What are some strengths and some weaknesses of C++, Python, and Java? Think back to the work you have completed using different programming languages in previous courses, along with your review of this week's resources, to help form your response.

**C++**

* **Weakness** –
  + It does not have support for threads
  + Does not have garbage collection features, makes it prone to memory leaks
  + Securities issues related to pointers and global variables
  + Pointers will cause system crash if not handled correctly
* **Strength** –
  + Speed and memory management
  + Easier to use over other low-level programming languages

**Java**

* **Weakness** –
  + Slower to compile and run that C++
  + Performance is handicapped during garbage collection
* **Strength** –
  + Platform independent so it can be ran on any platform with JRE installed
  + Supports multi-threading
  + Faster than Python
  + Easy to compile, debug
  + Learning curve is low
  + Object-Oriented which allows for modular programs and reusable code making it robust
  + Memory is divided into heaps and stacks and helps store information more easily

**Python**

* **Weakness** –
  + Slowest out of the three
  + Can have more runtime errors because of being dynamically typed
  + Rarely used in mobile app development
  + Database access layers are not as developed as Java
* **Strength** –
  + Very active community
  + Excellent when used as API servers
  + Free, open source
  + Very easy to learn
  + Easily used with other programming languages such as C++
  + High readability and reliability
  + Extensive support of library for countless purposes

What criteria would make a specific language better for a certain task? Select one of the following tasks, or another area you think of, to frame your response.

**Security** - Both Java and Python are considered secure languages, however, Java is more

secure in that is has more authentication and access control functions keeping web

applications secure. Java has bytecode which every time the code is compiled it creates a

class file which is then scanned by the JVM for malware and viruses. Python has

significant security measures itself but when compared to Java it falls short.

**Data Analysis** - Python is the language most used for data analysis as it has support for an

extensive list of libraries which makes it easy to process and manipulate data. It is well

supported which greatly so if any issues are encountered resolving them is quite easy or if

a user is needing help with data analysis it is readily available.

**Gaming** - C++ is the language most associated with game development. Of the three

programming languages C++ has the best control over hardware and graphical devices.

It’s speed and memory management help make it the best for gaming.