**Team Discussion: What is a Secure Programming Language?**

You should read Chapter 2,6,7,8 of the course text (Pillai, 2017) and Cifuentes & Bierman (2019) and then answer the questions below, adding them as evidence to your e-portfolio.

1. What factors determine whether a programming language is secure or not?
2. Could Python be classed as a secure language? Justify your answer.
3. Python would be a better language to create operating systems than C. Discuss.

Answers:

1. Software Architecture with Python by Cifuentes, C. & Bierman, G. (2019) tells us that programming languages have a few vulnerabilities such as buffer overflows and Integer or arithmetic overflow. These issues allow a hacker to overflow a buffer or an array and read an out-of-bound memory region, which might contain sensitive information such as credit card information or passwords. This information doesn’t have to be related to the application currently running. Instead, it could be related to another application. This is a big issue, and most security issues in programming languages can be traced back to buffer overflow. A secure language tries to prevent such events in its rules.

As of today there isn’t a secure programming language. The security of any application falls on the developer of the software.

1. While python does prevent a user from reading memory outside the boundaries of an array, the python runtime can still have a buffer overflow. This is because the runtime is programmed in a lower level language like C.
2. Python is a high-level language. High level languages are generally slower than lower-level languages like C and C++. Even C++ is considered to be a higher-level language than C. Not only is python a high level language it is also an interpreted language and not a compiled language. In order to write fast efficient code the language has to be compiled on the target machine and python does not compile to machine code which makes it not suitable for writing operating systems. Further more a low level language allows the programmer to take much higher control over the system memory which is very important when it comes to writing high performance applications.