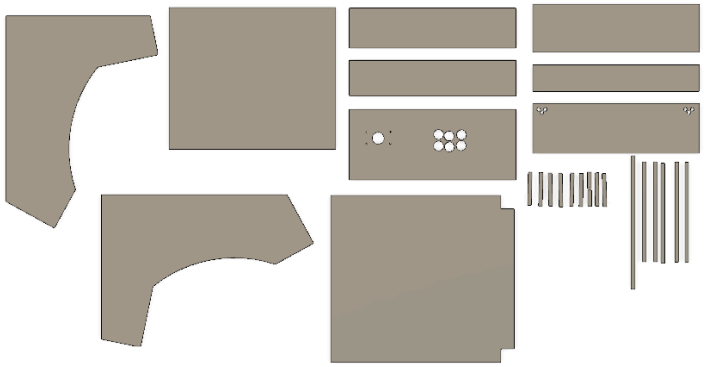
Preparing the CAD model for manufacturing on a CNC machine

Notes: The instructions below outlines the process involved on using Fusion360 to prepare the cabinet for manufacturing on a CNC machine. Previously developed files may be provided, so you can use these on the machine control software to cut the pieces straightaway.

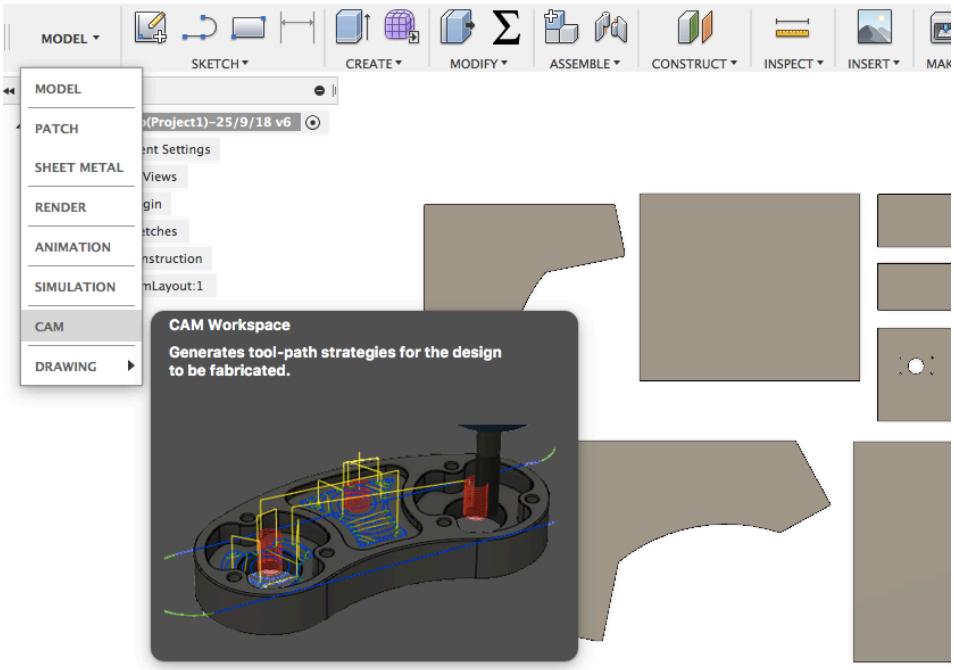
1- **Firstly, you will need a CAD model of the arcade cabinet you want to cut on the CNC machine.**

(A CAD model file will be provided)



2- **Show the CNC machine on how to cut this model from your stock material.**
A toolpath will be required to make on the model to define how the model will sit on the CNC and what tools the CNC will use. This process is called CAM in Fusion360.

