# Product Set Up and Completion

## Objective:

I built my final product to help ease a new generation of coders into learning computer science. Learning computer science is quite a daunting task, since its like learning a new language, but more complicated since you have to learn both the syntax and logic of the language. To make it easier for new comers I designed a language with english-like syntax so they only have to learn the logic of the code as beginners which is the more essential part of computer science.

## Methodology:

- **Materials:** The physical materials I used were limited to just a laptop. On the software side, the most important one I used was the Eclipse IDE for programming my language in Java. I used other articles for my research assessments to gain an insight into the process of developing and designing a language and the main elements of a language.
- **Description of Process and Procedures:** When I had started my final product, my vision for a product was different. I wanted to create a conversion program that utilised machine learning for converting natural language instructions into code. Alas I found no databases that could be used for training such a program. Thus I decided to implement my idea without machine learning. Making a programming language, with a pre-decided syntax. Thus I began researching the development and design of a programming language to design my own. After a meeting with my mentors, I also decided to prioritize the Graphical User Interface, as it would form an essential part of my goal - to help new coming programmers. If I didn't have a GUI, it would limit interactions with my program to remain only viable through an IDE, which went against my purpose. Next I focused on designing the language, to emphasize readability. I brainstormed the syntax and semantics of my language and eventually decided on it and designed the language. Next I began coding my language and the features of my language. I also learned about how to properly program such a large project to organise the code effectively. I went through, changing my code to be efficient and to account for any new problems I found due to the limiting nature of Java. Finally I tested and debugged my code to account for any minor errors and then converted my code to an executable.

## Utilization of Higher-Level Thinking Skills:

This Final Product allowed me to utilise various higher level thinking skills. Most importantly it allowed me to become more efficient at coding. This project was much larger than my Original Work, and required that much more problem solving and critical thinking. I encountered multiple problems during coding. I had to go through and debug my code thoroughly. This allowed me to learn the importance of patience and observation while coding. By rushing the process you only end up with more errors, and make the entire process longer for yourself. Through my research I utilised the skill of analysis to learn about the different elements of a programming language and how to design a programming language for specific purposes, such as readability, through the elements. I also then utilised the knowledge I gained through my research to design the syntax and semantics and implement them to make a language resembling english.

## Results:

I would consider my final product a success. I successfully built a programming language with a syntax designed towards making an introduction to programming easier for newcomers. I was able to implement primitive variables, strings, conditionals, loops and printing in my language. The very basics of a language. I wasn't able to implement an array structure, but if I continue with the language, that's the next programming structure I wish to implement.

## Conclusions/Interpretations:

When I had first thought of my product, I had hoped to make the product employ machine learning. Although I had to make some alterations to the design of my product along the way, I consider my product a complete success. Through this Final Product, I learned more about not only Natural Language Processing, but also about professional life as a programmer.