Information

Time Limit	Memory Limit	Data Amount	Problem Type
1000ms	128MiB	10	Tradition

Description

n 个人围成一圈，从第一个人开始报数,数到 m 的人出列，再由下一个人重新从 1 开始报数，数到 m 的人再出圈，依次类推，直到所有的人都出圈，请输出依次出圈人的编号。

Input

输入两个整数 n,m。

Output

输出一行 n 个整数，按顺序输出每个出圈人的编号。

Sample Test Data

```
10 3
<|==|>
3 6 9 2 7 1 8 5 10 4
```

Data Limit

For 100% cases: $1 \leq m, n \leq 100$

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Description

There are n students standing in a row. Two coaches are forming two teams — the first coach chooses the first team and the second coach chooses the second team.

The i-th student has integer programming skill a_i. All programming skills are **distinct** and between 1 and n, inclusive.

Firstly, the first coach will choose the student with maximum programming skill among all students not taken into any team, **and** k closest students to the left of him and k closest students to the right of him (if there are less than k students to the left or to the right, all of them will be chosen). All students that are chosen leave the row and join the first team. Secondly, the second coach will make the same move (but all students chosen by him join the second team). Then again the first coach will make such move, and so on. This repeats until the row becomes empty (i. e. the process ends when each student becomes to some team).

Your problem is to determine which students will be taken into the first team and which students will be taken into the second team.

Input

The first line of the input contains two integers n and k — the number of students and the value determining the range of chosen students during each move, respectively.

The second line of the input contains n integers $a_1, a_2, \ldots, a_n$, where a_i is the programming skill of the i-th student. It is guaranteed that all programming skills are **distinct**.

Output

Print a string of n characters; i-th character should be 1 if i-th student joins the first team, or 2 otherwise.

Sample Test Data

```
5 2
2 4 5 3 1
<|==|>
11111
```

```
5 1
2 1 3 5 4
<|==|>
22111
```

```
7 1
7 2 1 3 5 4 6
<|==|>
1121122
```

```
5 1
2 4 5 3 1
<|==|>
21112
```

Tips

In the first example the first coach chooses the student on a position 3, and the row becomes empty (all students join the first team).

In the second example the first coach chooses the student on position 4, and the row becomes [2,1] (students with programming skills [3,4,5] join the first team). Then the second coach chooses the student on position 1, and the row becomes empty (and students with programming skills [1,2] join the second team).

In the third example the first coach chooses the student on position 1, and the row becomes [1,3,5,4,6] (students with programming skills [2,7] join the first team). Then the second coach chooses the student on position 5, and the row becomes [1,3,5] (students with programming skills [4,6] join the second team). Then the first coach chooses the student on position 3, and the row becomes [1] (students with programming skills [3,5] join the first team). And then the second

coach chooses the remaining student (and the student with programming skill 1 joins the second team).

In the fourth example the first coach chooses the student on position 3, and the row becomes [2,1] (students with programming skills [3,4,5] join the first team). Then the second coach chooses the student on position 1, and the row becomes empty (and students with programming skills [1,2] join the second team).

Data Limit

For 100% cases: $1 \leq k \leq n \leq 200000, \quad 1 \leq a_i \leq n$.

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Description

Problem Statement
Takahashi is playing with toy trains, connecting and disconnecting them.
There are N toy train cars, with car numbers: Car 1, Car 2, ..., Car N.
Initially, all cars are separated.

You will be given Q queries. Process them in the order they are given. There are three kinds of queries, as follows.

1 x y: Connect the front of Car y to the rear of Car x.
It is guaranteed that:

$x \neq y$
just before this query, no train is connected to the rear of Car x;
just before this query, no train is connected to the front of Car y;
just before this query, Car x and Car y belong to different connected components.

2 x y: Disconnect the front of Car y from the rear of Car x.
It is guaranteed that:

$x \neq y$
just before this query, the front of Car y is directly connected to the rear of Car x.

3 x: Print the car numbers of the cars belonging to the connected component containing Car x, from front to back.

