Lab 3 Report

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**A description of the objectives/concepts explored in this assignment including why you think they are important to this course and a career in CS and/or Engineering.**

1. Operator Overloading
   1. Operator overloading allows for more readable / easier syntax for basic operations. By default, C++ may not handle basic operations with classes in the way that may be intended for the class, so overloading them allows for us to correctly implement them.
2. Private variables and Accessors and Mutators
   1. Instance members are an important part of class structure, and correctly using them with OOP standards is vital to good class design. Theoretically, all classes should implement good practices with access modifiers even though this may not always be possible in the real world.
3. “This” pointer
   1. The this reserved word is very good to use for readability. Often, parameters’ names be like existing instance variables, and the this pointer can easily show which variable is trying to be accessed. This word can also help avoid variable naming pollution.
4. Constructor overloading
   1. Constructor overloading can be extremely helpful in many cases. Especially, when classes are designed to be relatively light. The ability to generate objects from different pieces of information really allows them to be used to their fullest potential and allows easier implementation.

**Why you designed the class the way you did initially, what changes you made because of each task and what considerations you consider important when designing classes.**

Initially, we started off with a very small class of just the accessors, mutators, constructors, print member, and operator overloads; all things we initially knew we would need. We implemented them and moved on to task 3. We got a little tripped up on the polar coordinates, mostly because we hadn’t dealt with them in so long, and there were a few different formulas online. Eventually, we figured out one that worked, and implemented the constructor. We then moved on to task 4 and wrote main to house the main loop for the program, which was simple enough. We presented it to the TA and he asked us to add functionality to display an imaginary number in polar form, so we added a print imaginary function, and added “polar” option in the available operations.











