

# Sherlock and MiniMax



Watson gives Sherlock an array of integers. Given the endpoints of an integer range, for all  $M$  in that inclusive range, determine the minimum(  $\text{abs}(\text{arr}[i]-M)$  for all  $1 \leq i \leq |\text{arr}|$  ). Once that has been determined for all integers in the range, return the  $M$  which generated the maximum of those values. If there are multiple  $M$ 's that result in that value, return the lowest one.

For example, your array  $\text{arr} = [3, 5, 7, 9]$  and your range is from  $p = 6$  to  $q = 8$  inclusive.

M	arr[1]-M	arr[2]-M	arr[3]-M	arr[4]-M	Min
6	3	1	1	3	1
7	4	2	0	2	0
8	5	3	1	1	1

We look at the **Min** column and see the maximum of those three values is **1**. Two  $M$ 's result in that answer so we choose the lower value, **6**.

## Function Description

Complete the `sherlockAndMinimax` function in the editor below. It should return an integer as described.

`sherlockAndMinimax` has the following parameters:

- `arr`: an array of integers
- `p`: an integer that represents the lowest value of the range for  $M$
- `q`: an integer that represents the highest value of the range for  $M$

## Input Format

The first line contains an integer  $n$ , the number of elements in `arr`.

The next line contains  $n$  space-separated integers `arr[i]`.

The third line contains two space-separated integers  $p$  and  $q$ , the inclusive endpoints for the range of  $M$ .

## Constraints

$$1 \leq n \leq 10^2$$

$$1 \leq \text{arr}[i] \leq 10^9$$

$$1 \leq p \leq q \leq 10^9$$

## Output Format

Print the value of  $M$  on a line.

## Sample Input

```
3
5 8 14
4 9
```

## Sample Output

```
4
```

## Explanation

$\text{arr} = [5, 8, 14]$ ,  $\text{range} = [4 - 9]$

M	arr[1]-M	arr[2]-M	arr[3]-M	Min
4	1	4	10	1

5	0	3	9	0
6	1	2	8	1
7	2	1	7	1
8	3	0	6	0
9	4	1	5	1

For  $M = 4, 6, 7$ , or  $9$ , the result is  $1$ . Since we have to output the smallest of the multiple solutions, we print  $4$ .