

Jesse and Profit

Jesse has started stock trading and loves it. He knows the prices of a share of a particular company over the next N days. He wants to analyze this data to build a model which can predict the best day to buy and sell the shares. Given an amount, he wants to know if the given desirable amount of profit can be made. If yes, he wants to know the minimum number of days in which it can be made. If there are multiple ways of buying and selling to achieve that profit, he wants to know the way which happens the earliest.

Note: Jesse can buy only 1 share and not more. He always has to buy before he can sell the share.

Input Format

The first line contains two integers N and D , where N is the number of days for which he knows the share values and D is the number of amounts for which he needs the answer.

The next line contains N space separated integers, where N_i is the value of the share on the $i + 1^{th}$ day.

The next D lines contain a single integer D_i , where D_i is the profit that needs to be made.

Constraints

$$1 \leq N \leq 2 \times 10^5$$

$$1 \leq D \leq 10$$

$$1 \leq N_i, D_i \leq 10^8$$

Output Format

For each amount of profit given as a query, print in a new line containing two space separated integers - the day on which the share was bought and the day on which the share was sold if an answer exists. If it is not possible to achieve the amount of profit, print -1 .

Sample Input

```
6 2
3 1 2 1 4 5
3
2
```

Sample Output

```
4 5
3 5
```

Explanation

To achieve a profit of **3**, he can either buy on day **2** or day **4** and sell on day **5** or he can buy on day **3** and sell on day **6**. The one that takes the minimum number of days is the one where he buys on day **4** and sells on day **5**. So the answer is **4 5**.