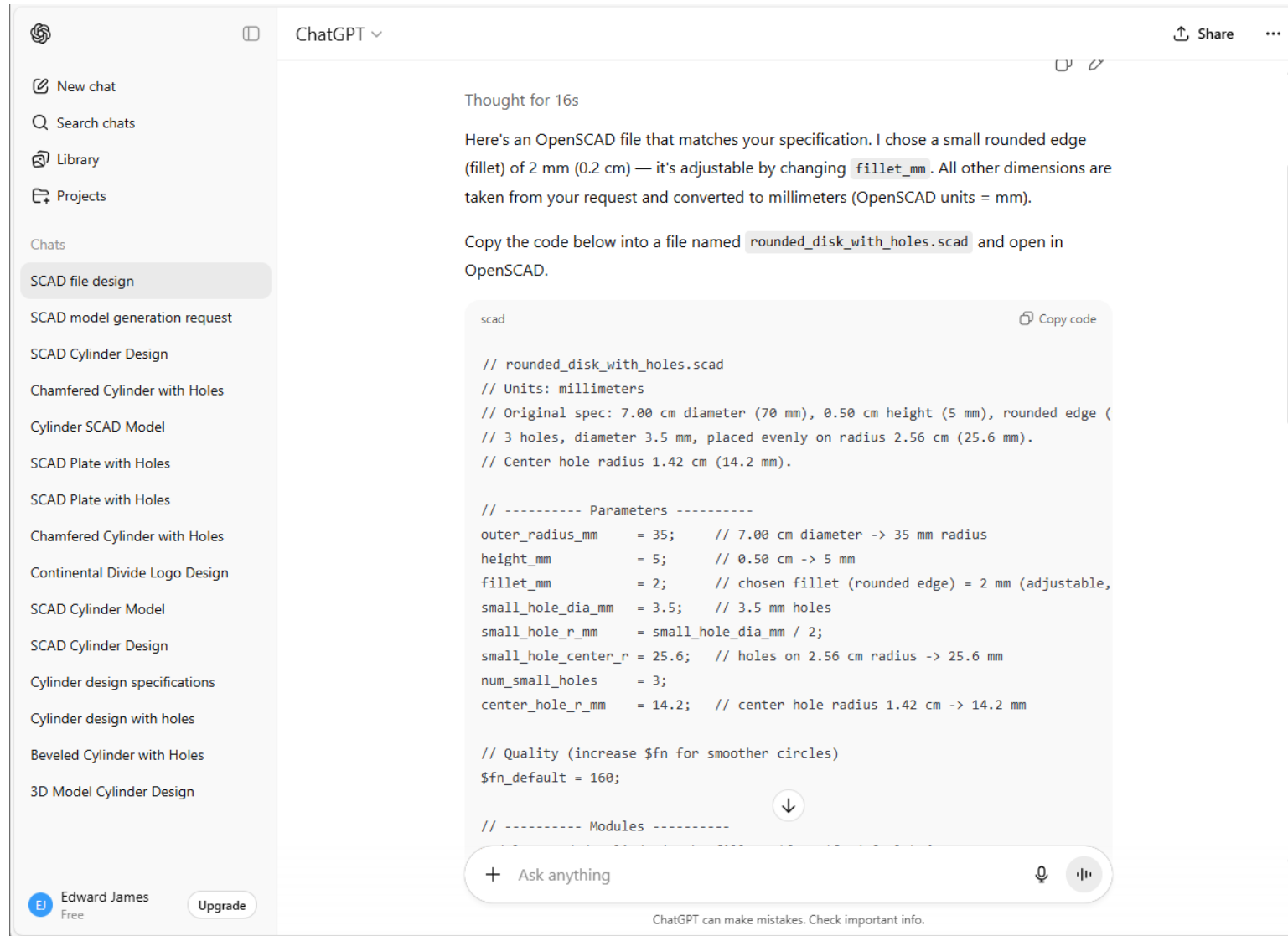


The image shows a Notepad++ window titled '*new 2 - Notepad++'. The menu bar includes File, Edit, Search, View, Encoding, Language, Settings, Tools, Macro, Run, Plugins, and Window. The toolbar contains various icons for file operations, editing, and development. The tab bar shows 'new 1' and 'new 2'. The text area contains the following lines:

