Reconstructed statement

This PDF is reconstructed from the original official HTML statement; it is not an original contest PDF. The original HTML is supplied unchanged as an attachment. Use standard input and standard output. Historical point weights were not recovered: QOJ assigns equal weight to each original input file, rounded to six decimals with an exact total of 25 points. Any valid optimal output is accepted by a semantic checker. An archived reference output contained clippings absent from its newspaper. It has been corrected using independently verified minimum-clipping dynamic programming; original inputs and the official output archive are preserved locally. Newspaper punctuation and line breaks remain forbidden inside clippings, as stated below.

Day 1 Question 2: Ransom Note

Your solution: N:\ransom\ransom.{pas,c,cpp}
Input file: ransom.in
Output file: ransom.out

Gilbert Bates, the magnate of aluminum siding, doors, and windows, has been kidnapped. You are to help the perpetrators produce a ransom note. Your raw materials are the text of a newspaper and the text of the ransom note. The ransom note is to be produced by clipping letters or strings of letters (and possibly spaces) from the newspaper and pasting them onto a blank sheet of paper to form the note. Your job is to determine the minimum number of pieces of paper that must be clipped and pasted to form the note. Between each pair of words in the note, either the clipping must contain a space or a boundary between clippings must occur (so that the blank background shows through).

Input

The input file consists of the text of the note followed by the text of the newspaper. The text of the note is a single line, less than 2KB in length, in lowercase with no punctuation. The text of the newspaper is in upper and lower case with punctuation and newlines mixed in. Case may be ignored (aS IN aNY stANDard RAnsoM nOTE) and punctuation and newlines should not be clipped. The kidnappers have acquired a large number of copies of the same newspaper, so that the same or overlapping text may be clipped as many times as necessary. Every letter of the alphabet occurs at least once in the newspaper. The newspaper is smaller than 9KB in length. In at least 60% of the test cases the newspaper will be smaller than 2KB. An inefficient algorithm will probably exceed the time limit (about 15 seconds) when solving the larger cases.

Output

Print the minimum number of clippings followed by the clippings, one per line, in the correct order to compose the note. The case of the newspaper text should be preserved.

Sample Input

```
drop the price on new thermopanes now or else
Rain Users Guide (by J.Z.)
While "rain" was intended to be a general purpose tool, at the time of
writing the primary goal was to study one particular software system.
As a result, some steps that are only done once (such as extracting
information from the program under study) are done using cumbersome
ad-hoc techniques that require significant manual intervention.  While
"rain" can be used on arbitrary programs, more development work needs
to be done before this is a convenient process.
```

Possible Output for Sample Input

```
19
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ro
p
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ce
on
ne
w
the
rm
op
an
es
n
o
W
or
el
se
```

Judging Input

To help you test your program, a very large input file **N:\ransom\ransom1.in** has been given to you. This will be one of the files used by the judges to evaluate your solution.