

# INTRODUCTION TO COMPUTER SCIENCE I

## LAB 2

### Absolute Values and Leap Years

## 1 Getting started

First, **login to one of the college servers** (`remus/romulus`) using your X11 Windows Server (`XQuartz/VcXsrv`). See Lab-1 if you're forgotten how to do that.

Next, **get some source code** into a new directory for this lab by using the following commands at the shell prompt:

```
$ mkdir lab-2
$ cd lab-2
$ wget -nv -i https://bit.ly/COSC-111-lab-2-source
```

If you list the files in your directory (`ls -l`), you should see two Java source code files: `AbsVal.java` and `LeapYear.java`. We will work with each of these in turn.

## 2 Your assignments

### 2.1 Calculating an absolute value

Open the source code for this program in *Emacs* (and don't forget the trailing ampersand!):

```
$ emacs AbsVal.java &
```

The source code that you will see will contain only part of the program. Specifically, the existing code will prompt the user to enter a number, and will then read that number and assign it into the variable `f`; at the program's end, it will print the value of `f`. In between, **you must write the code that insures a non-negative value for `f`**, thus making what is printed in the last step the absolute value of what was entered by the user.

As usual, be sure that each time you change the source code and want to test it, that you...

1. **Save** your changes in *Emacs*.
2. **Compile** your new source code:  

```
$ javac AbsVal.java
```
3. **Run** the new version of the program (*if* the compilation completed without errors):

```
$ java AbsVal
```

## 2.2 Determining a leap year

Next, open the other source code file:

```
$ emacs LeapYear.java &
```

The existing code does only the simple job of prompting the user to enter a year, and then assigning the user's entry into the variable `year`. From there, your code must determine whether the year entered is a leap year, based on the following rules: *A given year is a leap year if it is divisible (i.e., with no remainder) by 4, but not by 100, except if it is by 400.* Thus, running the program and providing the following year numbers should yield the following results:

```
$ java LeapYear
Enter a year: 2016
Yes, every 4th
```

```
$ java LeapYear
Enter a year: 2019
No, not a 4th
```

```
$ java LeapYear
Enter a year: 2100
No, not every 100th
```

```
$ java LeapYear
Enter a year: 2000
Yes, every 400th
```

## 3 How to submit your work

Submit your `AbsVal.java` and `LeapYear.java` files using the `cssubmit` command, like so:

```
$ cssubmit AbsVal.java LeapYear.java
```

You may also access the CS submissions systems through your web browser at the submission system web page at [www.cs.amherst.edu/submit](http://www.cs.amherst.edu/submit) where you can check whether and when you have submitted work for each assignment. Note that **you may submit work multiple times**; each submission is separately logged, and I will grade the most recent submission for each assignment.

**This assignment is due on Thursday, Feb-14, 11:59 pm.**