Distanced Strings

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	256 megabytes

Vasya wants to construct n strings of equal length that consist of first k Latin letters. He says that *similarity* of two strings is the number of positions where the strings match. Vasya would like similarity of any two strings to be the same, and the similarity should not exceed $2m/(k+2)$, where m is the length of the strings. He also doesn't want the strings to be too long, more precisely, the length of the strings should not exceed $2n$.

Input

The only line of input contains two integers n and k ($2 \le n \le 1000$; $2 \le k \le 26$).

Output

In the first line print two integers m and l — the strings' length and the similarity between any two strings.

In the next n lines print the strings. The strings should consist of lowercase Latin letters.

Examples

standard input	standard output
4 2	3 1 aaa bba abb bab