ECE 2036 Spring 2014

**Lab 1: Garden Gnome Gripe**

*Assigned: January 13, 2014 Section B: Due January 23, 2014*

 *Section A: Due January 24, 2014*

In this lab we will be creating a C++ class, and two objects of that class. Classes can be used to represent anything: cars, gradebooks, students, professors, or in this case, garden gnomes.



Fig 1. A garden gnome.

You will help create the class GardenGnome. Your class will have two private data members: gnomeName and gnomeHeight. Your class will also have several public member functions for manipulating objects of the class: setName(string), setHeight(double), getName(), getHeight(), and inputHeight(). In addition, your class will have a constructor with a single string parameter. The constructor should set the name of the gnome equal to the string parameter, and initialize the height of the gnome to zero.

In the main() function of the code, you should create two instantiations (objects) of GardenGnome, with object names gnome1 and gnome2. The gnomeName of gnome1 should be set to “Michael” and the gnomeName of gnome2 should be set to “Melissa”. The code should then prompt the user to input the height of each gnome, by name, in inches. This should appear on the screen as:

Please enter the height of gnome Michael, in inches: 4

Please enter the height of gnome Melissa, in inches: 5

After the height of both gnomes has been entered, your code must correctly determine which gnome is taller or if they are of equal height. It must output this result to the screen as:

Michael is shorter than Melissa

the code then exits.

**Detailed Lab Programming Requirements**

Your code must include the following:

1. A constructor for class GardenGnome that accepts a single argument, a string, that must be copied into gnomeName. The constructor must also initialize the value of gnomeHeight to zero.

2. Member functions of class GardenGnome to set and get the values of gnomeName and gnomeHeight.

3. A member function of class GardenGnome which prompts the user for the height value and sets gnomeHeight accordingly, as shown above.

4. In the main() function, the code must instantiate two objects of class GardenGnome, and set their gnomeName strings appropriately. The main() function must then call member functions of GardenGnome in order to prompt the user to input the height of each gnome. Finally, the main() function must call member functions of GardenGnome in order to test which gnome is taller or if they are of equal height, and output the result.

You must use the skeleton code given to you in class as the basis for your code. As part of this lab, it is your responsibility to manually type in this skeleton code. Do not copy this from another source! There are various places in the code where the comments indicate an intentionally placed syntax error or missing code. You should correct the errors so indicated, and insert more code where indicated in order to ‘flesh out’ the skeleton and obtain the functionality delineated above. Modify and complete the skeleton code only as indicated in the skeleton code comments.

As shown in the skeleton code, you will include implementations of the member functions outside the class definition. However, your entire code can be contained in a single file. (In the future, implementations will generally be contained in separate files.)

**Sample output from completed code**

Please enter the height of gnome Michael, in inches: 5

Please enter the height of gnome Melissa, in inches: 10

Michael is shorter than Melissa

Please enter the height of gnome Michael, in inches: 7

Please enter the height of gnome Melissa, in inches: 3

Michael is taller than Melissa

Please enter the height of gnome Michael, in inches: 8

Please enter the height of gnome Melissa, in inches: 8

Michael is equally tall as Melissa