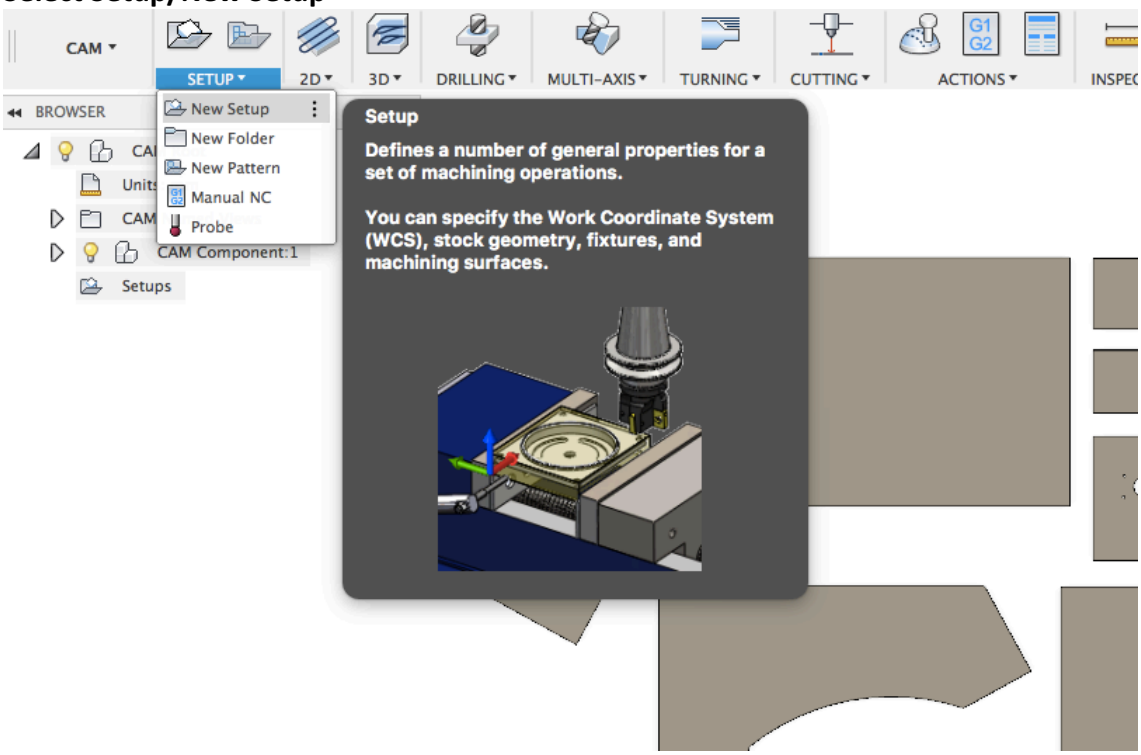
2.1 Get to the CAM workspace by changing the space selector as seen above.



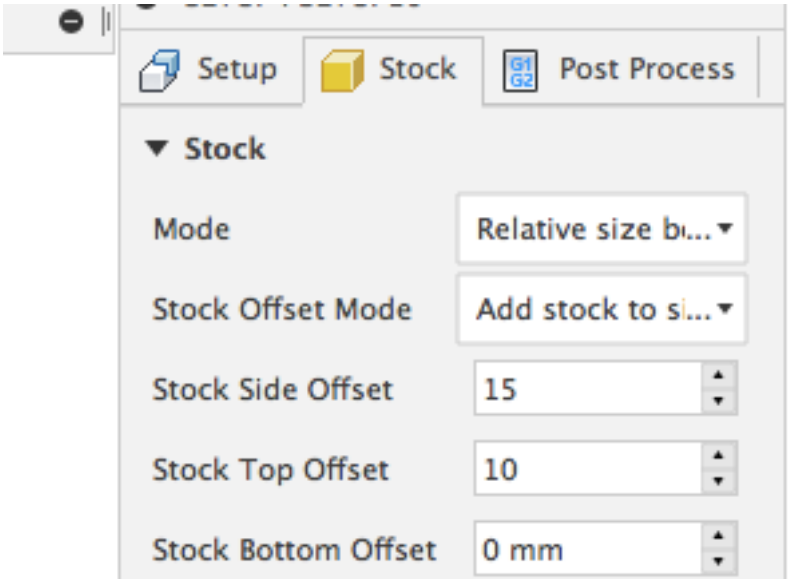
2.2 A setup is created

In the CAM workspace, you need to define what the raw material will be and how is your model oriented.

Select Setup/New Setup



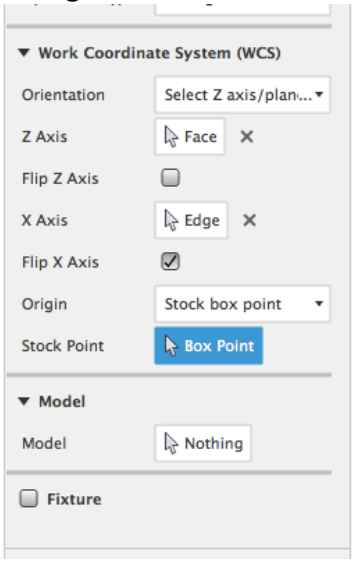
2.3 Define your material in the stock tab. in this example we will be using a 15mm thick material.

