

D. Running Miles

time limit per test: 2 seconds

memory limit per test: 256 megabytes

There is a street with n sights, with sight number i being i miles from the beginning of the street. Sight number i has beauty b_i . You want to start your morning jog l miles and end it r miles from the beginning of the street. By the time you run, you will see sights you run by (including sights at l and r miles from the start). You are interested in the 3 most beautiful sights along your jog, but every mile you run, you get more and more tired.

So choose l and r , such that there are at least 3 sights you run by, and the sum of beauties of the 3 most beautiful sights minus the distance in miles you have to run is maximized. More formally, choose l and r , such that $b_{i_1} + b_{i_2} + b_{i_3} - (r - l)$ is maximum possible, where i_1, i_2, i_3 are the indices of the three maximum elements in range $[l, r]$.

Input

The first line contains a single integer t ($1 \leq t \leq 10^5$) — the number of test cases.

The first line of each test case contains a single integer n ($3 \leq n \leq 10^5$).

The second line of each test case contains n integers b_i ($1 \leq b_i \leq 10^8$) — beauties of sights i miles from the beginning of the street.

It's guaranteed that the sum of all n does not exceed 10^5 .

Output

For each test case output a single integer equal to the maximum value $b_{i_1} + b_{i_2} + b_{i_3} - (r - l)$ for some running range $[l, r]$.

Example

input	Copy
4 5 5 1 4 2 3 4 1 1 1 1 6 9 8 7 6 5 4 7 100000000 1 100000000 1 100000000 1 100000000	
output	Copy
8 1 22 299999996	

Note

In the first example, we can choose l and r to be 1 and 5. So we visit all the sights and the three sights with the maximum beauty are the sights with indices 1, 3, and 5 with beauties 5, 4, and 3, respectively. So the total value is $5 + 4 + 3 - (5 - 1) = 8$.

In the second example, the range $[l, r]$ can be $[1, 3]$ or $[2, 4]$, the total value is $1 + 1 + 1 - (3 - 1) = 1$.

Codeforces Round 870 (Div. 2)

Finished

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