CMPUT 274 - Tangible Computing
Morning Problem: Market Madness

Description

Recently Alice has become a beginner investor, this means she can buy and sell her favourite stock once every n days; however, she's not making as much money as she would like. Alice believes she has figured out the pattern of the market and thinks she knows what the price of her favourite stock will be for the next n days.
With this knowledge, can you determine when Alice should buy and sell to maximize her profit?

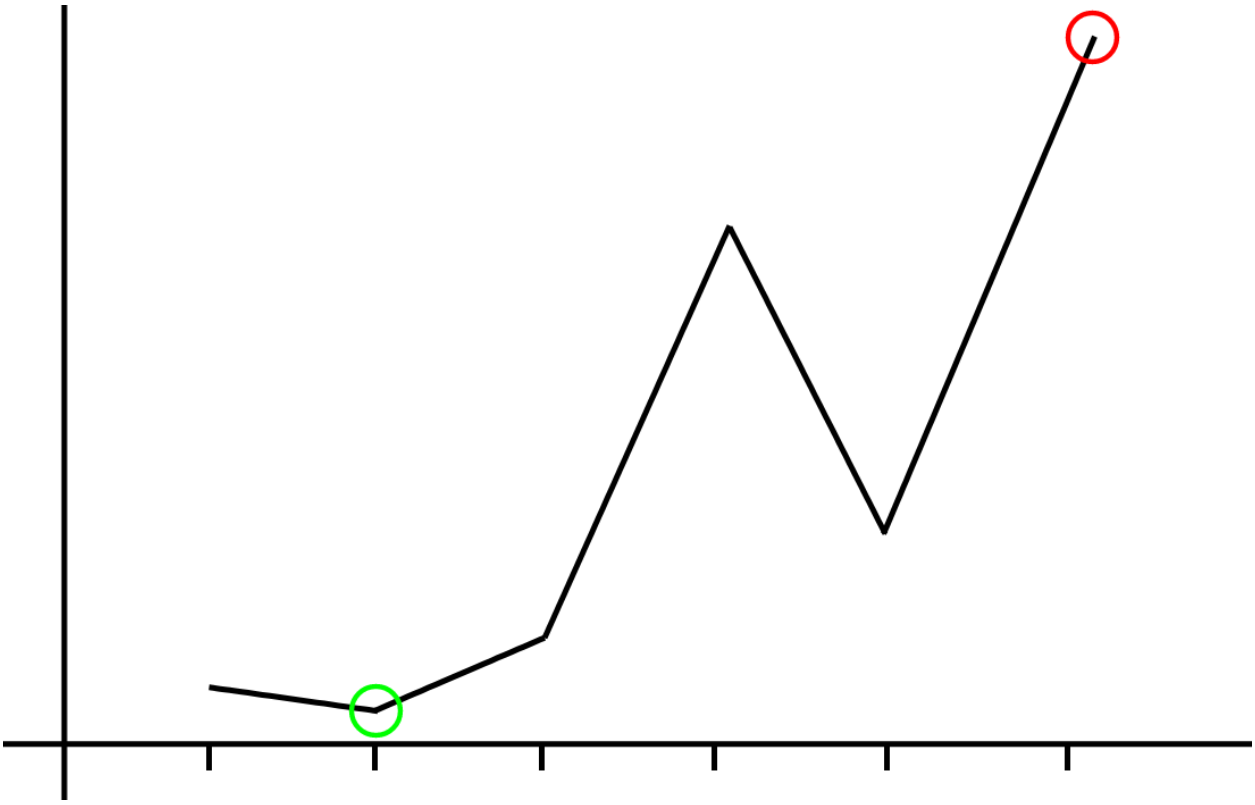

Figure 1: See sample 2.

Input

The first line of input will contain a single integer $1 \leq n \leq 100,000$, the amount of days Alice has to buy and sell.

The next line contains n space separated integers each between 1 and 1e9.

Output

Output the maximum profit Alice can make within the next n days.

Sample Input 1

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

Sample Output 1

```
0
```

Explanation:

Regardless of when Alice buys and sells she will lose money, so her best course of action is to not buy or sell.

Sample Input 2

```
6
3 2 5 35 10 50
```

Sample Output 2

```
48
```

Explanation:

Alice can buy her stock at a price of 2 on day 2 and sell at a price of 50 on day 6 for a profit of 48.

Sample Input 3

```
8
400 401 402 403 404 405 1 50
```

Sample Output 3

```
49
```

Explanation:

Alice should buy the stock at a price of 1 and sell at a price of 50 for maximum gain.