

Task: TRE

Trek and Swim

Farias Brito High School Programming Camp, Day 1. Available memory: 128 MB. 25.07.2016

You want to spend your next vacation in Poland. Despite its not being a very big country, Poland has a highly diverse natural environment ranging from the Baltic Sea in the north to the Tatra Mountains in the south. As you enjoy swimming in the sea as well as trekking up mountains, you would like to spend some time in both of those locations. However, the weather in Poland can sometimes be very capricious, so you also need to take that into account when planning your vacation.

In the summer you are free for n consecutive days. You can start and finish your vacation on any of these days. You want to spend the first part of your vacation at the seaside and the remaining part in the mountains. These parts can each be of any positive length, and you want to maximize the total length of the vacation.

You have obtained a weather forecast for all n days when you are free. By curious coincidence, the weather on every day is expected to be either perfect for spending the day at the seaside but not in the mountains, or vice versa (perfect for trekking but not for swimming). Obviously, you want the best possible weather during each part of your vacation, so you require the weather to be perfect for swimming for more than half of the days in the first part of your vacation, and perfect for trekking for more than half of the days in the second part of your vacation.

Input

In the first line of the input there is an integer n ($n \geq 1$), specifying the number of days. The next line contains a sequence of integers a_1, a_2, \dots, a_n . Number a_i is equal to 0 if the weather during i -th day favors the seaside, or 1 if the weather during that day favors the mountains.

Output

In the only line of the output should be one integer standing for the length of the longest vacation consistent with your requirements. If there is no vacation that satisfies your requirements, return 0.

Example

For the input data:

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8
1 1 0 1 0 0 1 1
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the correct result is:

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7
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Explanation of the example: You are free for eight days. The weather during days 3, 5 and 6 will be better for swimming, and better for trekking during the remaining days. You can start your vacation on day 2, spend five days at the seaside (three days will have perfect weather, which is more than half) and then spend two days in the mountains (both days will have perfect weather). That results in a vacation length of seven days, which is the longest possible vacation that meets your criteria, so the function should return 7.

Grading

Subtask	Constraints	Points
1	$n \leq 60$	30
2	$n \leq 500$	30
3	$n \leq 100\,000$	40