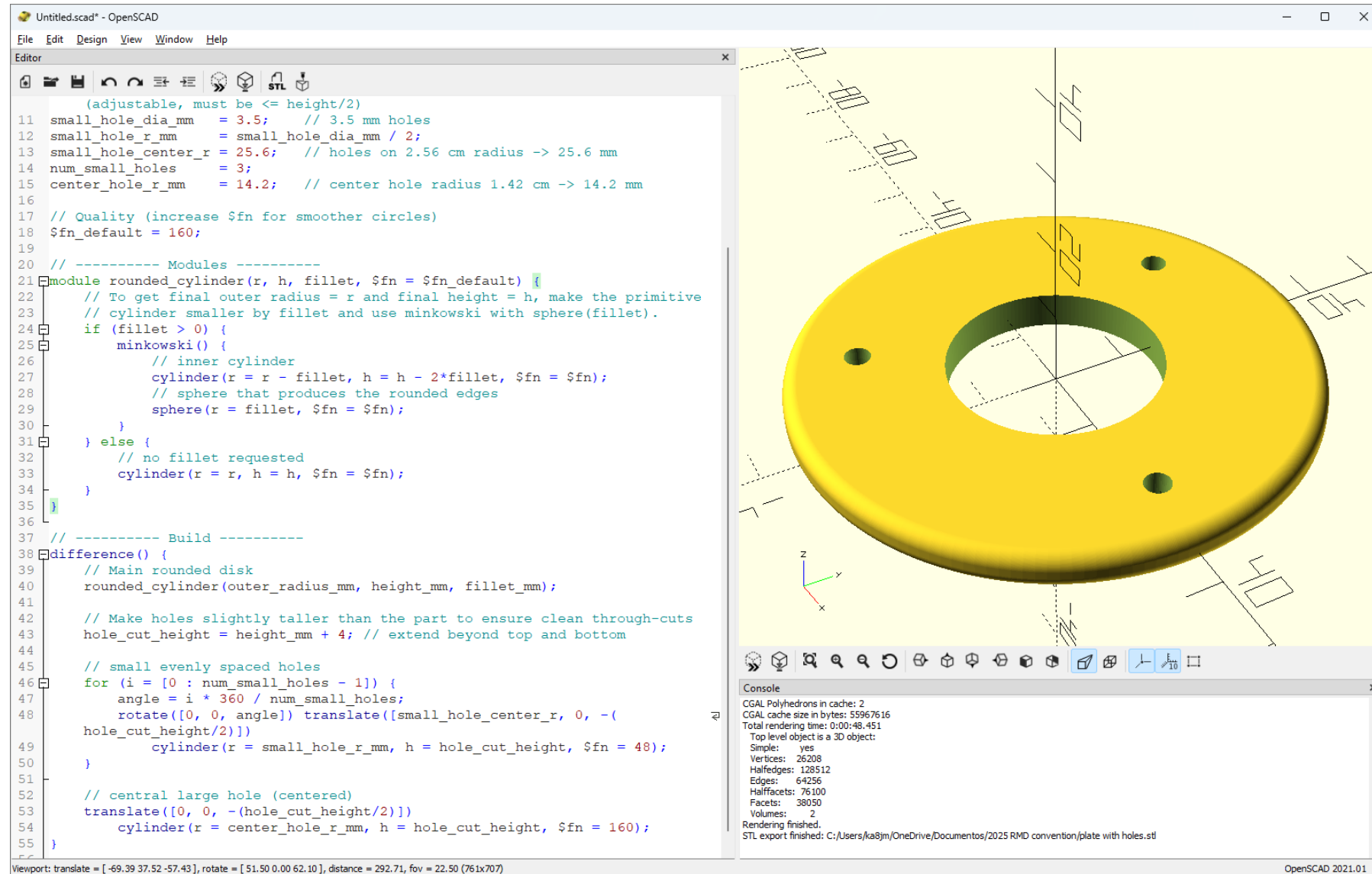
```
1 Design a 7 cm diameter cylinder, 0.5 cm height, rounded edge.  
2  
3 Add 3 evenly spaced 3.5 mm holes on a 2.56 cm radius.  
4  
5 Add a 1.42 cm radius hole in the center.  
6  
7 scad file output.  
8
```

