1. Consider the following code:

```
public static void process (Integer a[], int liminf, int limsup) {

     int i=liminf ;
     int j=limsup-1 ;
     while (i < j) {
         int temp=a[i] ;
         a[i]=a[j] ;
         a[j]=temp ;
         i++ ;
         j-- ;
    }
}

public static void example (Integer a[], int li, int ls) {

     if (li < ls) {
       process (a,li,ls);
       ls=ls/2;
       example (a,li,ls);
     }
}
```

Explain what the methods above do and present the result applied to the vector `a[8]={6,1,4,2,7,3,1,5}`, `li=0, ls=8, example(a,0,8).`

2. Develop recursive methods that permit:
   - **a)** Calculate the sum of two positive integer numbers.
   - **b)** Convert a decimal integer *n* to a binary representation.
   - **c)** Verify if a positive integer is prime.
   - **d)** Verify if a word is palindrome. A word, phrase, or other sequence of symbols or elements, whose meaning may be interpreted the same way in either forward or reverse direction: ANA, SOPAPOS.

Complementary Exercises

Implement a recursive algorithm:

1. For finding the maximum element in an array A of n elements.
2. For converting a string of digits into the integer it represents. For example, '13531' represents the integer 13 531.
3. To compute the sum of all the elements in an n × n (two-dimensional) array of integers.
4. To compute the product of two positive integers, m and n, using only the arithmetic operations: addition and subtraction.