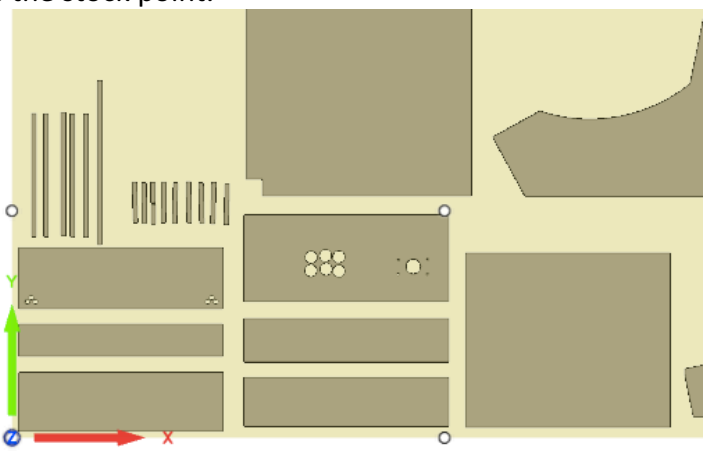


2.4 Now we need to orient the stock.

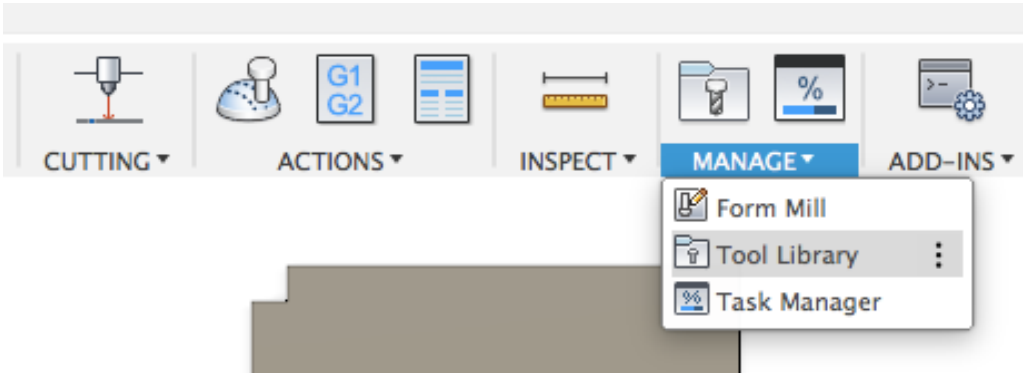
In the setup tab you can easily change your work coordinate systems. To orient the model properly, click on top of the stock for the Z axis, and an edge for the X axis.

And then lastly identify your stock point. The stock point represents the starting point, in another words the CNC will start cutting from that specified point. Every machine has their own certain point, and thus you should have your origin to that location. In this example we are using the bottom left corner as the stock point.

