Constructor

SEASON 10 – SECOND ROUND

Annie and Bobby play with their new constructor, which consists of colored cubes. The colors of the cubes are M in total and they are labeled with small Latin letters. It is known that there are C_i cubes colored in L_i. The children take turns to add cubes into a sequence. In the beginning, they choose a color and put all the cubes of this color into the sequence. After that they choose another color and add some of the cubes at the front of the sequence and the remaining ones at the end. They do this until they run out of cubes. It is possible to put all the cubes of a certain color only at the front or only at the end.

Write a program which determines whether by doing this Annie and Bobby can construct N given sequences of cubes, represented as strings.

Input

The first line of the input file `constructor.in` contains the numbers N and M. The following M lines contain a symbol L_i and a number C_i, separated by a space. Each of the last N lines contains a string which describes a sequence that you have to check.

Output

On N lines of the output file `constructor.out` print "Yes" или "No" depending on whether the corresponding sequence of cubes could be obtained or not.

Constraints

$1 \leq N \leq 100$
$1 \leq M \leq 26$
The total length of the strings will not exceed 100.
The sum of all C_i will not exceed 100.

Example

Input	Output
5 5 a 2 b 3 c 1 x 2 y 4 aabbbcxxyyyy ycbaabbxxyyy ababbxxyyycy xxbacabbyyy yaabbbcxyyyx	Yes Yes No No No