**WEEK 5**

This week is all about Fusion 360, our lecture gave us 6 task to do which will technically cover all the basic skills.

The first exercise is to create a NameTag with your name on it. The tools we used during this exercise is rectangle, circle and text under the edit function, after editing the tool I used to make the design from 2D to 3D is extrude.

The second exercise is to create a Lego Brick. The tools we used during this exercise is rectangle and circle under the edit function, after editing the tool I used to make the design from 2D to 3D is extrude. I use the fillet function to ensure that the circle piece is rounded off. I use the rectangle pattern tool to duplicate the circle piece which is located at the top and bottom of the brick. The circle piece together with the brick will form to a Lego Brick.

The third exercise is to create a Cube Stairs (Planes and Extrudes). The tools we used during this exercise is rectangle under the edit function to form the square shape, after editing the tool I used to make the design from 2D to 3D is extrude. I use the rectangle pattern tool to duplicate the cube to the desire amount till it form a stair. Finally, I used the shell function to ensure that the bottom part of the Cube Stairs is hollow till the top part.

The fourth exercise is to create a Mug With Handle. The tools we used during this exercise is circle tool to form the mug, line and arc tool to form the handle under the edit function. After editing the tool I used to make the design from 2D to 3D is extrude. I use the fillet function to ensure that the mug is rounded off at the bottom part.

The fifth exercise is to create a Hex Nut. The tools we used during this exercise is rectangle under the edit function to form the hexagonal shape. I use line to create a triangle shape to bevel the edge around the hexagonal shape to make it look more like a nut shape. I use mirror to ensure the bottom and top part has the same bevel around it. I also use the thread function to create the thread that is located in the middle of the Hex Nut.

Our last assignment was to create a chess piece and 3D print it during the next lesson. The tool I used for this exercise is line. I inserted a picture through a canvas and trace it out. Once the trace is done, I revolved it which will them form into a chess piece. I also have to ensure that the whole thing is hollow throughout to make that happen, I used the shell function.

Our final project required us to design a chess piece and 3D print it during the subsequent lesson. I utilized line as my tool for this project. I traced a photograph that I had inserted via a canvas. Once the tracing is complete, I revolved it to make it into a chess piece. In order to be sure that the entire object is hollow throughout, I utilized the shell function.

**WEEK 6**

This week nothing really happen much as it is just 3D print our design chess piece. We learn how to set the function everything through Ultimaker Cura. I learn something new on that lesson which is the profile, you are able to set the profile ranging from lowest quality draft to ultra fine. This may differ with the different type of 3D printer that will be used. The purpose of that is to decrease the printing time but in return the final product may have some slight deform during printing whereas if the profile setting is at the highest the printing time with be longer but the product will be very fine and super detail.

**WEEK 7**

For this week, we did fusion using parameters. We did a laptop stand with the guidance from our lecturer. We set all the dimension through parameter first before designing the laptop stand.

We are also task to create a keychain that will be laser cut at the next lesson.

And lastly we were given a task to create a makeup box using the laser cutting and the parameters given to us.

For this week, we did Computer Controlled Cutting also known as CNC (Computer Numerical Control). Provides accurate and precise cutting operations.

Data is provided from:

* CADD operation
* Digital 2D drawings

Used in:

* Laser cutting & engraving
* Flatbed cutters & 2D routers
* Milling machine

2D Profile

* All cutting systems work on a 2D profile which provides an outline of the cut
* Advantages:
  + - Cut is precise with little wastage of material
    - Allows positioning to prevent wastage
    - Repeatability
* Vector file formats:

DXF (Data eXchange Format)

PDF (Portable Document Format)

SVG (Scalable Vector Graphics)

Software Tools

Fusion 360

* Full CAD/CAM software to obtain profiles
* Lots of modelling tools to help

Vector Drawing software

* Inkscape
* LibreCAD (for DXF files)
* CorelDraw (licensed software)
* Illustrator (licensed software)

Output Vector Formats

* DXF (outdated, but still used, text editable)
* PDF, EPS
* SVG (may have different variants)
* AI (Adobe illustrator format)