

# COS10009 Introduction to Programming

## Learning Summary Report

### Reflections

From this COS10009 Introduction to Programming unit, what I found challenging and interesting were the lab tasks. These tasks presented various problems that required various knowledge on different programming and mathematical concepts to solve. When I was faced with a problem that I could not solve, I would be required to learn more about the concepts regarding the problem from the Internet. Thus, I was able to learn various new and interesting things during the completion of these tasks. This also furthered my interest in my programming as I got to know and understand more about programming as a whole, and what it can be applied to.

When presented with new problems, I would try my best to figure out the best logical way to solve it. By first separating the problem in multiple smaller problems, I worked on these problems one at a time. With the help of my prior knowledge on programming and mathematics, I would think carefully about how each piece of code would lead to the desired output, and if it does not, what is wrong with it and how to fix it. Through much trial and error, I would end up with an algorithm that produces the desired result. During this process, various bugs and issues would appear, which I would have to debug with various techniques, such as using “puts” statements in parts of the code that were suspected to be the source of the problem. All this comes together during the process to solve problems and helps me figure out the best solution to a problem.

In the event that I could not figure out the solution for the problem, I would look up concepts and solutions online and see how others do it. I would try to understand their code and their logic, and afterwards I implement that logic into my code. In certain cases, from watching others code, I would be inspired and figure out a different kind of logic, which I proceed to try out and see if my logic was correct or not.

There were various new concepts that I learned from this unit. Prior to this unit, I have known about the basic programming concepts such as conditionals, loops and the like. But this unit delved deeper into how the code works with and manipulates memory. By using pointers, the code points to different parts of memory and obtains or changes the values within those parts of memory. Different data types also use the memory differently. Array items are stored in each individual memory slot and point to from one to another, instead of being stored entirely in one memory slot. This is rather interesting to me as I did not understand how programming was able to store data for variables and other functions.

During my exploration of the Internet to understand more about programming, I looked into video game programming. This was rather interesting to me as it applied real physics concepts into the video games, such as gravity, velocity, momentum. This allowed the objects to simulate physics and react accordingly. It was also interesting to see how these physics equations are applied in programming terms, and how it is used to manipulate the different objects. I also watched videos on programming of mathematical concepts, such as Conway’s Game of Life and pathfinding algorithms among other things. This is very interesting to me as it visualized these concepts and ideas and also reminded me how powerful a tool programming is, being capable of performing so many different functions.

I plan to look more into app development, as I have ideas and things I would like to try out and create. I also want to challenge myself and see how far is my capabilities in terms of programming. It also seems pretty interesting to publish my application online and see how users react to it. I could learn interesting new things and improve my code and workflow as time goes on and I get more and more feedback. To me, this seems like a good starting point before I venture out into more complicated concepts like machine learning, or IoT programming.

The logical thinking applied to programming can be used to help solve problems in other areas, such as mathematics or even real-life problems. Taking this step-by-step approach proved to be rather efficient and I think it is able to help me in my daily life, whether it be in learning or work. It also helps me to understand more about the problem at hand and how each “part” of the problem affects the outcome, and how the results come about. With this systematic approach to solving problems, I will be able to more efficiently solve problems and also understand more so as to not make the same mistakes in the future.

The programming concepts I learned in this unit can also be applied in other programming languages, which can hasten my learning of new languages. This is because most programming languages utilize the same concepts, which means that techniques and knowledge from one language can be used in another language. For example, most programming languages use the same “if else” statements for conditionals, and they also utilize “while” or “for” loops within the languages. This helps me program in different languages for different types of applications, without having to relearn the programming concepts.

## Self-Assessment

List of completed tasks:

- Pass Task 1.1 Hello World
- Pass Task 1.2 Reading and Writing (Hello User)
- Pass Task 1.3 Desk Check
- Pass Task 2.1 Name Tester
- Pass Task 2.2 Calculating Leap Year
- Core Task 2.3 Machinery Temperature Management
- Pass Task 3.1 Hello User with Functions
- Pass Task 3.2 Guess Number Game
- Pass Task 3.3 Music Player Menu
- Credit Task 3.1 Code Reusability / Eliminating Repeated Code
- Pass Task 4.1 Shape Drawing
- Pass Task 4.2 Gosu Cycle
- Pass Task 4.3 Shape Moving
- HD Task 4.4 Maze Creation
- Pass Task 5.1 Button Test
- Pass Task 5.2 Custom Program Plan
- Credit Task 5.1 Hover Button Test
- Pass Task 6.1 One Dimension Array
- Pass Task 6.2 Two Dimension Array
- Pass Task 6.3 Music Records
- Credit Task 6.1 Turtle Graphics
- Pass Task 7.1 Track File Handling
- Pass Task 7.2 Album File Handling
- Pass Task 7.3 Array Search
- HD Task 7.1 Maze Search
- Pass Task 8.1 Text Based Music Player with Menu
- Pass Task 8.2 GUI Music Player
- Distinction Task 8.1 Food Hunter
- Lab Test 1
- Custom Program