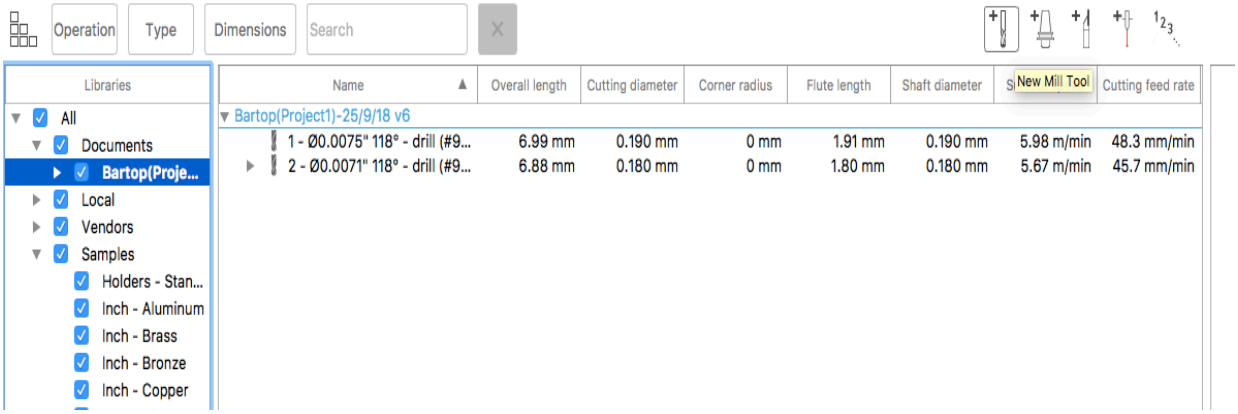




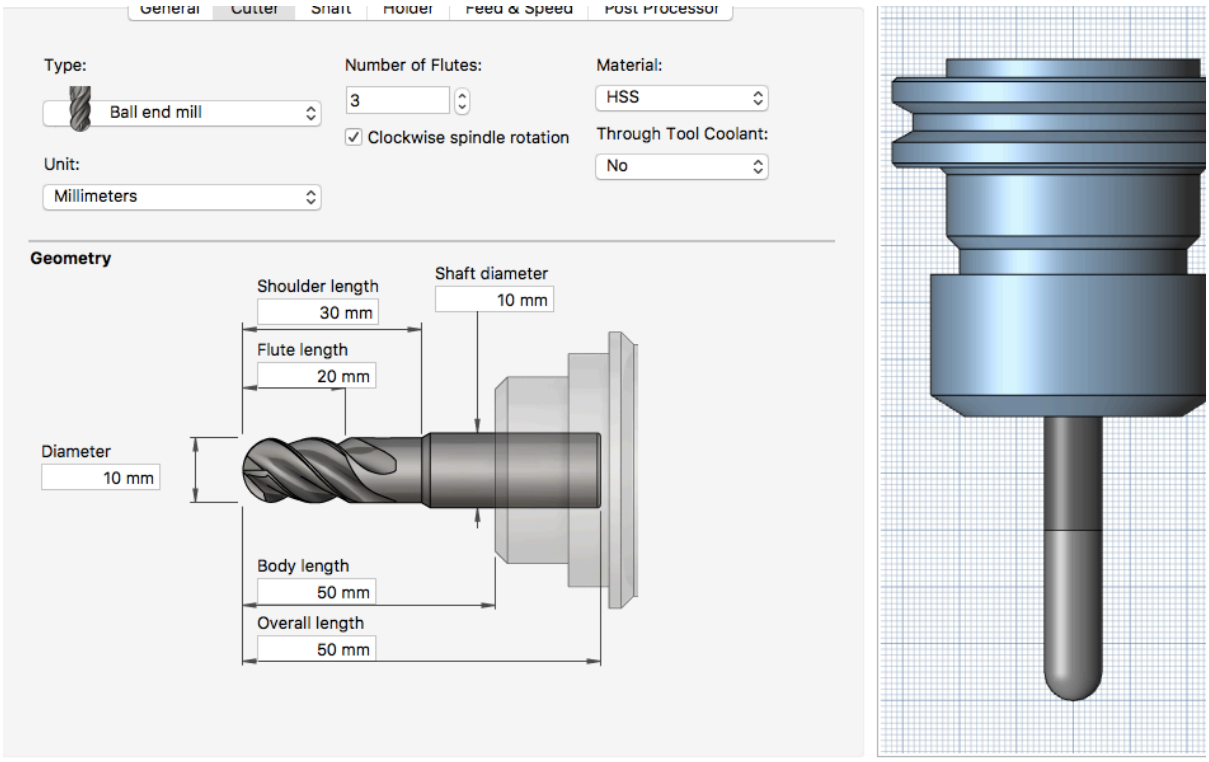
2.5 Now the setup is complete, we need add our tool.



Select where you want to add the tool and what type of cutter it will be.



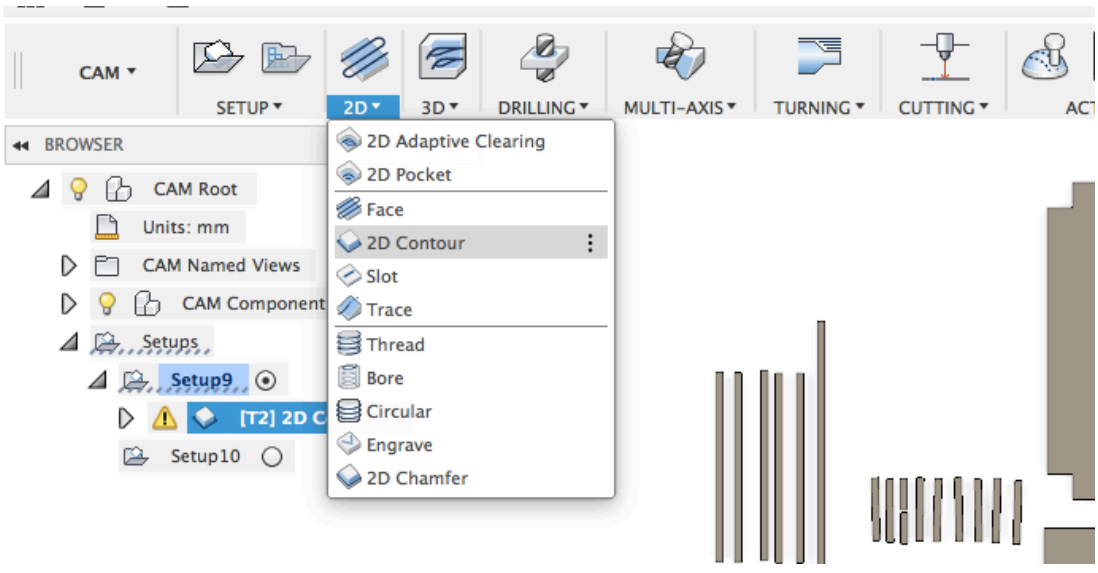
From here you can enter your dimensions of your tool. The speed and feed rate also to be added here.



