Name: _____

Programming Assessment 2
CMP 326: Programming Methods II
Lehman College– CUNY
28 October 2010

Problem 1	15	
Problem 2	20	
Problem 3	15	
Total	50	

Directions:
• **Include your name (as a comment) in your solution to each problem.**
• **Submit each solution on Blackboard, under "Programming Assessment 1" in Assignments.**
• **Submit .java files only.**
• **Password on Blackboard:** Polymorphism

1. Using the **ArraySorter** (from the zip files on Blackboard or the textbook), implement the **gnome sort** of Sarbazi-Azad and Grune.

   "The algorithm always finds the first place where two adjacent elements are in the wrong order, and swaps them. It takes advantage of the fact that performing a swap can introduce a new out-of-order adjacent pair only right before or after the two swapped elements. It does not assume that elements forward of the current position are sorted, so it only needs to check the position directly before the swapped elements."

   ```
   procedure gnomeSort(a[])
       pos := 1
       while pos < length(a)
           if (a[pos] >= a[pos-1])
               pos := pos + 1
           else
               swap a[pos] and a[pos-1]
               if (pos > 1)
                   pos := pos - 1
               end if
           end if
       end while
   end procedure
   ```

   (Description and pseudocode from `http://en.wikipedia.org/wiki/Gnome_sort`.)

2. Write a new class **Friend** that extends the **Person** class (from the zip files on Blackboard or the textbook). Your **Friend** class should store the email (as a string) and phone number (as a integer), in addition to the attributes of **Person**. Include methods to construct a new friend, access and mutate (i.e. "get" and "set" methods) for the two new attributes, as well as override the **writeOutput()** method to print out the additional information as well. Include a driver program that demonstrates your new class.

3. Write a program that asks the user for two numbers, and divides the first by the second. Using exception handling, gracefully handle any divisions by zero.