Problem D. Heavy is the Crown

Time limit   1000 ms
Memory limit   256MB

Problem Description

League of Legends (LoL), commonly referred to as League, is a 2009 multiplayer online battle arena video game developed and published by Riot Games. Inspired by Defense of the Ancients, a custom map for Warcraft III, the founders of Riot sought to create a stand-alone game in the same genre. Since its release in October 2009, League has been free-to-play and monetized through purchasable character customizations. The game is available for Microsoft Windows and macOS.

Faker and Chovy, two of the best players in this game, decide to enhance their competitive skills. There are n training sets in sequence, where the i-th set has a reward r_i. To outplay each other, they will take turns choosing training sets, with Faker starting first. Each player can only select either the **first** or the **last** training set from the remaining sets and then remove it from play.

Let X and Y represent Faker's and Chovy's total rewards, respectively, after they finish the training. Faker's objective is to maximize $X - Y$, while Chovy aims to minimize $X - Y$. Assuming both players play optimally, determine the final value of $X - Y$.

Input format

The first line contains an integer n ($4 \le n \le 5000$), the number of training sets.

The second line contains n integers $r_1, r_2, \ldots, r_n$ ($1 \le r_i \le 10^9$), the i-th integer represent the reward of the i-th set.

Output format

Output one integer, which is the final value of $X - Y$.

Subtask score

Subtask	Score	Additional Constraints
1	15	$n = 4$.
2	60	n is even.
4	25	No constraints

Sample

Sample Input 1

```
4
7 10 2 6
```

Sample Output 1

```
7
```

Sample Input 2

```
7
10 14 9 15 17 16 5
```

Sample Output 2

```
-4
```

Notes

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