The status bar at the bottom displays: 'Normal text file', 'length: 185 lines: 8', 'Ln: 8 Col: 1 Pos: 186', 'Windows (CR LF)', 'UTF-8', and 'INS'.

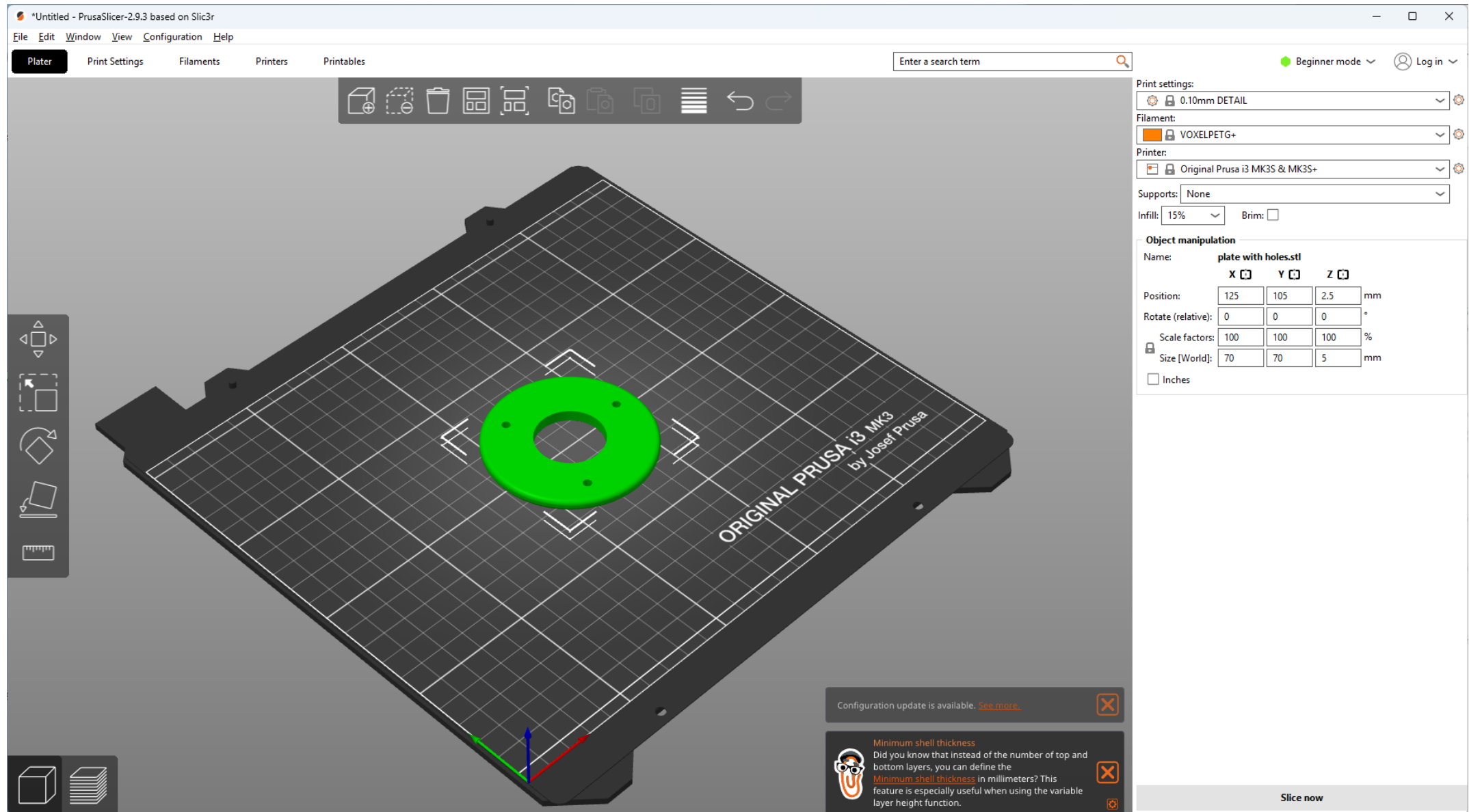
2. Paste the part description into ChatGPT.

