E: Musical Themes

A theme in music is a repeating sequence of contiguous notes. Notes are distinguished by "pitch" which describes how high (as soprano level) or low (bass level) the note sounds. Themes may be identical or transposed (raised or lowered by some constant amount), and adjacent or not adjacent. Your task is to determine the length of the longest theme in a given piece of music.

You may assume that notes are defined by 12 equi-spaced pitches labeled a through l (musical consestants might balk at this designation with lack of sharps and flats, but this makes it easier to compute). These letters repeat with "octaves" in case the pitch rises above l or drops below a. We will allow for 3 possible octaves, so the pitches from lowest to highest are as follows: $a1$ $b1$ $c1$ $d1$ $e1$ $f1$ $g1$ $h1$ $i1$ $j1$ $k1$ $l1$ $a2$ $b2$ $c2$ $d2$ $e2$ $f2$ $g2$ $h2$ $i2$ $j2$ $k2$ $l2$ $a3$ $b3$ $c3$ $d3$ $e3$ $f3$ $g3$ $h3$ $i3$ $j3$ $k3$ $l3$

Input

Input may consist of multiple cases. Each case begins on a new line with the number of notes (no more than 100) in the song. This is followed by strings representing the sequence of notes, as described above and shown in the sample. A case may follow onto additional lines, noting that arbitrary white space and new lines may delimit the input. The last case is followed by a line with a single 0.

Output

For each case, display the case number followed by the length of the longest theme, formatted as in the sample. Use single spaces as delimiters.

Sample Input	Sample Output
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9 a1 b1 c1 a3 l1 a2 b2 c1 h3	Case 1: 3
2 c2 f3	Case 2: 1
0	--------------