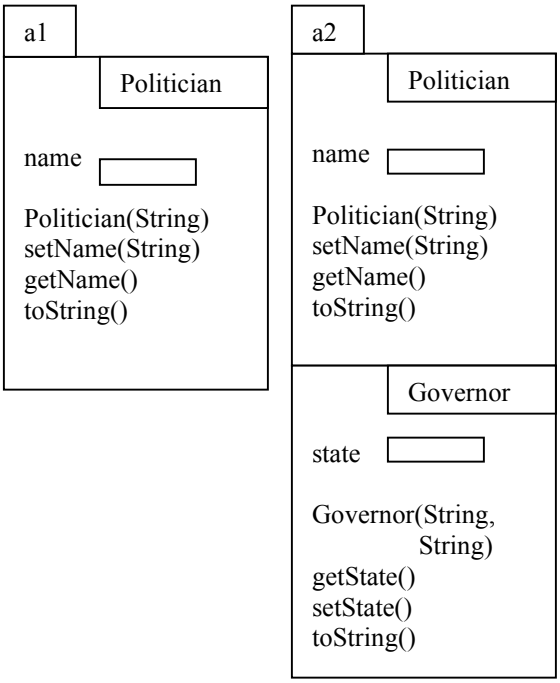
Answers to Prelim 1. CS100J, Spring 2006 David Gries djg17

1. (a) A non-static method is a component of every instance of the class. A static method does not go in each instance; there is one copy of it, in the class's file drawer.
(b) There are 4 kinds of variable: non-static variable (field) defined in a class, static variable, parameter, and local variable. The scope of non-static variable is the body of all non-static methods in the class. The scope of a static variable is the body of all methods defined in the class (static or non-static). The scope of a parameter is body of the method for which it is a parameter. The scope of a local variable begins at its declaration and ends at the end of the block in which it is declared.
(c) A parameter is a variable that is declared in the header of a method.
(d) **false**, "error", **false**.

2.



3. (a) The superclass of Politician is Object.
(b) toString()
(c) toString()
(d) **false**, **false**
(e) 1. Draw a folder(object) of class Governor.
2. Store the folder in Governor's file drawer (you can leave this step out).
3. Execute the constructor call
Governor ("Arnold", "California");
4. Yield as the value of the expression the name of the new folder.

To execute the assignment, evaluate the expression and store its value in variable g.
(f). "politician Arnold the governor of California"

4 (a).
```
/** An instance is a President */
public class President extends Politician {
   int months; // number of months in office
   /** Constructor: a President with name n
         and m months in office
         Precondition: 1 <= m <= 8*12*/
   public President(String n, int m) {
      super(n);
      months= m;
   }

   /** = the term of this President */
   public int getTerm() {
      return (months<= 4*12? 1 : 2);
   }

   /** = String rep of this President */
   public String toString() {
      return super.toString() +
         ", president for " + months + " months";
   }

}
```

4 (b).
```
public void testX() {
    President p1= new President("G", 2);
    President p2= new President("H", 48);
    President p3= new President("I", 49);
    assertEquals("G", p1.getName());
    assertEquals(1, p1.getTerm());
    assertEquals(1, p2.getTerm());
    assertEquals(2, p3.getTerm());
    assertEquals("politician G, president for 2 months",
                 p1.toString());
    assertEquals("politician I, president for 49 months",
                 p3.toString());
}
```

5.
```
/** See prelim 1 for specification */
public static String english2PigLatin(String s) {
     int i= indexOfFirstVowel(s);
     if (i == 0)
        return s + "hay";
     if (s.charAt(0) == 'q')
        return s.substring(2) + s.substring(0,2) + "ay";
     return s.substring(i) + s.substring(0,i) + "ay";
}
```