

Hospital Management System

Time Limit: 1s

Memory Limit: 256 MB



Description

Prince Hospital is needing a new system to manage their patients data. The system will list all patients with their severity levels, then **prioritize** severe patients first and take care of the rest if their capacity and resources is still sufficient. Else, they need to transfer the patients to another hospital. Given the list of patients, determine how many patients the hospital able to treat or transfer

Use the suitable data structure, solution using array will not be accepted

Input Format

The first line contains three integers n , c , and r . n is the number of patients received, c is the capacity of the hospital, and r is the resources

Each of the next n line contains s_i , the severity level of each patients

Notes

capacity (c) will decrease by 1 each time a patient is treated

resources (r) will decrease by s_i for each patient being treated

Output Format

print

Patients treated: X

Patients transferred: Y

Where X is the number of patients the hospital can treat, and Y is the number of patients they transfer. In case of hospital couldn't treat all patients and transfer all of them, print

All n patients are transferred

Where n is the number of all patients

Constraints

$$2 \leq n, c, r, s_i \leq 10^6$$

Example

Input
7 5 20 1 3 5 3 5 5 1
Output
Patients treated: 5 Patients transferred: 2

When **prioritized** by the severity level, the list will be as follows

5 5 5 3 3 1 1

There are 7 patients, and the initial condition of the hospital is

Treated: 0, Transferred: 0, Capacity: 5, Resources: 20

After treating patient 1 with severity level 5

Treated: 1, Transferred: 0, Capacity: 4, Resources: 15

After treating patient 2 with severity level 5

Treated: 2, Transferred: 0, Capacity: 3, Resources: 10

After treating patient 3 with severity level 5

Treated: 3, Transferred: 0, Capacity: 2, Resources: 5

After treating patient 4 with severity level 3

Treated: 4, Transferred: 0, Capacity: 1, Resources: 2

We can't treat patient 5 with severity level 3, since we only have 2 resources left, so transfer patient 5

Treated: 4, Transferred: 1, Capacity: 1, Resources: 2

But we can treat patient 6 with severity level 1

Treated: 5, Transferred: 1, Capacity: 0, Resources: 1

We still have 1 resource to treat patient 7 with severity level 1, but we can't since the capacity is already 0, so transfer patient 7, and the final conditions will be as follows
Treated: 5, Transferred: 2, Capacity: 0, Resources: 1