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Village Hidden in The Leaf



Problem

Submissions

Time Limit : $C/C^{++}\left(2s\right)$, $Java\left(4s\right)$

Memory Limit : $512\,MB$

Little Labib lives in a village that is hidden in the leaf. There are N houses in the village located in a line and represented by an array A where A_i denotes the holding number of the i^{th} ($1 \le i \le N$) house. If Labib wants to move from house i he can move to his adjacent houses (i+1 or i-1), where house holding number can't be a prime number. Keep in mind that he can't go outside of the village. Now you will be given Q queries of 2 types.

- $1\,X$ How many houses can Labib can go to from the X^{th} house with mentioned condition.
- $2\,X\,Y$ Replace the holding number of the X^{th} house with Y.

Input Format

Input start with an integer T denoting the number of test cases. Then T testcases follow.

For each test case, input starts with two integers N and Q denoting number of houses and number of queries to be performed.

Next line contains an array A of N integers denoting house holding numbers.

Each of the next Q lines contains a query as described above.

Constraints

$$1 \le T \le 10^4$$

$$1 \le N \le 10^5$$

$$1 \le Q \le 10^5$$

$$1 \le A_i, Y \le 10^7$$

$$1 \le X \le N$$

It is guaranteed that both the sum of N and the sum of Q over all test cases do not exceed $5*10^5$.

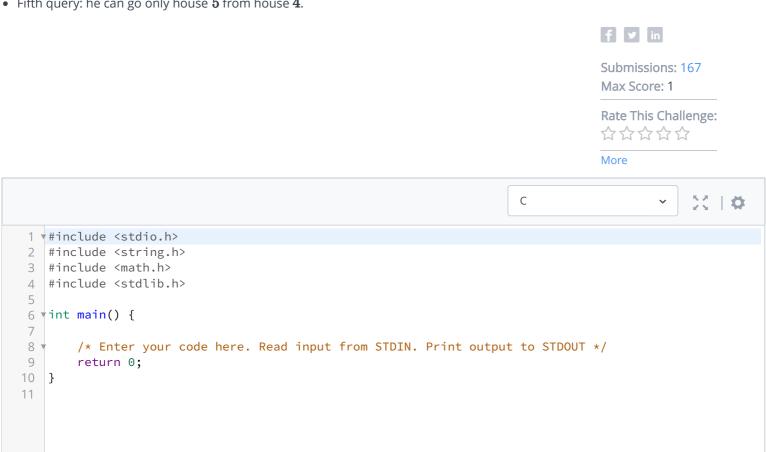
Output Format

For each query of type 1, print the expected result in a separate line. You may see the sample I/O for better explanation.

Sample Input 0

Explanation 0

- First query: he can go house **2** and **3** from house **1**.
- Second query: he can go only house **3** from house **2**.
- Third query: he can go house **2**, **3** and **5** from house **4**.
- Fourth query: he relplaced the house **3** with new holding number **5**, now array looks like [**2**,**1**,**5**,**3**,**6**].
- Fifth query: he can go only house $\bf 5$ from house $\bf 4$.



Line: 1 Col: 1