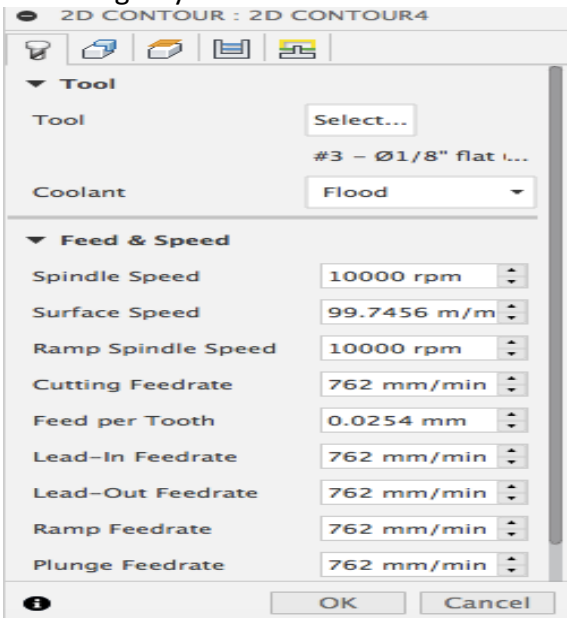
2.6 Next you define the toolpaths.

We will generate paths the tool will use to cut the model.

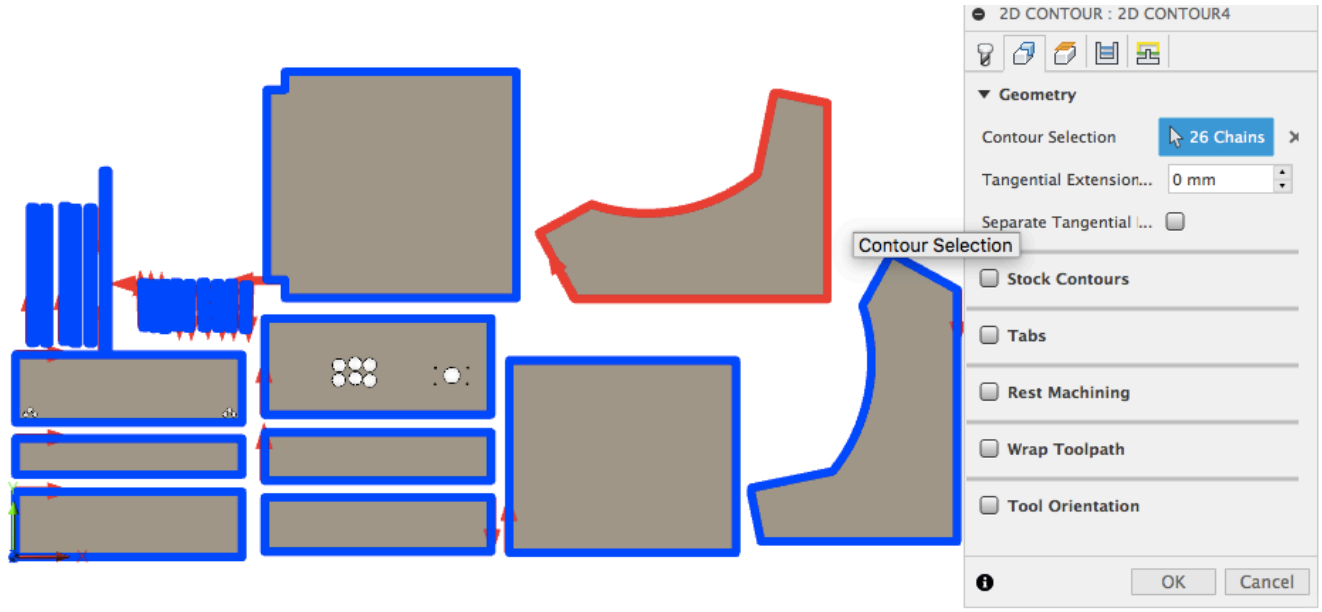
As seen above there's variety of options to choose from. For this type of model 2D Contour suits better.



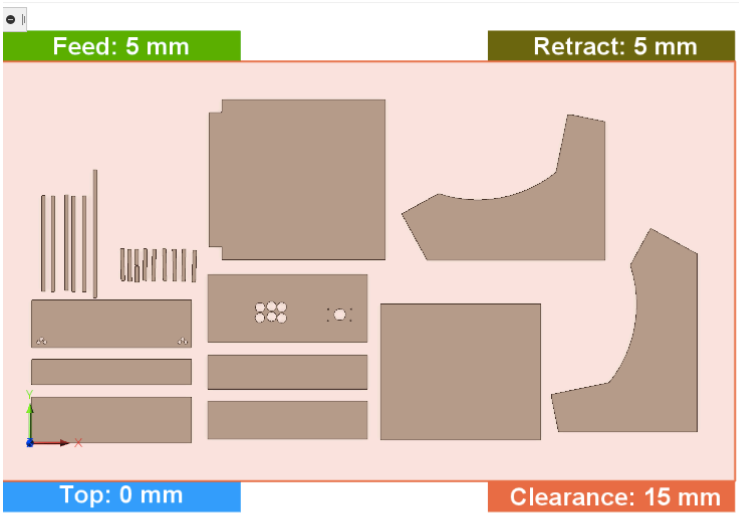
Select the tool you defined previously and adjust the feed rate, and the spindle rate etc. according to your own machine.

