Facebook friend

Ph want to find out some intesting information about his friends. He asked some friends to gather all relationship of N friends **(relationship may be duplicated)**. With that data, Ph want to know for each his friend, how many friends of the opposite gender he/she has.

Input

The first line contains two integers N ($0 < N \leq 10^5$) and M ($0 \leq M \leq 3 * 10^5$), the number of people in the statistics list and the number of relationships counted.

The next line consists of N strings containing only "Nam" and "Nu", the i-th sequence is the gender of your ith

In the next M lines, each line has two numbers u and v, representing u and v being friends on Facebook

Output

Output the number of friends of the opposite gender of each person on a line, separated by spaces.

Sample

Input
5 6
Nam Nu Nu Nam Nam
1 3
1 4
1 2
5 2
4 5
5 1

Output
2 2 1 0 1