Exercises 9

1. (a) Which errors can possibly occur during runtime of the following Java program fragment?

```
int i;
float list[300];
float x, y;
...
/*  i, x and y are somehow calculated */
...
list[i] = 1.5 / (x + y);
...
```

(b) Which conditions (to be specified in Java syntax) should be checked to capture these errors before they can cause trouble?

2. Write an XL (or Java) program which prints all prime numbers between 1 and 1000 on the screen (and no other numbers).

Remark 1: An integer is a prime number if it is larger than 1 and if it is not divisible without rest by any other positive integer except 1 and itself.
Remark 2: `a % b` = rest of the division of integer `a` by integer `b` $(0 \le$ `(a % b)` $<$ `b`).

3. The following Java method **f** gets an integer array **x** and the length **n** of the array as arguments:

```
public int f(int x[], int n)
   {
   int i, k = 0;
   if (n <= 0) return -1;
   i = 1;
   while (i < n)
      {
      if (x[k] > x[i])
          k = i;
      i = i+1;
      }
   return k;
   }
```

(a) What does the method **f** calculate?

(b) What does it give as result if all fields of the array **x** contain the same number, let us say, 1 ?