CMPS 12A
Introduction to Programming
Winter 2013

Programming Assignment 1

In this assignment you will write a java program that will interact with the user by taking input from the keyboard, performing some simple calculations, then printing its output to the screen. Program input will consist of five numbers: the length and width of a rectangular lot, the length and width of a rectangular house situated on that lot (all linear distances are measured in feet), and the rate at which a lawn on that lot will be mowed (measured in square feet per second.) Assume that all area not occupied by the house is covered by grass. The program will print out two quantities: the lawn area (in square feet), and the mowing time (in hours, minutes, and seconds, rounded to the nearest second.) The Java commands that get user input, do the necessary calculations, and print the output, will be discussed in class. See the example Area.java on the class website for an illustration of some of these commands.

A sample run of your program will appear as follows.

```
Enter the length and width of the lot, in feet: 150 250
Enter the length and width of the house, in feet: 100 75
The lawn area is 30000.0 square feet.
Enter the mowing rate, in square feet per second: 4.5
The mowing time is 1 hour 51 minutes 7 seconds.
```

Notice that the program interaction is both informative, and grammatically correct. The first line prompts the user for the length and width of the lot. At this point program execution pauses while the user enters this data. The user may enter the two numbers separated by a space, followed by the return key, or the user may follow each number with a separate return. The length and width of the lot are then stored in variables of type double. Likewise for the length and width of the house. The program then calculates the area of the lawn, and prints that quantity to the screen. The next line prompts the user for the mowing rate, which is then stored as type double. The mowing time is calculated, and printed in the form of three integer quantities: hours, minutes, and seconds, rounded to the nearest second. Notice that the words "hour", "minute", and "second" are properly pluralized. Thus if the quantity is a single unit, there is no "s" at the end of the unit name, while for non-unit quantities (including zero), the unit name ends in "s". This is illustrated in the following example.

```
Enter the length and width of the lot, in feet: 100 75
Enter the length and width of the house, in feet: 50 41.96
The lawn area is 5402.0 square feet.
Enter the mowing rate, in square feet per second: 2
The mowing time is 0 hours 45 minutes 1 second.
```

It is not required that your program check the input for logical consistency, such as whether or not a house of the given dimensions will fit on the lot, or even whether or not the input quantities are positive. Such checks may be required in future assignments.

Your source code file for this project will be called lawn.java. Note that in all projects (for both 12A and 12L) source file names are not optional, and points may be deducted for misspellings. Thus "Lawn.java", "LAWN.java", and "prog1.java", are all incorrect. Your program will include the standard comment block described in lab1.

```
/*  file_name.java
 *  your name
 *  your user name
 *  assignment name
 *  a (very) short description of the program
 */
```

Other acceptable forms of the comment block would be

```
/************************************************************
 *
 *  file_name.java
 *  your name
 *  your user name
 *  assignment name
 *  a (very) short description of the program
 *
 ************************************************************/
```

or

```
////////////////////////////////////////////////////////////
//
//  file_name.java
//  your name
//  your user name
//  assignment name
//  a (very) short description of the program
//
////////////////////////////////////////////////////////////
```

What to turn in

Submit the file `lawn.java` to the assignment name `pa1`. Thus your submit command will be

```
% submit cmps012a-pt.w13 pa1 lawn.java
```

The "%" above represents the unix prompt, and it is not typed. Start early and ask questions if anything is unclear.