**EE150 Project Prof. David Kuijt**

**Project: ADT for Complex Numbers**

**Due: Friday December 11, midnight**

**Project Descriptions:**

1. Define an ADT for complex numbers

* The internal state of a complex number should be presented by a double precision floating point value for the real part and a similar floating point value for the imaginary part.
* Implement two constructors. The default constructor takes no arguments. A constructor with two double precision arguments sets both fields.
* Define a pair of member functions to return real and imaginary part of the complex number.
* Define arithmetic operations of addition, subtraction and multiplication.

2. Based on the ADT developed above, write a main program to read in two complex numbers, calculate the sum, difference, and product of two numbers. Write two functions to calculate and display

* The absolute value of a complex number
* The square root(s) of a complex number.

**Notes on complex number operations:**

To find square roots of a complex number :

(1) if both a and b are 0, only one square root, 0.

(2) if only b is 0, then we will have two real square roots, and − if a > 0; or we will have two imaginary square roots, and − if a < 0.

(3) if b is not 0, we have two roots and :

Where , i.e., the absolute value of a complex number.

**Project Requirements:**

* 1. The program must be properly indented and documented.
  2. When submitting your project, please submit an archive of your entire project directory (i.e., complexADT.tar.gz)
  3. Grading guideline:   
     -- Correctness 60%

-- Coding conventions, documentation, and style 20%

-- Tests (Diversity, Correct formulation, and Documentation) 20%