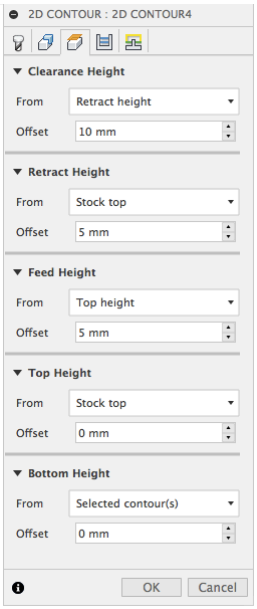


in the contour tab, we will choose what contour we are cutting. Choose all the contour you want to cut as seen below.

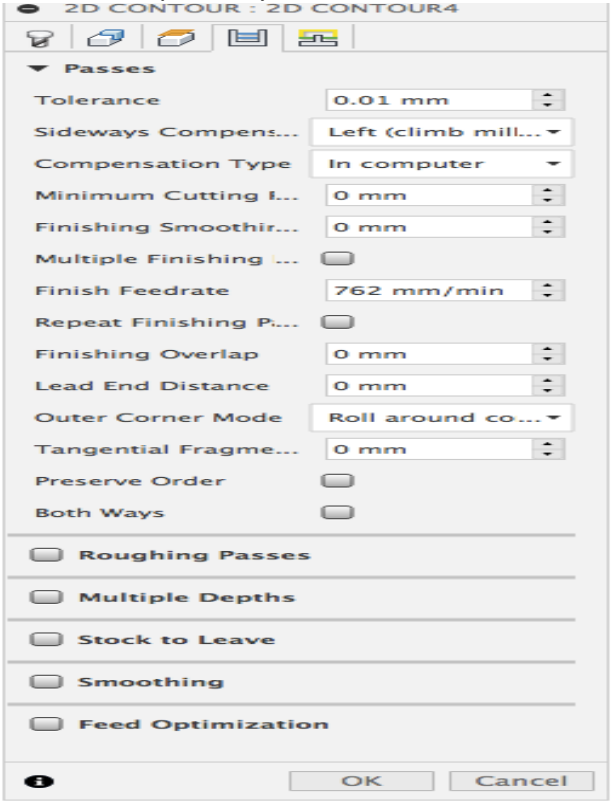


The next tab is called Heights. It will outline the movements of the tool, we can have them leaved as default.

