

Contest Duration: 2025-11-01(Sat) 23:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251101T2100&p1=248>) - 2025-11-02(Sun) 00:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251101T2240&p1=248>) (local time) (100 minutes)

[Back to Home \(/home\)](/home)

[🏠 Top \(/contests/abc430\)](/contests/abc430)

[📋 Tasks \(/contests/abc430/tasks\)](/contests/abc430/tasks)

[❓ Clarifications \(/contests/abc430/clarifications\)](/contests/abc430/clarifications)

[📊 Results ▼](#)

[🏆 Standings \(/contests/abc430/standings\)](/contests/abc430/standings)

[🏆 Virtual Standings \(/contests/abc430/standings/virtual\)](/contests/abc430/standings/virtual)

[📖 Editorial \(/contests/abc430/editorial\)](/contests/abc430/editorial)

[💬 Discuss \(https://codeforces.com/blog/entry/147960\)](https://codeforces.com/blog/entry/147960)



## D - Neighbor Distance

[Editorial \(/contests/abc430/tasks/abc430\\_d/editorial\)](/contests/abc430/tasks/abc430_d/editorial)



Time Limit: 4 sec / Memory Limit: 1024 MiB

Score : 400 points

### Problem Statement

There is a number line, and initially person 0 is standing alone at coordinate 0.

From now on, persons  $1, 2, \dots, N$  will arrive in this order and stand on the number line.

Person  $i$  stands at coordinate  $X_i$ . Here,  $X_i \geq 1$ , and  $X_i$  is distinct for all persons.

Each time a person arrives, answer the following question.

- Suppose that currently  $r + 1$  persons  $0, 1, \dots, r$  are standing on the number line.
- Here, define  $d_i$  as the distance to the nearest other person from person  $i$ .
  - More formally,  $d_i = \min_{0 \leq j \leq r, j \neq i} |X_i - X_j|$ .
- Find the sum of this  $d$ , that is,  $\sum_{i=0}^r d_i$ .

### Constraints

- All input values are integers.
- $1 \leq N \leq 5 \times 10^5$
- $1 \leq X_i \leq 10^9$
- $X_i \neq X_j$  if  $i \neq j$ .

2026-01-02 (Fri)

05:32:31 +11:00

# Input

The input is given from Standard Input in the following format:

```
 $N$   
 $X_1 \ X_2 \ \dots \ X_N$ 
```

# Output

Print  $N$  lines.

The  $i$ -th line ( $1 \leq i \leq N$ ) should contain the answer to the question when person  $i$  arrives.

## Sample Input 1

[Copy](#)

```
10  
5 2 7 4 108728325 390529120 597713292 322456626 845148281 812604915
```

[Copy](#)

## Sample Output 1

[Copy](#)

```
10  
7  
8  
8  
108728326  
390529121  
523096670  
452057486  
699492475  
517144218
```

[Copy](#)

In this input, 10 persons arrive.

The first four persons are explained below.

- When person 1 arrives, there are persons at coordinates 0, 5.
  - The required value is  $5 + 5 = 10$ .
- When person 2 arrives, there are persons at coordinates 0, 2, 5.
  - The required value is  $2 + 2 + 3 = 7$ .
- When person 3 arrives, there are persons at coordinates 0, 2, 5, 7.
  - The required value is  $2 + 2 + 2 + 2 = 8$ .
- When person 4 arrives, there are persons at coordinates 0, 2, 4, 5, 7.
  - The required value is  $2 + 2 + 1 + 1 + 2 = 8$ .

2026-01-02 (Fri)  
05:32:31 +11:00

url=https%3A%2F%2Fatcoder.jp%2Fcontests%2Fab430%2Ftasks%2Fab430\_d%3Flang%3Den&title=D%20-

---

[Rule \(/contests/abc430/rules\)](/contests/abc430/rules) [Glossary \(/contests/abc430/glossary\)](/contests/abc430/glossary)

[Terms of service \(/tos\)](/tos) [Privacy Policy \(/privacy\)](/privacy) [Information Protection Policy \(/personal\)](/personal) [Company \(/company\)](/company)  
[FAQ \(/faq\)](/faq) [Contact \(/contact\)](/contact)

Copyright Since 2012 ©AtCoder Inc. (<http://atcoder.co.jp>) All rights reserved.