

3D Modeling Projects

REFERENCE

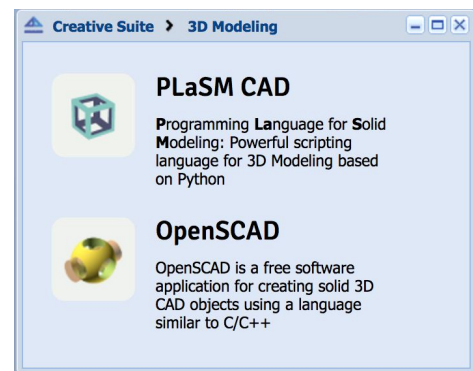
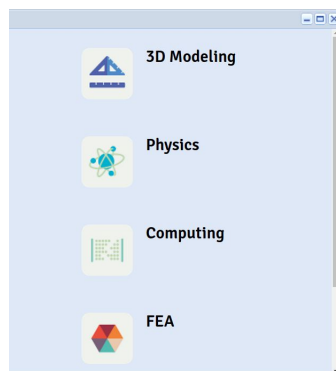
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Creative Suite

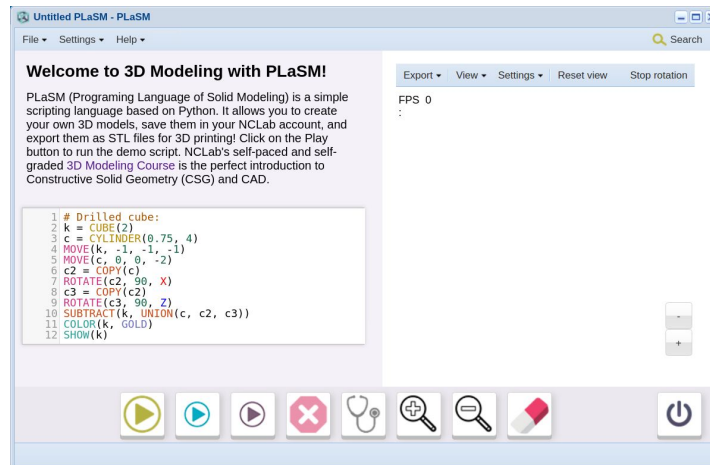
To access the PLaSM CAD application:


1. Double-click the **Creative Suite** icon on your NCLab Desktop.
2. Select **3D Modeling**.
3. Open **PLaSM CAD**.

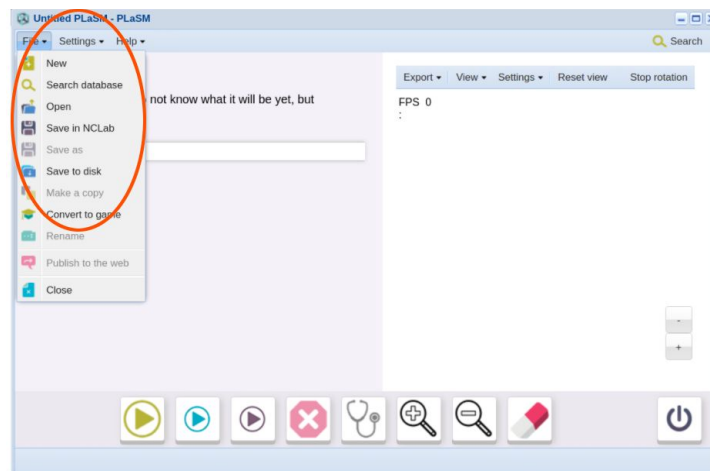


Saving Projects in NCLab

The app will open in a **PLaSM CAD worksheet**.



Click on the  button to remove the **demo script**:



Click the **File** menu in the upper-left corner, then select **“Save in NCLab”**. Select the folder **3d-course-projects** and give your file a **descriptive title**, **“color-bar”** will work.

File name:

Click OK. Your file will be autosaved as you work, you can begin your project.