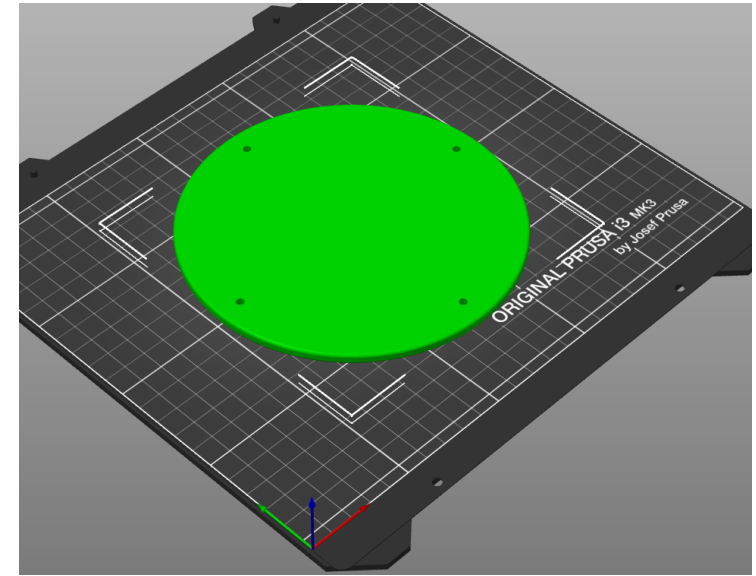
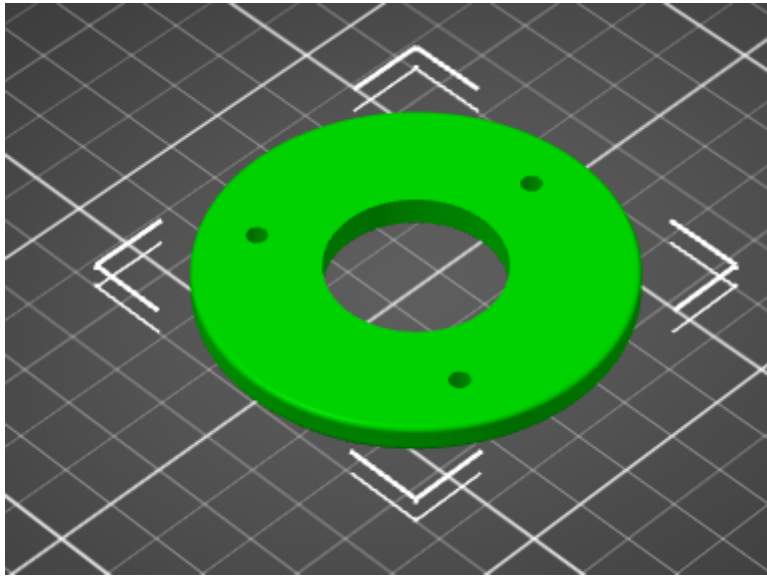


