

Sample Problem Name

This is a **sample problem statement**. You can use most markdown formatting, *like this*. You can also use Latex, such as in the following examples: x , $i + 1$, a_{i+1} , $10^9 + 7$, $(1 \leq n \leq 2 \cdot 10^5)$.

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \leq t \leq 1000$). The description of the test cases follows.

The first line of each test case...

- contains one integer x ($1 \leq x \leq 2 \cdot 10^5$) — here is the meaning of x , respectively.
- contains two integers a and b ($1 \leq n, x \leq 2 \cdot 10^5$) — here are the meanings of a and b , respectively.
- contains n space-separated integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 10^4$) — here is the meaning, where a_i means i .
- contains a string s of length n consisting of lowercase English letters (a-z) — here is the meaning of s .

The next n lines each contain two integers u and v ($1 \leq u, v \leq n, u \neq v$) — denoting an edge between vertices u and v .

Then m lines follow, the i -th line containing two integers x_i and y_i ($1 \leq x_i, y_i \leq n$) — coordinates of the i -th location.

It is guaranteed that the sum of n across all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, ...

- output "YES" if condition is met, and "NO" otherwise.
- output a single integer — the answer.
- output n integers b_1, b_2, \dots, b_n — the answers.
- output a single string of length n — the final configuration.
- output two integers — the answer and the minimal operations.

Since the answer may be large, output it modulo $10^9 + 7$.

If multiple valid answers exist, output any of them.

Sample Test Cases

Input
1
1 2 3
Output
6

Notes

Since $1 + 2 + 3 = 6$, output 6.