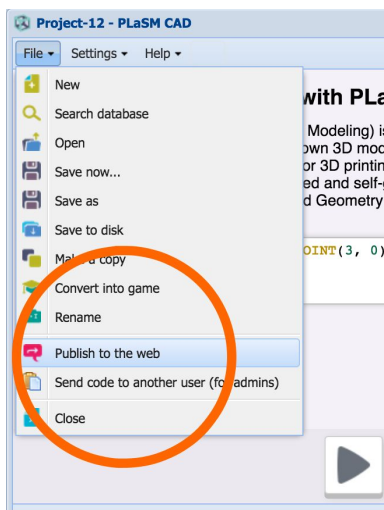
Sharing Your Files

You can create a public link for your PLaSM CAD models. This link allows others to see an interactive demonstration of your model.

To publish your model:

Select **Publish to the web** from the **File** menu.

Select a **Public sharing status**.



You can share the unique link for your file by **copying the link text** on the right.

Public link:

You can email this link to your friends, or use it on your own web page.

<https://desktop.nclab.com/viewer/fd7001222de24a0d989717183e09e45e>

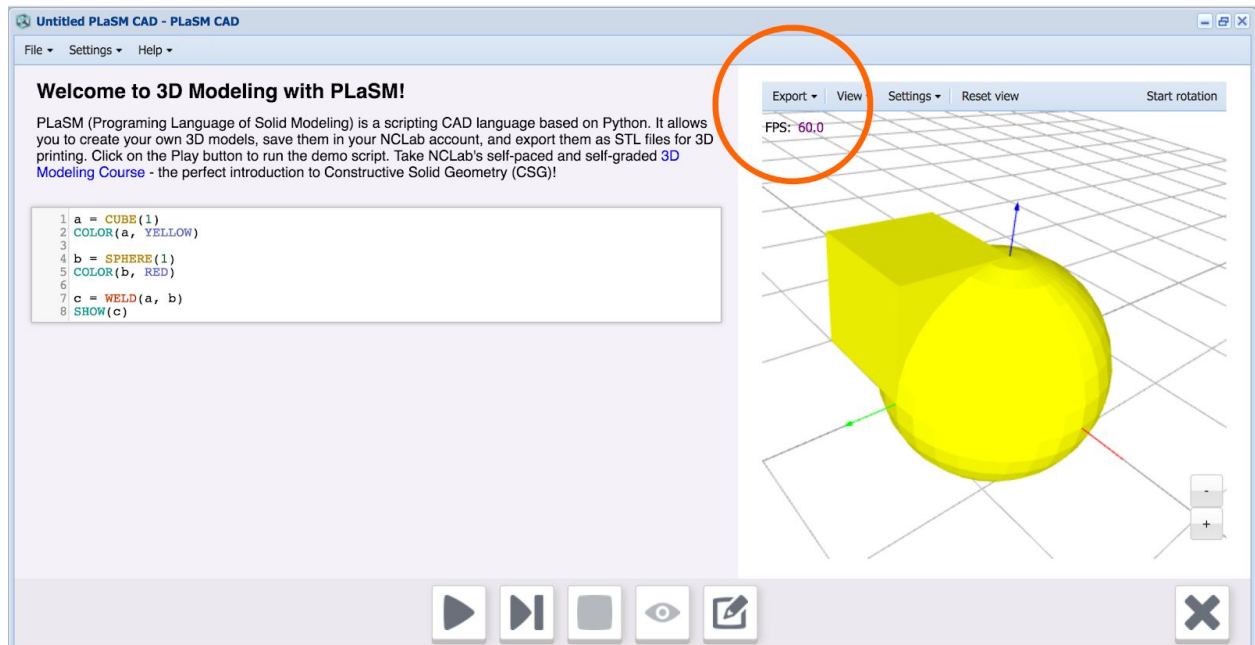
 **Copy link to clipboard**

If you are using the NCLab desktop in a classroom setting, we recommend you use a service such as Google Docs or another public sharing option to allow your students to share their 3D modeling projects in a shared document.

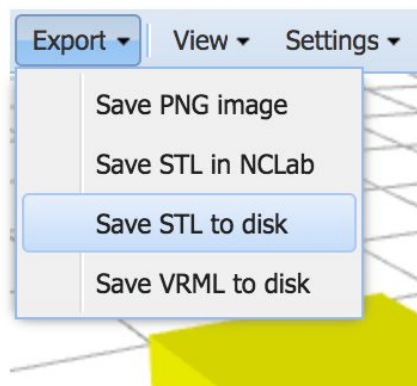
Exporting for 3D Printing

The PLaSM CAD software can **export your model to the .STL format**. This file format is used by commercial and consumer 3D Printers.