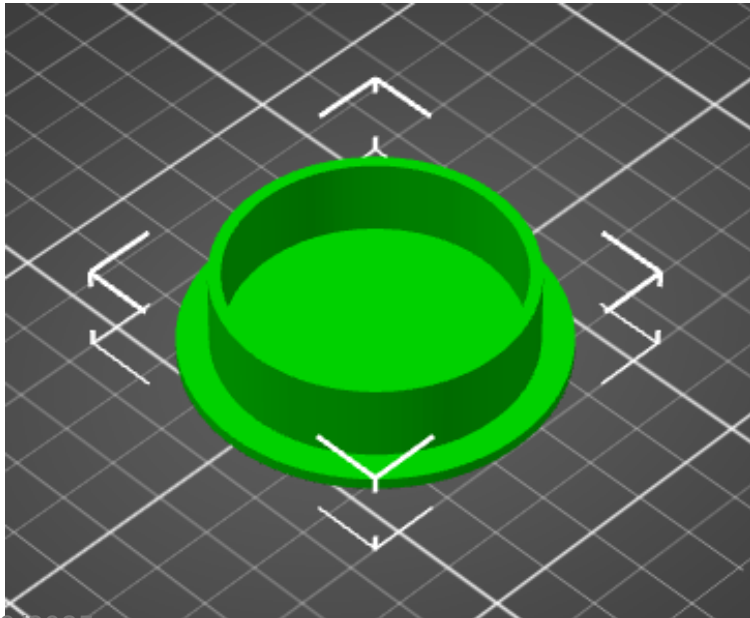
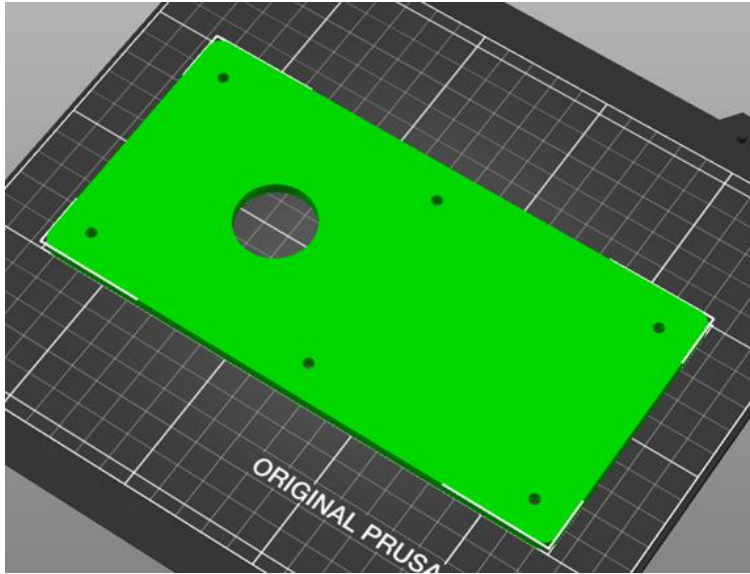
3. Paste the output into OpenSCAD and render.



4. Load the STL file into the 3D printer slicer.







Lets make a box:

ChatGPT ▾

Share ...

Design a 7 cm x 7 cm x 3 cm box,
add hole for db9 connector on two opposite sides.
add a vertical, 4 mm diameter, 2.5 cm tall vertical cylinder,
1.5 mm wall thickness cylinder in each corner.
scad file output.

