

Profit sort

You are given the profits of a company for NN days and QQ queries are prepared on this file. Each query contains two integers, LL and RR .

Write a program to calculate the number of days on which the profit falls between the range LL and RR (both inclusive).

Input format

- First line: NN
- Second line: NN space-separated integers (denoting the profit for each day)
- Third line: QQ
- First line in each query: LL and RR

Output format

Print the number of days on which the profit is greater than or equal to LL and less than or equal to RR .

Constraints

$$1 \leq N \leq 10^5, 1 \leq N \leq 10^5$$

$$1 \leq \text{Profit for each day} \leq 10^7, 1 \leq \text{Profit for each day} \leq 10^7$$

$$1 \leq Q \leq 10^5, 1 \leq Q \leq 10^5$$

$$1 \leq L, R \leq 10^5, 1 \leq L, R \leq 10^5$$

Sample Input

```
5
23 13 10 2 33
5
7 11
10 30
1 10
2 40
5 6
```

Sample Output

```
1
3
2
```

5
0

Interval query

You are given an array A containing N integers and Q queries described by three integers L , R , and P .

For each query, find the minimal possible value of $|A_i - P|$, where $L \leq i \leq R$ (1 based index).

Input format

- First line: Two space-separated integers N and Q
-
- Second line: N space-separated integers (denoting the array A)
-
- Next Q lines: Three space-separated integers L , R , and P

Output format

For each query, print the minimal possible value of $|A_i - P|$, where $L \leq i \leq R$ (1 based index). Print the answer for each query in a separate line.

Constraints

$$1 \leq N, Q \leq 10^5$$

$$1 \leq A[i], P \leq 10^9$$

$$1 \leq L \leq R \leq N$$

Sample Input

```

5 3
2 8 5 1 10
4 5 9
3 5 6
1 2 8

```

Sample Output

```

1
1
0

```

Unique matrix operations

You are required to maximise the value of $F(x)$ using the following pieces of information:

The four operations conducted on a matrix A of size $N \times M$ are as follows:

- Add v_1 to all the elements of a row.
- Update the value of all the elements of a row to v_2 , i.e., all the elements of that row become equal to v_2 .
- Add v_3 to all the elements of a column.
- Update the values of all the elements of a column to v_4 , i.e., all the elements of that column become equal to v_4 .

The function $F(x)$ is defined as follows:

$$F(x) = \sum_{i=1}^N \sum_{j=1}^M \text{abs}(A[i][j])$$

where $A[i][j]$ refers to the j th cell in the i th row of matrix A , and $\text{abs}(x)$ refers to the absolute value of any integer x .

The following restrictions are also defined:

- On any cell of the matrix, at most one operation can be performed. This operation can be of any type.
- All operations can be used any number of times.

Write a program to determine the maximum value of $F(x)$.

Input format

- First line: Two space-separated integers N and M
-
- Next N lines: M space-separated integers (denoting the rows of the matrix)
-
- Next line: Four space-separated integers v_1 , v_2 , v_3 , and v_4

Output format

Print the maximum value of $F(x)$.

Constraints

$$1 \leq N \leq 1000$$

$$1 \leq M \leq 1000$$

$$-10^9 \leq A[i][j] \leq 10^9$$

$$-10^9 \leq v_1, v_2, v_3, v_4 \leq 10^9$$