CSCI 200 – Programming Project 1

Due 2/10/16 by 5:00pm

This assignment is designed to strengthen your understanding of some basic Java programming concepts from Chapter 1 and some of Chapter 2. This assignment is to be done **individually**. It is due by the beginning of class on that day – no exceptions. Make sure that all the work you submit to me is professional looking. Both hard and soft copies of this assignment will be turned into me by the due date and time or you will receive a zero! Soft copies will be submitted to blackboard by the due date above. Hard copies will be turned in at the beginning of class on the due date to the instructor.

What I expect for the softcopy of this assignment:
You will submit your code for this programming project on Blackboard under Programming Project 1 when complete (just attach the **.java** file and the **screenshot** of the output) and include the code discussion (described below) in the comment section of the submission page.

What I expect for the hardcopy of this assignment:
There is no hard copy requirement for this assignment other than the Assignment 1a that was due on 2/8/16 by 2:30pm to the folder outside of my office.

Programming Project

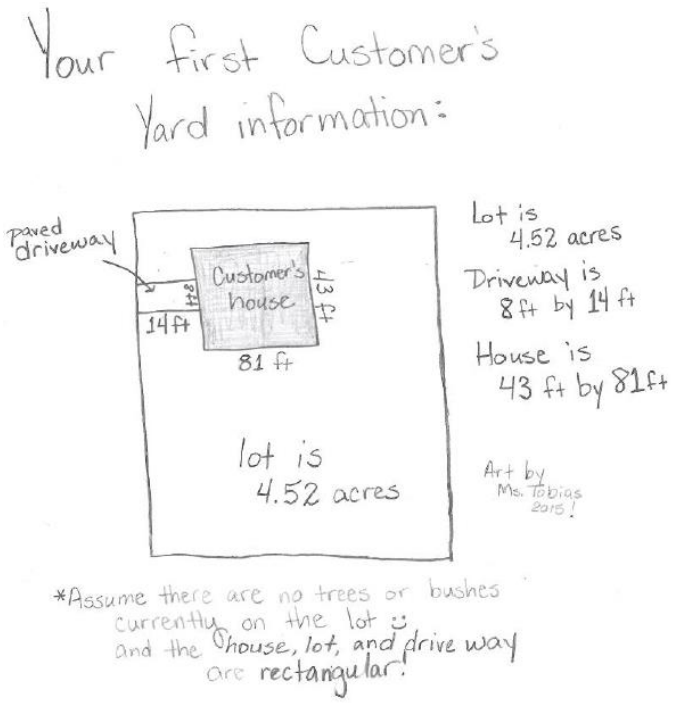
(You will submit the code for this program and screenshot to blackboard). Use jGrasp and create a Java file named *YourName*_Java_Assignment1.java. Once you complete the project you will take a screenshot of the output and name that *YourName*_screenshot_Assignment1.jpg which should show the output console with the results of your running code for credit. Both files (screenshot and java) should be attached and submitted through blackboard.

Program Assignment Description

You have decided to start your own lawn care service for the local community. As with any new company, you must think of a professional-sounding name and slogan (Yes, you get to be creative here – keep both professional and short).

Create a program that calculates the amount of time (in minutes) that it will take you to cut a customer's lawn given the dimensions of the lawn and house that sits on the lawn. This program will also calculate and display the payment due after you have rendered this service. (Much like a receipt!)

You even have your first customer lined up. They have provided the dimensions of their yard and house to you below, as well as a diagram on the layout of the lot.



The program begins by displaying the company's logo. Display the name of your lawn care company inside a box made up of the characters = and |. Beneath the boxed-name, display your company's professional slogan (remember to keep this short) enclosed in quotation marks.

After the logo is displayed, print a blank line to separate the company's logo and the rest of the output. Compute the time required (in minutes) it will take you to cut the grass assuming that you cut the grass at a rate of 2.56 square meters a second. Also, calculate the payment due to your company knowing that you make $21.35 an hour. Both of these values should be constants (use correct naming conventions) in your code. Display these results exactly as follows with the blanks filled in using variables (not hardcoded) and including tabs:

Total yardage: _____ **square meters**
Yardage mowed: _____ **square meters**
Total time of service: _____ **minutes**

At a payment rate of $__ an hour for this service, the payment due is around $_____.

It is important to note that the units provided by the customer are standard units of measurement used commonly in describing such dimensions. The metric used in your program to calculate time is concerned with square meters, so you may find the following information useful:

1 acre ≈ 4046.856 square meters (m^2)
1 foot ≈ 0.305 meters

All calculations MUST take place within the code for credit. Leave floating-point numbers **doubles** throughout your calculations to preserve accuracy. The payment due should be calculated as a **double** but displayed as an **integer**! Total yardage is amount of the whole yard, while Yardage mowed is just the portion of the yard that has grass (You should not mow the house or driveway!). Make the rate at which you mow and payment rate constants, since those values will not change throughout your code, and use those constants in your calculations.

Your output should look exactly like the following (with exceptions to variations in the logo):

```
|=========================|
| Tobias LawnCare Service |
|=========================|
 "You grow it, we mow it!"

Total yardage:          _________ square meters
Yardage mowed:          _________ square meters
Total time of service:  _________ minutes

At a payment rate of $__ an hour for this service,
     the payment due is around $_______.
```

The following is the output of my program for this assignment if you would like to check your numbers ☺

```
----jGRASP exec: java LawnServiceHW

|=========================|
| Tobias LawnCare Service |
|=========================|
 "You grow it, we mow it!"

Total yardage:          18291.789119999998 square meters
Yardage mowed:          17957.364244999997 square meters
Total time of service:  116.90992347005206 minutes

At a payment rate of $21.35 an hour for this service,
        the payment due is around $41.

----jGRASP: operation complete.
```

<u>Code Discussion</u>: In the comments section on blackboard (where/when you submit the code), please include a brief paragraph discussing any issues that you encountered and measures that you took to correct them. Also, discuss anything that you learned from this assignment and confusion (if any) that you may still have on the material that we have addressed. This is also *<u>required</u>* for full credit on the programming portion of the assignment.

You will be <u>required</u> to have a comment block header and use comments throughout your code to explain your reasoning.

The comment header should include the following information: program name, course name and section number, author (this is your name), due date, and a brief description of the program.

It should look something like the one I used for our HelloWorld.java example:

```
/**********************************************************************
      Program:      HelloWorld.java
      Course Info:  CSCI 200, section 001/002/003
      Author:       Nicole Tobias
      Date:         1/31/2016
      Description:  This program demos a basic HelloWorld program
                    for Java
**********************************************************************/
```

Suggested layout:

```
/*Place header comment block here*/
public class YourName_Java_Assignment1
{
      public static void main(String[] args)
      {
            //variable declarations

            //execution statements and output statements
      }
}
```

Code will be graded on its readability, style, and clarity as well as its ability to display the proper results.

Do not turn in useless/wasteful code! Make sure that what you turn into me is final presentation quality.

Good luck!! -Ms. Tobias