

# Assignment II

## Differences:

There are several differences between python and C++ program for the quicksort:

1. The python code is not compiled by g++ before running. Unlike the c++ code
2. Python datatypes are dynamic, meaning that we don't have to declare the datatypes before the variables
  - a. Eg. We didn't use 'int' before the declarations in python
3. The loops syntax is different
  - a. Eg: the for loop in C++ is something like `for(int I=0; i<x; i++){ }` while its python counterpart is something like `for x in range (0, x):`
4. Python really cares about the spacing and indenting (which makes sense because there are no brackets around the loops). C++, doesn't care
5. I used arrays in python but vectors in C++, I could have used arrays in C++ but it the debugging was very hard

## Advantages and disadvantages:

### Advantages of Python over C++

1. Python code is easier to create and modify. Debugging is also easier
2. Python is more readable than c++
3. Development in python is a lot faster because of python uses a lot less syntax to accomplish a given task
  - a. For example, passing the parameters in C++ requires explicit declaration of the datatype. This makes it less flexible (but makes it faster because everything is optimized)
  - b. Printing in c++ requires that datatypes be consistent or casting is done to ensure that the printing is consistent
4. Python is very intuitive for development. C++ has

### Advantages of C++ over Python

1. C++ memory management is a lot better and controlled than python
2. Although both C++ and python have inbuilt libraries for supporting development, I thought that the C++ documentation was better than the python ones
3. C++ has a better (and maybe larger) presence on online forums like Stackoverflow
4. C++ has namespaces

Bottom line is both are excellent languages to practice programming. Of course, they have advantages/disadvantages over each others. At the end of the day, the choice of language depends on the task itself: I'd chose python over C++ if I want to make something quick, lightweight and easy to make (something I'd want to make in no more than a day).

If I want to make something extremely fast and reliable, I'd definitely chose C++ over python. Of course it's a pain to set up C++ sometimes, and C++ requires a fair bit of understanding for memory management (the problems associated with this are sometimes overrated). Bottom line is C++ is faster:

# Assignment II

A large application that might involve several hundred thousand lines of code will see this difference aggregated up and by comparison divulge its python counterpart to be a joke in performance.

Optional bonus read:

Since this was an essay about programming languages, here's is an interesting image I found to try and make up for the lost late points (pls):

What if programming languages wrote essays?

