

## 11528 Switch Grid

There is a grid with  $N$  rows and  $M$  columns. The rows are numbered from 0 to  $N - 1$  and columns are numbered from 0 to  $M - 1$ . Each of the cell in row 0 and each of the cell in column 0 contains a bulb. Except the cell in row 0 and column 0 is empty. All the other rows can contain a switch. The switch in the cell on row  $r$  and column  $c$  change the states of both bulbs in row  $r$  and column  $c$ . You are given the initial states and the desired states of each of the bulb. Now given a list of switches you need to press them in such a way that all the bulbs change their states from their initial to desired states.

### Input

Input contains multiple test cases. First line contains  $T$  the number of test cases. Each of the test case consists of 7 lines.

- 3 space separated integers  $N$  ( $1 \leq N \leq 1000$ ),  $M$  ( $1 \leq M \leq 1000$ ) and  $S$  ( $1 \leq S \leq 4000$ ).  $N$  is the number of rows in the grid,  $M$  is the number of columns in the grid and  $S$  is the number of switches.
- $N - 1$  space separated integers. Each of these integers is either '0' or '1'. The  $i$ -th ( $i$  starts from 1) denotes the initial state of the bulb in  $(i, 0)$ . 0 means off and 1 means on.
- $N - 1$  space separated integers. Each of these integers is either '0' or '1'. The  $i$ -th ( $i$  starts from 1) denotes the final state of the bulb in  $(i, 0)$ .
- $M - 1$  space separated integers. Each of these integers is either '0' or '1'. The  $i$ -th ( $i$  starts from 1) denotes the initial state of the bulb in  $(0, i)$ .
- $M - 1$  space separated integers. Each of these integers is either '0' or '1'. The  $i$ -th ( $i$  starts from 1) denotes the final state of the bulb in  $(0, i)$ .
- $S$  space separated integers. Each of these integers is between 1 and  $N - 1$  inclusive. The  $i$ -th ( $i$  starts from 0) integers denote the row number of the  $i$ -th switch.
- $S$  space separated integers. Each of these integers is between 1 and  $M - 1$  inclusive. The  $i$ -th ( $i$  starts from 0) integers denote the column number of the  $i$ -th switch.

There is a blank line after each of the test case. There will be 100 test cases.

### Output

For each test case output contains a single line. When there is no way to transform the state of all the bulbs the line contains '-1'. Otherwise the line starts with  $X$  followed by  $X$  integers.  $X$  is the number of switch presses required to transform all the bulbs into the desired states.  $X$  should be less than 10000. The next  $X$  integers denotes the indices of the switches that need to be pressed. All of these  $X$  integers should be distinct. Any combination of switch presses that transforms all the bulbs to their desired state will be considered correct.

**Sample Input**

```
3
3 3 2
0 0
1 0
0 0
0 1
1 2
1 2

3 3 3
0 0
1 1
0 0
1 1
1 1 2
1 2 2

4 4 5
0 0 0
0 1 1
0 0 0
1 0 1
1 1 2 2 3
1 3 1 2 2
```

**Sample Output**

```
-1
2 0 2
4 0 1 3 4
```