NOI '22 Multi-Provincial Team Selection P3 - Community

Time limit: 1.5s **Memory limit:** 512M

Tommy discovers the relics of m messages $[X_1, X_2, \ldots, X_m]$ corresponding to n clowns participating in a forum thread. A message X_i can be described by three strings $X_{i\,1}, X_{i\,2}, X_{i\,3}$. Tommy will reorder the m messages into some sequence $[Y_1, Y_2, \ldots, Y_m]$. A message Y_i is **good** if and only if either

- $i \neq m$, $Y_{i\,3} =$ `'loushang'` and $Y_{i\,2} = Y_{i+1\,1}$
- $i \neq 1$, $Y_{i\,3} =$ `'louxia'` and $Y_{i\,2} = Y_{i-1\,1}$

Find any ordering of the m given messages that maximizes the number of **good** messages.

Let $S = \{X_{i\,1} : 1 \leq i \leq m\}$. The test data guarantees that $|S| = n$ and that for any $X_{i\,1}$, there exists j such that $X_{j\,1} = X_{i\,1}$ and $X_{j\,3} \notin \{$`'loushang'`, `'louxia'`$\}$.

Constraints

The input consists of $T \leq 100$ individual test cases.

For each test case, $1 \leq n \leq m \leq 77\,777$.

Over all test cases, $\sum m \leq 2.5 \times 10^5$.

The length of any token of input will not exceed 12 ASCII characters.

50% of points will be granted for finding the maximum number of **good** messages but failing to find a valid ordering.

$T \leq$	$M \leq$	$\sum M \leq$	Test	Prop. A	Prop. B	Prop. C
5	10	50	1	/	/	/
10	16	160	2	/	/	/
30	$2\,222$	$15\,000$	3, 4	Y	Y	Y
30	$2\,222$	$15\,000$	5, 6	Y	/	Y
30	$2\,222$	$15\,000$	7, 8, 9	/	Y	Y
30	$2\,222$	$15\,000$	10, 11	/	/	Y
30	$2\,222$	$15\,000$	12, 13	/	/	/
100	$77\,777$	2.5×10^5	14, 15	Y	Y	Y
100	$77\,777$	2.5×10^5	16	Y	/	Y
100	$77\,777$	2.5×10^5	17, 18, 19	/	Y	Y

$T \leq$	$M \leq$	$\sum M \leq$	Test	Prop. A	Prop. B	Prop. C
100	$77\,777$	2.5×10^5	20, 21, 22	/	/	Y
100	$77\,777$	2.5×10^5	23, 24, 25	/	/	/

Property A: There is no i where $X_{i\,3} =$ `'loushang'` and $X_{i\,2} \in S$.

Property B: There exists an ordering such that all i where $X_{i\,3} \in \{$`'loushang'`, `'louxia'`$\}$ and $X_{i\,2} \in S$, are **good** messages.

Property C: There exists no pair $1 \leq i, j \leq m$ where $X_{i\,1} = X_{j\,2}$, $X_{i\,2} = X_{j\,1}$, $X_{i\,3} =$ `'loushang'`, and $X_{j\,3} =$ `'louxia'`.

Input Specification

The first line contains a positive integer T, the number of test cases. For each test case:

The first line contains two positive integers n and m, the number of clowns and the number of messages, respectively.

The following n lines contain the names of the clowns.

The following m lines contain three strings $X_{i\,1}$, $X_{i\,2}$, and $X_{i\,3}$, describing message X_i.

Output Specification

For each test case:

On the first line output an integer, corresponding to the maximum number of **good** messages.

On the second line output m distinct integers $a_1, a_2, \ldots, a_m$ from 1 to m, corresponding to an ordering of the messages, i.e. $Y_i = X_{a_i}$.

Sample Input

```
2
4 15
builtin_clz
builtin_ctz
jinkela
OrzTourist
builtin_clz MengXin QiuZhu
builtin_ctz builtin_clz louxia
jinkela builtin_ctz louxia
builtin_ctz builtin_clz loushang
builtin_clz BieMoZheng YaoXueShu
OrzTourist builtin_clz louxia
OrzTourist OrzTourist louxia
builtin_clz Iam Angry!
builtin_clz builtin_clz loushang
builtin_clz builtin_clz louxia
builtin_clz builtin_clz loushang
builtin_clz builtin_clz louxia
builtin_ctz Xue Shu
jinkela Xue Shu
OrzTourist Xue Shu
1 9
builtin_clz
builtin_clz builtin_clz loushang
builtin_clz builtin_clz loushang
builtin_clz builtin_clz louxia
builtin_clz builtin_clz Loushang
builtin_clz builtin_clz LOUSHANG
builtin_clz Builtin_clz loushang
builtin_clz loushang louxia
builtin_clz builtin_clz builtin_clz
builtin_clz loushang builtin_clz
```

Sample Output

```
9
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
3
8 1 2 7 9 3 6 4 5
```

Attachments