Got it! Here's a complete **OpenSCAD** file for a **70 × 70 × 30 mm** box with:

- **DB9 holes** on two opposite sides,
- **Four hollow vertical corner posts:** 4 mm outer diameter, 1.5 mm wall thickness, 25 mm tall.

scad

Copy code

```
// 7cm x 7cm x 3cm box with DB9 holes and hollow corner posts
// Units: millimeters

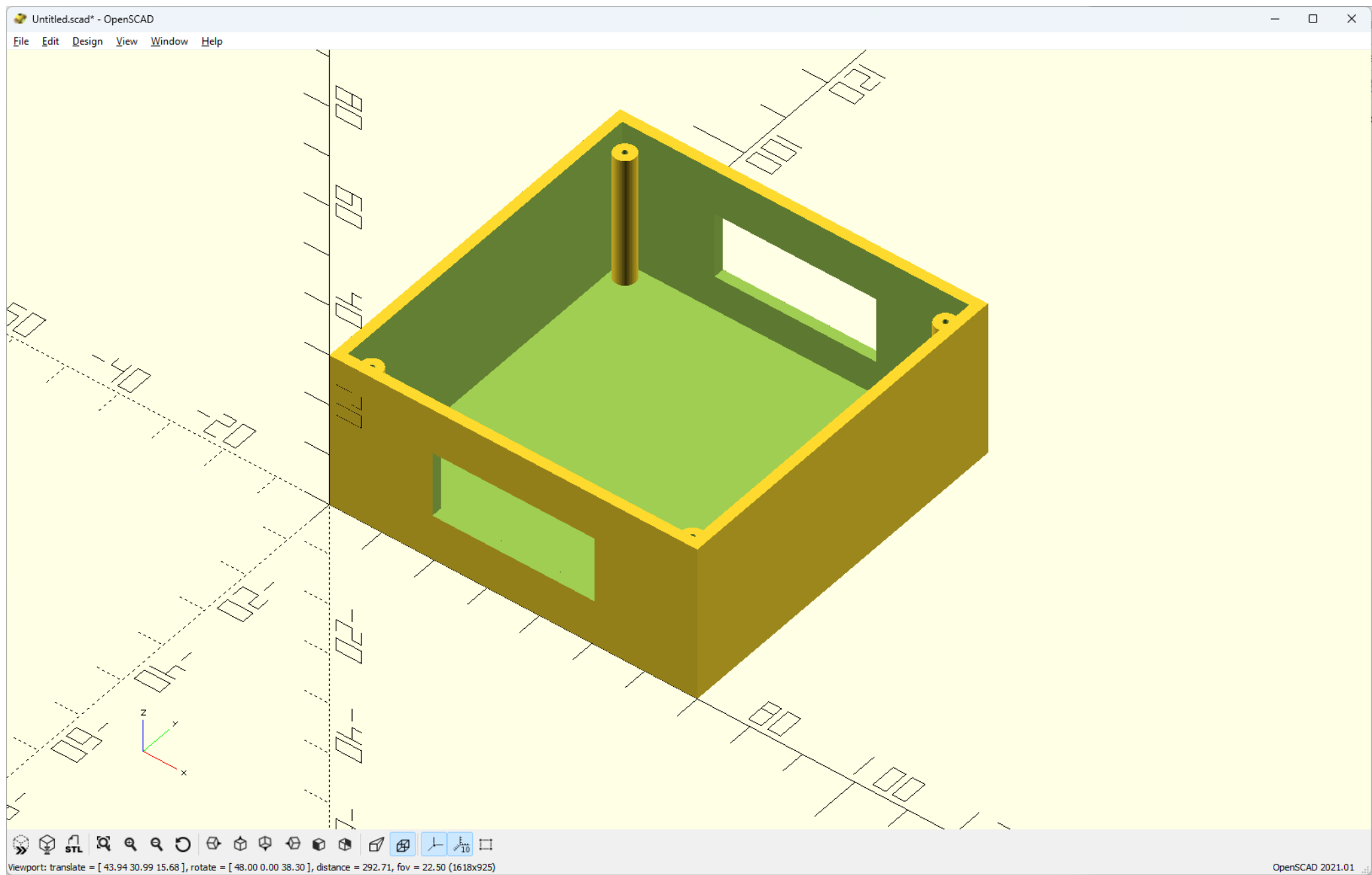
// ----- Parameters -----
outer_x = 70;      // width
