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1. Question 1

A shop in HackerLand contains n items where the price of the i^{th} item is $price[i]$. In one operation, the price of any one item can be increased or decreased by 1.

Given q queries denoted by the array $query[]$, find the minimum number of operations required to make the price of all items equal to each $query[i]$ ($0 \leq i < q$).

Note: All queries are independent of each other, i.e., the original price of items is restored after the completion of each query.

Example:

Consider $n = 3$, $q = 4$, $price[] = [1, 2, 3]$, $query[] = [3, 2, 1, 5]$

Language C

Environment

```
1 > #include
19
20 /*
21 * Comple
22 *
23 * The fu
24 * The fu
25 * 1. I
26 * 2. I
27 */
28
29 /*
30 * To re
31 *
32 *
33 *
34 * For
35 * long
36 *
37 *
38 *
```

Test Results

Search

1 JPY/INR
+0.68%

Your Action Required: IBM Co... HackerRank Question - Quest...

hackerrank.com/test/1osk0dhn7a2/questions/flglamgbm7

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The answer is $[3, 2, 3, 9]$.

Function Description
Complete the function `countMinimumOperations` in the editor below.

`countMinimumOperations` has the following parameters:

- `int price[n]`: the original prices of each item
- `int query[q]`: the queries

Returns
`long_int[q]`: the answers to the queries in their order of input

Constraints

- $1 \leq n \leq 2 \cdot 10^5$
- $1 \leq price[i] \leq 10^9$
- $1 \leq q \leq 2 \cdot 10^5$
- $1 \leq query[i] \leq 10^9$

Language C

Environment

```
1 > #include <
19
20 /*
21 * Comple
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23 * The fun
24 * The fun
25 * 1. IN
26 * 2. IN
27 */
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30 * To ret
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34 * For ex
35 * long*
36 * *
37 *
38 * s
```

Test Results

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Sample Case 0

Sample Input For Custom Testing

STDIN	FUNCTION
3 = 3	price[] size, n
2 5, 1]	price[] = [2,
5	
1	
3 = 3	query[] size, q
8 4, 3]	query[] = [8,
4	
3	

Sample Output

16
6
5

Explanation

Language C

Environment

```
1 > #include <as
19
20 /*
21 * Complete
22 *
23 * The funct
24 * The funct
25 * 1. INTEC
26 * 2. INTEC
27 */
28
29 /*
30 * To return
31 * - St
32 * - AL
33 *
34 * For exam
35 * long* re
36 * *res
37 *
38 * stat
```

Test Results

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Understanding -> Given an array of size N; and a target -> find the minimum number of operations needed to make all elements of array equal to target -> there are multiple target in order of Q;

=> N = 5

[1 2 3 4 5]

Target = [3; 2]

O/P = [6 ; 7]

C++ - <https://www.jdoodle.com/ia/1gOB>

Java -

<https://ide.geeksforgeeks.org/online-java-compiler/77c8a6bc-e39a-4359-bd99-534c1b5cc3f9>

Py -

<https://ide.geeksforgeeks.org/online-python3-compiler/f5b34c4d-5929-4258-856d-67a82a257f96>

TC - $O(N*Q)$

Takes constant size;

Optimization:->

If target > all numbers in the array ->(target > max element of array)

-> answer = target*n - sum; =>O(1)

If target < all numbers in the array ->(target < min element of the array)

-> answer = sum - target*n;

C++ <https://www.jdoodle.com/ia/1gUy>

Java -

<https://ide.geeksforgeeks.org/online-java-compiler/d2ca5aed-7c53-4ee3-9d09-ba720edc1a28>

Py -

<https://ide.geeksforgeeks.org/online-python3-compiler/3b3c4c08-2b72-41c6-ab10-e55f552b6add>

TC - $O(N + N\log N + Q\log N)$

Takes $O(N)$ size;

C++ - Using binary search function on vector -

<https://www.jdoodle.com/ia/1gUu>

Java -

<https://ide.geeksforgeeks.org/online-java-compiler/37c5ffb9-396b-431f-bf65-cf5af0cfb497>

Py -

<https://ide.geeksforgeeks.org/online-python3-compiler/a8ba0e3a-4f4d-4ec8-ab53-3b65f255f0c4>

