

# CPSPC

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## Warcry (Wednesday)

<b>Input File:</b>	stdin	100 points
<b>Output File:</b>	stdout	Time limit: 3 s
<b>Source Code:</b>	warcry.pas/.c/.cpp	Memory limit: 64 MB

Winnetou, the chief of Apaches, is not satisfied with the fight-spirit of his apache warriors. His brother gave him an advice that he should invent new warcry which will scare the enemy and raise the self-confidence of warriors.

They know about some words, which scare the enemy. The Apaches have assigned to each of this words one number which denotes the scariness of the word. The higher the number the higher the enemy's fear.

The warcry should consist of exactly  $N$  letters. Scariness of warcry is counted as the sum of scariness of known words, which occur in the string. Each word counts once for each occurrence in the warcry. Occurrences can overlap. Winnetou wants to find such warcry, that it's scariness is maximal.

### Task

You are given a list of words (with lowercase letters)  $\{\alpha_1, \dots, \alpha_K\}$ , and corresponding numbers  $\{a_1, \dots, a_K\}$  and number  $N$ .

Your task is to find such string  $S$  of size  $N$ , that the number

$$\sum_{i=1}^K v_i \cdot a_i$$

(where  $v_i$  is the number of (possibly overlapping) occurrences of  $\alpha_i$  in  $S$ ), is maximal.

### Input

The first line of input contains two integers  $N, K$  ( $1 \leq N \leq 100$ ,  $0 \leq K \leq 100$ ), separated by one space.  $K$  pairs of lines follows, where first line contains word  $\alpha_i$  (of maximal size 100) and second line contains integer  $a_i$  ( $0 \leq a_i \leq 10000$ ). You can assume that no two words in input are the same.

### Output

The first line of output contains one number – maximal scariness of warcry of length  $N$ . The second line contains one such warcry. If there are multiple solutions, output any of them.

### Example

#### Input

```
7 4
a
1
b
1
ab
4
bac
8
```

#### Output

```
25
bacabac
```