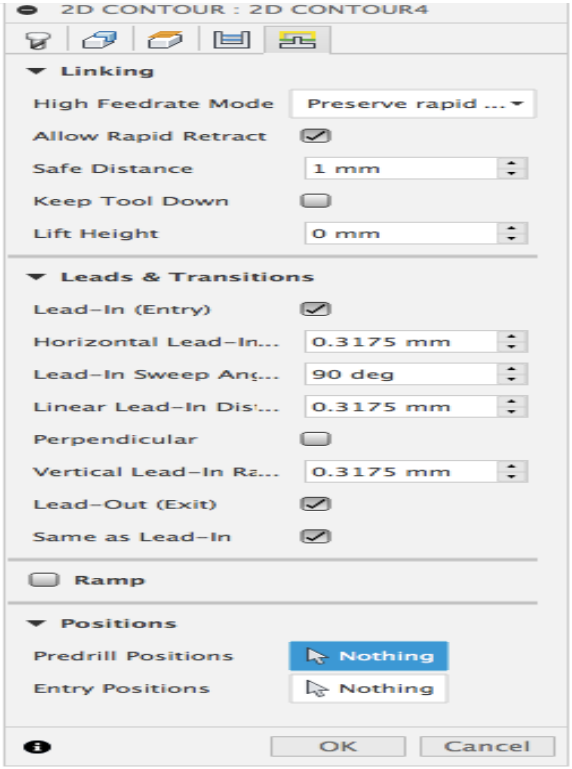




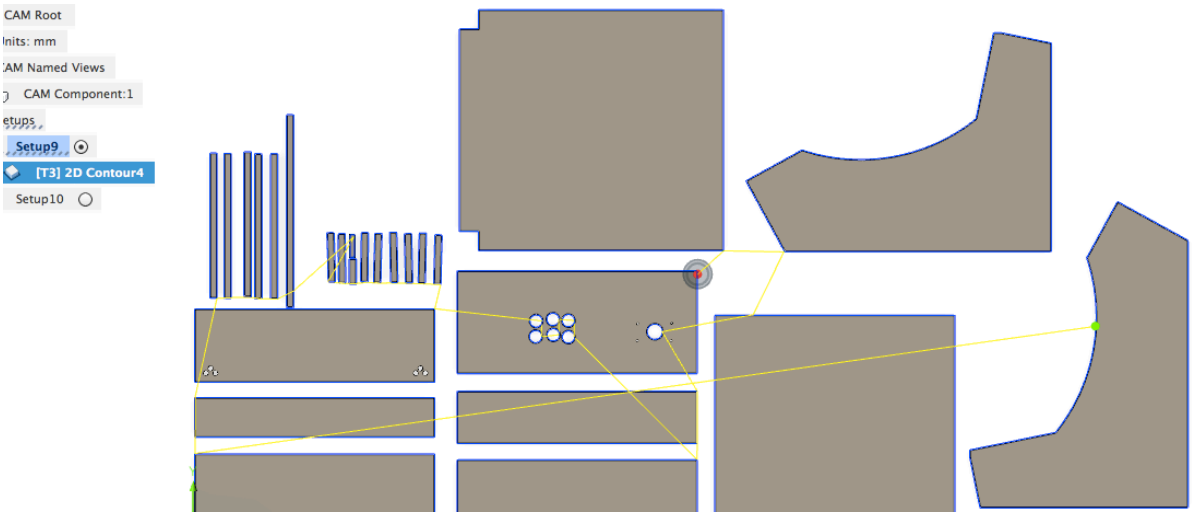
The Passes tab is not required to be change for our type of model. But this is where you outline the depths of your cuts



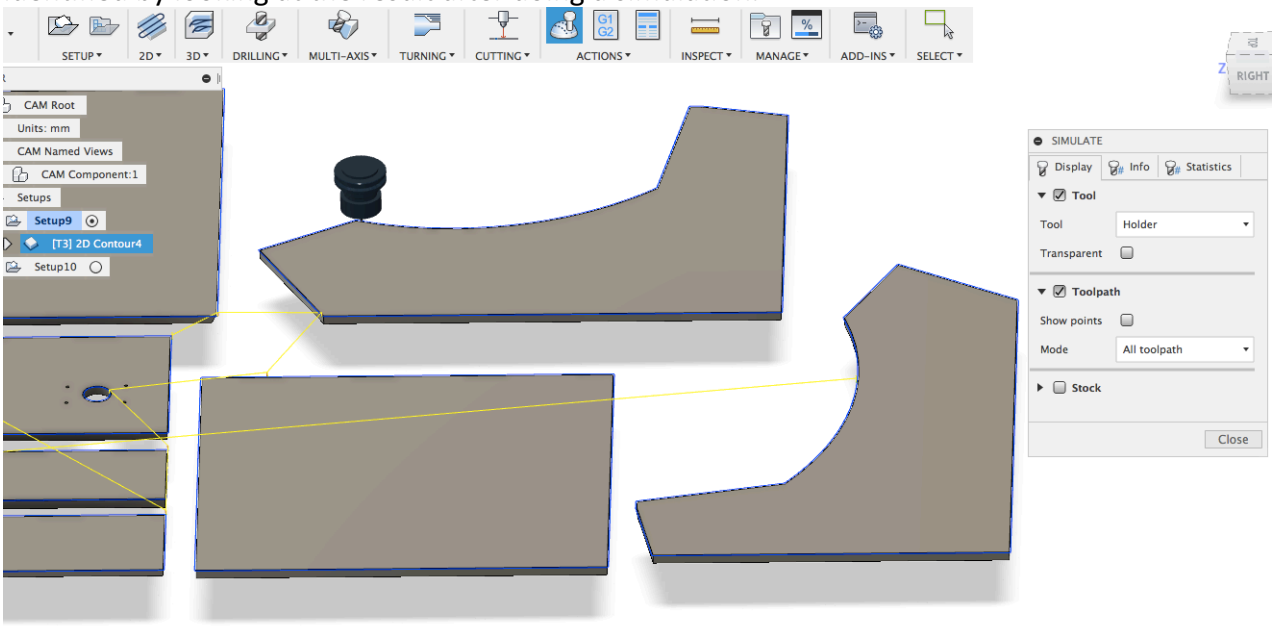
The next tab we are looking is called the linking tab. Make sure to keep the “tool down” box unchecked.



After you have identified all your settings you can now click ok and wait for it to be rendered.

