CSGE602040 - Data Structures and Algorithms
Even Semester - 2020/2021
Lab 4
Deadline: Friday, 21-May-2021, 23.55 WIB

Buying Souvenirs

Description

Jarjar goes on holiday to a neighbouring city which is a favourite tourism spot for Jarjar and his lover. But this time, Jarjar goes on his own because his lover has something urgent to do. Jarjar's lover is disappointed because it's been a long time since the last time she went there. Therefore, Jarjar wants to buy a lot of souvenirs to make his lover happy.

Jarjar will go to a street that is known as a center for souvenirs. On that street, there are rows of shops selling typical souvenirs at a certain price. In addition, there're also several ATMs so tourists can withdraw money when they run out of money. Each ATM has a limit on the amount of money each person can withdraw. The total number of shops and ATMs on the street is **N**.

Jarjar has a unique habit while buying souvenirs on that street. He always visited each place without money at first. He will be visiting from left to right.

- If the place that he visits is a souvenir shop, he will note the price of souvenirs in his notebook.
- If the place that he visits is an ATM, he will withdraw some money. Since Jarjar is a rich man, he can withdraw money as much as he can without worrying about running out of money later on and can withdraw as much as that maximum amount of cash at the ATM. Then, he returned to the previous shops to buy souvenirs. He would go back to the shop with the cheapest souvenirs first and buy just one from the shop. He will continue to another shop with the next cheapest souvenir price until there's not enough money left. Of course, he would not visit the shop that he had already visited and bought the souvenir. He will use the remaining money to take an ojek to the last ATM he used and continue his visits to other places (if there is no money left, Jarjar will walk).

Before going to buy the souvenirs, Jarjar wants to call his lover to tell her how many souvenirs he will bring so that she will be happy. As a souvenir expert in that street, you were asked by Jarjar about the amount. Of course, you too are a very good programmer and have just learned the structure of binary heap. So you feel challenged to answer that question by creating a program that utilizes the binary heap.

Input

The first line contains the integer **N** which represents the number of gift shops and ATMs.
The next line consists of N integers $\mathbf{t_1, t_2, \ldots, t_n}$. $\mathbf{t_i}$ specifies the types of places on the street of the souvenir center (**0** for gift shops and **1** for ATMs).
The next line consists of **N** integers $\mathbf{a_1, a_2, \ldots, a_n}$. $\mathbf{a_i}$ states the price for souvenirs if place i is a gift shop or the amount of money that can be taken if place **i** is an ATM.

Output

The output is a number that states the number of souvenirs that Jarjar can buy.

Limitation

$1 \leq N \leq 100.000$

$1 \leq a_i \leq 1.000.000.000$

t_i must be 0 or 1.

Guaranteed there is at least one gift that can be purchased every time you withdraw money from an ATM.

Input Example

```
6
0 0 0 1 0 1
8 4 3 5 1 5
```

Output Example

```
3
```

Explanation

- When visiting the 4th place, which is an ATM, Jarjar will take 5 cash. Prices for souvenirs in previous shops that have been visited and the souvenirs have not been purchased yet are [8, 4, 3]. Jarjar returns to 3rd place to buy souvenirs worth 3. The rest of the money is spent on returning to 4th place.
- When visiting the 6th place, which is an ATM, Jarjar will take 5 cash. Prices for souvenirs in previous shops that have been visited and the souvenirs have not been purchased yet are [8, 4, 1]. Jarjar returned to 5th place to buy souvenirs worth 4, then to 2nd place to buy souvenirs worth 1. The rest of the money (incidentally there was no rest in this example) was spent on returning to 6th place.
- The number of souvenirs purchased after visiting all the places is 3.