H. Permutation and Queries

time limit per test

4 seconds

memory limit per test

256 megabytes

input

standard input

output

standard output

You are given a permutation p of n elements. A permutation of n elements is an array of length n containing each integer from 1 to n exactly once. For example, [1,2,3] and [4,3,5,1,2] are permutations, but [1,2,4] and [4,3,2,1,2] are not permutations. You should perform q queries.

There are two types of queries:

* 1 x y — swap px and py.
* 2 i k — print the number that i will become if we assign i=p k times.

**Input**

The first line contains two integers n and q (1≤n,q≤105).

The second line contains n integers p1,p2,…,pn.

Each of the next q lines contains three integers. The first integer is t (1≤t≤2) — type of query. If t=1, then the next two integers are x and y (1≤x,y≤n; x≠y) — first-type query. If t=2, then the next two integers are iiand k (1≤i,k≤n) — second-type query.

It is guaranteed that there is at least one second-type query.

**Output**

For every second-type query, print one integer in a new line — answer to this query.

**Examples**

**input**

**Copy**

5 4

5 3 4 2 1

2 3 1

2 1 2

1 1 3

2 1 2

**output**

**Copy**

4

1

2

**input**

**Copy**

5 9

2 3 5 1 4

2 3 5

2 5 5

2 5 1

2 5 3

2 5 4

1 5 4

2 5 3

2 2 5

2 5 1

**output**

**Copy**

3

5

4

2

3

3

3

1

**Note**

In the first example p={5,3,4,2,1}.

The first query is to print p3. The answer is 4.

The second query is to print pp1. The answer is 1.

The third query is to swap p1 and p3. Now p={4,3,5,2,1}.

The fourth query is to print pp1. The answer is 2.