outer_y = 70;      // depth
outer_z = 30;      // height
wall = 2;          // wall thickness
bottom = 2;        // bottom thickness

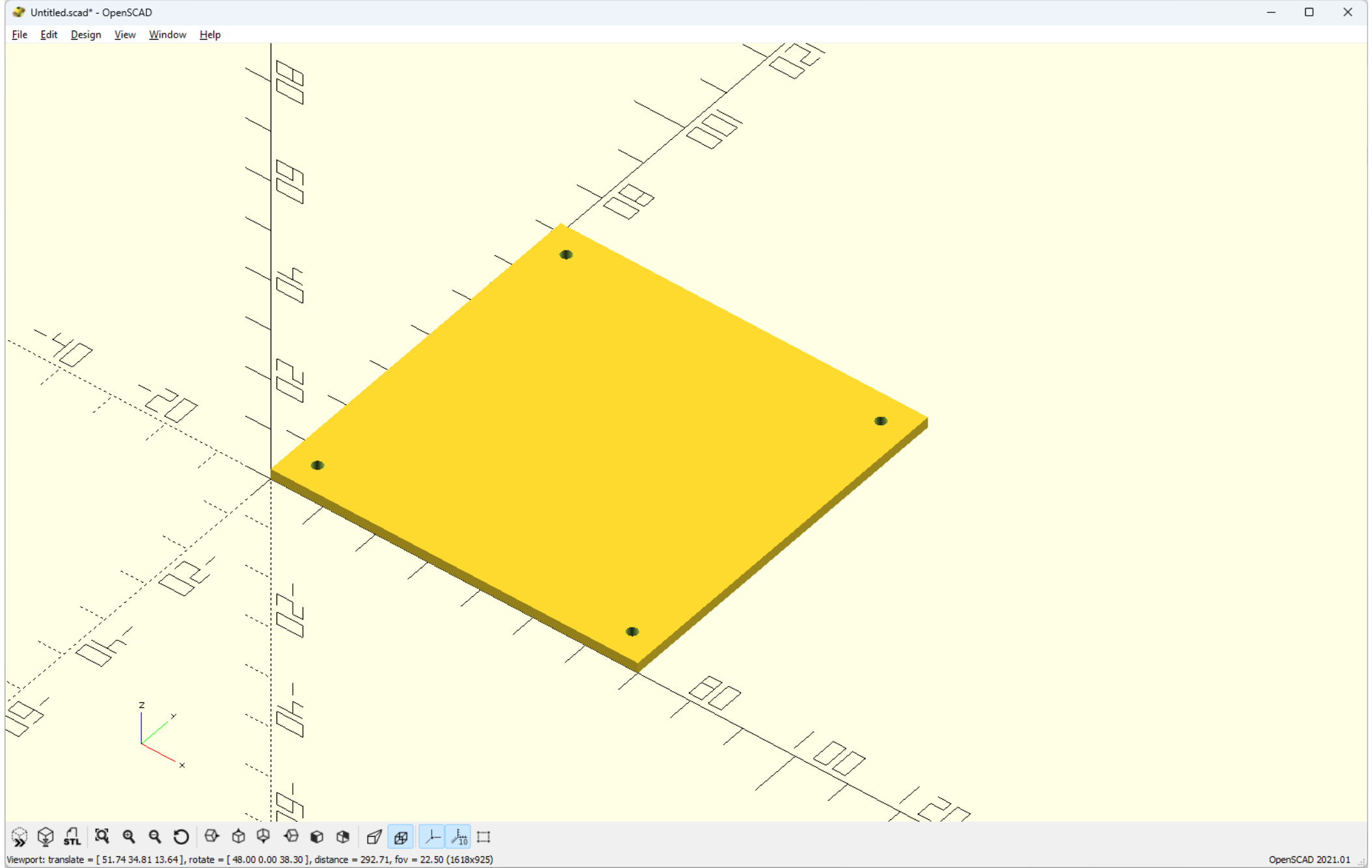
// DB9 hole parameters
db9_hole_w = 30.8;  // width of DB9 cutout
db9_hole_h = 12.6;  // height of DB9 cutout
db9_offset_z = outer_z / 2; // vertical center of hole
```

+ Ask anything



ChatGPT can make mistakes. Check important info.





