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Data Structures (CS 2028C)

Lab 3

Rationale for Class Members

The members used in my ComplexNumber class are two double variables, myX and myY, and a bool called isCartesian. The doubles represent the x and y components of a number in Cartesian form, and they can be used to calculate the phi angle or r value for the polar form. They are doubles to allow for values with decimal points. The bool, isCartesian, simply keeps track of whether or not the instance of ComplexNumber is representing Cartesian form or not. There are three constructor members – a default constructor, accepting no arguments, a constructor accepting two double argument, and a third constructor accepting two doubles and a bool value. The constructor with three arguments allows the user to explicitly declare the ComplexNumber Cartesian or not using the bool parameter. There are getter and setter methods for the private member variables myX and myY. There are two additional getter methods for the r value and angle phi value, necessary for outputting a ComplexNumber in polar form. Next, there is the printValue function and the five overloaded operator methods.

Changes Made to Class Declaration

Overall, there were no changes needed in the declaration file during task 2 or 3, other than adding the methods to return the r and phi values for polar complex form.

Screen shot showing the output of all operator overload functions.