To export your model for 3D printing, select the **Export tab** in the 3D Model Viewer.



Select **Save STL to disk**. Your model will be **downloaded to your computer** as a .STL file. This .STL file can be used by any 3D printing software.



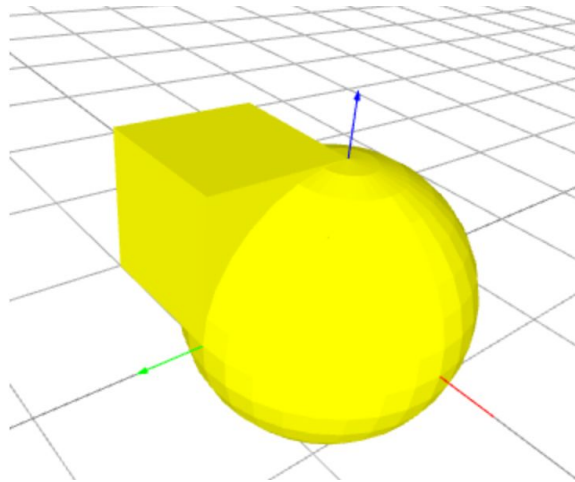
Welding Your Model

The `WELD()` command will ensure that all of the components of your model are welded into a **compound object**. This will prevent many common problems encountered when attempting to print models.

The following program will create two objects and weld them together.

```
1 a = CUBE(1)
2 COLOR(a, YELLOW)
3
4 b = SPHERE(1)
5 COLOR(b, RED)
6
7 c = WELD(a, b)
8 SHOW(c)
```

The color of the first object listed will be used to color the new object created by `WELD()`. In this example, the final output will be YELLOW. This is **the best way to optimize** your model. `COLOR()` should not be used to separate components of a printed model.

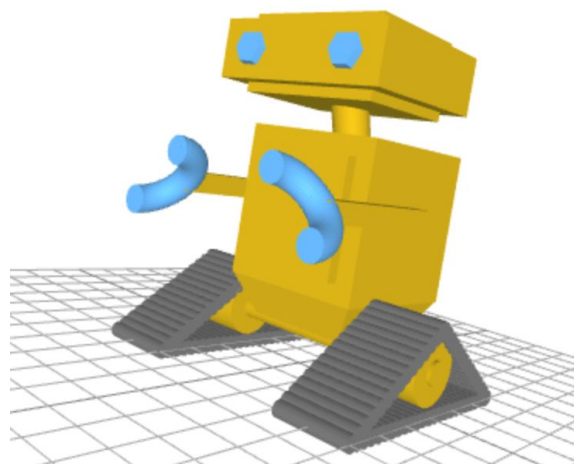


If all the **components of your object are touching** and you have used the `WELD()` command, your exported `.STL` file will be optimized for 3D printing.

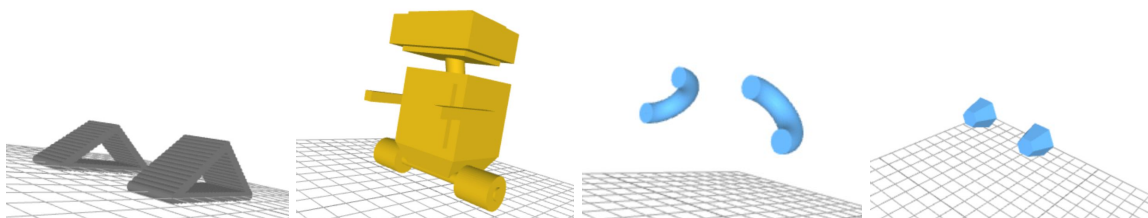
Printing Multiple Components

You may want to **print parts of your model separately**. This can allow you to use different colors of filament or different materials on separate pieces of your model. This method is useful when creating **mechanical components**, such as an axle for a wheel.

For example, let's say you wanted to **separately print the treads, hands, and eyes** when printing the following model of Karel the Robot.



By using SHOW() for **each component separately**, you can produce four separate models.



The end of the program to generate these models uses **separate SHOW() commands** for each component. The **# character** is used in this example to prevent components from being shown.

```
143 #SHOW(treads)
144 SHOW(karel_body)
145 #SHOW(claws)
146 #SHOW(eyes)
```