

I. TONTON AND THE SCHOOL FAIR

Time limit: 4s | Memory limit: 512MB
Input stream: stdin | Output stream: stdout

Yuta has been growing up and no longer being a little pupil. He is a Mathematics teacher now. Today, school of Tonton organizes a fair for international women's day celebration with a lot of activities for pupils. An activity called Game of Friends is his favorite activity. There are n ($2 \leq n \leq 10^5$) pupils standing on a line starting from 1 to n . Each pupil has his or her own height denoted as w_1, w_2, \dots, w_n . Yuta's mission is to split n pupils into a number of groups. Each group should contains at least 2 consecutive pupils and a pupil should belongs to exactly one group. Weakness of a group is defined as the difference between the tallest and shortest pupils. Total weakness of groups is denoted as W . The question is to determine the minimum value of W . Yuta wants to know the answer quickly to take the gift. It is revealed that the gift is Bella's favorite handbag.

Input

- The first line contains one integer – n
- The second line contains n integers – heights of the pupils. For each i^{th} pupil, $1 \leq w_i \leq 10^9$.

Output

- Print exactly one integer – the minimum value of W .

Sample 1

Input	Output
4 1 2 3 4	2

Sample 2

Input	Output
4 5 2 3 4	3