Recursion Exercises

Instructions:

Use recursion to solve the following problems. You may not use loops at all. You may not use static nor instance variables. Using auxiliary methods is fine.

1. Write a recursive method that finds the minimum value in an array. The method’s prototype is:

   ```java
   int minimum(int a[], int n)
   ```

2. Write a recursive method that prints the elements of an array in reverse order.

   ```java
   void reverse(int a[])
   ```

3. Write a recursive method that determines whether an array is a palindrome. The method’s prototype is:

   ```java
   boolean isPalindrome(int a[])
   ```

4. Write a recursive method that prints an integer with commas in the correct places. For example, 12345 will be printed as 12,345. The method’s prototype is:

   ```java
   void print(int n)
   ```

5. Write a recursive method that determines if the first n elements of an array are already in ascending sorted order. The method’s prototype is:

   ```java
   boolean isSorted(int n, int[] a)
   ```

6. The following linked list definition will be used for the problems that follow:

   ```java
   public class LinkedList<T> {
      private class Node {
         private T data;
         private Node next;
         public Node(T data) {
            this.data = data;
            next = null;
         }
      }
      private Node head;
   }
   ```

   a. Define a recursive method that computes the size of the list.

   b. Define a recursive method that prints the contents of the list in reverse order.