# PROGRAMMING:

1A Final Project (Robot C/C++):

For our 1A final project as part of a team of four students at University of Waterloo, we decided to build a Plotter. Our team was provided with a Lego kit to complete the project. We divided the plotter into two main parts. The first part was the tray that moved in X direction and the tool (pencil/pen) holder that moved in the Y direction. We provided the user with two different choice of tools. The plotter was able to take .SVG file from a computer and plot it on a paper. It was also able to provide the user to have, LIVE CONTROL, meaning the user could use Joystick/controller to Plot anything.

Stacking Game (Java):

As a final project for my CS course, I made game in JAVA inspired by the game STACKED. The game had multiple levels and as each level was completed, the game would get harder.

Tic-Tac Toe (Java):

As a project, I made a Tic-Tac Toe game in JAVA that allowed the user to play with another user or with the computer. It also had a cheat-code that allowed one of the users to win no matter what.

Website (HTML/CSS):

Self-taught HTML/CSS to make this website.

Arduino:

In my spare time, I have done various projects using Arduino. Some of them include:

* Allowing text to display and flow on an LCD screen.
* Controlling the speed of a fan through a Potentiometer (Controls the amount of current flowing through a circuit).

Fuel-Cell Car:

As part of a team of four, we were given parts of a fuel cell car. Our task was to assemble the car together and use the fuel cells provided to run the car. The next task was to program the car to follow a black line while avoiding obstacles in the way by using the sensors provided. We were able to complete the tasks given successfully.

# DESGINING/DEVELOPING:

Versatile 3D Scanning System for Mines:

Designed and developed a Laser based 3D scanning system for Clickmox Solutions using SolidWorks and Geomagic. A single laser scanner with a scan angle of 270 degrees and scan radius of 15m was used as a scanner. I, along with my co-worker worked together to develop an enclosure for the scanner to allow the users to scan 360 degrees while protecting the scanner from the harsh environment of underground mines. The enclosure consisted of a motor, Raspberry Pie and a battery pack to allow easy scanning and mobility. The scanner was tested and proven to work very well both underground and above ground. The next task was to make the scanner versatile, so it can be mounted on any type of moving vehicle. I designed a mounting piece for the scanner which allowed the scanner to be mounted on any vehicle. The scanner is on sale and is the main product of the company right now.

Versatile 3D Scanning System equipped with live mapping:

Designed and developed a scanning system similar to the one before. Unlike the one listed above, this scanning system is be able to provide the user with a live map as the scanner scans an area. It also comes with a larger battery which allows the scanner to last longer with each charge. With a sliding piece on the top, the scanner is protected from getting scratched.

3D Tube Scanner:

I designed and developed this Scanner specifically for small and hard to access holes. Some of the wholes were as small as 7 cm in diameter. Keeping that in mind and considering the safety of the scanner, I came up with a couple of designs. The design that we decided on was the slimmest and versatile among the other designs. The Tube Scanner is currently under development.

3D Puzzle:

I designed and 3D printing a sliding puzzle using AutoCAD. The puzzle when put together properly represented our school’s mascot.

Rube Goldberg Machine:

Working in a team of two, we were given the task to build a Rube Goldberg machine that would be put on a shelf in the school hallway.