Task: PHONE

Byephone

CPSPC 2010, day 4. *25.06.2010*

Available memory: 3 MB. Maximum running time: 5 s.

Byteman is porting his favourite text editor to a new phone called the *Byephone* (the name comes from words byte and phone). One of the features of the editor is the ability to compare two documents line by line. The comparison is based on an algorithm that computes the longest common subsequence of two strings.

Byteman has soon realized that the phone does not have enough memory to run the algorithm he had implemented and he asked you for help. Write a program that will find the longest common subsequence of two input strings using only three megabytes of memory.

Input

The first line of the standard input contains two integers n_1 and n_2 ($1 \leqslant n_1, n_2 \leqslant 10\,000$), denoting the lengths of the input strings. The second and the third line contain strings of lengths n_1 and n_2 respectively, which consist only of lowercase letters of English alphabet.

Output

Output two lines to the standard output. The first line should contain one integer k equal to the length of the longest common subsequence of the input words. In the second line, there should be a k character long string describing the common subsequence. If there are many optimal results, your program may output any of them.

Example

For the input data:

```
5 6
abcad
dacbda
```

the correct result is:

```
3
acd
```

Remarks

Note that the memory limit applies not only to stack and heap sizes, but also to the size of the executable file. The submissions in C/C++ are compiled with `gcc/g++ -O2 -static -o phone phone.cpp -lm`, whereas Pascal solutions are compiled with `fpc -XS -O2 source.pas`. You can test whether your program runs within the memory limit by executing (`ulimit -v 3072; ./phone < input`) (with the brackets) from the console.