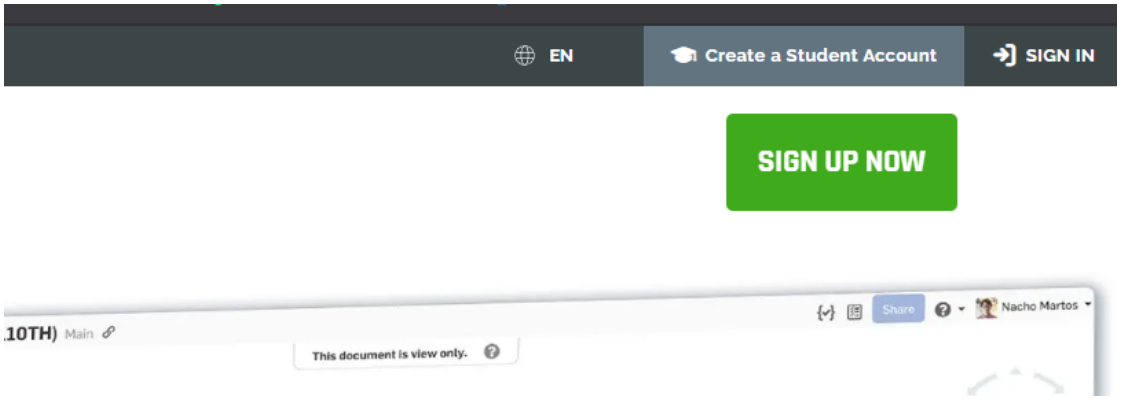
CAD Modelling

Setting up OnShape

1. Go to https://www.onshape.com
2. Click “SIGN UP NOW”.



3. Fill in your Name and Email and then choose “Education Account”.
4. Select “Student” and “<18”.
5. You will be prompted to the “Student Plan”. Fill out your School Name, Website, Graduation Year and tick the appropriate boxes.

Creating Your Project

Hit “Create” and then “Document”. If you need multiple parts make a Folder and then put your documents in there. There is no need Assemble anything if your project requires it, the Educators will take care of that.

Please give your document an Intuitive Title

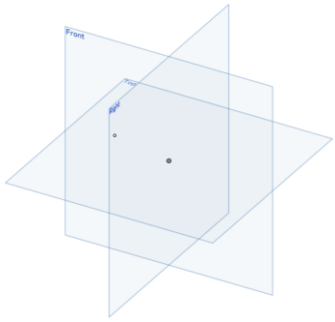
Something like: “Group_NameCAD1” and then every time you make a new prototype increase that number.

Modelling

If you are unfamiliar with OnShape or CAD in general, this will be a somewhat comprehensive guide, but if you have any questions please ask the Educators as they are more familiar with the software.

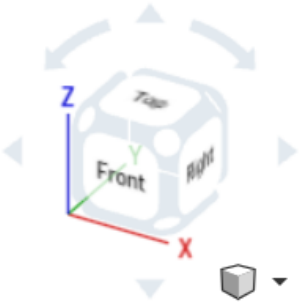
The things you should be seeing on screen now are:

- **The Planes –** invisible sheets for you to draw on



- **The Toolbar –** contains your drawing and modelling tools

- **The View Cube –** spin it to see your design from different angles

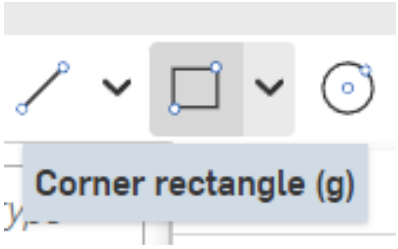


<u>Sketching</u>

To create anything in CAD (Computer Aided Drawing), you need to create <u>Sketches</u> these are like 2D outlines that we can manipulate into a 3D Shape.

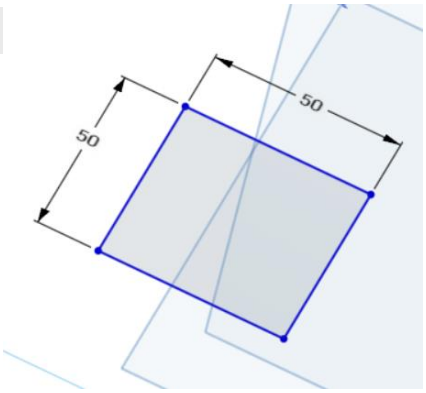
We can start off by creating a **simple cube**, to get a gist of how to use the program.

1. Select “Sketch” and then press on the “Top Plane”
2. Select the “Corner Rectangle” Button or press ‘G’

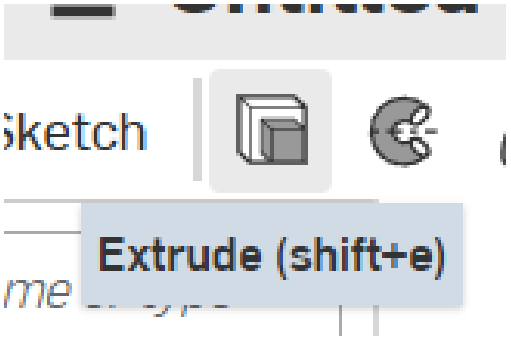


3. Click and drag on the new Sketch Plane you have created. > Note that you are now creating a 2D Rectangle.
4. Edit your Rectangle’s sides to be whatever size you need them to be. Note that the default measurements for OnShape are millimetres (mm). You can always change these later by **Adding Dimensions**. (it is in fact recommended)

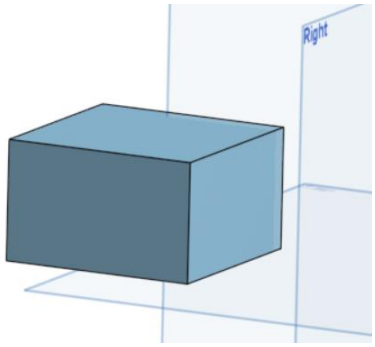
5. Add Dimensions by pressing the “Dimensions” button or by pressing ‘d’. Click one of the sides of the rectangle and slide the Dimension that appears outwards. You can now edit this number to change this side’s length. Note that changing it will also change the opposite side because we chose to create a Corner **Rectangle**.



6. Press the Checkmark icon in your Sketch section to close out of it.
7. Create your cube by pressing the “Extrude” button or pressing ‘shift+e’



8. Click your previously made sketch and drag the arrow as far as you need.



I recommend that you spend a few minutes playing around with the buttons and all the functions that weren’t used. There are many and all are very useful for creating more complex designs.

PLEASE ASK THE EDUCATORS FOR HELP

This is incredibly difficult if it’s your first time using it.

Email your files to **fallm@tcd.ie** when you are done.

Github.com/Six34/WaltonProjectsSem1