|  |  |  |  |
| --- | --- | --- | --- |
| Problem Domain | Language Selected and rationale for selecting the language | What about the language made it easy? | What about the language made it difficult? |
| Schedule Making | C++  The reason I selected the language C++ is because last semester I took a C++ class and wanted to practice it.  Also, since I am still relatively fresh with it using this language would be a bit easier. | What made it easy was the familiarity. Having some knowledge in C++ and the similarities in C++ to Java made programming easy.  To me it seems kind of hard to juggle multiple languages at the same time. Using languages that share things make it easier. | One thing that was a bit difficult is that since It is an object-oriented language, I needed to make my own sort function to sort the objects that I made. This was probably only a problem that I caused myself though because there were probably other ways to approach this problem that do not involve objects. Also, there might have been another way to sort the data where I could have used a sort function that takes a predicate and I just needed to create a predicate to allow the function to choose between 2 items to sort.  One problem that I find with C++ is that formatting the output for printing numbers is very difficult and cumbersome when compared to other languages like Java and Python.  In C++ we need to use width and precision operators while Java allows a much easier method for formatting numbers.  One example being that in Java we can just concatenate a number to a string but C++ does not allow that.  Also, for the sort I needed to remember to pass references and not copies so the sort actually happened. |
| Reporting | Java  The reason I selected is because I have solved similar problems that involve reading in data and reporting on it before in Java. | From the languages I have learned so far Java seems to be really convenient for reading in data from files.  Also formatting strings is very simple with Java.  Also, with my knowledge of the language I was able to make improvements.  The first version of the program made use of arrays. I was able to use my knowledge of Array lists though to swap out the two data structures and that cut out a lot of unneeded lines and made the code easier to understand. | One thing that was a little annoying was that I needed to make my own sort to deal with the objects I made.  Like with the C++ program though I do wonder if there is a sort function that accepts a predicate that I could have used.  Other than that, I personally do not think I had much issues because of the nature of the language. |
| Sorting | Python  The reason I selected Python is because I am currently taking a Python class and wanted to practice with it.  Also, last semester I had an interesting idea for a sort function and though this lab would be a good opportunity to try it out. | Since I was experimenting with this program, I found Pythons dynamically casted language very convenient.  This meant that I did not need to keep specifying what type of data each variable was.  Also, since I wanted to compare my sort to normal selection sort it was very convenient that Python had access to a plotting library.  I do not really know how to plot in any language so this was a really convenient way.  This made it so I could show my results in a visually appealing way.  Also, a lot of the commands are simpler in python than compared to other languages so that made experimentation really easy. | The main thing that made my experimentation very difficult was how python groups together lines of code with indentation.  This is unlike Java or C++ where lines are grouped with curly braces and indentation is purely for aesthetic reasons.  This in and of itself would not have been an issue but it became a problem when I needed to move code around.  In Java or C++, you can just copy and paste code to move it around.  All you need to do is make sure it is in the correct pair of curly braces.  In Python though when I try to move code around though pasting the code into an indented block will ruin the indentation in had for itself.  For example, after I got my sort working, I wanted to copy and paste it into a for loop.  That was because I wanted to test my sort with arrays of different sizes and log the results.  When I did so though the indentation of my sort was ruined and I got a lot of errors.  To fix it I had to rewrite the whole sort inside of the for loop.  This was quite tedious and annoying.  So far, I am unaware of a better way to do this but I can say that Python would benefit from another method than indentation to group lines of code together.  I find myself often copying and pasting code to move it around so I will need to find a more efficient solution than writing the code again.  Another problem that I had with this code was how Python handles for loops.  Python decides how many times it will loop the first time it comes across the for loop.  This is different from Java which does a check each time and allows for manipulation of the loop counter.  While not a big issue it did take me a while to figure out this problem while I was debugging. |
| Problem Solving | Python  In addition to taking a Python class this semester I am also taking an AI class.  In that class we are also using Python.  The professor told us that the reason we are suing Python is because it has access to many useful libraries that help with artificial intelligence. | Again, what made it easy was the dynamic type casting.  This made it so that I could experiment very easily.  I could make variables quickly and not need to worry about what they needed to be.  This allowed me to focus more on the concepts and the bigger picture than the small details.  While I do find static typing useful, I do think that dynamic typing is useful for experimenting.  After the code work you can then explicitly show define each variable.  I think that would be an interesting feature to add to python.  If you do not specify what type you want a variable to be make it dynamic.  But if you do make it static.  This would allow for clarity when looking at completed code and leave the flexibility given when making code. | Again, here the indentation caused me a bit of trouble but not as much as during the previous program.  Overall, I would not say that Python itself gave me much trouble with this program.  Most of the trouble came from me trying to figure out how to solve the problem. |
| Web Development | Java Script  Over the Winter Break I took part in a JavaScript boot camp which is why I decided to use Java Script. | I honestly do not think there is anything about Java Script or HTML that makes it easy. | A lot of things make this language difficult. While the program I made is relatively simple it took a lot of work for me to make it.  I needed to look up a lot of resources to get it tie work properly.  One thing that also makes web development difficult is that to make this code and upload it properly requires a lot of use of the command line.  I am not very experienced with command line so that was quite difficult.  Also, the use of nodes makes the programs take up a lot of memory.  Once during the boot camp when I was trying to run a program that was working perfectly the previous day it caused my computer to crash for two whole days which was especially frustrating considering we live in an online learning environment due to Covid. To be honest that is probably the biggest reason as to why I am a bitter with this language. Even without that I would still say that it is a very difficult language and not user friendly at all.  To give this language a fairer critique though I would probably have to start learning it again from the beginning and at a slower pace than the boot camp. |