

Homework 1

Java Programming on Eclipse

Due Monday, October 1, 2012

1. Problems:

Develop a Java class `Complex` on Eclipse Java development environment. The specification of the class `Complex` is as follows:

```
class Complex {
    private double re;
    private double im;
    public Complex();
    public Complex(double r, double i);
    public Complex add(Complex c);
    public Complex sub(Complex c);
    public Complex mul(Complex c);
    public Complex div(Complex c) throws ZeroDenominatorException;
    public boolean equal(Complex c);
    public String toString();
}
```

Each object of class `Complex` contains two fields: the real part of the complex number `re` and the imaginary part of the complex number `im`.

There are two constructors. The constructor `Complex()` creates an object of class `Complex` and initializes both `re` and `im` to zero. The constructor `Complex(double r, double i)` creates an object of class `Complex` and initializes `re` to `r` and `im` to `i`.

The methods `add(Complex c)`, `sub(Complex c)`, `mul(Complex c)`, and `div(Complex c)` performs operations: addition, subtraction, multiplication, and division between the object itself and the complex number `c` and returns the resultant complex number. For method `div(Complex c)`, the `re` and `im` of `c` cannot both be zero. If this is the case, then the exception `ZeroDenominatorException` is thrown.

The method `equal(Complex c)` checks if the object itself is equal to the complex number `c`.

The method `toString()` represents the object as a `String`. For an object with `re` 2.0 and `im` 3.0, the object is represented as `"(2.0 , 3.0)"`.

You don't have to write a main method in this homework.

2. Handing in your homework:

You should upload a compressed file `hw1.zip` that contains the package that contains the source class to the eCourse website.