Meow Party

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Meow is throwing a huge birthday party at KK8. Meow has invited N friends to his party, each having unique *meow-ness*. During the party, to reduce awkwardness, Meow has introduced them to a game. They will be playing rock-paper-scissors. During each match, two cats will be playing against each other, the loser will tag the winner throughout the rest of the game. If there is any cat who has been tagging the loser, he or she will also tag the winner. In fact, the winner's group will grow larger and larger. However, not every time the winner will be playing a rock-paper-scissors match, he or she will let other cats in his or her group have the opportunity to play the next match.

During the game, Meow has several questions to ask, Meow would like to know who has the lowest *meow-ness* and who has the highest *meow-ness* in Cat_x's group.

This game has Q events in total and here are the two types of events during the game.

1. A rock-paper-scissors match description. It is guaranteed that the two opponents do not come from the same group.
2. Meow's question: who has the lowest *meow-ness* and who has the highest *meow-ness* in Cat_x's group.

Input

The first line contains two space-separated integers, N and Q ($1 \leq N, Q \leq 3 \times 10^5$) — the number of friends Meow invited to his party and the number of events during the game respectively.

The second line contains N space-separated integers ($1 \leq$ *meow-ness* $\leq N$) — each unique *meow-ness* of Cat_i.

The next Q lines contains one of the two events in the following format:

- 1 x y ($1 \leq x, y \leq N$)— A rock-paper-scissors match occurs between Cat_x and Cat_y, and Cat_x is the winner.
- 2 x ($1 \leq x \leq N$)— Meow's query, output who has the lowest *meow-ness* and who has the highest *meow-ness* in Cat_x's group.

Output

For each Meow's question / type 2 event, output a line with two space-separated, describing who has the lowest and *meow-ness* and who has the highest *meow-ness* in Cat_x's group respectively.

Example

standard input	standard output
5 10 5 2 3 1 4 1 1 3 2 3 2 2 1 2 4 2 4 1 2 5 2 3 1 2 3 2 3 2 5	3 1 2 2 4 2 3 1 4 1 4 1