Input

Input is given from Standard Input in the following format:

```
N Q
query1
query2
⋮
queryQ
```

The i-th query `queryi`
begins with an integer c_i
(1, 2, or 3) representing the kind of the query, followed by x and y if c_i
=1 or 2, and followed by x if c_i=3.

In short, each query is in one of the following three formats:

```
1 x y
2 x y
3 x
```

Output

If a query with c_i=3 asks to print the values $j_1, j_2, \ldots, j_M$, output the following line:

$M\ j_1\ j_2 \ldots j_M$

Your output should consist of q lines, where q is the number of queries with $c_i = 3$

The k-th line ($1 \leq k \leq q$) should contain the response to the k-th such query.

Sample Test Data

```
7 14
1 6 3
1 4 1
1 5 2
1 2 7
1 3 5
3 2
3 4
3 6
2 3 5
2 4 1
1 1 5
3 2
3 4
3 6
<|==|>
5 6 3 5 2 7
2 4 1
5 6 3 5 2 7
4 1 5 2 7
1 4
2 6 3
```

Data Limit

$1 \leq N \leq 100000$

$1 \leq Q \leq 100000$

$1 \leq x \leq N$

$1 \leq y \leq N$

All values in input are integers.

All queries satisfy the conditions in the Problem Statement.

The queries of the format `3 x` ask to print at most 10^6 car numbers in total.

Description

给定一个$n \times m$ 的矩阵，有q次操作，每次将两个相同形状大小，不重合且边不相邻的子矩阵的值交换。请输出最终的矩形。

该矩阵左上角的坐标 为$(1,1)$，右下角为(n,m)。

Input

第一行$n\ m\ q$

接下来n行，每行m个整数，用空格分隔，代表该矩阵

接下来q行，代表q次操作，每行6个整数a,b,c,d,h,w

a,b为第一个子矩阵左上角的坐标

c,d为第二个子矩阵左上角的坐标

h,w为这两个矩阵的高和宽

Output

最终的矩阵，格式和输入相同

Sample Test Data

```
4 4 2
1 1 2 2
1 1 2 2
3 3 4 4
3 3 4 4
1 1 3 3 2 2
3 1 1 3 2 2
<|==|>
4 4 3 3
4 4 3 3
2 2 1 1
2 2 1 1
```

```
4 2 1
1 1
1 1
2 2
2 2
1 1 4 1 1 2
<|==|>
2 2
1 1
2 2
1 1
```

Tips

Data Limit

$1 \leq n, m \leq 1000,\ 1 \leq q \leq 10000$

矩阵内部值的大小不超过10^9。

保证子矩阵合法并满足题目条件。

Attention

请不要使用$O(qhw)$的算法。

The input can be huge, and you can reduce input time by using fast input.

C++ fast input:

```cpp
int read(int x = 0, int f = 1, char ch = getchar()) {
    while(ch < '0' || ch > '9') {
        if(ch == '-') f = -1;
        ch = getchar();
    }
    while(ch >= '0' && ch <= '9') x = x * 10 + ch - '0', ch = getchar();
    return x * f;
}
//in main
int main() {
    int a;
    a = read();
}
```

Java fast I/O: https://paste.ubuntu.com/p/6ybMcVXvz5/

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Description

Given a string S and three operators:

Insert(ch, p), inserting the char ch to position p.

Find(p), finding the char at position p and print it to screen.

Transform(l,r), transforming the characters from position l to position r (including l, r) (we define transforming as for each character c in l to r we apply ('a' + 'z' - c) to transform it)

Input

The first line has a string S . The second line has an integer n, which is the number of operations. The next n lines are one operation per line. For each presentation, we use 1 for Insert , 2 for Find, 3 for Transform.

Output

Follow the output definition of each operation.

Sample Test Data

```
madamimadam
5
1 b 1
1 b 2
2 3
3 1 3
2 2
<|==|>
m
y
```

Tips

You are likely to encounter TLE in this question, which is quite normal

So you need to use a more efficient LinkedList for this problem

Data Limit

For 100% cases: $1 \leq len(S) \leq 2000000, \quad 1 \leq n \leq 100000$.