Problem 1 —————————————————————————————————

Write a program reading integers until zero is entered and printing the length of the longest sequence of consecutive numbers of the same value (and this value).
For example, for

        2 2 2 2 3 3 3 2 6 6 6 0

the result should be

        Longest sequence: 4 times 2

for

        2 2 2 3 3 3 3 3 2 6 6 6 0

the result should be

        Longest sequence: 5 times 3

and for

        2 2 3 3 2 3 6 6 6 0

it should be

      Longest sequence: 3 times 6

Do not use arrays, strings or any other kind of collections.

Problem 2 —————————————————————————————————

Write a program which reads an odd natural number n and writes on the console a symmetric 'kite' consisting of asterisks: in the first line n stars, in the second line $n - 2$ stars, ... , in n-th – one star. For example, for $n = 7$ the output should look like this:

    ****
     *****
      ***
       *

Problem 3 —————————————————————————————————

Write a program which reads two natural numbers, w and h, and then prints a rectangle with width w and height h. For example, if the numbers are 7 and 5, the result should look like this:

```
*******
*     *
*     *
*     *
*******
```

Problem 4

Write a program which finds the greatest common divisor (GCD) of two numbers
read from the user. Use Euclid's algorithm (*Elements,* Book VII).

In order to find the GCD of number a i b $(a, b \in \mathbb{N})$ repeat the sequence:

1. if $a = b$, then GCD=a and END;
2. if $a > b$, then decrease a by b or, if $b > a$, then decrease b by a;

Note that the algorithm requires only testing equality and subtracting. For those
mathematically inclined: show that the algorithm will always stop, i.e., that after
a finite number of iterations the condition in step 1 will be satisfied (and both a and
b will then be equal to GCD of the two numbers that we started with).

Problem 5

Write a program printing the multiplication table for numbers from 1 to n. For
example, if n is 12, the table should look like this:

```
 1   2   3   4   5   6   7   8   9  10  11  12
 2   4   6   8  10  12  14  16  18  20  22  24
 3   6   9  12  15  18  21  24  27  30  33  36
 4   8  12  16  20  24  28  32  36  40  44  48
 5  10  15  20  25  30  35  40  45  50  55  60
 6  12  18  24  30  36  42  48  54  60  66  72
 7  14  21  28  35  42  49  56  63  70  77  84
 8  16  24  32  40  48  56  64  72  80  88  96
 9  18  27  36  45  54  63  72  81  90  99 108
10  20  30  40  50  60  70  80  90 100 110 120
11  22  33  44  55  66  77  88  99 110 121 132
12  24  36  48  60  72  84  96 108 120 132 144
```

In order to print a number on four places, padding it from the left with spaces for
shorter numbers, you can use `System.out.printf("%4d",n)`.