

## Essay - Assignment 6

For this assignment, you will write a longer paper; the exact length is up to you, but I expect roughly 4-5 pages for most. I will expect at least 3 sources beyond your textbook, with proper citations for relevant facts from those references. Of course, for this assignment, you are welcome to use web or book resources of any type; just be sure to use reputable sources and include them in your bibliography. For this assignment, I am also expecting you to include some sample code to justify your answers to the questions; please be sure to cite any references you use for this code, but please also make sure these examples run and are correct!

Experiment with a new programming language - examples might include (but are NOT limited to) matlab, mathematica, Icon, Ruby, C#, Fortran, Pascal, Perl, Ada, BASIC, Cobol, Lisp, Miranda, Magma, Processing, PHP, SML, scheme, smalltalk. (Note: Some of these are available freely, but others are not, so you might want to look around for a bit before deciding.) The only languages specifically forbidden for this assignment are C, C++, Java, and Python, since you are quite familiar with those after the classes in our major here.

Investigate the features of the language, both through the documentation and writing your own code. Is the language compiled or interpreted? Does the language use lexical or dynamic scoping? Can scopes nest, and are they open or closed? Does scope encompass an entire block where it is declared? How are recursive subroutines declared and used? Investigate order of evaluation - is it left to right or right to left? Does the language have short circuit boolean evaluation, or a true boolean type? Is the language dynamically or statically type-checked, and is it strong or weak type-checking? Does the language use any coercion or type-casting functionality, and how is polymorphism incorporated (if at all)?

Note that you don't have to address all of these - some aren't even relevant for all languages. My goal is simply to get you to investigate the issues we covered in chapters 3, 6, and 7 in more depth. Be sure to back up your answers, either through relevant and legitimate sources or through examples you devise to test this yourself.