

CALIFORNIA STATE UNIVERSITY, LOS ANGELES  
PROGFEST 2013

Problem 9

**Look-and-Say Sequence**

The **look-and-say sequence** is the sequence of integers beginning as follows:

1, 11, 21, 1211, 111221, 312211, 13112221, 1113213211, ...

To generate a member of the sequence from the previous member, read off the digits of the previous member, counting the number of digits in groups of the same digit. For example:

- 1 is read off as "one 1" or 11.
- 11 is read off as "two 1s" or 21.
- 21 is read off as "one 2, then one 1" or 1211.
- 1211 is read off as "one 1, then one 2, then two 1s" or 111221.
- 111221 is read off as "three 1s, then two 2s, then one 1" or 312211.

The idea of the look-and-say sequence is similar to that of run-length encoding that stores runs of data as a value and count.

Write a program that reads two integer values: **d** (from 0 to 9) and **n** (from 1 to 100).

Then, generate a look-and-say sequence starting from **d** and ending at the **n<sup>th</sup>** number. For example, if **d**=4 and **n**=6, the sequence is

4, 14, 1114, 3114, 132114, 1113122114

After generating the sequence, display the longest palindrome in any number of the sequence.

Input

1 6
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Output

1, 11, 21, 1211, 111221, 312211
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Longest palindrome: 1221 found in 5 <sup>th</sup> and 6 <sup>th</sup> numbers
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