Problem H1301
Souvenir Vending Machine 2

At the end of this week, your tour of this beautiful city is coming to the end. As the leader of this tourist group, you lead the whole group to a gift store, and find a souvenir vending machine.

Each of the group member have a chance to receive one of the k types gift. The vending machine works as follow:

The gifts are placed vertically. When someone request a gift, the vending machine will drop out the gift at the bottom. Sometimes the staff will come and refill a gift of type x at the top. The staff will also sometime press the "shuffle" button: if the machine is not empty, it will move a gift from the top and insert it at the bottom.

You, as the leader of the tourist group, have the schedule of these n events in 3 types:

Type 1: the customer requests for a souvenir.

Type 2: the staff refills the machines with souvenir type x.

Type 3: the staff presses the "shuffle" button.

You would like to know which type of souvenir will each customer receive.

Input

The first line contains two integers $n, k (1 \leq n \leq 2 \cdot 10^5, 1 \leq k \leq 10^5)$.

The following contains one of the following 2 types:

1 : a customer requests for a souvenir.

2 x: the staff refills the machine with a souvenir of type $x (1 \leq x \leq k)$.

3 : the staffs press the "shuffle" button.

Output

Print the type of souvenir that each will receive following the order that the guest proceed to the vending machine. Each group member is guaranteed to get a type of gift.

Sample Input

```
9 3
2 2
2 3
2 1
1
3
1
1
2 1
1
```

Sample Output

```
2
1
3
1
```