CODEFORCES β
Sponsored by Telegram

| AutumnKite | Logout

HOME TOP CONTESTS GYM PROBLEMSET GROUPS RATING API HELP CALENDAR

PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS ROOM STANDINGS CUSTOM INVOCATION

D. k-Maximum Subsequence Sum

time limit per test: 4 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Consider integer sequence $a_1, a_2, ..., a_n$. You should run queries of two types:

- The query format is "0 i val". In reply to this query you should make the following assignment: $a_i = val$.
- The query format is "1 l r k". In reply to this query you should print the maximum sum of at most k non-intersecting subsegments of sequence $a_l, a_{l+1}, ..., a_r$. Formally, you should choose at most k pairs of integers $(x_1, y_1), (x_2, y_2), ..., (x_t, y_t)$ $(l \le x_1 \le y_1 < x_2 \le y_2 < ... < x_t \le y_t \le r; t \le k)$ such that the sum $a_{x_1} + a_{x_1+1} + ... + a_{y_1} + a_{x_2} + a_{x_2+1} + ... + a_{y_2} + ... + a_{x_t} + a_{x_t+1} + ... + a_{y_t}$ is as large as possible. Note that you should choose at most k subsegments. Particularly, you can choose 0 subsegments. In this case the described sum considered equal to zero.

Input

The first line contains integer n $(1 \le n \le 10^5)$, showing how many numbers the sequence has. The next line contains n integers $a_1, a_2, ..., a_n$ $(|a_i| \le 500)$.

The third line contains integer m $(1 \le m \le 10^5)$ — the number of queries. The next m lines contain the queries in the format, given in the statement.

All changing queries fit into limits: $1 \le i \le n$, $|val| \le 500$.

All queries to count the maximum sum of at most k non-intersecting subsegments fit into limits: $1 \le l \le r \le n$, $1 \le k \le 20$. It is guaranteed that the number of the queries to count the maximum sum of at most k non-intersecting subsegments doesn't exceed 10000.

Output

For each query to count the maximum sum of at most k non-intersecting subsegments print the reply — the maximum sum. Print the answers to the queries in the order, in which the queries follow in the input.

Examples

input Copy

```
9
9 -8 9 -1 -1 -1 9 -8 9
3
1 1 9 1
1 1 9 2
1 4 6 3
```

output Copy

```
17
25
0
```

input Copy

```
15
-4 8 -3 -10 10 4 -7 -7 0 -6 3 8 -10 7 2
15
1 3 9 2
1 6 12 1
0 6 5
0 10 -7
1 4 9 1
1 7 9 1
0 10 -3
1 4 10 2
1 3 13 2
```

Codeforces Round #172 (Div. 1)
Finished
Practice

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++11 5.1.0

Choose file: 选择文件 未选择任何文件

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

Submit

→ Last submissions

Submission	Time	Verdict
56825572	Jul/11/2019 06:59	Accepted

→ Problem tags

data structures flows graphs implementation *2800

No tag edit access

→ Contest materials

```
1 4 11 2
0 15 -9
0 13 -9
0 11 -10
1 5 14 2
1 6 12 1
```

output Copy

```
14
11
15
0
15
26
18
23
8
```

Note

In the first query of the first example you can select a single pair $(1, 9)$. So the described sum will be 17.

Look at the second query of the first example. How to choose two subsegments? (1, 3) and (7, 9)? Definitely not, the sum we could get from (1, 3) and (7, 9) is 20, against the optimal configuration (1, 7) and (9, 9) with 25.

The answer to the third query is 0, we prefer select nothing if all of the numbers in the given interval are negative.

- Announcement #1 (en)
- Announcement #2 (ru)
- Tutorial #1 (en)
- Tutorial #2 (en)

Codeforces (c) Copyright 2010-2019 Mike Mirzayanov
The only programming contests Web 2.0 platform
Server time: Jul/14/2019 14:02:16^{UTC+8} (g2).
Desktop version, switch to mobile version.
Privacy Policy

Supported by

ITMO UNIVERSITY