FileEditWindowViewConfigurationHelp

PlaterPrint SettingsFilamentsPrintersPrintables

Enter a search term

Beginner modeLog in

Legend

Feature type

	Time	Percentage	Used filament
Perimeter	1h4m	24.1%	3.56 m 10.87 g
External perimeter	1h47m	40.6%	2.82 m 8.60 g
Overhang perimeter	16s	0.1%	0.01 m 0.02 g
Internal infill	3m	1.2%	0.12 m 0.38 g
Solid infill	41m	15.4%	2.65 m 8.11 g
Top solid infill	5m	1.9%	0.19 m 0.58 g
Bridge infill	8m	3.2%	0.53 m 1.62 g
Skirt/Brim	27s	0.2%	0.02 m 0.06 g
Custom	6s	0.0%	0.02 m 0.07 g

Estimated printing times [Normal mode]:
First layer: 11m
Total: 4h24m
Show stealth mode

Icons

30.00 (299)

0.20 (1)

189471

Print settings:

0.10mm DETAIL

Filament: VOXELPETG+

Printer: Original Prusa i3 MK3S & MK3S+

Supports: None

Infill: 15% Brim:

Object manipulation

Name: box.stl

	X	Y	Z
Position:	125	105	15
Rotate (relative):	0	0	0
Scale factors:	100	100	100
Size [World]:	70	70	30

Inches

Sliced Info

Used Filament (g)	30.30
Used Filament (m)	9.92
Used Filament (mm ³)	23855.59
Cost	0.67
Estimated printing time:	
- normal mode	4h24m
- stealth mode	4h32m

Export G-code

ORIGINAL PRUSA i3 MK3 by Josef Prusa

10/20/2025

15

Untitled - PrusaSlicer-2.9.3 based on Slic3r

File Edit Window View Configuration Help

PlaterPrint SettingsFilamentsPrintersPrintables

Legend

Feature type

	Time	Percentage	Used filament
Perimeter	5m	7.7%	0.23 m 0.69 g
External perimeter	4m	5.6%	0.11 m 0.33 g
Internal infill	3m	4.3%	0.12 m 0.37 g
Solid infill	41m	56.9%	2.62 m 8.00 g
Top solid infill	5m	7.1%	0.19 m 0.57 g
Bridge infill	8m	11.7%	0.52 m 1.59 g
Skirt/Brim	27s	0.6%	0.02 m 0.06 g
Custom	6s	0.1%	0.02 m 0.07 g

Estimated printing times [Normal mode]:

First layer: 11m

Total: 1h11m

Show stealth mode

2.00 (19)

ORIGINAL PRUSA i3 MK3
by Josef Prusa

0.20 (1)

33172

Enter a search term

Beginner mode Log in

Print settings:

0.10mm DETAIL

Filament:

VOXELPETG+

Printer:

Original Prusa i3 MK3S & MK3S+

Supports: None

Infill: 15% Brim:

Object manipulation

Name: box lid.stl

	X	Y	Z
Position:	125	105	1
Rotate (relative):	0	0	0
Scale factors:	100	100	100
Size [World]:	70	70	2

Inches

Sliced Info

Used Filament (g)	11.68
Used Filament (m)	3.82
Used Filament (mm ³)	9194.61
Cost	0.26
Estimated printing time:	
- normal mode	1h11m
- stealth mode	1h12m

Export G-code

Configuration update is available. See more.

Slicing finished.



(Questions?)

Thank You

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- <http://www.rmham.org>