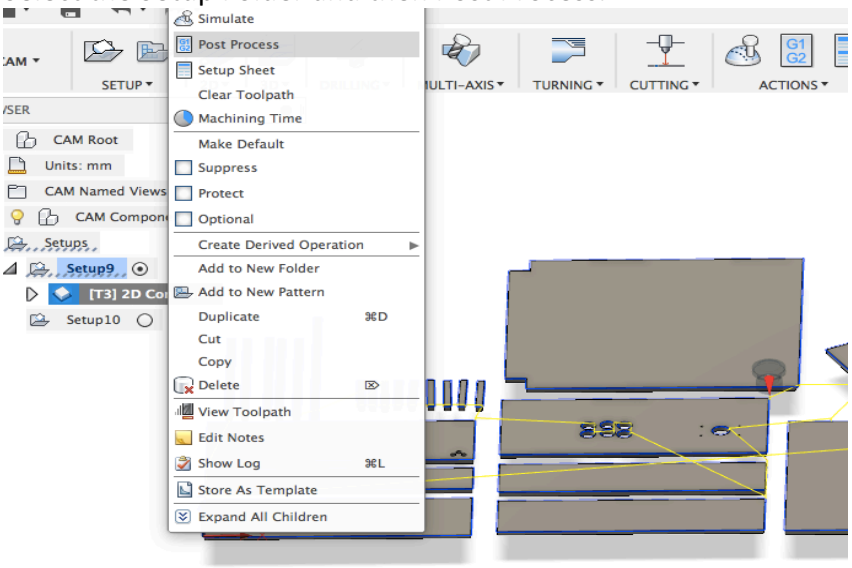


Now you can simulate the toolpath you just created. Any mistakes and errors can be identified by looking at the result after doing a simulation.

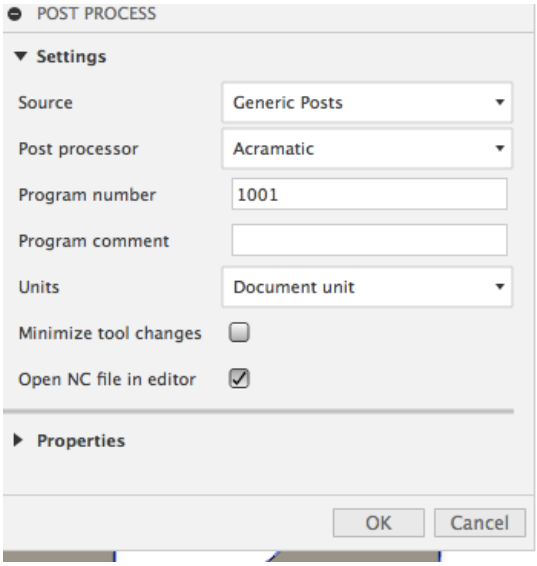


2.7 After everything worked out, we can now output the G-code. Fusion360 can export the cutting instructions in a way your specified CNC machine can recognise.

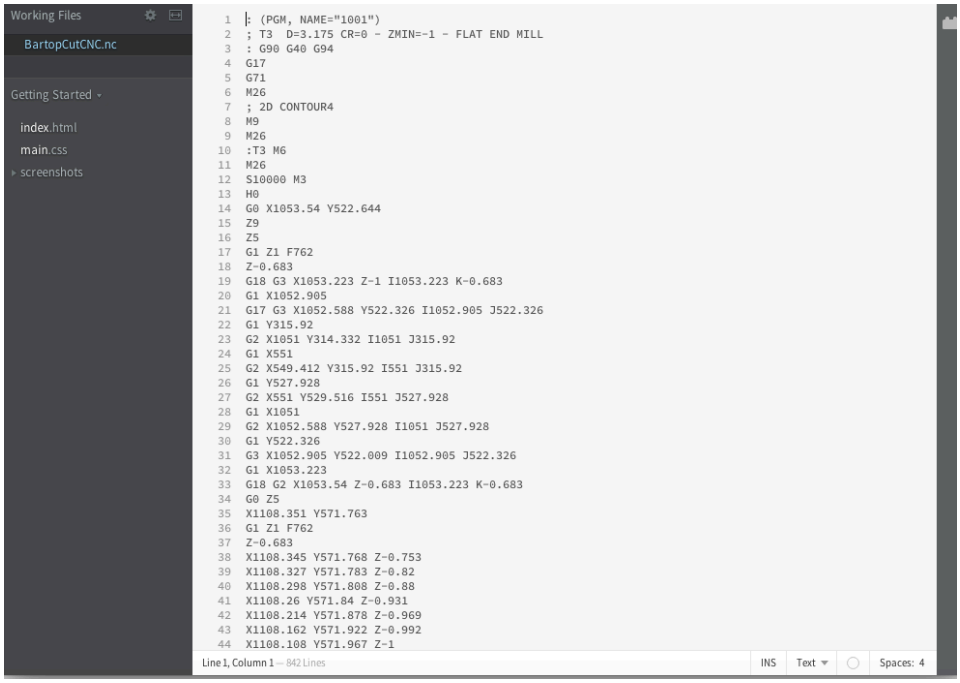
Select the Setup Folder and then Post Process.



Keep the source as Generic Posts and identify your post processor for your machine. Select ok and save the file.



Now this G-code can be used on the machine control software.



3- Now load these instructions into your machine control software.

3.1 Set up the material and prepare the machine.

3.2 Set the X and Y zero to match the lower left corner of your stock like in the setup you created. And have the Z zero to the top of the stock.

3.2 Open up your machine control software and import your G-code file (nc.file).

3.3 Run the CNC, so it can run its instructions and start cutting the material.

3.4 After the job is done remove the pieces from the router.

4- Assembly the pieces together

View the arcade cabinet assembly assembly manual.