Changing People

The file *ChangingPeople.java* contains a program that illustrates parameter passing. The program uses *Person* objects defined in the file *Person.java*. Do the following:

1. Trace the execution of the program using diagrams similar to those in Figure 6.5 of the text (which is a trace of the program in Listings 6.15 – 6.17). Also show what is printed by the program.
2. Compile and run the program to see if your trace was correct.
3. Modify the *changePeople* method so that it does what the documentation says it does, that is, the two Person objects passed in as actual parameters are actually changed.

```
// ********************************************************************
//   ChangingPeople.java
//
//   Demonstrates parameter passing -- contains a method that should
//   change to Person objects.
// ********************************************************************

public class ChangingPeople
{
    // -----------------------------------------------------------
    //  Sets up two person objects, one integer, and one String
    //  object.  These are sent to a method that should make
    //  some changes.
    // -----------------------------------------------------------
    public static void main (String[] args)
    {
      Person person1 = new Person ("Sally", 13);
      Person person2 = new Person ("Sam", 15);

      int age = 21;
      String name = "Jill";

      System.out.println ("\nParameter Passing... Original values...");
      System.out.println ("person1: " + person1);
      System.out.println ("person2: " + person2);
      System.out.println ("age: " + age + "\tname: " + name + "\n");

      changePeople (person1, person2, age, name);

      System.out.println ("\nValues after calling changePeople...");
      System.out.println ("person1: " + person1);
      System.out.println ("person2: " + person2);
      System.out.println ("age: " + age + "\tname: " + name + "\n");
    }

    // -----------------------------------------------------------------
    //  Change the first actual parameter to "Jack - Age 101" and change
    //  the second actual parameter to be a person with the age and
    //  name given in the third and fourth parameters.
    // -----------------------------------------------------------------
    public static void changePeople (Person p1, Person p2, int age, String name)
    {
      System.out.println ("\nInside changePeople... Original parameters...");
      System.out.println ("person1: " + p1);
      System.out.println ("person2: " + p2);
      System.out.println ("age: " + age + "\tname: " + name + "\n");

      // Make changes
      Person p3 = new Person (name, age);
      p2 = p3;
```

```
      name = "Jack";
      age = 101;
      p1.changeName (name);
      p1.changeAge (age);

      // Print changes
      System.out.println ("\nInside changePeople... Changed values...");
      System.out.println ("person1: " + p1);
      System.out.println ("person2: " + p2);
      System.out.println ("age: " + age + "\tname: " + name + "\n");
    }
}


// ************************************************************
//   Person.java
//
//   A simple class representing a person.
// ************************************************************
public class Person
{
    private String name;
    private int age;

    // -----------------------------------------------------------
    //  Sets up a Person object with the given name and age.
    // -----------------------------------------------------------
    public Person (String name, int age)
    {
      this.name = name;
      this.age = age;
    }

    // -----------------------------------------------------------
    //   Changes the name of the Person to the parameter newName.
    // -----------------------------------------------------------
    public void changeName(String newName)
    {
      name = newName;
    }

    // -----------------------------------------------------------
    //   Changes the age of the Person to the parameter newAge.
    // -----------------------------------------------------------
    public void changeAge (int newAge)
    {
      age = newAge;
    }

    // -----------------------------------------------------------
    //   Returns the person's name and age as a string.
    // -----------------------------------------------------------
    public String toString()
    {
      return name + " - Age " + age;
    }
}
```