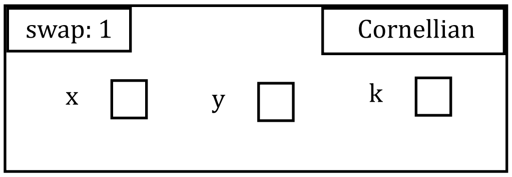
Sample answers to CS1110 Prelim 1, Spring 2008 Lillian Lee   ljl2

1. (a) **int** temp= b; b= c; c= temp;

1. (b) The four kinds of variable are:
(1) parameter (declared within the parentheses of a method header)
(2) local variable (declared within a method body)
(3) instance variable or field (declared within the a class body)
(4) static or class variable (declared with attribute **static** within a class body).

1 (c). It is not possible to write such a procedure. When a frame for the given call is created, the *values* of b and c (or c and b) are stored in parameters x and y, and b and c cannot be referenced in the method body. Drawing the frame for the call, as shown in part 1(d), should give you insight into this issue.

1(d).



2. (a)

```
/** Instance maintains info about a Cornellian */
public class Cornellian {
   private String name; // this student's name

   private static int nextID= 0;

   /** Constructor: a Cornellian with name name */
   public Cornellian(String name) {
      this.name= name;
   }
/** = String repr. of Cornellian, giving just the name */
   public String toString() {
      return name;
   }
}
/** An instance maintains info about a student */
public class Student extends Cornellian {
   private double gpa; // student's GPA

   /** Constructor: a student with name n and GPA g */
   public Student(String n, double g) {
      super(n);
      gpa= g;

   }
   /** = this student's GPA */
   public double getGPA() {
     return gpa;
   }

   /** = "this student has GPA >= 3.5 */
   public boolean isOnDeansList() {
      return gpa >= 3.5;
   }

   /** = a representation of this student. Form:
      student's name, followed by " Dean's List" if this
      student is on the Deans List. */
   public String toString() {
      return super.toString() +
         (isOnDeansList() ? " Dean's List" : "");
   }
}
```

3. **(a)**

```
/** = a unique positive integer. (Every call on
            incrementId gives a different integer).   */
   public static int incrementId() {
      nextID= nextID + 1;
      return nextID;
   }
```

4. (b) **int** v= Cornellian.incrementId();

4.

```
/** = a netid for name s. Precondition: s has the
      form given in the box above and to the right on
      page 3 of Prelim I.*/
public static String netId(String s) {
      s= s.trim().toLowerCase();
      int k= s.indexOf(",");
      String lastName= s.substring(0,k).trim();

      // Assume middle name is missing
      String firstName= s.substring(k+1).trim();
      String middleName= "";

      k= firstName.indexOf(" ");
      if (k > 0) {
         middleName= firstName.substring(k).trim();
         firstName= firstName.substring(0, k);
      }

      return "" + firstName.charAt(0) +
         (middleName.length() > 0 ?
               middleName.charAt(0) : "") +
         lastName.charAt(0) +
         incrementId();
}
```