Problem B: Black era

Description

The war in Ursus has broken out! Now, Wamiya and her teammates have to escape from this dangerous place immediately. In order to avoid the falling objects from the surrounding buildings, all the team members are lined up in a row while moving forward. In order to defend against enemy attacks, Wamiya should also constantly change the form of the team by exchanging two parts of the row, i.e., she will specify two continuous parts in the row, and exchange their locations without changing anything inside each part. There will be N members in the team, and Wamiya will give M orders one by one. Given the initial team, what will be the final team after their escape?

Input

First line contains one integer T, indicating that there will be T cases.

For each case, the first line will be two integers N and M. N is the number of the members in the team, and M is the number of orders.

The second line will be N integers, indicating the initial formation of the team. Each number is unique and represents the ID of the member. We guarantee that ID is in the range of $[0, N-1]$.

The following M lines represent M orders. In each line, there are four integers x_1, y_1, x_2, y_2, which mean the part $[x_1, y_1]$ (starting from member with ID x_1 and ending at the member with ID y_1), should exchange the position with part $[x_2, y_2]$.

$T \le 5, 1 \le N, M \le 10^5$. We guarantee that in each order, members with ID x_1, y_1, x_2, y_2 will be arranged in order from front to back in the row. Notice that x_1 could be equal to y_1 and x_2 could be equal to y_2.

Output

For each case, output N integer in one line to represent the final team consisting of member IDs.

Sample Input

```
1
10 2
0 6 5 1 2 3 4 8 7 9
6 4 7 9
0 8 6 5
```

Sample Output

6 5 0 7 9 8 1 2 3 4

HINT